COMPILED FROM OPEN SOURCES · PROTOTYPE PROOF · 2026-10-23

Janne's Guide to

Russian Ground Equipment

Field reference for recognition and unit association

257 systems: armoured vehicles, fires, air defence, radars, electronic warfare, engineers, command and signals, logistics, uncrewed systems, aircraft and helicopters, boats and landing craft and weapons. What each looks like, which units hold it, how far it reaches.

1 CROSS-REFERENCE TABLES
2 ARMOURED VEHICLES
3 FIRES
4 AIR DEFENCE
5 RADARS
6 ELECTRONIC WARFARE
7 ENGINEERS
8 COMMAND AND SIGNALS
9 LOGISTICS
10 UNCREWED SYSTEMS
11 AIRCRAFT AND HELICOPTERS
12 BOATS AND LANDING CRAFT
13 WEAPONS

NOT AN OFFICIAL PUBLICATION · OPEN SOURCES ONLY · VERIFY BEFORE USE

Janne's Guide to Russian Ground Equipment

Field reference for recognition and unit association

Prototype proof built 2026-10-23, build `cc082cfa`. 257 entries, 919 designations in the master list, 2725 sources.

This copy is the A4 edition. Layout of this build: A4 format (355 pages), A4 pages, the fullest edition, for desk use and home printing (type 12 per cent larger and pictures half as large again as in the A5 booklet, so entries lose far less to trimming). The current PDF of each layout is online at the link given, under jmkorhonen.github.io/files/publications. The A5 field booklet and the A4 compact layout are paused until the guide is nearer completion; most readers print their own copies on A4.

Compiled from open sources only. Research, source checking and layout were done with AI assistance under the compiler's direction; every entry names its sources, and a random audit of printed facts is described under *Status of this proof* overleaf. Photographs are reproduced under the licences named in the picture credits at the back; none is altered other than scaled.

This is a private project, not a publication of any authority. It is not an official document and must not be treated as one. Figures may be wrong: verify before use.

Licence of the text and tables: Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0): copy and adapt them for non-commercial use with credit, under the same licence; commercial rights stay with the author. The photographs are under their own licences, as credited at the back. Feedback: jannesguide@pm.me, Signal jmkorhonen.32.

About this guide

"If you want it done good, do it yourself."

This is an open-source (OSINT) guide to the equipment of the Russian Ground Forces, made to be printed and carried, as an A5 booklet or on A4 sheets. It was developed to fill a recognised need for a printable, open-source recognition guide and reference that can be read without a network connection or any electronic device. For each system it shows what it looks like and how to tell it from similar ones, which kinds of units hold it, and how far it reaches.

How the guide is organised. The at-a-glance tables come first: the master list of designations (Table 1, with its indexes of other names and Cyrillic forms, 1b and 1c), the table of unit types and their equipment, the reach tables by kind of weapon and sensor, mobility, and the horizon and frequency-band tables. The detailed entries follow, one chapter per role from armoured vehicles to boats and weapons. Each chapter opens with a quick-reference table of everything in it; the entries then run in role groups, each group under its own heading and in alphabetical order. The source register and the picture credits close the book. In the PDF every page number, system name and source code is a link.

Sources. Everything comes from open sources: reference works, Russian official, industry and specialist publications, Western and Ukrainian analysis and defence journalism, and photographs of equipment seen in the war in Ukraine. Each entry names its sources by code at its foot; the register at the back gives them in full, with the date each web page was read. Entries are researched and drafted with AI tools, then checked claim by claim against their sources in a separate pass. This is a private project, not a publication of any authority, and it contains only openly published information.

Soviet and Russian designations. Most equipment here carries a GRAU index, assigned by the Main Missile and Artillery Directorate (ГРАУ, Главное ракетно-артиллерийское управление), which orders and supplies missile and artillery armament; other ordering directorates use the same pattern. The index opens with a number for the category (1 optics, radars and control systems; 2 artillery; 3 artillery ammunition; 9 army missile systems), then one or more Cyrillic letters for the type, a number for the model and, where needed, a suffix for the variant: 2S19M2. Later air defence indices put the category last: 48N6 is model 48 of category 6. Table 1 groups the indices by category. The Latin forms transliterate the Cyrillic (3ОФ25 is 3OF25). Also met here are Object numbers of armoured vehicles (Объект 305 is the 2S4), Project numbers of vessels (проект 1176), factory product numbers (*изделие*, *Izdeliye* 51 and 52 are the Lancet), design-bureau names (Mi-8, T-72), system designations (S-300) and names (Tornado-G).

Status of this proof. This proof holds 257 entries, all checked claim by claim against their sources. A random audit on 6–7 October drew 100 of the 3,428 printed facts; the editor and an independent AI checker judged each against its source and every disagreement was adjudicated. One fact was wrong and five were overstated or mislabelled, an estimated error rate of 1 per cent (6 per cent counting overstatements). Nevertheless, use at your own risk.

Feedback. Corrections, better photographs and suggestions are welcome by email to jannesguide@pm.me or on Signal, username jmkorhonen.32. Give the edition and its date, printed at the foot of every page, and the page number, and a source if you have one: every change is checked against sources before it goes in. Send open-source material only: nothing classified, nothing about your own unit or where it is, and remove location data from photographs.

How to read an entry. The heading gives the designation and name, the Cyrillic form, the NATO or US name, the role and the year the type entered service; the black box at top right is the mobility code (legend below). *Operated by* lists the unit types that hold the equipment, from the largest formation down, with the subunit and the number held where known; *Numbers* gives inventory totals and confirmed losses. Each row ends with a tag such as D 2016 H: basis (D doctrinal tables of organisation, O observed with an identified unit, R reported or claimed), date and confidence (H, M or L). *Indicates* says what seeing the equipment may tell about the unit nearby, and no more than the rows above support. Equipment indicates a unit type; it does not prove it.

Recognise bullets run in the order a feature becomes visible as you close in: silhouette and class first, then turret or antenna, armament and hull fittings, with small details last and marked "close only". *Confused with* names the types a reader really mistakes for this one, each with one checkable cue; a lead-in such as *Full view* or *Chassis hidden* says when the cue works, "not decisive alone" asks for a second cue, and "from photograph" marks a cue that rests on an image rather than a text source. *Variants* gives what differs on each version; *Seen with* lists the other vehicles of the complex or battery.

The right-hand column holds the figures: mobility (weight, size, speed, range, fording, time into and out of action), then weapon and sensor performance. A condition in brackets says what the figure is for; "also" introduces a credible alternative figure; INA means no figure was found. The *Sources* line names the sources by code, each a link to the register at the back; "not in WEG" marks a type absent from the US Army's Worldwide Equipment Guide. A page number after a name ("p. 42") points to that type's own entry.

TR	Tracked, cross-country
WH-AT	Wheeled all-terrain
WH-LT	Wheeled, limited off-road
TW	Towed
AIR-RW	Helicopter
FX	Fixed installation
NA	Not applicable
TR-A	Tracked, amphibious
WH-AT-A	Wheeled all-terrain, amphibious
RD	Roadbound, hard surface only
MP	Man-portable
AIR-FW	Fixed-wing aircraft
SHIP	Ship or boat

GUIDE

Contents

The contents list the reference entries completed and checked so far. Each chapter's opening table also names the types of its class that are still in preparation or have no entry.

About this guide . . . 3

1 Cross-reference tables . . . 7
1 Master list of designations . . . 7
1b Other names and designations . . . 24
1c Cyrillic designations and names . . . 29
2 Unit type to equipment . . . 33
3a Reach of indirect fire . . . 52
3b Reach of long-range missiles, one-way attack drones and loitering munitions . . . 58
3c Reach of direct fire . . . 60
3d Reach of anti-tank weapons . . . 64
3e Reach of air defence weapons . . . 66
3f Reach of sensors . . . 68
3g Reach of communications . . . 75
3h Reach of electronic attack . . . 77
3i Reach of reusable UAVs . . . 78
3j Reach of aircraft . . . 80
3k Deployment distances . . . 81
3l Engineering equipment . . . 82
4 Mobility and time into action . . . 84
5 Radar and visual horizon . . . 90
6 Frequency bands . . . 90

2 Armoured vehicles . . . 91
Main battle tanks . . . 93
T-54 / T-55 . . . 94
T-62 . . . 95
T-64A/B/BV . . . 95
T-72B3/B3M . . . 96
T-80B/BV/BVM, T-80U . . . 97
T-90 . . . 98
Tracked IFVs, APCs and other AFVs . . . 99
2S25 Sprut-SD . . . 99
BMD-2 . . . 99
BMD-4M . . . 100
BMO-T . . . 101
BMP-1 . . . 101
BMP-2 . . . 102
BMP-3 . . . 103
BMPT Terminator . . . 104
BRM-1K . . . 104
BTR-D . . . 105
BTR-MDM Rakushka . . . 106
MT-LB . . . 107
Wheeled APCs and armoured cars . . . 109
BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars . . . 109
BRDM-2 . . . 109
BTR-80 . . . 110
BTR-90 Rostok . . . 111
Tigr and Vodnik armoured cars . . . 112
Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks . . . 113
ATGM carrier vehicles . . . 115
9K114 Shturm-S . . . 115
9P162 Kornet-T . . . 115
Bulsae-4 ATGM launcher vehicle (North Korea) . . . 116
Khrizantema-S . . . 116
Recovery and repair . . . 117
Foreign and captured armoured vehicles . . . 118
Captured US vehicles in Russian use: M2 Bradley, M113, MaxxPro, M88A1 . . . 118
ZFB-05 or Tiger 4x4 armoured personnel carrier (China) . . . 118

3 Fires . . . 119
MRLs and heavy flamethrowers . . . 121
BM-21 Grad 122 mm MRL . . . 122
BM-27 Uragan . . . 122
BM-30 Smerch . . . 123
M1991 and M-2024 240 mm multiple rocket launchers (North Korea) . . . 124
Tornado-G . . . 124
TOS-1A Solntsepek . . . 125
Uragan-1M . . . 125
Self-propelled guns and mortars . . . 126
2S1 Gvozdika . . . 126
2S3 Akatsiya . . . 127
2S4 Tyulpan . . . 128
2S5 Giatsint-S . . . 128
2S7 Pion / 2S7M Malka . . . 129
2S9 Nona-S . . . 129
2S12 Sani . . . 130
2S19 Msta-S . . . 130
2S23 Nona-SVK . . . 131
2S31 Vena . . . 131
2S34 Khosta . . . 131
2S35 Koalitsiya-SV . . . 132
2S40 Floks . . . 132
M1989 Koksan (North Korea) . . . 133
Anti-tank guns . . . 134
MT-12 Rapira . . . 134
Towed artillery and mortars . . . 135
2A36 Giatsint-B 152 mm towed gun . . . 135
2A65 Msta-B . . . 135
2B9 Vasilek . . . 135
2B14 Podnos . . . 136
D-20 . . . 137
D-30 . . . 137
M-46 . . . 138
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns . . . 139
Ballistic missiles . . . 140
9K79-1 Tochka-U . . . 141
Fath-360 short-range ballistic missile (Iran) . . . 142
Iskander-M . . . 143
KN-23 and KN-24 (Hwasong-11) (North Korea) . . . 144
Coastal missile systems . . . 145
Bal . . . 145
Bastion-P . . . 146
Ballistic and cruise missiles . . . 147
3M14 Kalibr . . . 147
Kh-22 and Kh-32 air-launched missiles . . . 147
Kh-47M2 Kinzhal . . . 147
Kh-59 Ovod family . . . 148
Kh-69 . . . 148
Kh-101 and Kh-55 air-launched cruise missiles . . . 148
Oreshnik . . . 149

4 Air defence . . . 151
Long and medium-range SAMs . . . 152
Buk-M1 / Buk-M2 / Buk-M3 . . . 152
S-300PM / S-300PS . . . 153
S-300V4 . . . 154
S-350 Vityaz . . . 154
S-400 Triumf . . . 155
Short-range SAMs and guns . . . 157
2S38 Derivatsiya-PVO . . . 157
Gibka-S . . . 157
Pantsir-S1 . . . 158
S-60 . . . 159
Sosna . . . 159
Strela-10 and Osa short-range SAM . . . 160
Tor . . . 161
Tunguska . . . 162
ZSU-23-4 Shilka . . . 162
ZU-23-2 . . . 163
Man-portable SAMs . . . 164
Igla / Igla-1 / Igla-S . . . 165
Verba . . . 165

5 Radars . . . 167
Air surveillance radars . . . 168
96L6 all-altitude acquisition radar . . . 168
Garmon . . . 169
Kasta 35N6 / 39N6 . . . 169
Nebo-M . . . 170
Nebo-SVU . . . 170
Nebo-U . . . 171
Niobiy . . . 171
Oborona-14 . . . 171
P-18 Terek . . . 172
Counter-battery and ground surveillance radars . . . 174
1B75 Penicillin . . . 174
1K148 Yastreb-AV . . . 174
ARK-1M Rys . . . 175
SNAR-10 / SNAR-10M1 Leopard . . . 176
Sobolyatnik . . . 176
Zoopark-1 / Zoopark-1M . . . 177
Strategic early-warning radars . . . 178
Voronezh-DM . . . 178
Other . . . 179

6 Electronic warfare . . . 181
Radar, satellite and strategic jamming . . . 183
Krasukha-2 / Krasukha-4 . . . 183
Moskva-1 . . . 184
Murmansk-BN . . . 184
Tirada-2 . . . 186
Tobol . . . 186
Communications jamming . . . 188
Borisoglebsk-2 . . . 188
Dzyudoist . . . 189
Leer-2 . . . 189
Leer-3 . . . 190
Palantin . . . 190
R-330B Mandat-B and R-934BMV . . . 191
R-330M1P Diabazol . . . 191
R-330Zh Zhitel . . . 192
EW command and signals reconnaissance . . . 194
R-381T Taran . . . 194
RB-109A Bylina . . . 196
Shipovnik-Aero . . . 196
Svet-KU . . . 197
Torn . . . 197
GNSS, drone and IED jamming . . . 198
Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers . . . 198
Infauna . . . 199
Lesochek . . . 199
Pole-21 . . . 200
Repellent-1 . . . 200
Rtut-BM . . . 201
Stupor, Garpun-3 and LPD-801 handheld jammer guns . . . 201
Volnorez, Saniya and Sapfir vehicle anti-drone jammers . . . 202

7 Engineers 203
Crossing 205
IRM Zhuk 206
MLZh-VF-VT 207
MMK bridge-mechanised complex 208
PMP heavy folding pontoon bridge park 210
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry 211
TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge 212
TMM-7 212
Obstacle clearing and earthmoving 213
BAT-2 213
BMR-3M 214
BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines 214
IMR-2 / IMR-2M / IMR-3M combat engineer vehicle 215
UR-77 Meteorit 216
Uran-6 216
Mine laying 217
ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer 217
UMZ 218
Recovery and repair 220
BREM and BTS armoured recovery vehicles 220
REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles 221
CBRN defence 222
ARS-14, TMS-65 and TZ-74 decontamination vehicles 222
RKhM CBRN reconnaissance vehicles 222
TDA-2K, TDA-3 and TDM-2K smoke generator vehicles 223

8 Command and signals 225
Command and staff vehicles 226
BMD-1KSh-A 226
BMP-1KSh command and staff vehicle 226
R-145BM Chayka command and staff vehicle 227
R-149 command and staff vehicles 228
VTS Ladoga 229
Artillery and air defence command 230
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex 230
1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles 231
Barnaul-T 233
Polyana-D4 233
PRP-4A Argus / PRP-4M Deytery 234
PU-12M7 234
Radio and signals 235
P-240I-4 Pereselenets 235
R-142N Deimos-N 236
R-161 Poisk HF radio station 236
R-166 Artek 237
R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations 237
R-416GM Granit-M radio relay station 238
R-439 Legenda-2 238
Redut-2US 239
Strelets 240
Transport and tanker aircraft 241
Early-warning, command and electronic-warfare aircraft 242

9 Logistics 243
Trucks and utility vehicles 244
Desertcross 1000-3 all-terrain buggy (China) 245
GAZ-66 and GAZ-3308 Sadko light 4x4 trucks 246
KamAZ-4310, -5350 and -6350 Mustang military trucks 247
UAZ-469, UAZ-452 and UAZ-39094 utility vehicles 249
Ural-6370, -63706 and -532301 trucks (newer Ural family) 251
ZIL-131 and KrAZ-255/260 legacy 6x6 trucks 252
Tank transporters 254
MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks 254
Tracked all-terrain carriers 255
Aleut and Plastun articulated and light tracked carriers 255
Vityaz DT-10, DT-20 and DT-30 256
Transport and tanker aircraft 257
Early-warning, command and electronic-warfare aircraft 259
Reconnaissance aircraft 260
Maritime patrol and amphibious aircraft 261
Trainers and other fixed-wing aircraft 262

10 Uncrewed systems 263
Ground robotic complexes 264
Kurier / Omich-2 / Bogomol-7V ground robotic complexes 264
Small reconnaissance drones 265
DJI Mavic, Air, Mini and Matrice quadcopters (China) 265
Eleron-3SV 266
Granat-1 / Granat-4 266
Merlin-VR 267
Orlan-10 268
Supercam S350 269
Takhion 269
ZALA 421-16E 270
Zastava 270
Larger reconnaissance and strike drones 271
Forpost 271
Korsar 271
Mohajer-6 272
Orion 272
Loitering munitions and one-way attack 273
Garpiya-A1 273
Geran-2 274
Gerbera 275
Italmas 275
KUB-BLA 276
Lancet 277
Molniya 278
Shahed-107 (Iran) 278
FPV drones 279
FPV drones 279
Trainers and other fixed-wing aircraft 280
Other 281

11 Aircraft and helicopters 283
Attack helicopters 284
Ka-52 Alligator 284
Mi-24P/V and Mi-35M 285
Mi-28N Night Hunter 285
Transport and special-mission helicopters 286
Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/Mi-17 family) 287
Mi-8MTPR-1 288
Mi-26 Halo 289
Naval helicopters 290
Ka-27 and Ka-29 290
Other 291

12 Boats and landing craft 293
Landing ships and craft 294
Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren 294
Project 1176 Akula landing craft 295
Serna 296
Assault and patrol boats 297
BK-16 297
FSB Border Service patrol boats (Mangust, Sobol, Tunets) 297
Grachonok 298
Raptor 299
Riverine boats 300
Dnipro small boats 300

13 Weapons 301
Anti-tank guided missiles 304
9K111 Fagot / 9K111-1 Konkurs 305
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M 306
Kornet 307
Metis 308
Artillery rounds and mortar bombs 309
3RB30 152 mm communications jammer round 310
120 mm gun-mortar rounds (3OF49, 3OF50, 3BK19) 311
120 mm mortar bombs (OF-843B and Iranian HE bomb) 311
122 mm howitzer rounds 311
152 mm gun and howitzer rounds 312
203 mm gun rounds (3OF43, 3OF44) 312
240 mm mortar bombs (3F2 HE, 3O8 cluster) 312
Kitolov-2 and Kitolov-2M laser-guided rounds 313
KM-8 Gran 313
Krasnopol, Krasnopol-M1, Krasnopol-M2 314
Santimetr (3OF38) and Santimetr-M (3OF75) 314
Rockets 315
122 mm rockets (Grad, Tornado-G, Prima) 315
220 mm rockets (Uragan) 315
220 mm thermobaric rockets (TOS-1A, TOS-2) 316
300 mm rockets (Smerch, Tornado-S) 316
Ballistic and cruise missiles 317
Glide bombs and air-launched weapons 320
UMPK glide kits and UMPB D-30SN glide bomb 321
Vikhr 321
Mines 322
MON-50 322
MON-90 322
MON-100 directional fragmentation mine 323
MON-200 directional mine 324
OZM-72 bounding fragmentation mine 324
PDM-1 anti-landing mine 325
PFM-1 Lepestok scatterable anti-personnel mine 326
PMN, PMN-2, PMN-4 327
POM-2 and POM-2R scatterable anti-personnel mines 327
POM-3 Medalyon scatterable anti-personnel mine 328
PTM-1 328
PTM-3 329
PTM-4 330
TM-46 anti-tank mine 331
TM-57 331
TM-62 anti-tank blast mine family 332
TM-83 332

S Sources and picture credits 335
Source register 335
Picture credits 374

Table 1. Master list of designations

Every system, vehicle, component and munition in this guide's lexicon, 919 in all, sorted by Russian designation. Designations that begin with a number are GRAU indices, grouped by their category (see *About this guide*); grey lines such as 3OF... say what a series stands for. Ships and craft are listed under their Project numbers (P). NATO reporting names and codes and US designations are set in BLUE CAPITALS, for example STONE, SS-26 or M1974. UA marks a type reported in Russian use in Ukraine since 2014. A **bold** page number leads to a full entry; a *grey italic* one to the entry of the system or family it belongs to; a row with a page is a link to it. Rounds and rockets give their calibre and type, and a range where one is established. Look up other names and Cyrillic forms in Tables 1b and 1c. Foreign types reported in Russian use (North Korean, Chinese, Iranian and others) are listed with their origin in the description.

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
1 · Optics, radars and control systems					
1B44		1Б44	meteorological station · part of 9K58 Smerch	–	*123*
1B75 1B75E	Penicillin	«Пенициллин»	acoustic-thermal locating system UA	**17–25 km** artillery, detect	**174**
1K113 3F5, 3VF4	Smelchak	1К113 «Смельчак», 3Ф5	240 mm guided mortar bomb (laser-homing) · for 2S4 Tyulpan UA	**9.2 km** guided, max	*128*
1K148	Yastreb-AV	1К148 «Ястреб-АВ»	counter-battery radar UA	–	**174**
1L...			*radar station (series)*	–	
1L13-3 1L13	Nebo-SV BOX SPRING	1Л13, «Небо-СВ»	air surveillance radar	**60–380 km** fighter, detect, VHF (metric)	**170**
1L119	Nebo-SVU	«Небо-СВУ» 1Л119	air surveillance radar UA	**60–380 km** fighter, detect, VHF (metric)	**170**
1L122	Garmon, Garmony	1Л122 «Гармонь»	portable air surveillance radar UA	**40–80 km** air target, detect, L band	**169**
1L125	Niobiy, Niobiy-SV, Niobium-SV		mobile metre-band air surveillance radar UA	**53–230 km** 1 m² target, detect, 180–220 MHz, metre band	**171**
1L219 Zoopark-1	Zoopark-1	1Л219 «Зоопарк-1», 1Л219М	counter-battery radar UA	**10–27 km** artillery, detect, C band (5 cm)	**177**
1L222	Avtobaza-M	«Автобаза»	ELINT system	–	*194*
1L259		1Л259	counter-battery radar UA	**10–27 km** artillery, detect, C band (5 cm)	**177**
1L260 Zoopark-1M	Zoopark-1M	1Л260, «Зоопарк-1М»	counter-battery radar UA	**10–27 km** artillery, detect, C band (5 cm)	**177**
1L261			counter-battery radar UA	**10–27 km** artillery, detect, C band (5 cm)	**177**
1L262E SPR-2M	Rtut-BM, Mercury-BM	1Л262Э «Ртуть-БМ»	proximity-fuze jammer UA	**20–50 ha** fuze jamming, area, 95–420 MHz	**201**
1L265		1Л265	ELINT system	**400 km** airborne emitters, detect, UHF, L, S, C, X and Ku bands	**184**
1L266		1Л266	EW command post	**400 km** airborne emitters, detect, UHF, L, S, C, X and Ku bands	**184**
1L267	Moskva-1	«Москва-1»	EW command post UA	**400 km** airborne emitters, detect, UHF, L, S, C, X and Ku bands	**184**
1L269 Krasukha-2O	Krasukha-2	1Л269 «Красуха-2»	radar jammer UA	**150–300 km** radar jamming, S-band; 8–18 GHz (X/Ku)	**183**
1L271	Aistenok, Aistyonok	1Л271 «Аистенок»	portable counter-battery radar UA	**17–25 km** artillery, detect	**174**
1L277	Sobolyatnik		portable ground surveillance radar UA	**17–20 km** vehicles, detect, J band (catalogue)	**176**
1RL...			*radar station (series)*	–	
1RL144M 1RL144M1, 1RL144, 1RL138	HOT SHOT	1РЛ144М1	fire-control radar UA	–	**162**
1RL239 ARK-1, ARK-1M	Rys SMALL FRED (disputed)	1РЛ239 / АРК-1 / «Рысь»	counter-battery radar UA	**7–9 km** artillery, detect, NATO H band 6–8 GHz	**175**
1RL257	Krasukha-4, Krasukha-4S	1РЛ257 «Красуха-4»	radar jammer UA	**150–300 km** radar jamming, S-band; 8–18 GHz (X/Ku)	**183**
1T12-2M		1Т12-2М	topographic survey vehicle · part of 9K58 Smerch	–	*123*
1V...			*control and computing equipment (artillery command and fire-control vehicles) (series)*	–	
1V13 1V13M, M1974/1		1В13	artillery battery fire control centre UA	**20–250 km** vehicle radios	**230**
1V14 1V15, 1V15M, 1V16			artillery command vehicle UA	**20–250 km** vehicle radios	**230**
1V18 1V19, M1979-2B	Klyon-1, Klen-1, Klen-2		artillery command vehicle UA	–	**231**
1V110			artillery command vehicle · part of 9K51 Grad *legacy* UA	–	*122*
1V119	Spektr	1В119	artillery command vehicle UA	–	**231**
1V126 1V126M, 1V152, 1V153, 1V152M	Kapustnik-B, Kapustnik-BM	1В126 «Капустник-Б»	artillery fire control system · part of 9K59 Prima	–	*121*
1V152		1В152	artillery command vehicle	–	**231**
1V1003			artillery command vehicle UA	–	**231**
2 · Artillery, mortars and rocket systems					
2A...			*guns and howitzers, towed or as the ordnance of a vehicle (series)*	–	
2A36 M1976	Giatsint-B	2А36 «Гиацинт-Б»	152 mm towed gun UA	**28.3–44 km** HE to RA, max	**135**
2A45M 2A45MR	Sprut-B		125 mm towed anti-tank gun *legacy*	–	*134*
2A65 M1987	Msta-B	2А65 «Мста-Б»	152 mm towed howitzer UA	**24–30 km** HE to base bleed, max	**135**
2B...			*mortars and rocket-launcher combat vehicles (series)*	–	
2B9 2B9M	Vasilek	2Б9 «Василёк»	82 mm automatic gun-mortar UA	**4.27–5 km** HE bombs, max	**135**
2B11		2Б11	120 mm mortar · part of 2S12 Sani UA	–	*130*
2B14	Podnos	2Б14 «Поднос»	82 mm mortar	**3.1–4.3 km** HE bombs, max	**136**
2B16	Nona-K	2Б16 «Нона-К»	120 mm towed gun-mortar UA	**8.8–12.8 km** HE to RA, max	**129**
2B17M	Tornado-G	2Б17М	122 mm multiple rocket launcher UA	**20–40 km** 9M538 to 9M521, max	**124**
2B26	Grad-K	2Б26	122 mm multiple rocket launcher · part of 9K51 Grad UA	–	*122*
2F77 2F77M		2Ф77, 2Ф77М	transloader · part of 2K22 Tunguska UA	–	*162*

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
2K22 2K22M, 2K22M1, SA-19	Tunguska, Tunguska-M1 GRISON	2К22, 2К22М «Тунгуска-М»	gun-missile air defence system UA	**0.2–10 km** engagement	162
2S...			*self-propelled artillery (series)*	–	
2S1 M1974	Gvozdika	2С1 «Гвоздика»	122 mm self-propelled howitzer UA	**15.2–15.3 km** HE, max	126
2S3 Object 303, M1973	Akatsiya	2С3 «Акация»	152 mm self-propelled howitzer UA	**17.05–24 km** HE to RA, max	127
2S3M 2S3M1, 2S3M2	Akatsiya	2С3М	152 mm self-propelled howitzer · variant of 2S3 Akatsiya UA	–	*127*
2S4 Object 305, M1975	Tyulpan	2С4 «Тюльпан»	240 mm self-propelled mortar UA	**9.65–20 km** HE to RA bombs, max	128
2S5 Object 307, M1981	Giatsint-S	2С5 «Гиацинт-С»	152 mm self-propelled gun UA	**28.4–40 km** HE to RA, max	128
2S5M		2С5М	152 mm self-propelled gun · variant of 2S5 Giatsint-S *legacy*	–	*128*
2S6 2S6M, 2S6M1		2С6, 2С6М	gun-missile air defence vehicle UA	**0.2–10 km** engagement	162
2S7 Object 216, M1975	Pion	2С7 «Пион»	203 mm self-propelled gun UA	**37.5–55 km** HE to RA, max	129
2S7M	Malka	2С7М «Малка»	203 mm self-propelled gun UA	–	129
2S9 2S9-1	Nona-S	2С9 «Нона-С»	120 mm self-propelled gun-mortar UA	**8.8–12.8 km** HE to RA, max	129
2S12 2S12A	Sani	2С12 «Сани», 2С12А	120 mm mortar UA	**7–13 km** HE to RA bombs, max	130
2S19 Object 316, M1990	Msta-S FARM	2С19 «Мста-С»	152 mm self-propelled howitzer UA	**24.7–36 km** HE to RA, max	130
2S19M1	Msta-S	2С19М1	152 mm self-propelled howitzer UA	**24.7–36 km** HE to RA, max	130
2S19M2 2S33	Msta-SM	2С19М2, 2С33 «Мста-СМ»	152 mm self-propelled howitzer UA	–	130
2S23	Nona-SVK	2С23 «Нона-СВК»	120 mm self-propelled gun-mortar UA	**8.8–12.8 km** HE to RA, max	131
2S25	Sprut-SD	2С25	125 mm self-propelled anti-tank gun	**3–7 km** APFSDS to ATGM	99
2S31	Vena	2С31 «Вена»	120 mm self-propelled gun-mortar UA	**8.8–13 km** HE to RA, max	131
2S34 2S1M	Khosta, Chosta	2С34 «Хоста»	120 mm self-propelled gun-mortar UA	**8.8–13 km** HE to RA, max	131
2S35	Koalitsiya-SV	2С35 «Коалиция-СВ»	152 mm self-propelled howitzer UA	**24.5–80 km** HE to guided or RA, max	132
2S38 ZAK-57	Derivatsiya-PVO	2С38, ЗАК-57	57 mm self-propelled anti-aircraft gun *trial* UA	**0.2–8 km** engagement	157
2S40	Floks	2С40, «Флокс»	120 mm self-propelled gun-mortar UA	**7–13 km** HE bomb to HE shell, max	132
2S43	Malva	2С43 «Мальва»	152 mm wheeled self-propelled howitzer UA	**24.5–80 km** HE to guided or RA, max	132
3 · Artillery ammunition and missiles					
3BK...			*HEAT (shaped-charge) projectile (series)*	–	
3BK13		3БК13	122 mm HEAT artillery round · for 2S1 Gvozdika *legacy*	**1 km** HEAT, max	*311*
3BK13 3OF24, 3OF56		3БК13, 3ОФ24	122 mm HE-frag and HEAT howitzer rounds for the D-30 and 2S1	**1–15.2 km** HEAT to HE-frag, max	311
3BK19 3VBK14		3БК19, 3ВБК14	120 mm HEAT gun-mortar round	**1 km** HEAT, max	*311*
3F...			*high-explosive (blast) projectile or bomb (series)*	–	
3F2 3VF2		3Ф2	240 mm rocket-assisted HE mortar bomb · for 2S4 Tyulpan	**18–20 km** RA, max	*312*
3K55 K-300P, K300P, SSC-5	Bastion, Bastion-P STOOGE	3К55, Бастион	coastal missile system UA	**120–600 km** P-800 Oniks, max	146
3K60 SSC-6	Bal, Bal-E SENNIGHT	3К60, Бал	coastal missile system UA	**120–300 km** Kh-35 to Kh-35U, max	145
3M...			*guided missile (GRAU department 3 and, for 3M14, the Navy's own index) (series)*	–	
3M14 3M14T, 3M14K, SS-N-30A, SS-N-27	Kalibr SAGARIS	Калибр, 3М-14	ship- and submarine-launched land-attack cruise missile UA	**1,400–2,500 km** land attack, max	*317*
3M14 3M14K, 3M14T, SS-N-30A	Kalibr, Kalibr-NK SAGARIS	3М14, Калибр	sea-launched subsonic land-attack cruise missile	**1,400–2,500 km** 3M14 land-attack, max, estimates and claims	147
3M16		3М16	122 mm scatterable-mine rocket (POM-2 anti-personnel mines) · for 9K51 Grad *legacy*	**13.4 km** AP mines, max	*315*
3O...			*fragmentation and cluster projectile; written with hyphens in Russian sources (3O13) (series)*	–	
3O8 3VO11	3-O-8	3О8	240 mm rocket-assisted cluster mortar bomb · for 2S4 Tyulpan UA	**19.3 km** cluster RA, max	*312*
3O13 3VO13, 3VO14	3-O-13	3О13	152 mm cluster artillery round (fragmentation) UA	**14.5 km** cluster, max	*312*
3O23 3VO28, 3VO29, 3VO30	3-O-23	3О23	152 mm cluster artillery round (dual-purpose)	**21–26 km** cluster, max	*312*
3OF...			*high-explosive fragmentation projectile (series)*	–	
3OF24		3ОФ24	122 mm HE-fragmentation artillery round · for 2S1 Gvozdika	**15.2 km** HE, max	*311*
3OF25 3VOF32, 3VOF33		3ОФ25	152 mm HE-fragmentation artillery round *legacy*	**17.4 km** HE, max	*312*
3OF29 3VOF39, 3VOF40		3ОФ29	152 mm HE-fragmentation artillery round · for 2S5 Giatsint-S	**28.4 km** HE, max	*312*
3OF38 3VOF63, 3VOF66	Santimetr	3ОФ38	152 mm guided artillery round (course-corrected)	**12 km** guided, max	*309*
3OF38 3OF75, 3VOF63	Santimetr, Santimetr-M	3ОФ38, Сантиметр	152 mm laser-guided, pulse-motor corrected HE-frag shell for gun-howitzers	**8–15 km** 3OF38/3OF75 HE-frag, max	314
3OF39 3VOF64, 3VOF93, 2K25	Krasnopol	3ОФ39, «Краснополь»	152 mm guided artillery round (laser-homing) UA	**18–20 km** guided, max	*309*
3OF39 2K25, 3VOF64	Krasnopol, Krasnopol-M1	3ОФ39, Краснополь	laser-guided 152/155 mm HE-fragmentation artillery round for point targets	**17–26 km** guided 152/155 mm rounds, max	314
3OF39M 3VOF64M, 2K25M	Krasnopol-M1	3ОФ39М	152 mm guided artillery round (laser-homing) · for 3OF39 Krasnopol UA	**25 km** guided, max	*309*
3OF43 3VOF34, 3VOF42		3ОФ43	203 mm HE-fragmentation artillery round · for 2S7 Pion	**37.5 km** HE, max	*312*
3OF44 3VOF35		3ОФ44	203 mm rocket-assisted HE-fragmentation artillery round · for 2S7 Pion	**47.5 km** RA, max	*312*
3OF45 3OF45-1, 3VOF58, 3VOF72, 3VOF73		3ОФ45	152 mm HE-fragmentation artillery round · for 2S19 Msta-S	**24.7 km** HE, max	*312*
3OF45 3O13, 3O23		3ОФ45, 3О13	152 mm HE-frag, base-bleed and cluster rounds for howitzers and guns	**14.5–30.5 km** cluster to HE-frag, max, full or long-range charge	312
3OF49 3VOF54, 3VOF54-1		3ВОФ54, 3ОФ49	120 mm HE-fragmentation gun-mortar round	**8.8 km** HE, max	*311*
3OF49 3OF50, 3BK19		3ОФ49, 3ОФ50	120 mm HE-frag, rocket-assisted and HEAT rounds for the 2A51, 2A60 and 2A80 gun-mortars	**1–12.8 km** 3BK19 HEAT to 3OF50 RA, max	311
3OF50 3VOF55, 3VOF55-1		3ОФ50, 3ВОФ55	120 mm rocket-assisted HE-fragmentation gun-mortar round	**12.8 km** RA, max	*311*
3OF56		3ОФ56	122 mm HE-fragmentation artillery round · for 2S1 Gvozdika	**15.2 km** HE, max	*311*

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
3OF59 3VOF86, 3VOF87		3ОФ59	152 mm HE-fragmentation artillery round · for 2S5 Giatsint-S	**30.5 km** HE, max	*312*
3OF61 3VOF91		3ОФ61	152 mm base-bleed HE-fragmentation artillery round	**29 km** base bleed, max	*312*
3OF64 3VOF96, 3VOF97, 3VOF98		3ОФ64	152 mm HE-fragmentation artillery round	**24.7 km** HE, max	*312*
3OF69 Kitolov-2, 3VOF112	Kitolov-2	«Китолов-2», 3ВОФ112	120 mm guided gun-mortar round (laser-homing) UA	**9 km** guided, max	*309*
3OF69M Kitolov-2M	Kitolov-2M	«Китолов-2М»	122 mm guided artillery round (laser-homing) · for 3OF69 Kitolov-2 UA	**12 km** guided, max	*309*
3OF75	Santimetr-M	3ОФ75	152 mm guided artillery round (course-corrected)	**15 km** guided, max; developer table 1999 (NVO), Yarovan; 18 km ru-Wikipedia as alternative	*310*
3RB…			*jamming (electronic countermeasure) projectile (series)*	–	
3RB30 3VRB36, 3VRB37, 3VRB38		3РБ30	152 mm communications jammer artillery round	**22 km** jammer, max	*310*
3RB30 3VRB36, 3VRB37		3РБ30, 3ВРБ36	152 mm round that lands a transmitter to jam HF/VHF radio	**13.5–22 km** 3RB30 jammer, max, HF/VHF 1.5–120 MHz	**310**
3S55 K-340P		К-340П	missile transporter erector launcher · part of 3K55 Bastion UA	–	*146*
3VF…			*complete separate-loading round with an HE projectile (series)*	–	
3VF2 3VO11, 3F2	Gagara, Nerpa	3Ф2, 3О8	240 mm rocket-assisted mortar bombs	**18–19.69 km** 3F2 HE and 3O8 cluster, rocket-assisted, max	**312**
3VOF…			*complete separate-loading round with an HE-fragmentation projectile (series)*	–	
3VOF34 3VOF35, 3OF43		3ВОФ34, 3ВОФ35	HE-frag and rocket-assisted rounds, separate loading, for the 2S7 203 mm gun	**37.5–47.5 km** HE-frag to rocket-assisted, max	**312**
3VOF112 3OF69, 3OF69M	Kitolov-2, Kitolov-2M	3ВОФ112, Китолов-2	laser-guided HE-fragmentation rounds	**9–12 km** Kitolov-2 and -2M, max	**313**
5 · Air defence equipment (PVO directorate)					
5N…			*air defence radar (letter meaning not defined by the sources; 5N63) (series)*	–	
5N63S 30N6	FLAP LID B	5Н63С	fire-control radar · part of S-300PS *legacy* UA	–	*153*
5N84A Oborona-14	Oborona-14 TALL KING C	5Н84А «Оборона»	early warning radar UA	**280–300 km** fighter, detect, metric band	**171**
5P…			*SAM launcher (series)*	–	
5P85SD 5P85SM, 5P85S, 5P85D		5П85С, 5П85Д	self-propelled SAM launcher (TEL) · part of S-300PS *legacy* UA	–	*153*
5P85SM2-01		5П85СМ2-01	self-propelled SAM launcher (TEL) UA	–	**155**
5P85T2		5П85Т2	towed semi-trailer SAM launcher UA	–	**155**
5V…			*surface-to-air missile (series)*	–	
5V55R 5V55K, 5V55RM, V-500R		5В55Р, 5В55К	long-range surface-to-air missile · for S-300PS *legacy* UA	**5–75 km** min–max, 5V55R	*153*
…6 · Air defence and radar indices, category 6 written last (48N6, 96L6)					
35N6	Kasta	35Н6 «Каста»	air surveillance radar UA	**32–140 km** aircraft, detect, UHF (decimetre)	**169**
39N6 39N6E, Kasta-2E2	Kasta-2-2 SQUAT EYE	39Н6 «Каста-2-2», 39Н6Е «Каста-2Е2»	low-altitude detection radar UA	**32–140 km** aircraft, detect, UHF (decimetre)	**169**
40N6 40N6E		40Н6Е	very long-range surface-to-air missile · for S-400 UA	**400 km** max, aerodynamic targets	*155*
48N6 48N6E, 48N6E2, 48N6E3, 48N6DM		48Н6Е, 48Н6Е2	long-range surface-to-air missile · for S-400 UA	**3–250 km** min–max, 48N6 to 48N6DM	*155*
48Ya6-K1 Podlet-K1	Podlet-K1	48Я6-К1 «Подлёт»	low-altitude detection radar UA	**400–700 km** air target, detect, VHF, L and S/C bands	**170**
50K6A 50K6E		50К6А	SAM command post	**1–121 km** engagement	**154**
50N6A 50N6E		50Н6А	fire-control radar UA	**1–121 km** engagement	**154**
50P6A 50P6E		50П6А	self-propelled SAM launcher (TEL) UA	**1–121 km** engagement	**154**
51P6		51П6	self-propelled SAM launcher (TEL) UA	–	**155**
53-OF-843B OF-843B, 3OF843B	Iranian	53-ОФ-843Б	120 mm HE mortar bombs for the 2B11/2S12 mortar and 2S9, 2S23, 2S31, 2S34 gun-mortars	**0.45–7.1 km** OF-843B HE, min to max	**311**
55K6 55K6A		55К6, 55К6Е	SAM command post · part of S-400 UA	–	*155*
55Zh6M 55Zh6ME	Nebo-M	55Ж6М «Небо-М», 55Ж6МЕ	multi-band air surveillance radar UA	**400–700 km** air target, detect, VHF, L and S/C bands	**170**
55Zh6U	Nebo-U TALL RACK		air surveillance radar UA	**65–400 km** fighter, detect, VHF 30–300 MHz	**171**
55Zh6UM	Nebo-UM		air surveillance radar	**65–400 km** fighter, detect, VHF 30–300 MHz	**171**
57E6 57E6-E, 57E6M		57Э6Е	short-range surface-to-air missile · for 96K6 Pantsir-S1 UA	**1.2–20 km** min–max, 57E6-E	*158*
59N6 59N6-E	Protivnik-G, Protivnik-GE	Противник-ГЕ	3-D air surveillance radar	–	*168*
64N6 64N6E	BIG BIRD		target acquisition radar · part of S-300PM	–	*153*
67N6 67N6E	Gamma-DE	Гамма-ДЕ	UHF 3-D air surveillance radar *export*	–	
77Ya6-DM	Voronezh-DM	«Воронеж-ДМ»	early warning radar UA	**4,200–10,000 km** early warning, detect, UHF, decimetre wave	**178**
85Ya6	Leer-2	85Я6 «Леер-2»	communications jammer UA	–	**189**
91N6A 91N6E		91Н6Е	air surveillance radar · part of S-400 UA	–	*155*
92N6A 92N6E		92Н6Е	fire-control radar · part of S-400 UA	–	*155*
96K6 SA-22	Pantsir-S1 GREYHOUND	96К6, Панцирь-С1	gun-missile air defence system UA	**0.2–20 km** engagement	**158**
96L6 96L6E, 96L6-TsP	CHEESE BOARD	96Л6Е	air surveillance radar UA	**300–400 km** air target, detect, C band 5.25–5.925 GHz	**168**
120 mm HE mortar bomb (Iran)	120 mm HE mortar bomb (Iran)		120 mm HE mortar bomb of Iranian make UA	–	*311*
6 · Infantry weapons					
6P50 6P49, 6P57, 6P58, 6P59	Kord	Корд	12.7 mm heavy machine gun UA	–	

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
9 · Army missile and rocket systems					
9A...			*combat vehicle of a missile system (launcher vehicle, launcher-radar vehicle) (series)*	–	
9A33B 9A33BM3		9А33Б	SAM launcher vehicle with radar (TELAR) · part of 9K33 Osa UA	–	*160*
9A35		9А35	SAM launcher vehicle (TEL) · part of 9K35 Strela-10 UA	–	*160*
9A39 9A39M1		9А39, 9А39М1	SAM loader-launcher · part of 9K37 Buk *stored* UA	–	*152*
9A39M1-2			SAM loader-launcher · part of 9K37M1-2 Buk-M1-2 UA	–	*152*
9A51	Prima	9А51	122 mm multiple rocket launcher · part of 9K59 Prima *legacy*	–	*121*
9A52 BM-30	Smerch	9А52	300 mm multiple rocket launcher *legacy* UA	–	**123**
9A52-2 BM-30	Smerch-M	9А52-2	300 mm multiple rocket launcher UA	**70–120 km** 9M55K to guided 9M544, max	**123**
9A52-2T		9А52-2Т	300 mm multiple rocket launcher · part of 9K58 Smerch *export*	–	*123*
9A52-4	Kama	9А52-4	300 mm multiple rocket launcher *trial*	**70–120 km** 9M55K to guided 9M544, max	**123**
9A53	Uragan-1M	9А53	220/300 mm multiple rocket launcher UA	**35–130 km** 9M27F to guided 9M544, max	**125**
9A54 9A53-S	Tornado-S	9А54	300 mm multiple rocket launcher UA	**70–120 km** 9M55K to guided 9M544, max	**123**
9A82		9А82	SAM launcher vehicle with radar (TELAR) · part of S-300V	–	*154*
9A83 9A83-1, 9A83M2		9А83	SAM launcher vehicle with radar (TELAR) · part of S-300V UA	–	*154*
9A83M2			SAM launcher vehicle with radar (TELAR) · part of S-300V4 UA	–	*154*
9A84		9А84	SAM loader-launcher · part of S-300V UA	–	*154*
9A84-2			SAM loader-launcher · part of S-300V4 UA	–	*154*
9A85 9A85-2		9А85	SAM loader-launcher · part of S-300V UA	–	*154*
9A85-2			transloader · part of S-300V4 UA	–	*154*
9A310 9A310M1, 9A38		9А310, 9А38	SAM launcher vehicle with radar (TELAR) · part of 9K37 Buk *stored* UA	–	*152*
9A310M1-2		9А310М1-2	SAM launcher vehicle with radar (TELAR) · part of 9K37M1-2 Buk-M1-2 UA	–	*152*
9A316		9А316	SAM loader-launcher · part of 9K317 Buk-M2 UA	–	*152*
9A317		9А317	SAM launcher vehicle with radar (TELAR) · part of 9K317 Buk-M2 UA	–	*152*
9A317M		9А317М	SAM launcher vehicle with radar (TELAR) · part of 9K317M Buk-M3 UA	–	*152*
9A330		9А330	SAM launcher vehicle with radar (TELAR) *legacy* UA	**1–16 km** engagement	**161**
9A331 9A331-1		9А331, 9А331-1	SAM launcher vehicle with radar (TELAR) UA	**1–16 km** engagement	**161**
9A331M 9A331M2		9А331М2	SAM launcher vehicle with radar (TELAR) UA	**1–16 km** engagement	**161**
9A4172 9K121, AT-16	Vikhr SCALLION		air-launched anti-tank guided missile UA	**8–10 km** max, 9A4172K Vikhr-1	*304*
9A4172 9K121, 9K121M, AT-16, RS-AT-16	Vikhr, Vikhr-M SCALLION	9А4172, Вихрь	air-launched laser-beam-riding anti-tank missile	**0.5–10 km** Vikhr, min–max, daytime	**321**
9K...			*missile or rocket system as a whole (the complex) (series)*	–	
9K11 9M14, AT-3	Malyutka, Malyutka-2 SAGGER	9К11, 9М14	anti-tank guided missile system *legacy*	–	*304*
9K32 9K32M, SA-7	Strela-2 GRAIL	9К32, «Стрела-2»	MANPADS *legacy*	–	*164*
9K33 9K33M2, 9K33M3, SA-8	Osa, Osa-AK, Osa-AKM GECKO	9К33, 9К33М2	short-range SAM system UA	**0.8–15 km** engagement	**160**
9K34 SA-14	Strela-3 GREMLIN	9К34, «Стрела-3»	MANPADS	–	*164*
9K35 9K35M3, SA-13	Strela-10, Strela-10M3 GOPHER	9К35 «Стрела-10», 9К35М3 «Стрела-10М3»	short-range SAM system UA	**0.8–15 km** engagement	**160**
9K37 9K37M1, SA-11	Buk, Buk-M1 GADFLY	9К37, 9К37М1 «Бук-М1»	medium-range SAM system *stored* UA	**2.5–70 km** engagement	**152**
9K37M1-2 SA-11	Buk-M1-2 GADFLY	9К37М1-2 «Бук-М1-2»	medium-range SAM system UA	–	**152**
9K38 SA-18	Igla GROUSE	9К38, «Игла»	MANPADS UA	**0.5–6 km** engagement	**165**
9K51 M-21, M1964	Grad	9К51 «Град»	122 mm multiple rocket launcher system UA	**20.4–45 km** 9M22U to new rockets, max	**122**
9K51M	Tornado-G	9К51М «Торнадо-Г»	122 mm multiple rocket launcher system UA	**20–40 km** 9M538 to 9M521, max	**124**
9K52 FROG-7	Luna-M	9К52, Луна-М	unguided rocket system *legacy*	–	*140*
9K54 BM-21V, M-21V, M1975	Grad-V	9К54 «Град-В»	122 mm multiple rocket launcher system *legacy*	–	**122**
9K55 BM-21b, M1976	Grad-1	9К55 «Град-1»	122 mm multiple rocket launcher system *stored* UA	–	**122**
9K55-1	Grad-1	9К55-1 «Град-1»	122 mm multiple rocket launcher system *legacy* UA	–	**122**
9K57 BM-27, M1977	Uragan	9К57 «Ураган»	220 mm multiple rocket launcher system UA	**34–35.8 km** 9M27F HE-frag, max	**122**
9K57-1	Uragan-1		220 mm multiple rocket launcher *legacy* UA	–	**122**
9K58 BM-30	Smerch	9К58 «Смерч»	300 mm multiple rocket launcher system UA	**70–120 km** 9M55K to guided 9M544, max	**123**
9K59	Prima	9К59 «Прима»	122 mm multiple rocket launcher system *legacy*	–	*121*
9K72 8K14, R-17, SS-1c, R-300	Elbrus SCUD B	9К72, Р-17	ballistic missile system *stored*	–	*140*
9K79 9K79-1, OTR-21, SS-21	Tochka, Tochka-U SCARAB	9К79, Точка-У	ballistic missile system UA	**70–120 km** 9M79, 9M79-1, max	**141**
9K111 9K111M, 9P135, AT-4	Fagot SPIGOT	9К111, Фагот	anti-tank guided missile system UA	**0.07–4 km** Fagot/Konkurs, min–max	**305**
9K111-1 9K111-1M, 9K113, 9P135M, AT-5	Konkurs, Konkurs-M SPANDREL	9К111-1, Конкурс	anti-tank guided missile system UA	**0.07–4 km** Fagot/Konkurs, min–max	**305**
9K112 9M112, AT-8	Kobra SONGSTER		gun-launched anti-tank missile system *legacy*	–	*305*

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
9K114 AT-6	Shturm SPIRAL	9K114, Штурм	anti-tank guided missile system UA	**0.4–6 km** Kokon/Ataka, min–max	115
9K115 9P151, AT-7	Metis SAXHORN	9K115, Метис	anti-tank guided missile system UA	**0.04–2 km** Metis, min–max	308
9K115-1 AT-13	Metis-M SAXHORN-2	9K115-1, Метис-М	anti-tank guided missile system	**0.04–2 km** Metis, min–max	308
9K115-2 AT-13	Metis-M1 SAXHORN-2	9K115-2, Метис-М1	anti-tank guided missile system · variant of 9K115-1 Metis-M	–	*308*
9K116 9K116-1, 9K116-2, 9K116-3, 3UBK10, AT-12	Kastet, Bastion, Sheksna SWINGER	9K116, Кастет	gun-launched anti-tank missile system	–	*306*
9K119 9K119M, 9K120, AT-11	Svir, Refleks, Refleks-M SNIPER	9K119M, Рефлекс-М	gun-launched anti-tank missile system UA	**0.075–5.5 km** Svir/Invar, min–max	306
9K123 9K123-1, AT-15	Khrizantema, Khrizantema-S SPRINGER	9K123, Хризантема	anti-tank guided missile system UA	**0.4–6 km** Khrizantema, min–max	116
9K132 9P149M, AT-9	Shturm-SM SPIRAL-2	9K132, 9П149М	anti-tank guided missile system · variant of 9K114 Shturm UA	–	*115*
9K135 9K129, 9P163M-1, AT-14	Kornet, Kornet-E, Kornet-EM SPRIGGAN	9K135, Корнет	anti-tank guided missile system UA	**0.1–10 km** Kornet, min–max	307
9K310 SA-16	Igla-1 GIMLET	9K310, «Игла-1»	MANPADS	**0.5–6 km** engagement	165
9K317 SA-17	Buk-M2 GRIZZLY	9K317 «Бук-М2»	medium-range SAM system UA	**2.5–70 km** engagement	152
9K317M SA-27	Buk-M3 GOLLUM	9K317М «Бук-М3»	medium-range SAM system UA	**2.5–70 km** engagement	152
9K330 SA-15	Tor GAUNTLET	9K330	short-range SAM system *legacy* UA	**1–16 km** engagement	161
9K331 9K331M, SA-15	Tor-M1 GAUNTLET	9K331 «Тор-М1»	short-range SAM system UA	**1–16 km** engagement	161
9K331MDT SA-15	Tor-M2DT GAUNTLET	«Тор-М2ДТ»	short-range SAM system UA	**1–16 km** engagement	161
9K331MU SA-15	Tor-M1-2U, Tor-M2U GAUNTLET	«Тор-М1-2У»	short-range SAM system UA	**1–16 km** engagement	161
9K332 SA-15	Tor-M2 GAUNTLET	9K332 ЗРК «Тор-М2»	short-range SAM system UA	**1–16 km** engagement	161
9K333 SA-29	Verba GIZMO	9K333, «Верба»	MANPADS UA	**0.5–6.5 km** engagement	165
9K334	Gibka-S	«Гибка-С»	MANPADS launcher vehicle UA	**6–6.5 km** engagement	157
9K338 SA-24	Igla-S GRINCH	9K338, «Игла-С»	MANPADS	**0.5–6 km** engagement	165
9K512	Uragan-1M	9K512 «Ураган-1М»	220/300 mm multiple rocket launcher system UA	**35–130 km** 9M27F to guided 9M544, max	125
9K515	Tornado-S	9K515	300 mm multiple rocket launcher system UA	**70–120 km** 9M55K to guided 9M544, max	123
9K720 SS-26, SSC-7, SSC-8	Iskander-M, Iskander, Iskander-K STONE, SOUTHPAW	9K720, Искандер	ballistic missile system UA	**450–500 km** 9M723, 9M728, max	143
9M...			*missile or rocket of an army missile system (series)*	–	
9M22		9M22	122 mm HE-fragmentation rocket · for 9K51 Grad *legacy*	**20.4 km** HE, max	*315*
9M22 3M16, 9M22M		9M22, 9M28Ф	unguided 122 mm rockets for Grad, Tornado-G, Prima and Grad-P rocket launchers	**5–40 km** 9M42 illumination to 9M521 HE, max	315
9M22M	Malysh	9M22M	122 mm HE-fragmentation rocket (Grad-P man-portable) · for 9P132 Grad-P *legacy*	**10.8 km** HE, max	*315*
9M22S		9M22C	122 mm incendiary rocket · for 9K51 Grad *legacy* UA	**19.89 km** incendiary, max	*315*
9M22U 9M22U-1, M-21OF		9M22У	122 mm HE-fragmentation rocket · for 9K51 Grad UA	**20.4 km** HE, max	*315*
9M27 9M27D, 9M27F		9M27, 9M27Д	unguided 220 mm rockets	**13–35.8 km** 9M51 thermobaric to 9M27F HE, max	315
9M27D		9M27Д	220 mm leaflet rocket · for 9K57 Uragan *legacy*	–	*315*
9M27F		9M27Ф	220 mm HE-fragmentation rocket · for 9K57 Uragan	**35 km** HE, max	*315*
9M27K		9M27K	220 mm cluster rocket · for 9K57 Uragan UA	**35 km** cluster, max	*315*
9M27K1		9M27K1	220 mm cluster rocket · for 9K57 Uragan UA	**35 km** cluster, max	*315*
9M27K2		9M27K2	220 mm scatterable-mine rocket (PTM-1 anti-tank mines) · for 9K57 Uragan	**35 km** AT mines, max	*315*
9M27K3		9M27K3	220 mm scatterable-mine rocket (PFM-1 anti-personnel mines) · for 9K57 Uragan	**35 km** AP mines, max	*315*
9M27S		9M27C	220 mm incendiary rocket · for 9K57 Uragan *legacy*	–	*315*
9M28D		9M28Д	122 mm leaflet rocket · for 9K51 Grad *legacy*	**15.42 km** leaflet, max	*315*
9M28F		9M28Ф	122 mm HE-fragmentation rocket, short range · for 9K51 Grad *legacy* UA	**15 km** HE, max	*315*
9M28K		9M28K	122 mm scatterable-mine rocket (PTM-3 anti-tank mines) · for 9K51 Grad *legacy*	**13.4 km** AT mines, max	*315*
9M28S		9M28C	122 mm incendiary rocket · for 9K51 Grad *legacy* UA	**15.07 km** incendiary, max	*315*
9M33 9M33M2, 9M33M3, 9M33M		9M33, 9M33M3	short-range surface-to-air missile	**15 km** max, 9M33M3	160
9M37 9M37M, 9M37MD		9M37	short-range surface-to-air missile UA	**0.8–5 km** min–max	160
9M38		9M38	medium-range surface-to-air missile · for 9K37 Buk UA	**3.25–34 km** min–max, 9M38M1	*152*
9M39		9M39	man-portable surface-to-air missile · for 9K38 Igla UA	**0.5–5.2 km** min–max	*165*
9M42		9M42	122 mm illumination rocket · for 9K51 Grad *legacy*	**5 km** illumination, max	*315*
9M43		9M43	122 mm smoke rocket · for 9K51 Grad *legacy*	**20.1 km** smoke, max	*315*
9M51		9M51	220 mm thermobaric rocket · for 9K57 Uragan *legacy*	**13 km** thermobaric, max	*315*
9M53F		9M53Ф	122 mm HE-fragmentation rocket, separating warhead · for 9K59 Prima *legacy*	**20.5 km** HE, max	*315*

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
9M53K		9M53K	122 mm cluster rocket (HEAT-fragmentation submunitions) · for 9K59 Prima *legacy*	**20.3 km** cluster, max	*315*
9M53S		9M53C	122 mm incendiary rocket · for 9K59 Prima *legacy*	**20 km** incendiary, max	*315*
9M55 9M55F, 9M55K		9M55, 9M55Ф	unguided 300 mm rockets	**70–90 km** 9M55 series to 9M528, max	**316**
9M55F		9M55Ф	300 mm HE-fragmentation rocket, separating warhead · for 9K58 Smerch	**70 km** HE, max	*316*
9M55K		9M55K	300 mm cluster rocket (fragmentation submunitions) · for 9K58 Smerch UA	**70 km** cluster, max	*316*
9M55K1		9M55K1	300 mm cluster rocket (self-aiming submunitions, Motiv-3M) · for 9K58 Smerch UA	**70 km** cluster, max	*316*
9M55K4		9M55K4	300 mm scatterable-mine rocket (PTM-3 anti-tank mines) · for 9K58 Smerch	**70 km** AT mines, max	*316*
9M55K5		9M55K5	300 mm cluster rocket (HEAT-fragmentation submunitions) · for 9K58 Smerch	**70 km** cluster, max	*316*
9M55S		9M55C	300 mm thermobaric rocket · for 9K58 Smerch	**70 km** thermobaric, max	*316*
9M59		9M59	220 mm scatterable-mine rocket (PTM-3 anti-tank mines) · for 9K57 Uragan	**35 km** AT mines, max	*315*
9M79 9M79-1, SS-21	SCARAB	9M79	short-range ballistic missile (Tochka, Tochka-U) · for 9K79 Tochka UA	**70–120 km** Tochka to Tochka-U, max	*141*
9M82 9M82M, 9M82MD, SA-12B	GIANT	9M82, 9M82M	long-range anti-ballistic surface-to-air missile · for S-300V UA	**13–400 km** min–max, 9M82 to 9M82MD	*154*
9M83 9M83M, SA-12A	GLADIATOR	9M83	long-range surface-to-air missile · for S-300V UA	**6–75 km** min–max, aircraft	*154*
9M96 9M96E, 9M96E2, 9M96M		9M96E2, 9M96E	medium-range surface-to-air missile · for S-400 UA	**1–120 km** min–max, 9M96E to 9M96E2	*155*
9M100		9M100	short-range infrared-homing surface-to-air missile · for S-350	**10 km** max, fielding unconfirmed	*154*
9M111 9M111-2, 9M111M, AT-4	Fagot, Faktoriya SPIGOT	9M111	anti-tank guided missile · for 9K111 Fagot UA	**0.07–2.5 km** min–max, 9M111 to 9M111M	*305*
9M113 AT-5	Konkurs SPANDREL	9M113	anti-tank guided missile · for 9K111-1 Konkurs UA	**0.075–4 km** min–max, day	*305*
9M113M AT-5B	Konkurs-M SPANDREL-B	9M113M	tandem-warhead anti-tank guided missile · for 9K111-1 Konkurs	**0.075–4 km** min–max, day	*305*
9M114 AT-6	Kokon SPIRAL	9M114	ground- and helicopter-launched anti-tank guided missile · for 9K114 Shturm UA	**0.4–5 km** min–max	*115*
9M115 AT-7	Metis SAXHORN	9M115	anti-tank guided missile · for 9K115 Metis UA	**0.04–1 km** min–max	*308*
9M117 9M117M, 9M117M1, AT-10	Bastion, Kan, Arkan STABBER	9M117	100 mm gun-launched anti-tank guided missile · for 9K116 Kastet UA	**0.1–5.5 km** min–max	*306*
9M119 9M119M, 9M119M1, AT-11B, AT-11C, AT-11	Svir, Refleks, Invar SNIPER	9M119M, 9M119M1	125 mm gun-launched anti-tank guided missile · for 9K119 Svir UA	**0.1–5 km** min–max	*306*
9M120 AT-9	Ataka SPIRAL-2	9M120	ground- and helicopter-launched anti-tank guided missile · for 9K132 Shturm-SM	**0.4–6 km** min–max	*115*
9M120-1	Ataka-1	9M120-1	ground- and helicopter-launched anti-tank guided missile · for 9K132 Shturm-SM	**6 km** max	*115*
9M123 9M123F, AT-15	Khrizantema SPRINGER	9M123, 9M123Ф	anti-tank guided missile · for 9K123 Khrizantema UA	**0.4–6 km** min–max	*116*
9M131 9M131M, AT-13	Metis-M SAXHORN-2	9M131	anti-tank guided missile · for 9K115-1 Metis-M	**0.08–2 km** min–max, 9M131 to 9M131M	*308*
9M133 9M133F-1, AT-14	Kornet SPRIGGAN	9M133	anti-tank guided missile · for 9K135 Kornet UA	**0.1–5.5 km** min–max, 9M133, 9M133F-1	*307*
9M217		9M217	122 mm cluster rocket (self-aiming anti-tank submunitions) · for 9K51M Tornado-G	**30 km** cluster, max	*315*
9M218 9M541		9M218	122 mm cluster rocket (HEAT-fragmentation submunitions) · for 9K51M Tornado-G	**30 km** cluster, max	*315*
9M311 9M311-1M		9M311	short-range surface-to-air missile UA	**2.5–10 km** min–max, 9M311-1M	**162**
9M313		9M313	man-portable surface-to-air missile · for 9K310 Igla-1	**0.5–5 km** min–max, Igla-1	*165*
9M317		9M317	medium-range surface-to-air missile · for 9K317 Buk-M2 UA	**3–50 km** min–max, aircraft	*152*
9M317M			medium-range surface-to-air missile · for 9K317M Buk-M3 UA	**2.5–70 km** min–max	*152*
9M330 9M330-2		9M330	short-range surface-to-air missile *legacy* UA	**1.5–12 km** min–max	**161**
9M331		9M331	short-range surface-to-air missile UA	**1.5–12 km** min–max	**161**
9M333		9M333	short-range surface-to-air missile UA	**0.8–5 km** min–max	**160**
9M335		9M335	short-range surface-to-air missile · for 96K6 Pantsir-S1 UA	**1–12 km** min–max	*158*
9M336		9M336	man-portable surface-to-air missile · for 9K333 Verba UA	**0.5–6 km** min–max	*165*
9M338 9M338K		9M338	short-range surface-to-air missile UA	**16 km** max, 9M338K	**161**
9M340		9M340	short-range surface-to-air missile · for Sosna *trial*	**10 km** max	*159*
9M342		9M342	man-portable surface-to-air missile · for 9K338 Igla-S	**6 km** max effective	*165*
9M519		9M519	122 mm radio-jamming rocket (HF/VHF) · for 9K51 Grad *legacy*	**18.3 km** jammer, max	*122*
9M521		9M521	122 mm HE-fragmentation rocket, extended range · for 9K51M Tornado-G	**40 km** HE, max	*315*
9M522		9M522	122 mm HE-frag rocket, extended range, separating warhead	**37.5 km** HE, max	*315*
9M525		9M525	300 mm cluster rocket (fragmentation submunitions) · for 9K58 Smerch *trial*	**90 km** cluster, max (design)	*316*
9M528		9M528	300 mm HE-fragmentation rocket, extended range · for 9K58 Smerch	**90 km** HE, max	*316*
9M529		9M529	300 mm thermobaric rocket, extended range · for 9K58 Smerch *trial*	**90 km** thermobaric, max (design)	*316*
9M531		9M531	300 mm cluster rocket (HEAT-fragmentation submunitions) · for 9K58 Smerch *trial*	**90 km** cluster, max (design)	*316*
9M533		9M533	300 mm cluster rocket (self-aiming submunitions) · for 9K58 Smerch *trial*	**90 km** cluster, max (design)	*316*
9M534		9M534	300 mm rocket carrying a reconnaissance UAV · for 9K58 Smerch *trial*	**90 km** UAV carrier, max (design)	*123*
9M542		9M542	300 mm guided HE-fragmentation rocket · for 9K515 Tornado-S *trial*	**120 km** guided, max	*123*
9M544		9M544	300 mm guided cluster rocket (HEAT-frag submunitions) · for 9K515 Tornado-S UA	**120 km** guided, max	*123*
9M549		9M549	300 mm guided cluster rocket (fragmentation submunitions) · for 9K515 Tornado-S UA	**120 km** guided, max	*123*

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
9M723 9M723K1, SS-26	STONE	9М723	short-range ballistic missile (Iskander-M) UA	**450–500 km** max	143
9M728 R-500, SSC-7	SOUTHPAW	9М728, Р-500	ground-launched cruise missile (Iskander-K) UA	**500 km** official max	143
9M729 SSC-8	SCREWDRIVER	9М729	ground-launched cruise missile (Iskander-K) UA	**480–2,500 km** RU claim to US estimate	143
9P…			*launcher (series)*	–	
9P78-1 9P78		9П78-1	missile transporter erector launcher UA	–	143
9P122	Malyutka-M	9П122	ATGM launcher vehicle · part of 9K11 Malyutka *legacy*	–	*304*
9P125 BM-21V, M1975		9П125, БМ-21В	122 mm multiple rocket launcher · part of 9K54 Grad-V *legacy*	–	*122*
9P129 9P129-1M		9П129	missile transporter erector launcher · part of 9K79 Tochka UA	–	*141*
9P132 DKZ-66, BM-21P, Grad-1P, 9K510	Grad-P, Partizan	9П132	man-portable 122 mm rocket launcher · part of 9K51 Grad *legacy* UA	–	*122*
9P133	Malyutka-P	9П133	ATGM launcher vehicle · part of 9K11 Malyutka *legacy*	–	*304*
9P137			ATGM launcher vehicle · part of 9K111-1 Konkurs *legacy*	–	*305*
9P138 BM-21b, M1976	Grad-1	9П138	122 mm multiple rocket launcher *stored* UA	–	**122**
9P139		9П139	122 mm multiple rocket launcher · part of 9K55-1 Grad-1 *legacy* UA	–	*122*
9P140 BM-27, BM-22, M1977	Uragan	9П140	220 mm multiple rocket launcher UA	**34–35.8 km** 9M27F HE-frag, max	**122**
9P148	Konkurs	9П148	ATGM launcher vehicle · part of 9K111-1 Konkurs *legacy* UA	–	*305*
9P149	Shturm-S	9П149	ATGM launcher vehicle · part of 9K114 Shturm UA	–	*115*
9P157-2 9P157	Khrizantema-S	9П157, 9П157-2	ATGM launcher vehicle · part of 9K123 Khrizantema UA	–	*116*
9P162 9K128-1	Kornet-T, Kornet-LR	9П162, 9К128-1	ATGM launcher vehicle UA	**0.1–5.5 km** 9M133-1, day, min–max	**115**
9P163-3 Kornet-D1	Kornet-D	9П163-3	ATGM launcher vehicle · part of 9K135 Kornet	–	*307*
9P163M-1	Kornet-P	9П163М-1	man-portable ATGM launcher · part of 9K135 Kornet UA	–	*307*
9P163M-2 9P163-2	Kvartet	9П163М-2	vehicle-mounted ATGM launcher module · part of 9K135 Kornet	–	*307*
9S…			*control equipment of a missile system: radars, command posts (series)*	–	
9S15M 9S15MT2E, 9S15	Obzor-3 BILL BOARD	9С15М	SAM surveillance radar · part of S-300V	–	*154*
9S18 9S18M1, 9S18M1-1, 9S18M1-2, 9S18M1-3	Kupol SNOW DRIFT	9С18, 9С18М1	SAM surveillance radar · part of 9K37M1-2 Buk-M1-2 UA	–	*152*
9S19M2 9S19	Imbir HIGH SCREEN	9С19М2	SAM surveillance radar · part of S-300V UA	–	*154*
9S32 9S32M1	GRILL PAN	9С32	fire-control radar · part of S-300V UA	–	*154*
9S36 9S36M		9С36М	fire-control radar · part of 9K317 Buk-M2 UA	–	*152*
9S52 9S52M, 9S52M1	Polyana-D4, Polyana-D4M1	Поляна-Д4, 9С52	air defence command post	–	**233**
9S80 9S80-1, PPRU-1, PPRU-1M	Sborka, Ovod		air defence command post · part of 9K35 Strela-10 UA	–	*160*
9S457		9С457	SAM command post · part of S-300V	–	*154*
9S470 9S470M1, 9S470M1-2		9С470	SAM command post · part of 9K37M1-2 Buk-M1-2 UA	–	*152*
9S510 9S510M		9С510М	SAM command post · part of 9K317 Buk-M2	–	*152*
9S552		9С552	command and staff vehicle · part of 9K720 Iskander-M	–	*143*
9S729M1	Slepok-1	9С729М1 «Слепок-1»	artillery fire-control system · part of 9K58 Smerch UA	–	*123*
9S737	Ranzhir		air defence command post	**5–40 km** data link, radio, VHF, HF	**234**
9S920		9С920	missile data preparation vehicle · part of 9K720 Iskander-M	–	*143*
9S931 MP		9С931	planning module vehicle	**1–40 km** data link and radios	**233**
9S931-1 MP-K		МП-К	planning module vehicle	**1–40 km** data link and radios	**233**
9S932-1 9S932-2, MRU-B	Barnaul-T	9С932-1	air defence command post UA	**1–40 km** data link and radios	**233**
9S933		ПМУО	portable fire control module · part of Barnaul-T	–	*233*
9S935		КСАС	squad automation complex · part of Barnaul-T UA	–	*233*
9S936			command and staff vehicle · part of 9K515 Tornado-S UA	–	*123*
9T…			*transport and transloading equipment of a missile system (series)*	–	
9T217 9T217B		9Т217Б	transloader · part of 9K33 Osa UA	–	*160*
9T218 9T128-1		9Т218	transloader · part of 9K79 Tochka	–	*141*
9T232M		9Т232М	transloader · part of 9K59 Prima *legacy*	–	*121*
9T234		9Т234	transloader · part of 9K58 Smerch *legacy* UA	–	*123*
9T234-2		9Т234-2	transloader · part of 9K58 Smerch UA	–	*123*
9T234-2T		9Т234-2Т	transloader on Tatra chassis · part of 9K58 Smerch *export*	–	*123*
9T234-4		9Т234-4	transloader on KamAZ chassis · part of 9K58 Smerch *trial*	–	*123*
9T243M			transloader · part of 9K317M Buk-M3 UA	–	*152*
9T244		9Т244	transloader · part of 9K331 Tor-M1 UA	–	*161*
9T248			life support vehicle · part of 9K720 Iskander-M UA	–	*143*
9T249		9Т249	transloader · part of 9K512 Uragan-1M	–	*125*
9T250 9T250E		9Т250	transloader · part of 9K720 Iskander-M UA	–	*143*
9T254			ammunition carrier · part of 9K51 Grad *legacy*	–	*122*
9T255		9Т255	transloader · part of 9K515 Tornado-S	–	*123*
9T450		9Т450	transloader · part of 9K55 Grad-1 *stored*	–	*122*
9T451		9Т451	transloader on MT-LBu chassis · part of 9K55-1 Grad-1 *legacy*	–	*122*
9T452		9Т452	transloader · part of 9K57 Uragan UA	–	*122*
A					
AeroScope AS-F1800	DJI AeroScope		Chinese drone detection system *legacy* UA	–	*281*
AGS-17	Plamya	АГС-17, Пламя	30 mm automatic grenade launcher UA	–	
AGS-30		АГС-30	30 mm automatic grenade launcher	–	
AGS-40	Balkan	АГС-40, Балкан	40 mm automatic grenade launcher	–	
Akatsiya-E	Akatsiya-E		air defence command and control complex	–	*232*
Akatsiya-M	Akatsiya-M		command and control automation system	–	*232*
Altaets	Altaets, Altayets, Altaets-AM	«Алтаец»	communications jammer · part of R-330M1P Diabazol	–	*191*

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
Alurgit	Alurgit		GNSS jammer	–	*198*
AMN-233114 GAZ-233114	Tigr-M	Тигр-М, АМН-233114	armoured car UA	1.5–2.5 km Arbalet-DM sight, detect	112
AMN-590951	VPK Ural	АМН-590951, ВПК-Урал	armoured car UA	–	109
An-12PS	CUB	Ан-12ПС	search-and-rescue transport aircraft of naval aviation	–	*262*
An-140		Ан-140	light turboprop transport of the VKS and naval aviation	–	*257*
An-148-100E An-148		Ан-148-100Е, Ан-148	staff and passenger jet of the VKS	–	*241*
Andromeda-D	Andromeda-D		command and control system	–	*235*
Ansat-U Ansat		Ансат-У, Ансат	light trainer helicopter	–	*291*
APA-80			engine starting vehicle UA	–	*244*
Argus-Antidron	Argus-Antidron		UAV jammer	–	*198*
Armata	Armata	Армата	tracked armoured platform *trial* UA	–	*93*
ARS-14 ARS-14KM		АРС-14КМ	decontamination vehicle UA	10–40 vehicles/h decon throughput	222
AS-4350.1			ambulance UA	–	*244*
AShT-4310			topographic command and staff vehicle UA	–	*226*
ASN-233115	Tigr-M SpN	АСН-233115	armoured car · variant of AMN-233114 Tigr-M UA	–	*112*
Asteis-7020	Patrul	Патруль	armoured car UA	–	109
ASUNO-S 1V168			artillery fire control system	–	*232*
ATO-40			repair vehicle · part of RB-301B Borisoglebsk-2	–	*188*
ATS-59G		АТС-59Г	tracked artillery tractor *legacy* UA	–	*255*
Auriga-1.2V			satellite communications terminal UA	–	
AZK-7	AZK-7		acoustic artillery reconnaissance system	–	*175*
B					
B-4 M1931		Б-4	203 mm towed howitzer *legacy*	–	*136*
Barnaul-T	Barnaul-T	Барнаул-Т	air defence command and control system UA	1–40 km data link and radios	233
BAT-2 Object 454		БАТ-2	route-clearance vehicle UA	200–450 m³/h dozer capacity	213
BAT-M			route-clearance vehicle *legacy*	–	*213*
BAZ-6909 BAZ-69092			heavy truck chassis UA	–	*244*
BAZ-69092			transloader · part of S-400 UA	–	*155*
Be-200ES Be-200ChS, Be-200PS	Altair	Бе-200ЧС	search-and-rescue and patrol amphibian UA	–	*261*
BK-16 BK-16E, BK-10, Project 02510		БК-16	fast transport and assault boat for 19 troops	700–741 km cruising range, 16–24 troops, draught 0.87 m	297
BL-680			small river and coastal boats	150 km Skanda uncrewed, max, 8 troops (BL-680)	300
BLA-07			reconnaissance UAV	–	*265*
BM-1		БМ-1	220 mm heavy flamethrower launcher UA	–	125
BM-13	Katyusha	БМ-13	132 mm multiple rocket launcher *stored*	–	*121*
BM-21 2B5, M1964		БМ-21, 2Б5	122 mm multiple rocket launcher UA	–	122
BM-21-1 2B17, 2B17-1		БМ-21-1, 2Б17	122 mm multiple rocket launcher UA	20.4–45 km 9M22U to new rockets, max	122
BM-35	Italmas	Италмас	one-way attack drone UA	200 km Italmas, range	275
BMD-1		БМД-1	airborne fighting vehicle *stored* UA	2–4 km 2A42, AP to HE	99
BMD-1KSh-A			armoured command vehicle UA	300 km R-130 HF radio, max, HF	226
BMD-2		БМД-2	airborne fighting vehicle UA	2–4 km 2A42, AP to HE	99
BMD-3 Object 950		БМД-3, Объект 950	airborne fighting vehicle *legacy*	–	*100*
BMD-4		БМД-4	airborne fighting vehicle *legacy* UA	4–5.5 km HE-frag to Arkan ATGM	100
BMD-4M		БМД-4М	airborne fighting vehicle · variant of BMD-4 UA	–	*100*
BMK-130M BMK-150			towing and motor boat UA	–	*205*
BMK-460		БМК-460	towing and motor boat UA	–	*205*
BMK-MO			towing and motor boat UA	–	*205*
BMK-MT			towing and motor boat UA	–	*206*
BMO-T Object 564		БМО-Т, Объект 564	armoured personnel carrier UA	0.4–1 km RPO-A rocket, eff. to max	101
BMP-1 Object 765, BMP Model 1970		БМП-1, Объект 765	infantry fighting vehicle UA	1.3–4.5 km HEAT-FS to HE-frag	101
BMP-1AM	Basurmanin	БМП-1АМ, Басурманин	infantry fighting vehicle · variant of BMP-1 UA	–	*101*
BMP-1KSh BMP-1KShM			command and staff vehicle UA	–	226
BMP-1P		БМП-1П	infantry fighting vehicle · variant of BMP-1 UA	–	*101*
BMP-1U	Shkval	БМП-1У, Шквал	infantry fighting vehicle · variant of BMP-1 *legacy* UA	–	*101*
BMP-2 Object 675		БМП-2, Объект 675	infantry fighting vehicle UA	1.5–4 km 2A42, AP to HE	102
BMP-2D		БМП-2Д	infantry fighting vehicle · variant of BMP-2 UA	–	*102*
BMP-2M	Berezhok	БМП-2М, Бережок	infantry fighting vehicle · variant of BMP-2 UA	–	*102*
BMP-3 Object 688		БМП-3, Объект 688	infantry fighting vehicle UA	4–6 km HE-frag to Bastion ATGM	103
BMP-3F		БМП-3Ф	infantry fighting vehicle	–	103
BMP-3M		БМП-3М	infantry fighting vehicle · variant of BMP-3	–	*103*
BMPT	Terminator	БМПТ, Терминатор	tank support fighting vehicle UA	1.5–4 km 2A42, AP to HE	104
BMPT-72 Object 183	Terminator-2, Terminator	БМПТ-72, Терминатор-2	tank support fighting vehicle · variant of BMPT Terminator UA	–	*104*
BMR-3M BMR-3MA, Object 197	Vepr	БМР-3М, Вепрь	mine-clearing vehicle UA	0.8–3.2 m swept lane width	214

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
BRDM-2 GAZ-41-08		БРДМ-2, ГАЗ-41-08	armoured reconnaissance vehicle UA	**2–4 km** 14.5 mm KPVT, eff. to max	109
BRDM-2A		БРДМ-2А	armoured reconnaissance vehicle · variant of BRDM-2 UA	–	*109*
BRDM-2M		БРДМ-2М	armoured reconnaissance vehicle · variant of BRDM-2 UA	–	*109*
BRDM-2MS		БРДМ-2МС	armoured reconnaissance vehicle · variant of BRDM-2 UA	–	*109*
BRDM-2RKhb BRDM-2RKh			CBRN reconnaissance vehicle UA	**3–6 km** chemical agent, detect	222
BREM-1 Object 608		БРЭМ-1	armoured recovery vehicle UA	**6.5–35 t** winch pull	220
BREM-2		БРЭМ-2	armoured recovery vehicle UA	**6.5–35 t** winch pull	220
BREM-4	BREM-Ch		armoured recovery vehicle UA	**6.5–35 t** winch pull	220
BREM-64			armoured recovery vehicle	**6.5–35 t** winch pull	220
BREM-D	BREhM-D	БРЭМ-Д	armoured recovery vehicle UA	**6.5–35 t** winch pull	220
BREM-K		БРЭМ-К	armoured recovery vehicle UA	**6.5–35 t** winch pull	220
BREM-L	Beglyanka, Beglianka	БРЭМ-Л	armoured recovery vehicle UA	**6.5–35 t** winch pull	220
BRM-1K BRM-1KM, Object 676, BMP M1976/2		БРМ-1К, БРМ-1	armoured reconnaissance vehicle UA	**1.3–4.5 km** 73 mm gun, HEAT-FS to max	104
BRM-3K Object 501	Rys	БРМ-3К, Рысь	armoured reconnaissance vehicle	–	*105*
BS-3 M1944		БС-3	100 mm field gun *stored* UA	**11.72–20.65 km** M-30 HE-frag to BS-3, max	139
BTM-3		БТМ-3	trench digger UA	**1.1–5 m** digging depth	214
BTR-50		БТР-50	tracked armoured personnel carrier *legacy* UA	–	*105*
BTR-50PK		БТР-50ПК	tracked armoured personnel carrier · variant of BTR-50 *legacy* UA	–	*105*
BTR-60PB BTR-60		БТР-60ПБ, БТР-60	armoured personnel carrier *legacy* UA	–	227
BTR-70		БТР-70	armoured personnel carrier UA	**2–4 km** KPVT/2A72, eff. to max	110
BTR-70M		БТР-70М	armoured personnel carrier · variant of BTR-70 UA	–	*110*
BTR-80 GAZ-5903		БТР-80, ГАЗ-5903	armoured personnel carrier UA	**2–4 km** KPVT/2A72, eff. to max	110
BTR-80A		БТР-80А	armoured personnel carrier · variant of BTR-80	–	*110*
BTR-82		БТР-82	armoured personnel carrier · variant of BTR-80 UA	–	*110*
BTR-82A BTR-82AM		БТР-82А, БТР-82АМ	armoured personnel carrier · variant of BTR-80 UA	–	*110*
BTR-82AT		БТР-82АТ	armoured personnel carrier · variant of BTR-80 UA	–	*110*
BTR-90 GAZ-5923	Rostok	БТР-90, ГАЗ-5923	armoured personnel carrier UA	–	111
BTR-D		БТР-Д	armoured personnel carrier UA	**1–1.5 km** 7.62 mm MG, eff. to max	105
BTR-MDM	Rakushka	БТР-МДМ, Ракушка	armoured personnel carrier UA	–	106
BTR-T			heavy armoured personnel carrier *legacy*	–	*106*
BTS-4A		БТС-4А	armoured recovery vehicle UA	**6.5–35 t** winch pull	220
BTS-4V		БТС-4В	armoured recovery vehicle UA	**6.5–35 t** winch pull	220
Bulsae-4 M-2018			North Korean ATGM launcher vehicle UA	–	116
Buran	Buran, RIDA Buran, Buran ASV		armoured utility vehicle UA	–	109
C					
Chistyulya	Chistyulya	Чистюля	UAV jammer UA	**1–5 km** UAV link jamming	198
D					
D-1 M1943		Д-1	152 mm towed howitzer *stored* UA	**11.72–20.65 km** M-30 HE-frag to BS-3, max	139
D-20		Д-20	152 mm towed gun-howitzer UA	**17.23–24.4 km** HE OF-32 to OF-96, max	137
D-30 2A18, D-30A, 2A18M		Д-30, Д-30А	122 mm towed howitzer UA	**15.3–22 km** HE max to Croatian ERBB RA HE (not standard load)	137
D-44		Д-44	85 mm towed gun *legacy* UA	–	139
Desertcross 1000-3 Desertcross-1000-3	Desertcross, Odes Desertcross		Chinese 4x4 all-terrain utility buggy UA	–	245
DIM			vehicle-mounted mine detector *legacy*	–	
DShK 38/46	DShK, DShKM	ДШК	12.7 mm heavy machine gun *legacy* UA	–	
DT-10PM	Vityaz		articulated tracked carrier UA	**3–30 t** payload, 3–30 t cargo	256
DT-30 DT-30PM, DT-10PM	Vityaz	ДТ-30, ДТ-30ПМ	articulated tracked carrier UA	**3–30 t** payload, 3–30 t cargo	256
E					
Eleron-3 Eleron-3SV		Элерон-3, Элерон-3СВ	reconnaissance UAV UA	**20–25 km** control link	266
Eleron T-16			reconnaissance UAV UA	**20–25 km** control link	266
EOV-3521			military excavator UA	**1.1–5 m** digging depth	214
EOV-3523			military excavator UA	**1.1–5 m** digging depth	214
EOV-4421			military excavator UA	**1.1–5 m** digging depth	214
Essa	Essa		Belarusian thermal tank gunner's sight	–	
ESU TZ	YeSU TZ	ЕСУ ТЗ	tactical-level command and control system	–	*235*
EVO	Autel EVO, Autel Evo		Chinese commercial quadcopter UAV UA	**1.5–15 km** control/video link	265
F					
Fateh-360	Fath-360		Iranian short-range ballistic missile	**80–120 km** max, claimed	142
Forpost	Forpost, Searcher II	Форпост	reconnaissance UAV UA	**150–250 km** radius	271
Forpost-R	Forpost-R		reconnaissance and strike UAV UA	**150–250 km** radius	271
FPV drones	FPV drones, FPV kamikaze drones	FPV-дроны	first-person-view attack drones (family) UA	**7–65 km** FPV, range	279
FSB KS-701, Project 12150, Project 12200	Mangust, Sobol	12150, 12200, КС-701, «Мангуст», «Соболь», «Тунец»	fast patrol boats of the FSB Border Service coast guard	**759–926 km** range, Mangust, Sobol, 6–10 troops, draught 0.89 m	297
G					

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
Garpiya-A1	Garpiya		one-way attack drone, Shahed-derived [UA]	**1,000–1,500 km** Garpiya-A1, range	273
Garpun-3	Garpun-3, Harpoon-3	Гарпун-3	UAV jammer [UA]	**1–3.5 km** UAV link jamming, 433–5,875 MHz	201
GAZ-51		ГАЗ-51	cargo truck 4x2 *legacy* [UA]	—	*245*
GAZ-66		ГАЗ-66	cargo truck 4x4 *legacy* [UA]	**2–2.5 t** payload	246
GAZ-3307		ГАЗ-3307	cargo truck 4x2 [UA]	—	*246*
GAZ-3308 GAZ-33081	Sadko, Eger-II	ГАЗ-3308 «Садко»	cargo truck 4x4 [UA]	**2–2.5 t** payload	246
GAZ-3344-20	Aleut		articulated tracked carrier [UA]	**2–2.5 t** payload, rear unit, 12 persons total	255
GAZ-39371	Vodnik		armoured utility vehicle [UA]	**1.5–2.5 km** Arbalet-DM sight, detect	112
GAZ-233014 GAZ-2330, VPK-233136, GAZ-233036	Tigr	ГАЗ-233014, ГАЗ-2330	armoured car [UA]	**1.5–2.5 km** Arbalet-DM sight, detect	112
GAZ-233036 SPM-2	Tigr SPM-2	ГАЗ-233036, СПМ-2	armoured car · variant of GAZ-233014 Tigr [UA]	—	*112*
Geran-1 Shahed-131, Shahed 131	Geran-1	Герань-1	one-way attack drone [UA]	**600–2,500 km** Geran-1/2/3, range	274
Geran-2 Shahed-136, Shahed 136	Geran-2	Герань-2	one-way attack drone [UA]	**600–2,500 km** Geran-1/2/3, range	274
Geran-3 Shahed-238	Geran-3		Iranian-design jet one-way attack drone [UA]	**600–2,500 km** Geran-1/2/3, range	274
Gerbera	Gerbera	Гербера	one-way attack drone [UA]	**300–600 km** Gerbera, range	275
GMZ-3 Object 318		ГМЗ-3	minelayer [UA]	**5–15 km** ISDM mine rocket, min–max	217
Granat-1		Гранат-1	reconnaissance UAV [UA]	**10–70 km** Granat-1/-4, control link	266
Granat-4		Гранат-4	reconnaissance UAV [UA]	**10–70 km** Granat-1/-4, control link	266
Groza.04.K	Groza-04K	Гроза.04.К	UAV jammer [UA]	**1–5 km** UAV link jamming	198
GSP Object 55		ГСП	ferry *legacy*	—	*206*
GT-01	Murmansk-BN	Мурманск-БН	HF communications jammer [UA]	**3,000–8,000 km** HF radio jamming, HF 3–30 MHz	184
H					
Harpya	Harpya		UAV jammer	—	*199*
I					
Il-18D	COOT	Ил-18Д	turboprop airliner variant in naval aviation	—	*261*
IMR IMR-1			combat engineer vehicle *legacy* [UA]	—	215
IMR-2 IMR-2M, IMR-2M1, Object 637		ИМР-2, ИМР-2М	combat engineer vehicle [UA]	**200–300 m³/h** dozer capacity	215
IMR-3 IMR-3M		ИМР-3М	combat engineer vehicle [UA]	—	215
Irbis	Irbis		counter-battery radar	—	*175*
IRM	Zhuk		engineer reconnaissance vehicle [UA]	**3.6 m** mine-detector lane width	206
ISDM	Zemledeliye	ИСДМ, Земледелие	truck-mounted remote mining system [UA]	**5–15 km** ISDM mine rocket, min–max	217
Izdeliye 51 Izdeliye 52	Lancet, Lancet-3	Ланцет, Изделие 51/52	loitering munition [UA]	**25–100 km** Lancet, range	277
Izdeliye 53			loitering munition · variant of Izdeliye 51 Lancet [UA]	—	*277*
K					
K1Sh1 GAZ-59032	UNSh	К1Ш1	command vehicle chassis (BTR-80)	—	
K155M	Krasnopol-M2		152 mm guided artillery round (laser-homing) · for 3OF39 Krasnopol [UA]	**20 km** guided, max	*309*
Ka-31R Ka-31	HELIX B	Ка-31Р, Ка-31	radar picket helicopter	—	290
Ka-52 Ka-52A, Ka-52M	Alligator, Hokum HOKUM B	Ка-52, Аллигатор	two-seat attack and reconnaissance helicopter with anti-tank missiles	**460–545 km** range, internal fuel, 2–2.8 t combat load	284
Ka-226 Ka-226T	HOODLUM B	Ка-226, Ка-226Т	light utility and training helicopter	—	*286*
KamAZ-4310		КАМАЗ-4310	cargo truck 6x6 *legacy*	**6–15 t** payload, 30–39 troops	247
KamAZ-4386	Typhoon-VDV		mine-resistant ambush-protected vehicle [UA]	**2 t** payload, Typhoon-K 4x4, 6–16 troops	113
KamAZ-5350	Mustang	КАМАЗ-5350	cargo truck 6x6 [UA]	**6–15 t** payload, 30–39 troops	247
KamAZ-6350		КАМАЗ-6350	cargo truck 8x8 [UA]	**6–15 t** payload, 30–39 troops	247
KamAZ-6560		КАМАЗ-6560	heavy truck chassis 8x8	—	*247*
KamAZ-43269 BPM-97	Vystrel	КамАЗ-43269, БПМ-97	armoured car [UA]	—	109
KamAZ-53501		КАМАЗ-53501	cargo truck 6x6 [UA]	**6–15 t** payload, 30–39 troops	247
KamAZ-53949 Typhoon-K 4x4	Typhoon-K	КамАЗ-53949, Тайфун-К	mine-resistant ambush-protected vehicle [UA]	**2 t** payload, Typhoon-K 4x4, 6–16 troops	113
KamAZ-53949	Linza	КамАЗ-53949, Линза	armoured ambulance [UA]	**2 t** payload, Typhoon-K 4x4, 6–16 troops	113
KamAZ-63501		КАМАЗ-63501	cargo truck 8x8 [UA]	**6–15 t** payload, 30–39 troops	247
KamAZ-63968 Typhoon-K 6x6	Typhoon-K	КамАЗ-63968, Тайфун-К	mine-resistant ambush-protected vehicle [UA]	**2 t** payload, Typhoon-K 4x4, 6–16 troops	113
KamAZ-65225		КАМАЗ-65225	tractor truck 6x6	**50–100 t** semi-trailer gross mass	254
Kapustnik-BM	Kapustnik-BM	Капустник-БМ	artillery fire-control system · part of 9K51M Tornado-G	—	*124*
Kh-22 AS-4	Burya KITCHEN	Х-22 «Буря»	air-launched anti-ship missile [UA]	**140–600 km** launch range	*317*
Kh-22 D-2, 9-A-2362, AS-4, RS-AS-4	Burya KITCHEN	Х-22, Х-32	long-range supersonic air-launched anti-ship and land-attack cruise missiles	**140–1,000 km** Kh-22 to Kh-32, launch range (sources differ)	147
Kh-32		Х-32	supersonic air-launched cruise missile [UA]	**600–1,000 km** launch range	*317*
Kh-47M2 AS-24	Kinzhal KILLJOY	Х-47М2, Кинжал	air-launched ballistic missile [UA]	**460–480 km** after launch, estimate	*318*

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
Kh-47M2 9-S-7760, 9-A-7660, AS-24, RS-AS-24	Kinzhal, Dagger KILLJOY	Х-47М2, Кинжал	air-launched ballistic missile, conventional or nuclear warhead, fired from MiG-31K	**460–2,000 km** missile: est. after release to claimed incl. carrier	147
Kh-55 Kh-55SM, AS-15	KENT	Х-55	air-launched cruise missile UA	**2,500–3,500 km** Kh-55 to Kh-55SM, max	*318*
Kh-59 Kh-59M, AS-13, AS-18	Ovod KINGBOLT, KAZOO	Х-59 «Овод»	air-launched cruise missile UA	**40–115 km** Kh-59 to Kh-59M, max	*318*
Kh-59 Kh-59M, Kh-59MK, AS-13, AS-18	Ovod-M, Izdeliye KINGBOLT, KAZOO	Х-59, Овод	air-launched stand-off missiles for ground and ship targets	**40–285 km** Kh-59 to Kh-59MK2, max	148
Kh-69		Х-69	air-launched cruise missile UA	**400 km** reported	*319*
Kh-69		Х-69	subsonic air-launched cruise missile for fixed targets, 310 kg warhead	**300–400 km** Kh-69, claimed to reported launch distance	148
Kh-101 AS-23A	KODIAK	Х-101	air-launched cruise missile UA	**2,500–5,500 km** max, by source	*319*
Kh-101 Kh-55SM, Kh-102, AS-23A, AS-15	Izdeliye, Kluge KODIAK, KENT	Х-101, Х-55	bomber-launched cruise missiles	**2,500–5,500 km** Kh-55 to Kh-101, max	148
KM-8	Gran	КМ-8, «Грань»	120 mm guided mortar bomb (laser-homing) UA	**9 km** guided, max	*313*
KM-8	Gran	КМ-8, Грань	laser-guided 120 mm mortar bomb for point targets, fired from 120 mm mortars	**1.5–9 km** KM-8 Gran guided bomb, min–max	313
KMM			bridgelayer *legacy*	–	*207*
KMT-5			mine plough and roller set	–	
KMT-7			mine roller	–	
KMT-8			mine plough	–	
KMT-10			mine roller	–	
KN-23 Hwasong-11A			North Korean short-range ballistic missile UA	**450–900 km** by warhead, estimates	144
KN-24 Hwasong-11B			North Korean short-range ballistic missile UA	**410 km** demonstrated in test	144
Korsar	Korsar	Корсар	reconnaissance UAV UA	**120–200 km** radius	271
KPV KPVT		КПВ	14.5 mm heavy machine gun UA	–	
KrAZ-255 KrAZ-255B		КрАЗ-255Б	cargo truck 6x6 *legacy* UA	**3.5–9 t** payload, 16–24 seats in body	252
KrAZ-260		КрАЗ-260	cargo truck 6x6 *legacy* UA	**3.5–9 t** payload, 16–24 seats in body	252
Kredo-1E Credo-1E, RP-200, 1RL133-3, PSNR-8	Kredo-1, Credo-1	1РЛ133-3 «Кредо-1»	ground surveillance radar	–	
Kredo-M1 PSNR-8M, PSNR-9	Kredo-M1		portable ground surveillance radar UA	–	
KRUS-VR	Strelets, Strelets-M	Стрелец, Стрелец-М	soldier command and control terminal UA	**1.5–8 km** squad net, R-853-V2M link	240
KRVD			temporary road deployment kit UA	–	*207*
KT-L			recovery vehicle UA	**10.5–14 t** winch / recovery pull	221
KUB-BLA	Kub-BLA	Куб-БЛА	loitering munition UA	**25–50 km** KUB, range	276
Kurganets-25	Kurganets-25	Курганец-25	infantry fighting vehicle *trial*	–	*106*
KZKT-7428	Rusich		tank transporter *legacy*	**50–100 t** semi-trailer gross mass	254
L					
L-39	Albatros	Л-39	jet trainer of the VKS and naval aviation	–	*262*
L550E	Xiamen Limbach L550E		Chinese engine for Garpiya-A1 attack drone UA	–	
Ladoga	Ladoga, VTS Ladoga		heavy command and reconnaissance vehicle UA	–	229
Lancet launcher	Lancet launcher		UAV control station · part of Izdeliye 51 Lancet UA	–	*277*
LPD-801			UAV jammer UA	**1–3.5 km** UAV link jamming, 433–5,875 MHz	201
M					
M2A2 ODS-SA M2A2 ODS	Bradley		Captured US infantry fighting vehicle *legacy* UA	**1.5–2 km** 2A72, M2HB, max effective	118
M-30 M-1938		М-30	122 mm towed howitzer *stored* UA	**11.72–20.65 km** M-30 HE-frag to BS-3, max	139
M-46		М-46	130 mm towed gun UA	**27.15–38 km** HE to base bleed, max	138
M88A1			Captured US armoured recovery vehicle *legacy* UA	**1.5–2 km** 2A72, M2HB, max effective	118
M113		М113	Captured US armoured personnel carrier *legacy* UA	**1.5–2 km** 2A72, M2HB, max effective	118
M-160 M1949, 52-M-853		М-160	160 mm mortar *stored*	–	*138*
M-1938 PM-38		ПМ-38	120 mm mortar *stored*	–	*139*
M1989 M-1989, M1978	Koksan, Chuch'ep'o		North Korean 170 mm self-propelled gun UA	**40–60 km** HE-frag to RA, max	133
M1991 M-1991	Juche 100, Chuch'e		North Korean 240 mm multiple rocket launcher UA	**40–80 km** unguided rockets, approx.	124
M-2024	Chuch'e		North Korean 240 mm multiple rocket launcher UA	**40–80 km** unguided rockets, approx.	124
Matrice 300 RTK Matrice 30T, DJI Matrice 30T	DJI Matrice 300 RTK		Chinese enterprise quadcopter UAV (Matrice 300 RTK, 30T) UA	**1.5–15 km** control/video link	265
Mavic 3 Mavic 2 Pro, Mavic 2 Zoom, Mavic 2 Enterprise Advanced, Air 2S	DJI Mavic, Mavic		Chinese commercial quadcopter UAV (Mavic, Air, Mini) UA	**1.5–15 km** control/video link	265
MaxxPro	MaxxPro		Captured US mine-protected vehicle *legacy* UA	**1.5–2 km** 2A72, M2HB, max effective	118
MAZ-537		МАЗ-537	tank transporter *legacy* UA	**50–100 t** semi-trailer gross mass	254
MAZ-543 MAZ-7310		МАЗ-543/ МАЗ-7310	heavy truck chassis 8x8 *legacy*	–	*248*
MAZ-63172			tractor truck UA	–	254
MAZ-74101	Oplot-T		tractor truck UA	**50–100 t** semi-trailer gross mass	254
MAZ-531605			cargo truck UA	–	*248*
MDK-3		МДК-3	trench digger UA	**1.1–5 m** digging depth	214
Merlin-VR	Merlin-VR		reconnaissance UAV UA	**150 km** control link	267

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
Mi-8AMTSh-VN	Sapsan	Ми-8АМТШ-ВН, Сапсан	special-forces assault helicopter in flight test *trial*	–	*286*
Mi-8MNP-2		Ми-8МНП-2	FSB special-purpose helicopter	–	*286*
Mi-8MT Mi-8MTV-5, Mi-8AMTSh	Hip-C, Hip-H HIP	Ми-8, Ми-8Т	medium transport and armed assault helicopter	**520–960 km** range, load not given, 24–36 troops; 3.63–4 t	**287**
Mi-8MTPR-1 L187A, Mi-8MTV-5PR	Rychag-AV, Rychag-AVE HIP	Ми-8МТПР-1, Рычаг-АВ	helicopter jammer against air-defence and aircraft radars	**150 km** air-defence radar jamming, C/X band 5.1–11 GHz	**288**
Mi-8PPA Mi-8SMV-PG	HIP K	Ми-8ППА, Ми-8СМВ-ПГ	jamming helicopter (legacy) *legacy*	–	*289*
Mi-24P/V Mi-24D, Mi-24P	Hind D, Hind E HIND	Ми-24, Ми-35М	armoured attack helicopter with an eight-seat troop cabin	**415–460 km** range, normal weight, 8 troops; 1.5 t cargo	**285**
Mi-26 Mi-26T, Mi-26T2	Halo, Halo-A	Ми-26, Ми-26Т	heavy transport helicopter	**475–670 km** range, loaded, 82 troops or 20 t	**289**
Mi-28N Mi-28, Mi-28NE	Night Hunter, Havoc HAVOC B	Ми-28Н, Ночной охотник	two-seat attack helicopter	**435–450 km** range, internal fuel, 2.3 t combat load	**285**
MKTK-1	Plavsk	«Плавск»	radio monitoring station	–	*194*
MKTK-1A	Dzyudoist, Judoist	«Дзюдоист»	SIGINT system UA	–	**189**
ML-20 M-1937		МЛ-20	152 mm towed gun-howitzer *stored* UA	**11.72–20.65 km** M-30 HE-frag to BS-3, max	**139**
MLZh-VF-VT	MLZh-VF-VT		railway pontoon bridge UA	**0.5 km** bridge length, claimed	**207**
MMK	MMK	ММК	truck-mounted bridge-laying complex on Ural-53236	–	**208**
MO.1.01.04			220 mm thermobaric rocket, short range (TOS-1, TOS-1A) · for TOS-1A Solntsepek	**2.7 km** thermobaric, max (TOS-1A)	*316*
MO.1.01.04 MO.1.01.04M, MO.1.01.04M2		МО.1.01.04, МО.1.01.04М	unguided 220 mm thermobaric rockets for the TOS-1, TOS-1A and TOS-2 launchers	**2.7–15 km** MO.1.01.04 to TBS-M3, max	**316**
MO.1.01.04M			220 mm thermobaric rocket, extended range (TOS-1A) · for TOS-1A Solntsepek UA	**6 km** thermobaric, max	*316*
MO.1.01.04M2			220 mm thermobaric rocket, heavier warhead (TOS-1A, TOS-2) · for TOS-2 Tosochka	**10 km** thermobaric, max	*316*
Mohajer-6			reconnaissance and strike UAV UA	**200–500 km** control link	**272**
Molniya-1 Molniya-2	Molniya		FPV drone UA	**20–230 km** Molniya-1/2, range	**278**
MON-50		МОН-50	directional fragmentation anti-personnel mine UA	–	*322*
MON-50		МОН-50	hand-laid directional fragmentation anti-personnel mine, command- or victim-fired	**50–85 m** cylinders/balls, casualty zone to fragment flight	**322**
MON-90		МОН-90	directional fragmentation anti-personnel mine UA	–	*323*
MON-90		МОН-90	command- or victim-fired directional fragmentation anti-personnel mine, hand-laid	**80–99 m** lethal fragment flight range	**322**
MON-100			directional fragmentation anti-personnel mine UA	–	*323*
MON-100		МОН-100	hand-laid directional fragmentation mine against personnel and unarmoured vehicles	–	**323**
MON-200			directional fragmentation anti-personnel mine UA	–	*324*
MON-200		МОН-200	command-fired directional fragmentation mine against personnel and unarmoured vehicles	–	**324**
MP-32M1 MP32M1			command post vehicle · part of 9S729M1 Slepok-1 UA	–	*123*
MRO-A	Borodach		72.5 mm disposable thermobaric launcher UA	–	
MRTO	MRTO	МРТО	maintenance vehicle · part of 9K720 Iskander-M	–	*143*
MT-12 2A29, T-12A	Rapira	МТ-12, 2А29	100 mm anti-tank gun UA	–	**134**
MT-12R 2A29R	Ruta		100 mm anti-tank gun · variant of MT-12 Rapira *legacy*	–	*134*
MT-55A			bridgelayer	–	*208*
MT-LB		МТ-ЛБ	tracked armoured transporter UA	**1–4 km** 7.62 mm PKT, eff. to max	**107**
MT-LBM 6MA MT-LBM-6MA, Object 6MA		Объект 6МА	tracked armoured transporter · variant of MT-LB UA	–	*107*
MT-LBM 6MB MT-LBM-6MB, Object 6MB		Объект 6МБ	tracked armoured transporter · variant of MT-LB UA	–	*107*
MT-LBV		МТ-ЛБВ	tracked armoured transporter · variant of MT-LB *legacy* UA	–	*107*
MT-LBVM MT-LBVMK, MT-LB VM1K, MT-LBVM1K		МТ-ЛБВМ, МТ-ЛБВМК	tracked armoured transporter · variant of MT-LB UA	–	*107*
MTK-2 MTK			mine-clearing vehicle UA	–	*215*
MTO-AT			repair vehicle UA	**10.5–14 t** winch / recovery pull	**221**
MTO-UB2 MTO-UB			repair vehicle UA	**10.5–14 t** winch / recovery pull	**221**
MTP-A2.1 MTP-A2			recovery vehicle UA	**10.5–14 t** winch / recovery pull	**221**
MTP-LB		МТП-ЛБ	repair vehicle	**6.5–35 t** winch pull	**220**
MTU-20 Object 602		МТУ-20	bridgelayer UA	–	*208*
MTU-72 Object 632		МТУ-72	bridgelayer UA	**18–40 m** gap bridged	**212**
MTU-90		МТУ-90	bridgelayer	–	*209*
Mugin-5 Mugin-5 Pro	Mugin		Chinese commercial fixed-wing UAV *legacy* UA	–	*267*
MZKT-7930	Astrolog	МЗКТ-7930, Астролог	heavy truck chassis 8x8	–	**158**
N					
Nebo-T	Nebo-T		air surveillance radar	–	**171**
NRTK	Kurier, Omich-2	НРТК, Курьер	remotely driven tracked robots for fire support, resupply and casualty evacuation	**3–10 km** Kurier control range	**264**
NSV NSVT, NSVS	Utyos	НСВ, Утёс	12.7 mm heavy machine gun UA	–	
O					
Object 10	MT-LBu	МТ-ЛБу	tracked armoured transporter · variant of MT-LB UA	–	*107*
OF-843B 53-OF-843B, 3OF843B		53-ОФ-843Б	120 mm HE-fragmentation mortar bomb	**7.1 km** HE, max	*311*
Oreshnik RS-SS-28 MOD	Oreshnik	Орешник	intermediate-range ballistic missile UA	**800–850 km** flown, Dnipro 2024	*319*
Orion	Orion, Inokhodets	Орион, Иноходец	reconnaissance and strike UAV UA	**250–300 km** radius	**272**
Orlan-10		Орлан-10	reconnaissance UAV UA	**50–150 km** Orlan-10 control link	**268**
Orlan-30		Орлан-30	reconnaissance UAV UA	**50–150 km** Orlan-10 control link	**268**

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
OZM-72	Lyagushka, Vedma	ОЗМ-72	bounding fragmentation anti-personnel mine UA	–	*325*
OZM-72	Witch	ОЗМ-72	bounding anti-personnel fragmentation mine, hand-laid, tripwire or command fired	**25 m** lethal radius	324
P					
P-18 1RL131, P-18M	Terek SPOON REST D	П-18 «Терек», 1РЛ131	early warning radar UA	–	172
P-19 1RL134	Dunai FLAT FACE B	П-19 «Дунай», 1РЛ134	air surveillance radar	–	*172*
P-35 P-37, 1RL110, 1RL139	Saturn, Mech BAR LOCK	П-35 «Сатурн»	early warning radar *legacy* UA	–	*172*
P-240 P-240I-4	Pereselenets, Pereselenetz		digital communications vehicle UA	**40 km** comms range, at least	235
P-260-U P-260			signals vehicle · part of Redut-2US UA	–	*239*
P-800 3M55, SS-N-26	Oniks STROBILE	П-800 «Оникс»	anti-ship cruise missile · for 3K55 Bastion UA	**120–600 km** max, by flight profile	*146*
PAK-200 PAK-200M			field kitchen UA	–	*248*
Palantin	Palantin, Palantin-K	«Палантин», «Палантин-К»	communications jammer UA	**20 km** UAV link jamming, HF 3–30 MHz; VHF 30–300 MHz	190
Pantsir-S1M	Pantsir-SM, Pantsir-S1M	Панцирь-СМ	gun-missile air defence system UA	–	158
Pantsir-S2 SA-22	Pantsir-S2 GREYHOUND	Панцирь-С2	gun-missile air defence system UA	–	158
Pantsir-SM-SV	Pantsir-SM-SV	Панцирь-СМ-СВ	gun-missile air defence system	–	158
Pantsir-SMD-E	Pantsir-SMD-E	Панцирь-СМД-Е	short-range SAM system	–	*159*
Parodist	Parodist		radar and communications jammer *trial*	–	*185*
PAZ-32053			bus UA	–	*249*
PDM-1			anti-landing blast mine (tilt-rod fuze) *legacy*	–	*325*
PDM-1 PDM-1M		ПДМ-1, ПДМ-1М	bottom-laid tilt-rod anti-landing mine for shallow water	–	325
PFM-1 PFM-1S	Lepestok	ПФМ-1, ПФМ-1С	scatterable anti-personnel blast mine UA	–	*326*
PFM-1 PFM-1S, 9N212	Lepestok, Petal	ПФМ-1, Лепесток	scatterable anti-personnel blast mine, laid by rocket, minelayer, helicopter or drone	**0.03–34 km** laid by PKM and UMZ up to 9M27K3 rocket, max	326
PKM			man-portable minelaying kit	–	*217*
Plastun-SN	Plastun-SN		light tracked all-terrain vehicle UA	**2–2.5 t** payload, rear unit, 12 persons total	255
Plisa	Plisa		Belarusian tank gunner's sight	–	
PMM-2 PMM-2M		ПММ-2, ПММ-2М	amphibious ferry	**12–85 t** payload	211
PMN PMN-1, PMN-2, PMN-4		ПМН	pressure-operated anti-personnel blast mine UA	–	*326*
PMN PMN-2, PMN-4	Black Widow	ПМН, ПМН-1	pressure-operated anti-personnel blast mine, laid by hand or mechanically	**50–200 g** explosive charge, PMN-4 to PMN	327
PMP PMP-M		ПМП, ПМП-М	heavy folding pontoon bridge UA	–	210
PMR-3			towed minelayer *legacy*	–	*218*
PMZ-4			towed minelayer	–	*218*
POM-2 POM-2S		ПОМ-2	scatterable fragmentation anti-personnel mine UA	–	*327*
POM-2 POM-2S, POM-2R1		ПОМ-2, ПОМ-2Р	scatterable tripwire fragmentation anti-personnel mine	**13.4–70 km** 122 mm and 300 mm mine rockets, max	327
POM-2R		ПОМ-2Р	hand-emplaced fragmentation anti-personnel mine · for POM-2 UA	–	*327*
POM-3	Medalyon		scatterable bounding anti-personnel mine (seismic fuze) UA	–	*328*
POM-3 KPOM-3	Medallion	ПОМ-3, Медальон	scatterable seismic-fuzed bounding anti-personnel mine	**5–15 km** Zemledeliye delivery	328
PP-91		ПП-91	pontoon park *legacy* UA	–	210
PP-91M PP-2005		ПП-91М, ПП-2005	pontoon park UA	–	210
PPS-84		ППС-84	pontoon park *legacy*	–	*211*
Predel-E	Predel-E		coastal defence radar UA	–	*179*
Project 775 Project 775M, Project 775/III	Ropucha ROPUCHA	проект 775, БДК проекта 775	large landing ship (Ropucha class) UA	–	294
Project 1171	Tapir ALLIGATOR	проект 1171, «Тапир»	large landing ship (Tapir class) UA	–	294
Project 1176E Project 1176	ONDATRA	Проект 1176, «Акула»	landing craft for one tank, 20 troops or 50 t of cargo onto an unprepared shore	**611–926 km** range at 10 and 5 kn, 1 tank, 20–22 troops or 50 t, draught 1.55 m	295
Project 1204	Shmel	проект 1204, Шмель	armoured river gunboat	–	*300*
Project 02800		проект 02800	assault landing boat	–	*298*
Project 03160	Raptor	проект 03160, «Раптор»	fast armoured patrol and landing boat	**482–556 km** cruising range, 20 troops, draught 0.9 m	299
Project 11711	Ivan Gren	проект 11711, «Иван Грен»	large landing ship (Ivan Gren class) UA	–	294
Project 11770E Project 11770	Serna	проект 11770, «Серна»	fast air-cavity landing craft carrying a tank or two APCs onto an unprepared beach	**185–1,111 km** range at 30 and 12 kn, 1 MBT/2 APC; 92–100 troops, draught 1.52 m	296
Project 12322 Project 1232.2	Zubr POMORNIK	проект 12322, Зубр	air-cushion landing craft	–	*295*
Project 21820	Dyugon	проект 21820, Дюгонь	air-cavity landing craft	–	*295*
Project 21980	Grachonok	Проект 21980, «Грачонок»	anti-saboteur guard boat for naval bases and their approaches	**370 km** range at 16 kn, draught 1.86 m	298
Prokhod-1	Prokhod-1		remote-controlled mine-clearing system UA	–	214
PRP-3 1Zh3, Object 767	Val SMALL FRED (disputed)	ПРП-3 «Вал»	artillery reconnaissance vehicle UA	–	*176*
PRP-4 1V121, 1V125, Object 779	Nard	ПРП-4 Нард	artillery reconnaissance vehicle UA	–	234
PRP-4A	Argus	ПРП-4А «Аргус»	artillery reconnaissance vehicle UA	**10–20 km** tank, radar detect	234

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
PRP-4M PRP-4MU, 1V145	Deyteriy	ПРП-4М «Дейтерий»	artillery reconnaissance vehicle UA	**10–20 km** tank, radar detect	234
PSNR-5 PSNR-5M, 1RL133	Kredo-M TALL MIKE		ground surveillance radar · part of PRP-4M Deyteriy	–	*234*
PT-76		ПТ-76	light amphibious tank *legacy*	–	*108*
PTM-1 PTM-1S, PTM-1G		ПТМ-1	scatterable anti-tank blast mine UA	–	*329*
PTM-1 PTM-1G, PTM-1S		ПТМ-1, ПТМ-1Г	scatterable anti-vehicle blast mine laid from rockets, helicopters, aircraft or trucks	**24 mines** per 9M27K2 rocket	328
PTM-3 KPTM-3		ПТМ-3	scatterable shaped-charge anti-tank mine (magnetic fuze) UA	–	*329*
PTM-3 KPTM-3		ПТМ-3, КПТМ-3	scatterable antitank mine, magnetic fuze, self-destructing	**2.5–70 km** mine rockets 122, 220, 300 mm: min to max	329
PTM-4	Nokaut-2	ПТМ-4, Нокаут-2	scatterable shaped-charge anti-tank mine (magnetic fuze) UA	–	*330*
PTM-4 PTM-4M, KPTM-4	Nokaut-2	ПТМ-4, Нокаут-2	scatterable anti-tank mine, magnetic fuze	**8–48 h** self-destruct, set time	330
PTS-2 PTS, PTS-M		ПТС-2, ПТС-М	amphibious transporter UA	**12–85 t** payload	211
PTS-3		ПТС-3	amphibious transporter *legacy*	**12–85 t** payload	211
PTS-4		ПТС-4	amphibious transporter	–	211
PU-12 BTR-60PU-12, PU-12M, PU-12M6, PU-12M7		ПУ-12	air defence command post UA	**5–40 km** data link, radio, VHF, HF	234
PZM-2		ПЗМ-2	trench digger UA	**1.1–5 m** digging depth	214
R					
R-142N R-142NM, R-142NMR, R-142NSA	Deimos-N	Р-142Н, Деймос-Н	command and staff vehicle UA	–	236
R-145BM R-145BM1, R-145BMA			command and staff vehicle UA	–	227
R-149AKSh-1			command and staff vehicle UA	**6–450 km** VHF/HF/UHF radio, 1.5–108 MHz; 1.5–1.75 GHz	228
R-149BMR R-149BMRg	Kushetka-B	Р-149БМР, Кушетка-Б	command and staff vehicle UA	**6–450 km** VHF/HF/UHF radio, 1.5–108 MHz; 1.5–1.75 GHz	228
R-149MA3 R-149MA1			command and staff vehicle UA	**6–450 km** VHF/HF/UHF radio, 1.5–108 MHz; 1.5–1.75 GHz	228
R-161 R-161A2, R-161A2M	Poisk	Р-161, Поиск	radio station UA	**75–2,000 km** HF radio, max, 1.5–59.999 MHz	236
R-166 R-166-0.5, R-166S	Artek	Р-166, Артек	radio station UA	–	237
R-168 R-168E	Akveduk	Р-168, Акведук	radio set family UA	–	
R-187 R-187-P1	Azart		radio set family UA	–	
R-325UMV R-325BMV		Р-325УМВ	communications jammer · part of RB-301B Borisoglebsk-2 UA	–	*188*
R-330	Mandat	Р-330 «Мандат»	communications jammer complex *legacy*	–	
R-330B	Mandat-B	Р-330Б «Мандат-Б»	communications jammer *legacy*	–	191
R-330BMV		Р-330БМВ	communications jammer UA	–	191
R-330KMA		Р-330КМА	EW command post · part of R-330M1P Diabazol	–	*191*
R-330KMV		Р-330КМВ	EW command post · part of RB-301B Borisoglebsk-2	–	*188*
R-330M1P	Diabazol	Р-330М1П «Диабазол»	communications jammer complex UA	**20–30 km** ground terminal jamming, 0.1–2.0 GHz	191
R-330T		Р-330Т	communications jammer *export*	–	191
R-330Zh	Zhitel	Р-330Ж «Житель»	GNSS and cellular jammer UA	–	192
R-340RP Pole-21M, Pole-21E	Pole-21	Р-340РП «Поле-21»	GNSS jammer UA	**25–80 km** GNSS jamming, 1.176–1.602 GHz	200
R-378A R-378B		Р-378А(Б)	communications jammer · part of R-330 Mandat *legacy* UA	–	
R-378BMV		Р-378БМВ	communications jammer · part of RB-301B Borisoglebsk-2	–	*188*
R-378UM			communications jammer · part of R-330M1P Diabazol	–	*191*
R-381T R-381TM, R-381T2M	Taran, Taran-M	Р-381Т, «Таран»	SIGINT system UA	**40–100 km** ground/air radio, detect, 1.5–1,000 MHz	194
R-410-7.5			tropospheric scatter station UA	**150 km** R-412A link, at least, 4438–4555, 4630–4749.98 MHz	237
R-412A R-412AM	Torf, Rezoner	Р-412АМ, Резонер	tropospheric scatter station UA	**150 km** R-412A link, at least, 4438–4555, 4630–4749.98 MHz	237
R-416GM			radio relay station UA	–	238
R-417 R-417S	Baget		tropospheric scatter station UA	**150 km** R-412A link, at least, 4438–4555, 4630–4749.98 MHz	237
R-431AM			radio relay antenna module · part of Redut-2US UA	–	*239*
R-438			satellite communications terminal	–	
R-439 R-439-P, R-439-BK, R-439-KUL	Legenda-2	Р-439, Легенда-2	satellite communications terminal UA	–	238
R-934B	Sinitsa	Р-934Б «Синица»	communications jammer UA	–	191
R-934BMV		Р-934БМВ	communications jammer UA	–	191
R-934UM	Sinitsa		communications jammer UA	–	191
RB-105B	Less		SIGINT system	–	*195*
RB-108S			EW command post	–	*195*
RB-109A	Bylina	РБ-109А «Былина»	EW command post UA	**800 km** radio emitters, detect	196
RB-301B	Borisoglebsk-2	РБ-301Б «Борисоглебск-2»	communications jammer complex UA	**30 km** radio emitters, detect, HF, VHF, UHF	188
RB-341V	Leer-3	РБ-341В «Леер-3»	cellular jammer UA	**6 km** GSM jamming, around UAV, GSM 900 and GSM 1800	190
RB-531B	Infauna	РБ-531Б «Инфауна»	counter-IED jammer UA	**3 km** jamming, target not stated, 20–2,020 MHz	199
RB-636AM2 RB-636	Svet-KU	РБ636 «Свет-КУ»	SIGINT system UA	**30 km** emitters, detect, 30–18,000 MHz	197
RB-636 Svet-VSG	Svet-VSG		SIGINT system · part of RB-636AM2 Svet-KU	–	*197*
REBovets Valley	REBovets Valley		UAV jammer *trial*	–	*200*

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
Redut-2US			signal and communications system UA	**30–55 km** relay and wireless access	239
REM-KL			recovery vehicle UA	**10.5–14 t** winch / recovery pull	221
Repellent-1	Repellent-1	Репеллент-1	UAV jammer UA	**10–35 km** UAV/GNSS link jamming, 200 MHz–6 GHz	200
Repeynik	Repeynik		portable counter-UAS radar UA	–	
Rezonans-N	Rezonans-N, Resonans-N, Rezonans-NE		early warning radar	–	*173*
RKhM-4		РХМ-4	CBRN reconnaissance vehicle UA	**3–6 km** chemical agent, detect	222
RKhM-6	Povozka	РХМ-6	CBRN reconnaissance vehicle UA	**3–6 km** chemical agent, detect	222
RKhM-8		РХМ-8	CBRN reconnaissance vehicle	**3–6 km** chemical agent, detect	222
RKhM-9		РХМ-9	CBRN reconnaissance vehicle	**3–6 km** chemical agent, detect	222
RLM-D		РЛМ-Д	UHF radar module · part of 55Zh6M Nebo-M UA	–	*170*
RLM-M		РЛМ-М	VHF radar module · part of 55Zh6M Nebo-M UA	–	*170*
RLM-S		РЛМ-С	S-band radar module · part of 55Zh6M Nebo-M UA	–	*170*
RM-G			armoured recovery vehicle	**6.5–35 t** winch pull	220
RP-377L RP-377LA	Lorandit, Lorandit-M		communications jammer UA	–	*192*
RP-377UVM1 RP-377UVM2, RP-377UM2	Lesochek		counter-IED jammer UA	–	199
RPG-7 RPG-7V, RPG-7V2, 6G3		РПГ-7	anti-tank rocket launcher UA	–	
RPG-22	Netto	РПГ-22, Нетто	72.5 mm disposable anti-tank launcher *legacy* UA	–	
RPG-26	Aglen	РПГ-26, Аглень	disposable anti-tank rocket launcher UA	–	
RPG-27	Tavolga	Таволга	105 mm disposable anti-tank launcher UA	–	
RPG-28	Klyukva	РПГ-28, Клюква	125 mm disposable anti-tank launcher UA	–	
RPG-29 TKB-0175	Vampir	РПГ-29 «Вампир», ТКБ-0175	105 mm anti-tank rocket launcher	–	
RPG-30	Kryuk	РПГ-30, Крюк	105 mm disposable anti-tank launcher	–	
RPG-32	Barkas, Hashim, Nashshab	РПГ-32	105 mm reusable anti-tank launcher	–	
RPMK-1 1B44, 1B44-1	Ulybka, Ulibka-M		meteorological station UA	–	*179*
RPO-A RPO-M, RPO	Shmel	РПО-А «Шмель»	thermobaric rocket launcher UA	–	
Rys	Rys, Iveco LMV	Рысь	armoured utility vehicle UA	–	*111*
S					
S-60 AZP-57		С-60, АЗП-57	57 mm anti-aircraft gun UA	**4–6 km** engagement	159
S-300PM S-300PM1, S-300PM2, S-300PMU1, S-300PMU2, SA-20	S-300PM, Favorit GARGOYLE	С-300ПМ, С-300ПМУ1	long-range SAM system UA	**3–200 km** engagement	153
S-300PS 75R6, S-300PMU, SA-10	S-300PS GRUMBLE	С-300ПС, 75Р6	long-range SAM system *legacy* UA	**3–200 km** engagement	153
S-300V 9K81, SA-12A, SA-12B	S-300V, Antey-300 GLADIATOR, GIANT	С-300В, 9К81	long-range SAM system UA	**6–400 km** engagement	154
S-300V4 S-300VMD, SA-23	S-300V4	С-300В4	long-range SAM system UA	**6–400 km** engagement	154
S-350 50R6A	S-350, Vityaz	С-350 «Витязь», 50Р6А	medium-range SAM system UA	–	154
S-400 40R6, SA-21	S-400, Triumf GROWLER	С-400 «Триумф», 40Р6	long-range SAM system UA	**40–400 km** engagement	155
S-500 55R6M	S-500, Prometey, Triumfator-M	С-500 «Прометей», 55Р6М	long-range SAM and missile defence system *trial* UA	–	*156*
SA-14RM/SM			encryption command post UA	–	*239*
Saniya	Saniya, Sania	«Сания»	UAV jammer UA	**0.6–5 km** UAV link jamming, 300 MHz–6 GHz	202
Sapfir	Sapfir		UAV jammer UA	**0.6–5 km** UAV link jamming, 300 MHz–6 GHz	202
Sarmat-2 Sarmat-3, LSTC-1944	Sarmat, STS Sarmat		armoured utility vehicle UA	–	109
SBA-60K2	Bulat	«Булат»	armoured personnel carrier	–	*111*
SBR-5M	Fara-VR		portable battlefield surveillance radar UA	–	
SERP-VS6D	Serp	СЕРП-ВС6Д	UAV jammer UA	**1–5 km** UAV link jamming	198
Shahed-107	Shahed 107		Iranian one-way attack drone UA	**300–1,500 km** Shahed-107, range	278
Shipovnik-Aero	Shipovnik-Aero	«Шиповник-АЭРО»	UAV jammer UA	**10–15 km** UAV link, detect, 25–2,500 MHz	196
Silok-01	Silok	«Силок-01»	UAV jammer UA	**1–5 km** UAV link jamming	198
SNAR-10 1RL232, IRL-127-1	Leopard BIG FRED	СНАР-10 «Леопард», 1РЛ232 «Леопард»	battlefield surveillance radar UA	**10–40 km** vehicles, detect, K band 34.55–35.25 GHz	176
SNAR-10M SNAR-10M1, 1RL232-1M	Pantera	СНАР-10М, 1РЛ232-1М «Пантера»	battlefield surveillance radar UA	**10–40 km** vehicles, detect, K band 34.55–35.25 GHz	176
Sopka-2 12A6	Sopka-2		air surveillance radar	–	*173*
Sosna	Sosna, Sosna-R	«Сосна»	short-range SAM system *trial* UA	**10 km** engagement	159
Sosna-U	Sosna-U	Сосна-У	Belarusian multichannel tank gunner's sight	–	
Soyuz-TM	Soyuz-TM		Belarusian multichannel gunner's sight	–	
Sozvezdie	Sozvezdie		tactical command and control system *legacy*	–	*240*
SPG-9 SPG-9M, SPG-9D	Kopye	СПГ-9, Копьё	73 mm recoilless gun UA	–	
SPN-4 SPN-4M, 1RL248-4	HEART ACHE		radar jammer	–	*185*
SS-X-31 RS-SS-28	Oreshnik, Kedr	Орешник	road-mobile intermediate-range ballistic missile, multiple reentry vehicles, dual-capable	**3,500–5,470 km** Oreshnik, est. max; 800 km flown	149
Strizh-3	Strizh-3		UAV jammer UA	**1–5 km** UAV link jamming	198

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
Stupor	Stupor		UAV jammer UA	**1–3.5 km** UAV link jamming, 433–5,875 MHz	201
Supercam S350			reconnaissance UAV UA	**100 km** control link	269
Syuzhet-MF	Syuzhet-MF		meteorological station *trial*	–	*179*
T					
T-12 2A19		T-12, 2A19	100 mm anti-tank gun *stored*	**1.85–8.2 km** APFSDS to HE-frag	134
T-14 Object 148	Armata	T-14, Объект 148	main battle tank · variant of Armata *trial*	–	*93*
T-15	Armata	T-15	infantry fighting vehicle · variant of Armata *trial*	–	*93*
T-54 Object 137		T-54, Объект 137	main battle tank *legacy* UA	**1.5–5.5 km** APDS to Bastion ATGM	94
T-54-T			armoured recovery vehicle *legacy*	–	*117*
T-55		T-55	main battle tank *stored* UA	**1.5–5.5 km** APDS to Bastion ATGM	94
T-55A		T-55A	main battle tank · variant of T-55 *stored* UA	–	*94*
T-55AM T-55AMV		T-55AM, T-55AMB	main battle tank · variant of T-55 *legacy*	–	*94*
T-62 Object 166		T-62, Объект 166	main battle tank *legacy* UA	**1.8–5.5 km** APFSDS to 9M117 ATGM	95
T-62M		T-62M	main battle tank · variant of T-62 UA	–	*95*
T-62MV		T-62MB	main battle tank · variant of T-62 UA	–	*95*
T-64A Object 434		T-64A, Объект 434	main battle tank UA	**2–4 km** APFSDS to Kobra ATGM	95
T-64B Object 447, T-64BV		T-64Б, Объект 447	main battle tank UA	**2–4 km** APFSDS to Kobra ATGM	95
T-64BV			main battle tank · variant of T-64B UA	–	*95*
T-64BVK			armoured command vehicle · variant of T-64B *legacy* UA	–	*95*
T-72 T-72 Ural, Object 172M	Ural	T-72, T-72 «Урал»	main battle tank UA	**2–5 km** APFSDS to Refleks ATGM	96
T-72A		T-72A	main battle tank UA	**2–5 km** APFSDS to Refleks ATGM	96
T-72AV		T-72AB	main battle tank · variant of T-72A UA	–	*96*
T-72B Object 184		T-72Б, Объект 184	main battle tank UA	**2–5 km** APFSDS to Refleks ATGM	96
T-72B1 T-72B1K		T-72Б1, T-72Б1K	main battle tank · variant of T-72B UA	–	*96*
T-72B3		T-72Б3	main battle tank UA	**2–5 km** APFSDS to Refleks ATGM	96
T-72B3A			main battle tank · variant of T-72B3 *legacy* UA	–	*96*
T-72B3M		T-72Б3M	main battle tank UA	**2–5 km** APFSDS to Refleks ATGM	96
T-72BA		T-72БA	main battle tank UA	**2–5 km** APFSDS to Refleks ATGM	96
T-72BM		T-72БM	main battle tank *legacy* UA	**2–5 km** APFSDS to Refleks ATGM	96
T-72M1 T-72M		T-72M1, T-72M	main battle tank · variant of T-72 Ural *legacy*	–	*96*
T-80B Object 219R		T-80Б, Объект 219P	main battle tank *stored* UA	**2–5 km** APFSDS to Refleks ATGM	97
T-80BV		T-80БВ	main battle tank · variant of T-80B UA	–	*97*
T-80BVK		T-80БВК	armoured command vehicle · variant of T-80BV *legacy* UA	–	*97*
T-80BVM		T-80БВМ	main battle tank · variant of T-80BV UA	–	*97*
T-80U Object 219AS		T-80У, Объект 219AC	main battle tank UA	**2–5 km** APFSDS to Refleks ATGM	97
T-80UE-1		T-80УЕ-1	main battle tank · variant of T-80U *legacy* UA	–	*97*
T-80UK		T-80УК	armoured command vehicle · variant of T-80U *legacy* UA	–	*97*
T-80UM2		T-80УМ2	main battle tank · variant of T-80U *legacy* UA	–	*97*
T-90 Object 188		T-90, Объект 188	main battle tank UA	**2–5 km** APFSDS to Refleks ATGM	98
T-90A		T-90A	main battle tank · variant of T-90 UA	–	*98*
T-90AK		T-90AK	armoured command vehicle · variant of T-90A UA	–	*98*
T-90M Proryv-3	Proryv-3	T-90M, Прорыв-3	main battle tank · variant of T-90A UA	–	*98*
T-90S T-90SK		T-90C, T-90СК	main battle tank · variant of T-90 UA	–	*98*
Tachyon	Tachyon, Takhion	Тахион	reconnaissance UAV UA	**40 km** radius	269
TBS-M3		ТБС-М3	220 mm thermobaric rocket, long range (TOS-2) · for TOS-2 Tosochka UA	**15 km** thermobaric, max, claimed	*316*
TDA-2K TDA-2M		ТДА-2К, ТДА-2М	smoke generator vehicle UA	**over 1 km** smokescreen length	223
TDA-3			smoke generator vehicle UA	**over 1 km** smokescreen length	223
TDM-2K			smoke generator vehicle UA	**over 1 km** smokescreen length	223
Tetrazdr	Tetrazdr		UAV jammer *trial*	–	*201*
Tirada-2S Tirada-2.3, RB-371A	Tirada-2	«Тирада-2С», «Тирада 2.3»	satellite communications jammer UA	–	186
TM-46		TM-46	anti-tank blast mine *legacy*	–	*330*
TM-46 TMN-46		TM-46, ТМН-46	anti-tank blast mine, hand- or machine-laid	–	331
TM-57		TM-57	anti-tank blast mine *legacy*	–	*331*
TM-57		TM-57	anti-tank blast mine, pressure or tilt-rod fuze	**6.5–7 kg** explosive charge (TNT, or MS/TGA fill)	331
TM-62 TM-62M		TM-62	anti-tank blast mine UA	–	*332*
TM-62 TM-62M, TM-62P		TM-62, TM-62M	anti-tank blast mine family	–	332
TM-83		TM-83	side-attack anti-tank mine (explosively formed penetrator)	–	*333*
TM-83		TM-83	side-attack anti-tank mine	**5–50 m** EFP, distance to target	332
TMM-3 TMM		TMM-3	truck-mounted bridgelayer UA	**18–40 m** gap bridged	212
TMM-6		TMM-6	8x8 heavy bridgelayer UA	–	212
TMM-7		TMM-7	bridgelayer on KamAZ-6350 8x8 truck UA	**16 m** span per truck; 64 m per set	212
TMS-65 TMS-65M, TMS-65U		TMC-65	decontamination vehicle	**10–40 vehicles/h** decon throughput	222
Tobol	Tobol	«Тобол»	satellite communications jammer UA	–	186
Torn	Torn, Torn-MDM		SIGINT system UA	**30–70 km** VHF/HF emitters, detect, 1.5 MHz–3 GHz	197
Toros	Toros		armoured utility vehicle	–	109

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	PAGE
TOS-1 Object 634	Buratino	ТОС-1 «Буратино»	220 mm heavy flamethrower system *legacy* UA	–	125
TOS-1A Object 634B	Solntsepek	ТОС-1А «Солнцепёк»	220 mm heavy flamethrower system UA	–	125
TOS-2	Tosochka	ТОС-2 «Тосочка»	220 mm heavy flamethrower system UA	–	125
TOS-3	Drakon	ТОС-3 «Дракон»	heavy flamethrower system, tracked *trial* UA	–	125
TS-3132	Gusar		armoured utility vehicle UA	–	109
Tu-134	CRUSTY	Ту-134	passenger and liaison jet of the VKS and naval aviation	–	*257*
Tu-134UBL Tu-134A-4	CRUSTY	Ту-134УБЛ, Ту-134А-4	bomber-crew trainer variant of the Tu-134	–	*257*
Tu-154	CARELESS	Ту-154	three-engine passenger and staff jet of the VKS	–	*241*
Tu-154M	CARELESS	Ту-154М	upgraded Tu-154 passenger jet of naval aviation	–	*258*
Tu-214ON		Ту-214ОН	former Open Skies observation aircraft	–	*260*
Tu-214PU-SBUS		Ту-214ПУ-СБУС	airborne command post aircraft	–	*242*
Tu-214SR		Ту-214СР	communications relay aircraft	–	*259*
TZ-74			decontamination and smoke vehicle *legacy*	**10–40 vehicles/h** decon throughput	222
TZM-T		ТЗМ-Т	rocket transloader · part of TOS-1A Solntsepek UA	–	*125*
U					
UAZ-452	Bukhanka	УАЗ-452, Буханка	utility van UA	**600–1,075 kg** payload, 6 passengers and 100 kg	249
UAZ-469 UAZ-3151	Kozlik	УАЗ-469	utility vehicle UA	**600–1,075 kg** payload, 6 passengers and 100 kg	249
UAZ-469RKh UAZ-469RKhB			CBRN reconnaissance and decontamination vehicle UA	–	222
UAZ-39094	Fermer		utility pickup UA	**600–1,075 kg** payload, 6 passengers and 100 kg	249
UMPB D-30SN			jet-powered guided glide bomb UA	**80–95 km** max, estimate	*320*
UMPK		УМПК	glide and guidance kit for unguided bombs UA	**40–70 km** glide range, by bomb	*320*
UMPK D-30SN, UMPK-5R		УМПК, Д-30СН	glide kit and glide bomb	–	321
UMZ		УМЗ	truck-mounted minelayer UA	**0.15–1.5 km** minefield length	218
UMZ-G UMZ-K, UMZ-T	Kleshch-G, Klesch-G		universal tracked remote minelayer *trial*	–	*219*
UR-67		УР-67	mine-clearing line charge *legacy* UA	–	*215*
UR-77 Object 256, M1979	Meteorit	УР-77	mine-clearing line charge vehicle UA	–	216
UR-83P		УР-83П	portable mine-clearing line charge	–	*216*
Ural-375D Ural-375		Урал-375Д	cargo truck 6x6 *legacy* UA	–	*249*
Ural-4320 Ural-43203		Урал-4320	cargo truck 6x6 UA	–	*250*
Ural-4320-7810	Motovoz-M		cargo truck UA	–	*250*
Ural-6370 Ural-6370-0121-30			cargo truck 6x6 UA	**9–16 t** payload	251
Ural-43206		Урал-43206	cargo truck 4x4 UA	–	*252*
Ural-63095	Typhoon-U	Урал-63095, Тайфун-У	mine-resistant ambush-protected vehicle	**2 t** payload, Typhoon-K 4x4, 6–16 troops	113
Ural-63706-0122 Ural-63706-0011	Tornado-U		cargo truck 6x6 UA	**9–16 t** payload	251
Ural-432009	Ural-VV	Урал-432009, Урал-ВВ	armoured truck UA	–	*114*
Ural-532301			cargo truck with armoured cab UA	**9–16 t** payload	251
Ural-542301			tank transporter UA	**50–100 t** semi-trailer gross mass	254
Uran-6		Уран-6	remote-controlled mine-clearing robot UA	**0.3–1 km** radio control range	216
V					
Vesna-K	Vesna-K		Belarusian multichannel gunner's sight	–	
Volna Kupol Garant	Volna Kupol Garant		satellite communications jammer UA	–	*187*
Volnorez	Volnorez	«Волнорез»	UAV jammer UA	**0.6–5 km** UAV link jamming, 300 MHz–6 GHz	202
VPK-7829 K-16, K-17	Bumerang, Boomerang	Бумеранг	armoured personnel carrier *trial*	–	*114*
VPK-233136 SBM	Tigr SBM	ВПК-233136	armoured car · variant of GAZ-233014 Tigr UA	–	*112*
VSM-1		ВСМ-1	helicopter remote mining system	–	*219*
VT-72A			armoured recovery vehicle	**6.5–35 t** winch pull	220
Y					
Yak-40	CODLING	Як-40	three-engine regional passenger jet, Border Guard	–	*258*
Yak-52		Як-52	piston trainer, ad hoc counter-drone aircraft *legacy*	–	*280*
Yak-52B2		Як-52Б2	armed counter-drone conversion of the Yak-52 *trial*	–	*280*
Z					
Z-STS	Akhmat, Remdiesel Z-STS Akhmat		armoured utility vehicle UA	–	109
ZALA 421-16 Z-16			reconnaissance UAV UA	–	270
Zaslon-REB	Zaslon-REB		cellular jammer	–	*193*
Zastava	Zastava	Застава	reconnaissance UAV UA	**10 km** radius	270
Zavarukha	Zavarukha		portable acoustic reconnaissance system UA	–	*177*
ZFB-05	Tiger, Xinxing		Chinese 4x4 armoured personnel carrier UA	**1.1 t** payload, 7–9 troops	118
ZIL-131		ЗИЛ-131	cargo truck 6x6 *legacy* UA	**3.5–9 t** payload, 16–24 seats in body	252
ZIL-157		ЗИЛ-157	cargo truck 6x6 *legacy*	–	*253*
ZSU-23-4 2A6	Shilka	ЗСУ-23-4, 2А6	23 mm self-propelled anti-aircraft gun *stored* UA	–	162
ZU-23-2 ZU-23, 2A13		ЗУ-23, ЗУ-23-2	23 mm anti-aircraft gun UA	**1.7–2.5 km** engagement	163

Table 1b. Other names and designations

Names, NATO names and codes (in BLUE CAPITALS), and other designations, each pointing (→) to its row in Table 1. Page numbers as in Table 1. English translations of Russian names are in italics.

NAME OR DESIGNATION	PAGE
0–9	
1B44 → RPMK-1	*179*
1B44-1 → RPMK-1	*179*
1B75E → 1B75	**174**
1L13 → 1L13-3	**170**
1RL110 → P-35	*172*
1RL131 → P-18	**172**
1RL133 → PSNR-5	*234*
1RL133-3 → Kredo-1E	
1RL134 → P-19	*172*
1RL138 → 1RL144M	**162**
1RL139 → P-35	*172*
1RL144 → 1RL144M	**162**
1RL144M1 → 1RL144M	**162**
1RL232 → SNAR-10	**176**
1RL232-1M → SNAR-10M	**176**
1RL248-4 → SPN-4	*185*
1V13M → 1V13	**230**
1V15 → 1V14	**230**
1V15M → 1V14	**230**
1V16 → 1V14	**230**
1V19 → 1V18	**231**
1V121 → PRP-4	**234**
1V125 → PRP-4	**234**
1V126M → 1V126	*121*
1V145 → PRP-4M	**234**
1V152 → 1V126	*121*
1V152M → 1V126	*121*
1V153 → 1V126	*121*
1V153M → 1V126	*121*
1V168 → ASUNO-S	*232*
1Zh3 → PRP-3	*176*
2A6 → ZSU-23-4	**162**
2A13 → ZU-23-2	**163**
2A18 → D-30	**137**
2A18M → D-30	**137**
2A19 → T-12	**134**
2A29 → MT-12	**134**
2A29R → MT-12R	*134*
2A45MR → 2A45M	*134*
2B5 → BM-21	**122**
2B9M → 2B9	**135**
2B17 → BM-21-1	**122**
2B17-1 → BM-21-1	**122**
2F77M → 2F77	*162*
2K22M → 2K22	**162**
2K22M1 → 2K22	**162**
2K25 → 3OF39	*309*
2K25M → 3OF39M	*309*
2S1M → 2S34	**131**
2S3M1 → 2S3M	*127*
2S3M2 → 2S3M	*127*
2S6M → 2S6	**162**
2S6M1 → 2S6	**162**
2S9-1 → 2S9	**129**
2S12A → 2S12	**130**
2S33 → 2S19M2	**130**
3BK19 → 3OF49	**311**
3F2 → 3VF2	**312**
3F5 → 1K113	*128*
3M14K → 3M14	*317*
3M14T → 3M14	*317*
3M16 → 9M22	**315**
3M55 → P-800	*146*
3-0-8 → 308	*312*
3-0-13 → 3013	*312*
3013 → 3OF45	**312**
3-0-23 → 3023	*312*
3023 → 3OF45	**312**
3OF24 → 3BK13	**311**
3OF43 → 3VOF34	**312**
3OF45-1 → 3OF45	*312*
3OF50 → 3OF49	**311**
3OF56 → 3BK13	**311**
3OF69 → 3VOF112	**313**
3OF69M → 3VOF112	**313**
3OF75 → 3OF38	**314**
3OF843B → OF-843B	*311*
3OF843B → 53-OF-843B	**311**
3UBK10 → 9K116	*306*
3VBK14 → 3BK19	*311*
3VF2 → 3F2	*312*
3VF4 → 1K113	*128*
3VO11 → 308	*312*
3VO11 → 3VF2	**312**
3VO13 → 3013	*312*
3VO14 → 3013	*312*
3VO28 → 3023	*312*
3VO29 → 3023	*312*
3VO30 → 3023	*312*
3VOF32 → 3OF25	*312*
3VOF33 → 3OF25	*312*
3VOF34 → 3OF43	*312*
3VOF35 → 3OF44	*312*
3VOF35 → 3VOF34	**312**
3VOF39 → 3OF29	*312*
3VOF40 → 3OF29	*312*
3VOF42 → 3OF43	*312*
3VOF54 → 3OF49	*311*
3VOF54-1 → 3OF49	*311*
3VOF55 → 3OF50	*311*
3VOF55-1 → 3OF50	*311*
3VOF58 → 3OF45	*312*
3VOF63 → 3OF38	*309*
3VOF64 → 3OF39	*309*
3VOF64M → 3OF39M	*309*
3VOF66 → 3OF38	*309*
3VOF72 → 3OF45	*312*
3VOF73 → 3OF45	*312*
3VOF86 → 3OF59	*312*
3VOF87 → 3OF59	*312*
3VOF91 → 3OF61	*312*
3VOF93 → 3OF39	*309*
3VOF96 → 3OF64	*312*
3VOF97 → 3OF64	*312*
3VOF98 → 3OF64	*312*
3VOF112 → 3OF69	*309*
3VRB36 → 3RB30	*310*
3VRB37 → 3RB30	*310*
3VRB38 → 3RB30	*310*
5P85D → 5P85SD	*153*
5P85S → 5P85SD	*153*
5P85SM → 5P85SD	*153*
5V55K → 5V55R	*153*
5V55RM → 5V55R	*153*
6G3 → RPG-7	
6P49 → 6P50	
6P57 → 6P50	
6P58 → 6P50	
6P59 → 6P50	
8K14 → 9K72	*140*
9A33BM3 → 9A33B	*160*
9A38 → 9A310	*152*
9A39M1 → 9A39	*152*
9A53-S → 9A54	**123**
9A83-1 → 9A83	*154*
9A83M2 → 9A83	*154*
9A85-2 → 9A85	*154*
9A310M1 → 9A310	*152*
9A331-1 → 9A331	**161**
9A331M2 → 9A331M	**161**
9-A-2362 → Kh-22	**147**
9-A-7660 → Kh-47M2	**147**
9K32M → 9K32	*164*
9K33M2 → 9K33	**160**
9K33M3 → 9K33	**160**
9K35M3 → 9K35	**160**
9K37M1 → 9K37	**152**
9K79-1 → 9K79	**141**
9K81 → S-300V	**154**
9K111-1M → 9K111-1	**305**
9K111M → 9K111	**305**
9K113 → 9K111-1	**305**
9K116-1 → 9K116	*306*
9K116-2 → 9K116	*306*
9K116-3 → 9K116	*306*
9K119M → 9K119	**306**
9K120 → 9K119	**306**
9K121 → 9A4172	*304*
9K121M → 9A4172	**321**
9K123-1 → 9K123	**116**
9K128-1 → 9P162	**115**
9K129 → 9K135	**307**
9K331M → 9K331	**161**
9K510 → 9P132	*122*
9M14 → 9K11	*304*
9M22M → 9M22	**315**
9M22U-1 → 9M22U	*315*
9M27D → 9M27	**315**
9M27F → 9M27	**315**
9M33M → 9M33	**160**
9M33M2 → 9M33	**160**
9M33M3 → 9M33	**160**
9M37M → 9M37	**160**
9M37MD → 9M37	**160**
9M55F → 9M55	**316**
9M55K → 9M55	**316**
9M79-1 → 9M79	*141*
9M82M → 9M82	*154*
9M82MD → 9M82	*154*
9M83M → 9M83	*154*
9M96E → 9M96	*155*
9M96E2 → 9M96	*155*
9M96M → 9M96	*155*
9M111-2 → 9M111	*305*
9M111M → 9M111	*305*
9M112 → 9K112	*305*
9M117M → 9M117	*306*
9M117M1 → 9M117	*306*
9M119M → 9M119	*306*
9M119M1 → 9M119	*306*
9M123F → 9M123	*116*
9M131M → 9M131	*308*
9M133F-1 → 9M133	*307*
9M311-1M → 9M311	**162**
9M330-2 → 9M330	**161**
9M338K → 9M338	**161**
9M541 → 9M218	*315*
9M723K1 → 9M723	**143**
9N212 → PFM-1	**326**
9P78 → 9P78-1	**143**
9P129-1M → 9P129	*141*
9P135 → 9K111	**305**
9P135M → 9K111-1	**305**
9P149M → 9K132	*115*
9P151 → 9K115	**308**
9P157 → 9P157-2	*116*
9P163-2 → 9P163M-2	*307*
9P163M-1 → 9K135	**307**
9S15 → 9S15M	*154*
9S15MT2E → 9S15M	*154*
9S18M1 → 9S18	*152*
9S18M1-1 → 9S18	*152*
9S18M1-2 → 9S18	*152*
9S18M1-3 → 9S18	*152*
9S19 → 9S19M2	*154*
9S32M1 → 9S32	*154*
9S36M → 9S36	*152*
9S52M → 9S52	**233**
9S52M1 → 9S52	**233**
9S80-1 → 9S80	*160*
9S470M1 → 9S470	*152*
9S470M1-2 → 9S470	*152*
9S482 → PU-12	**234**
9S482M6 → PU-12	**234**
9S482MU → PU-12	**234**
9S510M → 9S510	*152*
9S932-2 → 9S932-1	**233**
9-S-7760 → Kh-47M2	**147**
9T128-1 → 9T218	*141*
9T217B → 9T217	*160*
9T250E → 9T250	*143*
12A6 → Sopka-2	*173*
30N6 → 5N63S	*153*
39N6E → 39N6	**169**
40N6E → 40N6	*155*
40R6 → S-400	**155**
48N6DM → 48N6	*155*
48N6E → 48N6	*155*
48N6E2 → 48N6	*155*
48N6E3 → 48N6	*155*
50K6E → 50K6A	**154**
50N6E → 50N6A	**154**
50P6E → 50P6A	**154**
50R6A → S-350	**154**
52-M-853 → M-160	*138*
53-OF-843B → OF-843B	*311*
55K6A → 55K6	*155*
55R6M → S-500	*156*
55Zh6ME → 55Zh6M	**170**
57E6-E → 57E6	*158*
57E6M → 57E6	*158*
59N6-E → 59N6	*168*
64N6E → 64N6	*153*
67N6E → 67N6	
75R6 → S-300PS	**153**
91N6E → 91N6A	*155*
92N6E → 92N6A	*155*
96L6E → 96L6	**168**
96L6-TsP → 96L6	**168**
A	
Aglen → RPG-26	
Agriculture (English) → ISDM	**217**
Air 2S → Mavic 3	**265**
Aistenok → 1L271	**174**
Aistyonok → 1L271	**174**
Akatsiya → 2S3	**127**
Akatsiya → 2S3M	*127*
Akhmat → Z-STS	**109**
Akveduk → R-168	
Albatros → L-39	*262*
Aleut → GAZ-3344-20	**255**
ALLIGATOR → Project 1171	**294**
Alligator → Ka-52	**284**
Altaets-AM → Altaets	*191*
Altair → Be-200ES	*261*
Altayets → Altaets	*191*
An-148 → An-148-100E	*241*
Ansat → Ansat-U	*291*
Antey-300 → S-300V	**154**
Argus → PRP-4A	**234**
ARK-1 → 1RL239	**175**
ARK-1M → 1RL239	**175**
Arkan → 9M117	*306*
Armata → T-14	*93*
Armata → T-15	*93*
ARS-14KM → ARS-14	**222**
Artek → R-166	**237**
AS-4 → Kh-22	*317*
AS-13 → Kh-59	*318*
AS-15 → Kh-55	*318*
AS-15 → Kh-101	**148**

NAME OR DESIGNATION	PAGE
AS-15B → Kh-101	148
AS-18 → Kh-59	318
AS-22 → Kh-101	148
AS-23A → Kh-101	319
AS-23B → Kh-101	148
AS-24 → Kh-47M2	318
AS-F1800 → AeroScope	281
Astrolog → MZKT-7930	158
AT-3 → 9K11	304
AT-4 → 9K111	305
AT-4 → 9M111	305
AT-5 → 9K111-1	305
AT-5 → 9M113	305
AT-5B → 9M113M	305
AT-6 → 9K114	115
AT-6 → 9M114	115
AT-7 → 9K115	308
AT-7 → 9M115	308
AT-8 → 9K112	305
AT-9 → 9K132	115
AT-9 → 9M120	115
AT-10 → 9M117	306
AT-11 → 9K119	306
AT-11 → 9M119	306
AT-11B → 9M119	306
AT-11C → 9M119	306
AT-12 → 9K116	306
AT-13 → 9K115-1	308
AT-13 → 9K115-2	308
AT-13 → 9M131	308
AT-14 → 9K135	307
AT-14 → 9M133	307
AT-15 → 9K123	116
AT-15 → 9M123	116
AT-16 → 9A4172	304
Ataka → 9M120	115
Ataka-1 → 9M120-1	115
Autel EVO → EVO	265
Avtobaza-M → 1L222	194
Azart → R-187	
AZP-57 → S-60	159
B	
Baget → R-417	237
Bal → 3K60	145
Bal-E → 3K60	145
Balkan → AGS-40	
BAR LOCK → P-35	172
Barkas → RPG-32	
Barnaul-T → 9S932-1	233
Bastion → 3K55	146
Bastion → 9K116	306
Bastion → 9M117	306
Bastion-P → 3K55	146
Basurmanin → BMP-1AM	101
BAZ-69092 → BAZ-6909	244
Be-200ChS → Be-200ES	261
Be-200PS → Be-200ES	261
Beetle (English) → IRM	206
Beglianka → BREM-L	220
Beglyanka → BREM-L	220
Berezhok → BMP-2M	102
BIG BIRD → 64N6	153
BIG FRED → SNAR-10	176
BILL BOARD → 9S15M	154
BK-10 → BK-16	297
BK-16E → BK-16	297
Black Widow → PMN	327
BM-21b → 9K55	122
BM-21b → 9P138	122
BM-21P → 9P132	122
BM-21V → 9K54	122
BM-21V → 9P125	122
BM-22 → 9P140	122
BM-27 → 9K57	122
BM-27 → 9P140	122
BM-30 → 9A52	123
BM-30 → 9A52-2	123
BM-30 → 9K58	123

NAME OR DESIGNATION	PAGE
BMK-150 → BMK-130M	205
BMP-1KShM → BMP-1KSh	226
BMP M1976/2 → BRM-1K	104
BMP Model 1970 → BMP-1	101
BMR-3MA → BMR-3M	214
Boar (English) → BMR-3M	214
Boomerang → VPK-7829	114
Borderline (English) → KM-8	313
Borisoglebsk-2 → RB-301B	188
Borodach → MRO-A	
BOX SPRING → 1L13-3	170
BPM-97 → KamAZ-43269	109
Bradley → M2A2 ODS-SA	118
BRDM-2RKh → BRDM-2RKhb	222
Breakwater (English) → Volnorez	202
BREhM-D → BREM-D	220
BREM-Ch → BREM-4	220
bridge-mechanised complex (English) → MMK	208
BRM-1KM → BRM-1K	104
BTR-60 → BTR-60PB	227
BTR-60PU-12 → PU-12	234
BTR-82AM → BTR-82A	110
Buk → 9K37	152
Buk-M1 → 9K37	152
Buk-M1-2 → 9K37M1-2	152
Buk-M2 → 9K317	152
Buk-M3 → 9K317M	152
Bukhanka → UAZ-452	249
Bulat → SBA-60K2	111
bulldozer on artillery tractor (English) → BAT-2	213
Bumerang → VPK-7829	114
Buran ASV → Buran	109
Buratino → TOS-1	125
Burya → Kh-22	317
Bylina → RB-109A	196
C	
CARELESS → Tu-154	241
CARELESS → Tu-154M	258
Carnation (English) → 2S1	126
CHEESE BOARD → 96L6	168
Chosta → 2S34	131
Chuch'e → M1991	124
Chuch'e → M-2024	124
Chuch'ep'o → M1989	133
Coalition-SV (English) → 2S35	132
CODLING → Yak-40	258
COOT → Il-18D	261
Cornflower (English) → 2B9	135
Credo-1 → Kredo-1E	
Credo-1E → Kredo-1E	
CRUSTY → Tu-134	257
CRUSTY → Tu-134UBL	257
CUB → An-12PS	262
D	
D-2 → Kh-22	147
D-30A → D-30	137
D-30SN → UMPK	321
Dagger (English) → Kh-47M2	318
Danube (English) → P-19	172
Deimos-N → R-142N	236
Derivatsiya-PVO → 2S38	157
Desertcross → Desertcross 1000-3	245
Desertcross-1000-3 → Desertcross 1000-3	245
Deuterium (English) → PRP-4M	234
Deyteriy → PRP-4M	234
Diabazol → R-330M1P	191
DJI AeroScope → AeroScope	281
DJI Air 2S → Mavic 3	265
DJI Matrice 30T → Matrice 300 RTK	265
DJI Matrice 300 RTK → Matrice 300 RTK	265
DJI Mavic → Mavic 3	265
DJI Mini 2 → Mavic 3	265

NAME OR DESIGNATION	PAGE
DJI Mini 3 Pro → Mavic 3	265
DKZ-66 → 9P132	122
Drakon → TOS-3	125
drone fighter (English) → Yak-52B2	280
DShK → DShK 38/46	
DShKM → DShK 38/46	
DT-10PM → DT-30	256
DT-30PM → DT-30	256
Dunai → P-19	172
Dyugon → Project 21820	295
Dzyudoist → MKTK-1A	189
E	
Eger-II → GAZ-3308	246
Elbrus → 9K72	140
Eleron-3SV → Eleron-3	266
F	
Fagot → 9K111	305
Fagot → 9M111	305
Faktoriya → 9M111	305
Fara-VR → SBR-5M	
FARM → 2S19	130
fast trench machine (English) → BTM-3	214
Fath-360 → Fateh-360	142
Favorit → S-300PM	153
Fermer → UAZ-39094	249
FLAP LID B → 5N63S	153
FLAT FACE B → P-19	172
Floks → 2S40	132
FPV kamikaze drones → FPV drones	279
Frog (English) → OZM-72	325
FROG-7 → 9K52	140
G	
GADFLY → 9K37	152
GADFLY → 9K37M1-2	152
Gagara → 3VF2	312
Gamma-DE → 67N6	
GARGOYLE → S-300PM	153
Garmon → 1L122	169
Garmony → 1L122	169
Garpiya → Garpiya-A1	273
GAUNTLET → 9K330	161
GAUNTLET → 9K331	161
GAUNTLET → 9K331MDT	161
GAUNTLET → 9K331MU	161
GAUNTLET → 9K332	161
GAZ-41-08 → BRDM-2	109
GAZ-2330 → GAZ-233014	112
GAZ-5903 → BTR-80	110
GAZ-5923 → BTR-90	111
GAZ-33081 → GAZ-3308	246
GAZ-59032 → K1Sh1	
GAZ-233036 → GAZ-233014	112
GAZ-233114 → AMN-233114	112
GECKO → 9K33	160
GIANT → 9M82	154
GIANT → S-300V	154
Giatsint-B → 2A36	135
Giatsint-S → 2S5	128
Gibka-S → 9K334	157
GIMLET → 9K310	165
GIZMO → 9K333	165
GLADIATOR → 9M83	154
GLADIATOR → S-300V	154
Goat (English) → UAZ-469	249
GOLLUM → 9K317M	152
GOPHER → 9K35	160
Grachonok → Project 21980	298
Grad → 9K51	122
Grad-1 → 9K55	122
Grad-1 → 9K55-1	122
Grad-1 → 9P138	122
Grad-1P → 9P132	122
Grad-K → 2B26	122
Grad-P → 9P132	122
Grad-V → 9K54	122

NAME OR DESIGNATION	PAGE
GRAIL → 9K32	164
Gran → KM-8	313
GREMLIN → 9K34	164
GREYHOUND → 96K6	158
GREYHOUND → Pantsir-S2	158
GRILL PAN → 9S32	154
GRINCH → 9K338	165
GRISON → 2K22	162
GRIZZLY → 9K317	152
GROUSE → 9K38	165
GROWLER → S-400	155
Groza-04K → Groza.04.K	198
GRUMBLE → S-300PS	153
Gusar → TS-3132	109
Gvozdika → 2S1	126
H	
Hail (English) → 9K51	122
Halo → Mi-26	289
Halo-A → Mi-26	289
Harpoon-3 → Garpun-3	201
Harpy (English) → Garpiya-A1	273
Hashim → RPG-32	
Havoc → Mi-28N	285
HAVOC B → Mi-28N	285
HEART ACHE → SPN-4	185
HELIX B → Ka-31R	290
HIGH SCREEN → 9S19M2	154
HIND → Mi-24P/V	285
Hind D → Mi-24P/V	285
Hind E → Mi-24P/V	285
HIP → Mi-8MT	287
HIP → Mi-8MTPR-1	288
Hip-C → Mi-8MT	287
Hip-H → Mi-8MT	287
HIP K → Mi-8PPA	289
Hokum → Ka-52	284
HOKUM B → Ka-52	284
HOODLUM B → Ka-226	286
HOT SHOT → 1RL144M	162
Hurricane (English) → 9K57	122
Hurricane-1M (English) → 9K512	125
Hwasong-11A → KN-23	144
Hwasong-11B → KN-24	144
Hyacinth (English) → 2A36	135
Hyacinth (English) → 2S5	128
I	
Igla → 9K38	165
Igla-1 → 9K310	165
Igla-S → 9K338	165
Imbir → 9S19M2	154
IMR-1 → IMR	215
IMR-2M → IMR-2	215
IMR-2M1 → IMR-2	215
IMR-3M → IMR-3	215
Infauna → RB-531B	199
Inokhodets → Orion	272
Invar → 9M119	306
Invar-M → 9M119	306
Iranian → 53-OF-843B	311
IRL-127-1 → SNAR-10	176
Iskander → 9K720	143
Iskander-E → 9K720	143
Iskander-K → 9K720	143
Iskander-M → 9K720	143
Italmas → BM-35	275
Ivan Gren → Project 11711	294
Iveco LMV → Rys	111
Izdeliye → Kh-101	148
Izdeliye → Kh-59	148
Izdeliye 52 → Izdeliye 51	277
J	
Juche 100 → M1991	124
Judoist → MKTK-1A	189
K	
K-16 → VPK-7829	114
K-17 → VPK-7829	114
K-300P → 3K55	146

NAME OR DESIGNATION	PAGE
K300P → 3K55	146
K-340P → 3S55	*146*
Ka-31 → Ka-31R	290
Ka-52A → Ka-52	284
Ka-52M → Ka-52	284
Ka-226T → Ka-226	*286*
Kalibr → 3M14	*317*
Kalibr-NK → 3M14	147
Kama → 9A52-4	123
Kan → 9M117	*306*
Kapustnik-B → 1V126	*121*
Kapustnik-BM → 1V126	*121*
Kasta → 35N6	169
Kasta-2-2 → 39N6	169
Kasta-2E2 → 39N6	169
Kastet → 9K116	*306*
Katyusha → BM-13	*121*
KAZOO → Kh-59	*318*
Kedr → SS-X-31	149
KENT → Kh-55	*318*
KENT → Kh-101	148
Kh-55SM → Kh-55	*318*
Kh-55SM → Kh-101	148
Kh-59M → Kh-59	*318*
Kh-59MK → Kh-59	148
Kh-102 → Kh-101	148
Khosta → 2S34	131
Khrizantema → 9K123	116
Khrizantema → 9M123	*116*
Khrizantema-S → 9K123	116
Khrizantema-S → 9P157-2	*116*
KILLJOY → Kh-47M2	*318*
KINGBOLT → Kh-59	*318*
Kinzhal → Kh-47M2	*318*
KITCHEN → Kh-22	*317*
Kitolov-2 → 30F69	*309*
Kitolov-2 → 3VOF112	313
Kitolov-2M → 30F69M	*309*
Kitolov-2M → 3VOF112	313
Klen-1 → 1V18	231
Klen-2 → 1V18	231
Klesch-G → UMZ-G	*219*
Kleshch-G → UMZ-G	*219*
Kluge → Kh-101	148
Klyon-1 → 1V18	231
Klyukva → RPG-28	
Koalitsiya-SV → 2S35	132
Kobra → 9K112	*305*
KODIAK → Kh-101	*319*
Kokon → 9M114	*115*
Koksan → M1989	133
Konkurs → 9K111-1	305
Konkurs → 9M113	*305*
Konkurs → 9P148	*305*
Konkurs-M → 9K111-1	305
Konkurs-M → 9M113M	*305*
Kopye → SPG-9	
Kord → 6P50	
Kornet → 9K135	307
Kornet → 9M133	*307*
Kornet-D → 9K135	307
Kornet-D → 9P163-3	*307*
Kornet-D1 → 9P163-3	*307*
Kornet-E → 9K135	307
Kornet-EM → 9K135	307
Kornet-LR → 9P162	115
Kornet-P → 9P163M-1	*307*
Kornet-T → 9P162	115
Kozlik → UAZ-469	249
KPOM-3 → POM-3	328
KPTM-3 → PTM-3	*329*
KPTM-4 → PTM-4	330
KPVT → KPV	
Krasnopol → 30F39	*309*
Krasnopol-M1 → 30F39M	*309*
Krasnopol-M1 → 30F39	314
Krasnopol-M2 → K155M	*309*
Krasukha-2 → 1L269	183
Krasukha-2O → 1L269	183
Krasukha-4 → 1RL257	183
Krasukha-4S → 1RL257	183
KrAZ-255B → KrAZ-255	252
Kredo-1 → Kredo-1E	
Kredo-M → PSNR-5	*234*
Kryuk → RPG-30	
KS-701 → FSB	297
Kub-BLA → KUB-BLA	276
Kupol → 9S18	*152*
Kurier → NRTK	264
Kushetka-B → R-149BMR	228
Kvartet → 9P163M-2	*307*
L	
L187A → Mi-8MTPR-1	288
Lancet → Izdeliye 51	277
Lancet-3 → Izdeliye 51	277
Leer-2 → 85Ya6	189
Leer-3 → RB-341V	190
Legenda-2 → R-439	238
Leopard → SNAR-10	176
Lepestok → PFM-1	*326*
Lesochek → RP-377UVM1	199
Less → RB-105B	*195*
Linza → KamAZ-53949	113
Loaf (English) → UAZ-452	249
Lorandit → RP-377L	*192*
Lorandit-M → RP-377L	*192*
LSTC-1944 → Sarmat-2	109
Luna-M → 9K52	*140*
Lyagushka → OZM-72	*325*
Lynx (English) → 1RL239	175
M	
M2A2 ODS → M2A2 ODS-SA	118
M-21 → 9K51	122
M-210F → 9M22U	*315*
M-21V → 9K54	122
M1931 → B-4	*136*
M-1937 → ML-20	139
M-1938 → M-30	139
M1943 → D-1	139
M1944 → BS-3	139
M1949 → M-160	*138*
M1964 → 9K51	122
M1964 → BM-21	122
M1973 → 2S3	127
M1974 → 2S1	126
M1974/1 → 1V13	230
M1975 → 2S4	128
M1975 → 2S7	129
M1975 → 9K54	122
M1975 → 9P125	*122*
M1976 → 2A36	135
M1976 → 9K55	122
M1976 → 9P138	122
M1977 → 9K57	122
M1977 → 9P140	122
M1978 → M1989	133
M1979 → UR-77	216
M1979-2B → 1V18	231
M1981 → 2S5	128
M1987 → 2A65	135
M-1989 → M1989	133
M1990 → 2S19	130
M-1991 → M1991	124
M-2018 → Bulsae-4	116
Malka → 2S7M	129
Malva → 2S43	132
Malysh → 9M22M	*315*
Malyutka → 9K11	*304*
Malyutka-2 → 9K11	*304*
Malyutka-M → 9P122	*304*
Malyutka-P → 9P133	*304*
Mandat → R-330	
Mandat-B → R-330B	191
Mangust → FSB	297
Matrice 30T → Matrice 300 RTK	265
Mavic → Mavic 3	265
Mavic 2 Enterprise Advanced → Mavic 3	265
Mavic 2 Pro → Mavic 3	265
Mavic 2 Zoom → Mavic 3	265
MAZ-7310 → MAZ-543	*248*
Mech → P-35	*172*
Medallion (English) → POM-3	*328*
Medalyon → POM-3	*328*
Mercury-BM → 1L262E	201
Meteorit → UR-77	216
Metis → 9K115	308
Metis → 9M115	*308*
Metis-M → 9K115-1	308
Metis-M → 9M131	*308*
Metis-M1 → 9K115-2	*308*
Mi-8AMTSh → Mi-8MT	287
Mi-8MTV-5 → Mi-8MT	287
Mi-8MTV-5PR → Mi-8MTPR-1	288
Mi-8SMV-PG → Mi-8PPA	*289*
Mi-24D → Mi-24P/V	285
Mi-24P → Mi-24P/V	285
Mi-26T → Mi-26	289
Mi-26T2 → Mi-26	289
Mi-28 → Mi-28N	285
Mi-28NE → Mi-28N	285
Mini 2 → Mavic 3	265
Mini 3 Pro → Mavic 3	265
MO.1.01.04M → MO.1.01.04	316
MO.1.01.04M2 → MO.1.01.04	316
Molniya → Molniya-1	278
Molniya-2 → Molniya-1	278
Moskva-1 → 1L267	184
Motovoz-M → Ural-4320-7810	*250*
MP → 9S931	233
MP32M1 → MP-32M1	*123*
MP-K → 9S931-1	233
MRU-B → 9S932-1	233
Msta-B → 2A65	135
Msta-S → 2S19	130
Msta-S → 2S19M1	130
Msta-SM → 2S19M2	130
MT-LB VM1K → MT-LBVM	*107*
MT-LBM-6MA → MT-LBM 6MA	*107*
MT-LBM-6MB → MT-LBM 6MB	*107*
MT-LBu → Object 10	*107*
MT-LBVM1K → MT-LBVM	*107*
MT-LBVMK → MT-LBVM	*107*
MTK → MTK-2	*215*
MTO-UB → MTO-UB2	221
MTP-A2 → MTP-A2.1	221
Mugin → Mugin-5	*267*
Mugin-5 Pro → Mugin-5	*267*
Murmansk-BN → GT-01	184
Mustang → KamAZ-5350	247
N	
Nard → PRP-4	234
Nashshab → RPG-32	
Nebo-M → 55Zh6M	170
Nebo-SV → 1L13-3	170
Nebo-SVU → 1L119	170
Nebo-U → 55Zh6U	171
Nebo-UM → 55Zh6UM	171
Nerpa → 3VF2	312
Netto → RPG-22	
Night Hunter → Mi-28N	285
Niobium-SV → 1L125	171
Niobiy → 1L125	171
Niobiy-SV → 1L125	171
Nokaut-2 → PTM-4	*330*
Nona-K → 2B16	129
Nona-S → 2S9	129
Nona-SVK → 2S23	131
NSVS → NSV	
NSVT → NSV	
O	
Object 6MA → MT-LBM 6MA	*107*
Object 6MB → MT-LBM 6MB	*107*
Object 55 → GSP	*206*
Object 137 → T-54	94
Object 148 → T-14	*93*
Object 166 → T-62	95
Object 172M → T-72	96
Object 183 → BMPT-72	*104*
Object 184 → T-72B	96
Object 188 → T-90	98
Object 197 → BMR-3M	214
Object 216 → 2S7	129
Object 219AS → T-80U	97
Object 219R → T-80B	97
Object 256 → UR-77	216
Object 303 → 2S3	127
Object 305 → 2S4	128
Object 307 → 2S5	128
Object 316 → 2S19	130
Object 318 → GMZ-3	217
Object 434 → T-64A	95
Object 447 → T-64B	95
Object 454 → BAT-2	213
Object 501 → BRM-3K	*105*
Object 564 → BMO-T	101
Object 602 → MTU-20	*208*
Object 608 → BREM-1	220
Object 632 → MTU-72	212
Object 634 → TOS-1	125
Object 634B → TOS-1A	125
Object 637 → IMR-2	215
Object 675 → BMP-2	102
Object 676 → BRM-1K	104
Object 688 → BMP-3	103
Object 765 → BMP-1	101
Object 767 → PRP-3	*176*
Object 779 → PRP-4	234
Object 950 → BMD-3	*100*
Oborona-14 → 5N84A	171
Obzor-3 → 9S15M	*154*
Odes Desertcross → Desertcross 1000-3	245
OF-843B → 53-OF-843B	311
Omich-2 → NRTK	264
ONDATRA → Project 1176E	295
Oniks → P-800	*146*
Onyx (English) → P-800	*146*
Open Skies (English) → Tu-214ON	*260*
Oplot-T → MAZ-74101	254
Oreshnik → SS-X-31	149
Osa → 9K33	160
Osa-AK → 9K33	160
Osa-AKM → 9K33	160
OTR-21 → 9K79	141
Ovod → 9S80	*160*
Ovod → Kh-59	*318*
Ovod-M → Kh-59	148
P	
P-18M → P-18	172
P-37 → P-35	*172*
P-240I-4 → P-240	235
P-260 → P-260-U	*239*
PAK-200M → PAK-200	*248*
Palantin-K → Palantin	190
Pantera → SNAR-10M	176
Pantsir-S1 → 96K6	158
Pantsir-SM → Pantsir-S1M	158
Partizan → 9P132	*122*
Patrul → Asteis-7020	109
PDM-1M → PDM-1	325
Penicillin → 1B75	174
Peony (English) → 2S7	129
Pereselenets → P-240	235
Pereselenetz → P-240	235
Petal (English) → PFM-1	*326*
PFM-1S → PFM-1	*326*
Phlox (English) → 2S40	132
Phoenix-4 (English) → Bulsae-4	116
Pine-U (English) → Sosna-U	
Pion → 2S7	129

NAME OR DESIGNATION	PAGE
Plamya → AGS-17	
Plavsk → MKTK-1	*194*
PM-38 → M-1938	*139*
PMM-2M → PMM-2	**211**
PMN-1 → PMN	*326*
PMN-2 → PMN	*326*
PMN-4 → PMN	*326*
PMP-M → PMP	**210**
Podlet-K1 → 48Ya6-K1	**170**
Podnos → 2B14	**136**
Poisk → R-161	**236**
Pole-21 → R-340RP	**200**
Pole-21E → R-340RP	**200**
Pole-21M → R-340RP	**200**
Polyana-D4 → 9S52	**233**
Polyana-D4M1 → 9S52	**233**
POM-2R1 → POM-2	**327**
POM-2S → POM-2	*327*
POMORNIK → Project 12322	*295*
Povozka → RKhM-6	**222**
PP-2005 → PP-91M	**210**
PPRU-1 → 9S80	*160*
PPRU-1M → 9S80	*160*
Prima → 9A51	*121*
Prima → 9K59	*121*
Project 775/III → Project 775	**294**
Project 775M → Project 775	**294**
Project 1176 → Project 1176E	**295**
Project 1232.2 → Project 12322	*295*
Project 02510 → BK-16	**297**
Project 11770 → Project 11770E	**296**
Project 12150 → FSB	**297**
Project 12200 → FSB	**297**
Prometey → S-500	*156*
Prometheus (English) → S-500	*156*
Proryv-3 → T-90M	*98*
Protivnik-G → 59N6	*168*
Protivnik-GE → 59N6	*168*
PRP-4MU → PRP-4M	**234**
PSNR-5M → PSNR-5	*234*
PSNR-8 → Kredo-1E	
PSNR-8M → Kredo-M1	
PSNR-9 → Kredo-M1	
PTM-1G → PTM-1	*329*
PTM-1S → PTM-1	*329*
PTM-4M → PTM-4	**330**
PTS → PTS-2	**211**
PTS-M → PTS-2	**211**
PU-12M → PU-12	**234**
PU-12M6 → PU-12	**234**
PU-12M7 → PU-12	**234**
R	
R-17 → 9K72	*140*
R-142NM → R-142N	**236**
R-142NMR → R-142N	**236**
R-142NSA → R-142N	**236**
R-145BM1 → R-145BM	**227**
R-145BMA → R-145BM	**227**
R-149BMRg → R-149BMR	**228**
R-149MA1 → R-149MA3	**228**
R-161A2 → R-161	**236**
R-161A2M → R-161	**236**
R-166-0.5 → R-166	**237**
R-166S → R-166	**237**
R-168E → R-168	
R-187-P1 → R-187	
R-300 → 9K72	*140*
R-325BMV → R-325UMV	*188*
R-378B → R-378A	
R-381T2M → R-381T	**194**
R-381TM → R-381T	**194**
R-412AM → R-412A	**237**
R-417S → R-417	**237**
R-439-BK → R-439	**238**
R-439-KUL → R-439	**238**
R-439-P → R-439	**238**
R-500 → 9M728	**143**
Rakushka → BTR-MDM	**106**
Ranzhir → 9S737	**234**
Rapira → MT-12	**134**
Raptor → Project 03160	**299**
RB-371A → Tirada-2S	**186**
RB-636 → RB-636AM2	**197**
Refleks → 9K119	**306**
Refleks → 9M119	*306*
Refleks-M → 9K119	**306**
regimental digging machine (English) → PZM-2	**214**
Remdiesel Z-STS Akhmat → Z-STS	**109**
Resonance-N (English) → Rezonans-N	*173*
Resonans-N → Rezonans-N	*173*
Rezonans-NE → Rezonans-N	*173*
Rezoner → R-412A	**237**
ribbon bridge (English) → PMP	**210**
RIDA Buran → Buran	**109**
Ropucha → Project 775	**294**
Rostok → BTR-90	**111**
RP-200 → Kredo-1E	
RP-377LA → RP-377L	*192*
RP-377UM2 → RP-377UVM1	**199**
RP-377UVM2 → RP-377UVM1	**199**
RPG-7V → RPG-7	
RPG-7V2 → RPG-7	
RPO → RPO-A	
RPO-M → RPO-A	
RS-AS-4 → Kh-22	**147**
RS-AS-4A → Kh-22	**147**
RS-AS-24 → Kh-47M2	**147**
RS-AT-16 → 9A4172	**321**
RS-SS-28 → SS-X-31	**149**
RS-SS-28 MOD → Oreshnik	*319*
Rtut-BM → 1L262E	**201**
Rusich → KZKT-7428	**254**
Ruta → MT-12R	*134*
Rychag-AV → Mi-8MTPR-1	**288**
Rychag-AVE → Mi-8MTPR-1	**288**
Rys → 1RL239	**175**
Rys → BRM-3K	*105*
S	
S-300PM1 → S-300PM	**153**
S-300PM2 → S-300PM	**153**
S-300PMU → S-300PS	**153**
S-300PMU1 → S-300PM	**153**
S-300PMU2 → S-300PM	**153**
S-300VMD → S-300V4	**154**
SA-7 → 9K32	*164*
SA-8 → 9K33	**160**
SA-10 → S-300PS	**153**
SA-11 → 9K37	**152**
SA-11 → 9K37M1-2	**152**
SA-12A → 9M83	*154*
SA-12A → S-300V	**154**
SA-12B → 9M82	*154*
SA-12B → S-300V	**154**
SA-13 → 9K35	**160**
SA-14 → 9K34	*164*
SA-15 → 9K330	**161**
SA-15 → 9K331	**161**
SA-15 → 9K331MDT	**161**
SA-15 → 9K331MU	**161**
SA-15 → 9K332	**161**
SA-16 → 9K310	**165**
SA-17 → 9K317	**152**
SA-18 → 9K38	**165**
SA-19 → 2K22	**162**
SA-20 → S-300PM	**153**
SA-21 → S-400	**155**
SA-22 → 96K6	**158**
SA-22 → Pantsir-S2	**158**
SA-23 → S-300V4	**154**
SA-24 → 9K338	**165**
SA-27 → 9K317M	**152**
SA-29 → 9K333	**165**
Sadko → GAZ-3308	**246**
SAGARIS → 3M14	*317*
SAGGER → 9K11	*304*
Sani → 2S12	**130**
Sania → Saniya	**202**
Santimetr → 3OF38	*309*
Santimetr-M → 3OF75	*310*
Santimetr-M → 3OF38	**314**
Sapsan → Mi-8AMTSh-VN	*286*
Sarmat → Sarmat-2	**109**
Sarmat-3 → Sarmat-2	**109**
Saturn → P-35	*172*
SAXHORN → 9K115	**308**
SAXHORN → 9M115	*308*
SAXHORN-2 → 9K115-1	**308**
SAXHORN-2 → 9K115-2	*308*
SAXHORN-2 → 9M131	*308*
SBM → VPK-233136	*112*
Sborka → 9S80	*160*
SCALLION → 9A4172	*304*
SCARAB → 9K79	**141**
SCARAB → 9M79	*141*
SCREWDRIVER → 9K720	**143**
SCREWDRIVER → 9M729	**143**
SCUD B → 9K72	*140*
Searcher II → Forpost	**271**
SENNIGHT → 3K60	**145**
Serna → Project 11770E	**296**
Serp → SERP-VS6D	**198**
Shahed 107 → Shahed-107	**278**
Shahed-131 → Geran-1	**274**
Shahed 131 → Geran-1	**274**
Shahed-136 → Geran-2	**274**
Shahed 136 → Geran-2	**274**
Shahed-238 → Geran-3	**274**
Sheksna → 9K116	*306*
Shilka → ZSU-23-4	**162**
Shkval → BMP-1U	*101*
Shmel → RPO-A	
Shmel → Project 1204	*300*
Shturm → 9K114	**115**
Shturm-S → 9P149	*115*
Shturm-SM → 9K132	*115*
Silok → Silok-01	**198**
Sinitsa → R-934B	**191**
Sinitsa → R-934UM	**191**
Sled (English) → 2S12	**130**
Slepok-1 → 9S729M1	*123*
SMALL FRED (disputed) → 1RL239	**175**
SMALL FRED (disputed) → PRP-3	*176*
Smelchak → 1K113	*128*
Smerch → 9A52	**123**
Smerch → 9K58	**123**
Smerch-M → 9A52-2	**123**
SNAR-10M1 → SNAR-10M	**176**
SNIPER → 9K119	**306**
SNIPER → 9M119	*306*
SNOW DRIFT → 9S18	*152*
Sobol → FSB	**297**
Sobolyatnik → 1L277	**176**
Solntsepek → TOS-1A	**125**
SONGSTER → 9K112	*305*
Sosna-R → Sosna	**159**
SOUTHPAW → 9K720	**143**
SOUTHPAW → 9M728	**143**
SPANDREL → 9K111-1	**305**
SPANDREL → 9M113	*305*
SPANDREL-B → 9M113M	*305*
Spektr → 1V119	**231**
SPG-9D → SPG-9	
SPG-9M → SPG-9	
SPIGOT → 9K111	**305**
SPIGOT → 9M111	*305*
SPIRAL → 9K114	**115**
SPIRAL → 9M114	*115*
SPIRAL-2 → 9K132	*115*
SPIRAL-2 → 9M120	*115*
SPM-2 → GAZ-233036	*112*
SPN-4M → SPN-4	*185*
SPOON REST D → P-18	**172**
SPR-2M → 1L262E	**201**
SPRIGGAN → 9K135	**307**
SPRIGGAN → 9M133	*307*
SPRINGER → 9K123	**116**
SPRINGER → 9M123	*116*
Sprut-B → 2A45M	*134*
Sprut-SD → 2S25	**99**
SQUAT EYE → 39N6	**169**
SS-1c → 9K72	*140*
SS-21 → 9K79	**141**
SS-21 → 9M79	*141*
SS-26 → 9K720	**143**
SS-26 → 9M723	**143**
SS-N-26 → P-800	*146*
SS-N-27 → 3M14	*317*
SS-N-30A → 3M14	*317*
SSC-5 → 3K55	**146**
SSC-6 → 3K60	**145**
SSC-7 → 9K720	**143**
SSC-7 → 9M728	**143**
SSC-8 → 9K720	**143**
SSC-8 → 9M729	**143**
STABBER → 9M117	*306*
STONE → 9K720	**143**
STONE → 9M723	**143**
STOOGE → 3K55	**146**
Strela-2 → 9K32	*164*
Strela-3 → 9K34	*164*
Strela-10 → 9K35	**160**
Strela-10M3 → 9K35	**160**
Strelets → KRUS-VR	**240**
Strelets-M → KRUS-VR	**240**
STROBILE → P-800	*146*
STS Sarmat → Sarmat-2	**109**
Svet-KU → RB-636AM2	**197**
Svet-VSG → RB-636 Svet-VSG	*197*
Svir → 9K119	**306**
Svir → 9M119	*306*
SWINGER → 9K116	*306*
T	
T-12A → MT-12	**134**
T-55AMV → T-55AM	*94*
T-64BV → T-64B	**95**
T-72B1K → T-72B1	*96*
T-72M → T-72M1	*96*
T-72 Ural → T-72	**96**
T-90SK → T-90S	*98*
Takhion → Tachyon	**269**
TALL KING C → 5N84A	**171**
TALL MIKE → PSNR-5	*234*
TALL RACK → 55Zh6U	**171**
Tapir → Project 1171	**294**
Taran → R-381T	**194**
Taran-M → R-381T	**194**
Tavolga → RPG-27	
TDA-2M → TDA-2K	**223**
Terek → P-18	**172**
Terminator → BMPT	**104**
Terminator → BMPT-72	*104*
Terminator-2 → BMPT-72	*104*
Tiger → ZFB-05	**118**
Tigr → GAZ-233014	**112**
Tigr-M → AMN-233114	**112**
Tigr-M SpN → ASN-233115	*112*
Tigr SBM → VPK-233136	*112*
Tigr SPM-2 → GAZ-233036	*112*
Tirada-2 → Tirada-2S	**186**
Tirada-2.3 → Tirada-2S	**186**
TKB-0175 → RPG-29	
TM-62M → TM-62	*332*
TM-62P → TM-62	**332**
TMM → TMM-3	**212**
TMN-46 → TM-46	**331**
TMS-65M → TMS-65	**222**
TMS-65U → TMS-65	**222**

NAME OR DESIGNATION	PAGE
Tochka → 9K79	141
Tochka-U → 9K79	141
Tor → 9K330	161
Tor-M1 → 9K331	161
Tor-M1-2U → 9K331MU	161
Tor-M2 → 9K332	161
Tor-M2DT → 9K331MDT	161
Tor-M2U → 9K331MU	161
Torf → R-412A	237
Torn-MDM → Torn	197
Tornado (English) → 9K58	123
Tornado-G → 2B17M	124
Tornado-G → 9K51M	124
Tornado-S → 9A54	123
Tornado-S → 9K515	123
Tornado-U → Ural-63706-0122	251
Tosochka → TOS-2	125
Tray (English) → 2B14	136
Triumf → S-400	155
Triumfator-M → S-500	*156*
Tu-134A-4 → Tu-134UBL	*257*
Tulip (English) → 2S4	128
Tunguska → 2K22	162
Tunguska-M1 → 2K22	162
Typhoon-K → KamAZ-53949	113
Typhoon-K → KamAZ-63968	113
Typhoon-K 4x4 → KamAZ-53949	113
Typhoon-K 6x6 → KamAZ-63968	113
Typhoon-U → Ural-63095	113
Typhoon-VDV → KamAZ-4386	113
Tyulpan → 2S4	128
U	
UAZ-469RKhB → UAZ-469RKh	222
UAZ-3151 → UAZ-469	249
Ulibka-M → RPMK-1	*179*
Ulybka → RPMK-1	*179*
UMPK-5R → UMPK	321
UMZ-K → UMZ-G	*219*
UMZ-T → UMZ-G	*219*
UNSh → K1Sh1	
Uragan → 9K57	122
Uragan → 9P140	122
Uragan-1 → 9K57-1	122
Uragan-1M → 9A53	125
Uragan-1M → 9K512	125
Ural → T-72	96
Ural-375 → Ural-375D	*249*
Ural-6370-0121-30 → Ural-6370	251
Ural-43203 → Ural-4320	*250*
Ural-63706-0011 → Ural-63706-0122	251
Ural-VV → Ural-432009	*114*
Utyos → NSV	
V	
V-500R → 5V55R	*153*
Val → PRP-3	*176*
Vampir → RPG-29	
Vasilek → 2B9	135
Vedma → OZM-72	*325*
Vena → 2S31	131
Vepr → BMR-3M	214
Verba → 9K333	165
Vikhr → 9A4172	*304*
Vikhr-M → 9A4172	321
Vityaz → DT-10PM	256
Vityaz → DT-30	256
Vityaz → S-350	154
Vodnik → GAZ-39371	112
Voronezh-DM → 77Ya6-DM	178
VPK-233136 → GAZ-233014	112
VPK Ural → AMN-590951	109
VTS Ladoga → Ladoga	229
Vystrel → KamAZ-43269	109
W	
Witch (English) → OZM-72	*325*

NAME OR DESIGNATION	PAGE
X	
Xiamen Limbach L550E → L550E	
Xinxing → ZFB-05	118
Y	
Yastreb-AV → 1K148	174
YeSU TZ → ESU TZ	*235*
Z	
Z-16 → ZALA 421-16	270
ZAK-57 → 2S38	157
Zemledeliye → ISDM	217
Zhitel → R-330Zh	192
Zhuk → IRM	206
Zoopark-1 → 1L219	177
Zoopark-1M → 1L260	177
ZU-23 → ZU-23-2	163
Zubr → Project 12322	*295*

Table 1c. Cyrillic designations and names

Sorted in Russian alphabetical order, each pointing (→) to its row in Table 1.

ОБОЗНАЧЕНИЕ, НАЗВАНИЕ	PAGE
0–9	
12150, 12200, КС-701 → FSB	297
1Б44 → 1B44	123
1В119 → 1V119	231
1В126 «Капустник-Б» → 1V126	121
1В13 → 1V13	230
1В152 → 1V152	231
1К113 «Смельчак» → 1K113	128
1К148 «Ястреб-АВ» → 1K148	174
1Л122 «Гармонь» → 1L122	169
1Л13 → 1L13-3	170
1Л219 «Зоопарк-1» → 1L219	177
1Л219М → 1L219	177
1Л259 → 1L259	177
1Л260 → 1L260	177
1Л262Э «Ртуть-БМ» → 1L262E	201
1Л265 → 1L265	184
1Л266 → 1L266	184
1Л269 «Красуха-2» → 1L269	183
1Л271 «Аистенок» → 1L271	174
1РЛ131 → P-18	172
1РЛ133-3 «Кредо-1» → Kredo-1E	
1РЛ134 → P-19	172
1РЛ144М1 → 1RL144M	162
1РЛ232-1М «Пантера» → SNAR-10M	176
1РЛ232 «Леопард» → SNAR-10	176
1РЛ239 / АРК-1 / «Рысь» → 1RL239	175
1РЛ257 «Красуха-4» → 1RL257	183
1Т12-2М → 1T12-2M	123
2А13 → ZU-23-2	163
2А18М → D-30	137
2А19 → T-12	134
2А29 → MT-12	134
2А36 «Гиацинт-Б» → 2A36	135
2А6 → ZSU-23-4	162
2А65 «Мста-Б» → 2A65	135
2Б11 → 2B11	130
2Б14 «Поднос» → 2B14	136
2Б16 «Нона-К» → 2B16	129
2Б17 → BM-21-1	122
2Б17М → 2B17M	124
2Б26 → 2B26	122
2Б5 → BM-21	122
2Б9 «Василёк» → 2B9	135
2К22 → 2K22	162
2К22М1 «Тунгуска-М1» → 2K22	162
2К22М «Тунгуска-М» → 2K22	162
2К25 → 3OF39	314
2С12А → 2S12	130
2С12 «Сани» → 2S12	130
2С19М1 → 2S19M1	130
2С19М2 → 2S19M2	130
2С19 «Мста-С» → 2S19	130
2С1 «Гвоздика» → 2S1	126
2С23 «Нона-СВК» → 2S23	131
2С25 → 2S25	99
2С31 «Вена» → 2S31	131
2С33 «Мста-СМ» → 2S19M2	130
2С34 «Хоста» → 2S34	131
2С35 «Коалиция-СВ» → 2S35	132
2С38 → 2S38	157
2С3 «Акация» → 2S3	127
2С3М → 2S3M	127
2С40 → 2S40	132
2С43 «Мальва» → 2S43	132
2С4 «Тюльпан» → 2S4	128
2С5 «Гиацинт-С» → 2S5	128
2С5М → 2S5M	128
2С6 → 2S6	162
2С6М → 2S6	162
2С6М1 → 2S6	162
2С7М «Малка» → 2S7M	129
2С7 «Пион» → 2S7	129
2С9 «Нона-С» → 2S9	129
2Ф77 → 2F77	162
2Ф77М → 2F77	162
35Н6 «Каста» → 35N6	169
39Н6Е «Каста-2Е2» → 39N6	169
39Н6 «Каста-2-2» → 39N6	169
3БК13 → 3BK13	311
3БК19 → 3BK19	311
3БК19 → 3OF49	311
3ВБК14 → 3BK19	311
3ВОФ112 → 3OF69	309
3ВОФ112 → 3VOF112	313
3ВОФ34 → 3VOF34	312
3ВОФ35 → 3VOF34	312
3ВОФ54 → 3OF49	311
3ВОФ55 → 3OF50	311
3ВРБ36 → 3RB30	310
3ВРБ37 → 3RB30	310
3ВФ4 → 1K113	128
3К55 → 3K55	146
3К60 → 3K60	145
3М-14 → 3M14	317
3М14 → 3M14	147
3М14Т → 3M14	147
3М16 → 3M16	315
3О13 → 3O13	312
3О13 → 3OF45	312
3О23 → 3O23	312
3О23 → 3OF45	312
3О8 → 3O8	312
3О8 → 3VF2	312
3ОФ24 → 3OF24	311
3ОФ24 → 3BK13	311
3ОФ25 → 3OF25	312
3ОФ29 → 3OF29	312
3ОФ38 → 3OF38	309
3ОФ39 → 3OF39	309
3ОФ39М → 3OF39M	309
3ОФ43 → 3OF43	312
3ОФ43 → 3VOF34	312
3ОФ44 → 3OF44	312
3ОФ45 → 3OF45	312
3ОФ49 → 3OF49	311
3ОФ50 → 3OF50	311
3ОФ50 → 3OF49	311
3ОФ56 → 3OF56	311
3ОФ56 → 3BK13	311
3ОФ59 → 3OF59	312
3ОФ61 → 3OF61	312
3ОФ64 → 3OF64	312
3ОФ75 → 3OF75	310
3ОФ75 → 3OF38	314
3РБ30 → 3RB30	310
3Ф2 → 3F2	312
3Ф2 → 3VF2	312
3Ф5 → 1K113	128
40Н6Е → 40N6	155
40Р6 → S-400	155
48Н6ДМ → 48N6	155
48Н6Е → 48N6	155
48Н6Е2 → 48N6	155
48Я6-К1 «Подлёт» → 48Ya6-K1	170
50К6А → 50K6A	154
50Н6А → 50N6A	154
50П6А → 50P6A	154
50Р6А → S-350	154
51П6 → 51P6	155
53-ОФ-843Б → OF-843B	311
53-ОФ-843Б → 53-OF-843B	311
55Ж6МЕ → 55Zh6M	170
55Ж6М «Небо-М» → 55Zh6M	170
55К6 → 55K6	155
55К6Е → 55K6	155
55Р6М → S-500	156
5Э36Е → 57E6	158
5В55К → 5V55R	153
5В55Р → 5V55R	153
5Н63С → 5N63S	153
5Н84А «Оборона» → 5N84A	171
5П85Д → 5P85SD	153
5П85С → 5P85SD	153
5П85СМ2-01 → 5P85SM2-01	155
5П85Т2 → 5P85T2	155
75Р6 → S-300PS	153
85Я6 «Леер-2» → 85Ya6	189
91Н6Е → 91N6A	155
92Н6Е → 92N6A	155
96К6 → 96K6	158
96Л6Е → 96L6	168
9А310 → 9A310	152
9А310М1-2 → 9A310M1-2	152
9А316 → 9A316	152
9А317 → 9A317	152
9А317М → 9A317M	152
9А330 → 9A330	161
9А331 → 9A331	161
9А331-1 → 9A331	161
9А331М2 → 9A331M	161
9А33Б → 9A33B	160
9А35 → 9A35	160
9А38 → 9A310	152
9А39 → 9A39	152
9А39М1 → 9A39	152
9А4172 → 9A4172	321
9А4172К → 9A4172	321
9А51 → 9A51	121
9А52 → 9A52	123
9А52-2 → 9A52-2	123
9А52-2Т → 9A52-2T	123
9А52-4 → 9A52-4	123
9А53 → 9A53	125
9А54 → 9A54	123
9А82 → 9A82	154
9А83 → 9A83	154
9А84 → 9A84	154
9А85 → 9A85	154
9К11 → 9K11	304
9К111 → 9K111	305
9К111-1 → 9K111-1	305
9К114 → 9K114	115
9К115 → 9K115	308
9К115-1 → 9K115-1	308
9К115-2 → 9K115-2	308
9К116 → 9K116	306
9К119М → 9K119	306
9К123 → 9K123	116
9К123-1 → 9K123	116
9К128-1 → 9P162	115
9К132 → 9K132	115
9К135 → 9K135	307
9К310 → 9K310	165
9К317 «Бук-М2» → 9K317	152
9К317М «Бук-М3» → 9K317M	152
9К32 → 9K32	164
9К33 → 9K33	160
9К330 → 9K330	161
9К331 «Тор-М1» → 9K331	161
9К332 ЗРК «Тор-М2» → 9K332	161
9К333 → 9K333	165
9К338 → 9K338	165
9К33М2 → 9K33	160
9К33М3 → 9K33	160
9К34 → 9K34	164
9К35М3 «Стрела-10М3» → 9K35	160
9К35 «Стрела-10» → 9K35	160
9К37 → 9K37	152
9К37М1-2 «Бук-М1-2» → 9K37M1-2	152
9К37М1 «Бук-М1» → 9K37	152
9К38 → 9K38	165
9К512 «Ураган-1М» → 9K512	125
9К515 → 9K515	123
9К51 «Град» → 9K51	122
9К51М «Торнадо-Г» → 9K51M	124
9К52 → 9K52	140
9К54 «Град-В» → 9K54	122
9К55-1 «Град-1» → 9K55-1	122
9К55 «Град-1» → 9K55	122
9К57 «Ураган» → 9K57	122
9К58 «Смерч» → 9K58	123
9К59 «Прима» → 9K59	121
9К72 → 9K72	140
9К720 → 9K720	143
9К79 → 9K79	141
9К79-1 → 9K79	141
9К81 → S-300V	154
9М100 → 9M100	154
9М111 → 9M111	305
9М113 → 9M113	305
9М113М → 9M113M	305
9М114 → 9M114	115
9М115 → 9M115	308
9М117 → 9M117	306
9М119М → 9M119	306
9М119М1 → 9M119	306
9М120 → 9M120	115
9М120-1 → 9M120-1	115
9М123 → 9M123	116
9М123Ф → 9M123	116
9М131 → 9M131	308
9М133 → 9M133	307
9М14 → 9K11	304
9М217 → 9M217	315
9М218 → 9M218	315
9М22 → 9M22	315
9М22М → 9M22M	315
9М22С → 9M22S	315
9М22С → 9M22	315
9М22У → 9M22U	315
9М27 → 9M27	315
9М27Д → 9M27D	315
9М27Д → 9M27	315
9М27К → 9M27K	315
9М27К1 → 9M27K1	315
9М27К2 → 9M27K2	315
9М27К3 → 9M27K3	315
9М27С → 9M27S	315
9М27Ф → 9M27F	315
9М27Ф → 9M27	315
9М28Д → 9M28D	315
9М28К → 9M28K	315
9М28С → 9M28S	315
9М28Ф → 9M28F	315
9М28Ф → 9M22	315
9М311 → 9M311	162
9М313 → 9M313	165
9М317 → 9M317	152
9М33 → 9M33	160
9М330 → 9M330	161
9М331 → 9M331	161
9М333 → 9M333	160
9М335 → 9M335	158
9М336 → 9M336	165
9М338 → 9M338	161
9М33М3 → 9M33	160
9М340 → 9M340	159
9М342 → 9M342	165
9М37 → 9M37	160
9М38 → 9M38	152
9М39 → 9M39	165

ОБОЗНАЧЕНИЕ, НАЗВАНИЕ	PAGE
9М42 → 9M42	315
9М43 → 9M43	315
9М51 → 9M51	315
9М519 → 9M519	122
9М521 → 9M521	315
9М522 → 9M522	315
9М525 → 9M525	316
9М528 → 9M528	316
9М529 → 9M529	316
9М531 → 9M531	316
9М533 → 9M533	316
9М534 → 9M534	123
9М53К → 9M53K	315
9М53С → 9M53S	315
9М53Ф → 9M53F	315
9М542 → 9M542	123
9М544 → 9M544	123
9М549 → 9M549	123
9М55 → 9M55	**316**
9М55К → 9M55K	316
9М55К → 9M55	**316**
9М55К1 → 9M55K1	316
9М55К4 → 9M55K4	316
9М55К5 → 9M55K5	316
9М55С → 9M55S	316
9М55Ф → 9M55F	316
9М55Ф → 9M55	**316**
9М59 → 9M59	315
9М723 → 9M723	**143**
9М728 → 9M728	**143**
9М729 → 9M729	**143**
9М79 → 9M79	141
9М82 → 9M82	154
9М82М → 9M82	154
9М83 → 9M83	154
9М96Е → 9M96	155
9М96Е2 → 9M96	155
9П122 → 9P122	304
9П125 → 9P125	122
9П129 → 9P129	141
9П132 → 9P132	122
9П133 → 9P133	304
9П138 → 9P138	**122**
9П139 → 9P139	122
9П140 → 9P140	**122**
9П148 → 9P148	305
9П149 → 9P149	115
9П149М → 9K132	115
9П151 → 9K115	**308**
9П157 → 9P157-2	116
9П157-2 → 9P157-2	116
9П162 → 9P162	**115**
9П163-3 → 9P163-3	307
9П163М-1 → 9P163M-1	307
9П163М-2 → 9P163M-2	307
9П78-1 → 9P78-1	**143**
9С15М → 9S15M	154
9С18 → 9S18	152
9С18М1 → 9S18	152
9С19М2 → 9S19M2	154
9С32 → 9S32	154
9С36М → 9S36	152
9С457 → 9S457	154
9С470 → 9S470	152
9С510М → 9S510	152
9С52 → 9S52	**233**
9С552 → 9S552	143
9С729М1 «Слепок-1» → 9S729M1	123
9С920 → 9S920	143
9С931 → 9S931	**233**
9С932-1 → 9S932-1	**233**
9Т217Б → 9T217	160
9Т218 → 9T218	141
9Т232М → 9T232M	121
9Т234 → 9T234	123
9Т234-2 → 9T234-2	123
9Т234-2Т → 9T234-2T	123
9Т234-4 → 9T234-4	123
9Т244 → 9T244	161
9Т249 → 9T249	125
9Т250 → 9T250	143
9Т255 → 9T255	123
9Т450 → 9T450	122
9Т451 → 9T451	122
9Т452 → 9T452	122
А	
«Автобаза» → 1L222	194
Аглень → RPG-26	
АГС-17 → AGS-17	
АГС-30 → AGS-30	
АГС-40 → AGS-40	
АЗП-57 → S-60	**159**
Акведук → R-168	
«Акула» → Project 1176E	**295**
Аллигатор → Ka-52	**284**
«Алтаец» → Altaets	191
АМН-233114 → AMN-233114	**112**
АМН-590951 → AMN-590951	**109**
Ан-12ПС → An-12PS	262
Ан-140 → An-140	257
Ан-148 → An-148-100E	241
Ан-148-100Е → An-148-100E	241
Ансат → Ansat-U	291
Ансат-У → Ansat-U	291
Армата → Armata	93
АРС-14КМ → ARS-14	**222**
Артек → R-166	**237**
АСН-233115 → ASN-233115	112
Астролог → MZKT-7930	**158**
АТС-59Г → ATS-59G	255
Б	
Б-4 → B-4	136
Бал → 3K60	**145**
Балкан → AGS-40	
Бал-3 → 3K60	**145**
Барнаул-Т → Barnaul-T	**233**
Бастион → 3K55	**146**
Басурманин → BMP-1AM	101
БАТ-2 → BAT-2	**213**
БДК проекта 775 → Project 775	**294**
Бе-200ЧС → Be-200ES	261
Бережок → BMP-2M	102
БК-16 → BK-16	**297**
БМ-1 → BM-1	**125**
БМ-13 → BM-13	121
БМ-21 → BM-21	**122**
БМ-21-1 → BM-21-1	**122**
БМ-21В → 9P125	122
БМД-1 → BMD-1	**99**
БМД-2 → BMD-2	**99**
БМД-3 → BMD-3	100
БМД-4 → BMD-4	**100**
БМД-4М → BMD-4M	100
БМК-460 → BMK-460	205
БМО-Т → BMO-T	**101**
БМП-1 → BMP-1	**101**
БМП-1АМ → BMP-1AM	101
БМП-1П → BMP-1P	101
БМП-1У → BMP-1U	101
БМП-2 → BMP-2	**102**
БМП-2Д → BMP-2D	102
БМП-2М → BMP-2M	102
БМП-3 → BMP-3	**103**
БМП-3М → BMP-3M	103
БМП-3Ф → BMP-3F	**103**
БМПТ → BMPT	**104**
БМПТ-72 → BMPT-72	104
БМР-3М → BMR-3M	**214**
БПМ-97 → KamAZ-43269	**109**
БРДМ-2 → BRDM-2	**109**
БРДМ-2А → BRDM-2A	109
БРДМ-2М → BRDM-2M	109
БРДМ-2МС → BRDM-2MS	109
БРМ-1 → BRM-1K	**104**
БРМ-1К → BRM-1K	**104**
БРМ-3К → BRM-3K	105
БРЭМ-1 → BREM-1	**220**
БРЭМ-2 → BREM-2	**220**
БРЭМ-Д → BREM-D	**220**
БРЭМ-К → BREM-K	**220**
БРЭМ-Л → BREM-L	**220**
БС-3 → BS-3	**139**
БТМ-3 → BTM-3	**214**
БТР-50 → BTR-50	105
БТР-50ПК → BTR-50PK	105
БТР-60 → BTR-60PB	**227**
БТР-60ПБ → BTR-60PB	**227**
БТР-70 → BTR-70	**110**
БТР-70М → BTR-70M	110
БТР-80 → BTR-80	**110**
БТР-80А → BTR-80A	110
БТР-82 → BTR-82	110
БТР-82А → BTR-82A	110
БТР-82АМ → BTR-82A	110
БТР-82АТ → BTR-82AT	110
БТР-90 → BTR-90	**111**
БТР-Д → BTR-D	**105**
БТР-МДМ → BTR-MDM	**106**
БТС-4А → BTS-4A	**220**
БТС-4В → BTS-4V	**220**
«Булат» → SBA-60K2	111
Бумеранг → VPK-7829	114
Буря → Kh-22	**147**
Буханка → UAZ-452	**249**
В	
Вепрь → BMR-3M	**214**
«Верба» → 9K333	**165**
Вихрь → 9A4172	**321**
«Волнорез» → Volnorez	**202**
«Воронеж-ДМ» → 77Ya6-DM	**178**
ВПК-233136 → VPK-233136	112
ВПК-Урал → AMN-590951	**109**
ВСМ-1 → VSM-1	219
Выстрел → KamAZ-43269	**109**
Г	
Гагара → 3VF2	**312**
ГАЗ-2330 → GAZ-233014	**112**
ГАЗ-233014 → GAZ-233014	**112**
ГАЗ-233036 → GAZ-233036	112
ГАЗ-3307 → GAZ-3307	246
ГАЗ-3308 «Садко» → GAZ-3308	**246**
ГАЗ-41-08 → BRDM-2	**109**
ГАЗ-51 → GAZ-51	245
ГАЗ-5903 → BTR-80	**110**
ГАЗ-5923 → BTR-90	**111**
ГАЗ-66 → GAZ-66	**246**
Гамма-ДЕ → 67N6	
Гарпун-3 → Garpun-3	**201**
Герань-1 → Geran-1	**274**
Герань-2 → Geran-2	**274**
Гербера → Gerbera	**275**
«Гибка-С» → 9K334	**157**
ГМЗ-3 → GMZ-3	**217**
Гранат-1 → Granat-1	**266**
Гранат-4 → Granat-4	**266**
«Грань» → KM-8	313
Грань → KM-8	**313**
«Грачонок» → Project 21980	**298**
Гроза.04.К → Groza.04.K	**198**
ГСП → GSP	206
Д	
Д-1 → D-1	**139**
Д-20 → D-20	**137**
Д-30 → D-30	**137**
Д-30А → D-30	**137**
Д-30СН → UMPK	**321**
Д-44 → D-44	**139**
Деймос-Н → R-142N	**236**
«Деривация-ПВО» → 2S38	**157**
«Дзюдоист» → MKTK-1A	**189**
ДТ-30 → DT-30	**256**
ДТ-30ПМ → DT-30	**256**
ДШК → DShK 38/46	
Дюгонь → Project 21820	295
Е	
ЕСУ ТЗ → ESU TZ	235
З	
ЗАК-57 → 2S38	**157**
Застава → Zastava	**270**
Земледелие → ISDM	**217**
ЗИЛ-131 → ZIL-131	**252**
ЗИЛ-157 → ZIL-157	253
«Зоопарк-1М» → 1L260	**177**
ЗСУ-23-4 → ZSU-23-4	**162**
ЗУ-23 → ZU-23-2	**163**
ЗУ-23-2 → ZU-23-2	**163**
Зубр → Project 12322	295
И	
«Иван Грен» → Project 11711	**294**
«Игла» → 9K38	**165**
«Игла-1» → 9K310	**165**
«Игла-С» → 9K338	**165**
Изделие → Kh-101	**148**
Изделие 51/52 → Izdeliye 51	**277**
Ил-18Д → Il-18D	261
ИМР-2 → IMR-2	**215**
ИМР-2М → IMR-2	**215**
ИМР-3М → IMR-3	**215**
Инвар → 9M119	306
Иноходец → Orion	**272**
ИСДМ → ISDM	**217**
Искандер → 9K720	**143**
Искандер-К → 9K720	**143**
Искандер-М → 9K720	**143**
Италмас → BM-35	**275**
К	
К1Ш1 → K1Sh1	
К30ОП → 3K55	**146**
К-340П → 3S55	146
Ка-226 → Ka-226	286
Ка-226Т → Ka-226	286
Ка-31 → Ka-31R	**290**
Ка-31Р → Ka-31R	**290**
Ка-52 → Ka-52	**284**
Ка-52М → Ka-52	**284**
Калибр → 3M14	317
КАМАЗ-4310 → KamAZ-4310	**247**
КамАЗ-43269 → KamAZ-43269	**109**
КАМАЗ-5350 → KamAZ-5350	**247**
КАМАЗ-53501 → KamAZ-53501	**247**
КамАЗ-53949 → KamAZ-53949	**113**
КАМАЗ-6350 → KamAZ-6350	**247**
КАМАЗ-63501 → KamAZ-63501	**247**
КамАЗ-63968 → KamAZ-63968	**113**
КАМАЗ-65225 → KamAZ-65225	**254**
КАМАЗ-6560 → KamAZ-6560	247
Капустник-БМ → Kapustnik-BM	124
Кастет → 9K116	306
Кинжал → Kh-47M2	318
«Китолов-2» → 3OF69	309
Китолов-2 → 3VOF112	**313**
«Китолов-2М» → 3OF69M	309
Китолов-2М → 3VOF112	**313**
Клюква → RPG-28	
КМ-8 → KM-8	313
Конкурс → 9K111-1	**305**
Конкурс-М → 9K111-1	**305**
Копьё → SPG-9	
Корд → 6P50	
Корнет → 9K135	**307**
Корнет-Д → 9K135	**307**
Корнет-Э → 9K135	**307**
Корнет-ЭМ → 9K135	**307**
Корсар → Korsar	**271**
КПВ → KPV	
КПТМ-3 → PTM-3	**329**
КрАЗ-255Б → KrAZ-255	**252**
КрАЗ-260 → KrAZ-260	**252**

ОБОЗНАЧЕНИЕ, НАЗВАНИЕ	PAGE
«Краснополь» → 3OF39	*309*
Краснополь → 3OF39	314
КРУС → KRUS-VR	240
Крюк → RPG-30	
КСАС → 9S935	*233*
Куб-БЛА → KUB-BLA	276
Курганец-25 → Kurganets-25	*106*
Курьер → NRTK	264
Кушетка-Б → R-149BMR	228
Л	
Л-39 → L-39	*262*
Ланцет → Izdeliye 51	277
Легенда-2 → R-439	238
Лепесток → PFM-1	326
Линза → KamAZ-53949	113
Луна-М → 9K52	*140*
М	
М113 → M113	118
М-160 → M-160	*138*
М-30 → M-30	139
М-46 → M-46	138
МАЗ-537 → MAZ-537	254
МАЗ-543/МАЗ-7310 → MAZ-543	*248*
Малютка → 9K11	*304*
«Мангуст», «Соболь», «Тунец» → FSB	297
МДК-3 → MDK-3	214
Медальон → POM-3	328
Метис → 9K115	308
Метис-М → 9K115-1	308
Метис-М1 → 9K115-2	*308*
МЗКТ-7930 → MZKT-7930	158
Ми-24 → Mi-24P/V	285
Ми-24В → Mi-24P/V	285
Ми-26 → Mi-26	289
Ми-26Т → Mi-26	289
Ми-26Т2В → Mi-26	289
Ми-28Н → Mi-28N	285
Ми-28УБ → Mi-28N	285
Ми-35М → Mi-24P/V	285
Ми-8 → Mi-8MT	287
Ми-8АМТШ-ВН → Mi-8AMTSh-VN	*286*
Ми-8МНП-2 → Mi-8MNP-2	*286*
Ми-8МТ → Mi-8MT	287
Ми-8МТПР-1 → Mi-8MTPR-1	288
Ми-8ППА → Mi-8PPA	*289*
Ми-8СМВ-ПГ → Mi-8PPA	*289*
Ми-8Т → Mi-8MT	287
МЛ-20 → ML-20	139
ММК → MMK	208
МО.1.01.04 → MO.1.01.04	316
МО.1.01.04М → MO.1.01.04	316
МОН-100 → MON-100	323
МОН-200 → MON-200	324
МОН-50 → MON-50	*322*
МОН-90 → MON-90	*323*
«Москва-1» → 1L267	184
МП-К → 9S931-1	233
МРТО → MRTO	*143*
МТ-12 → MT-12	134
МТ-ЛБ → MT-LB	107
МТ-ЛБВ → MT-LBV	*107*
МТ-ЛБВМ → MT-LBVM	*107*
МТ-ЛБВМ1К → MT-LBVM	*107*
МТ-ЛБВМК → MT-LBVM	*107*
МТ-ЛБу → Object 10	*107*
МТП-ЛБ → MTP-LB	220
МТУ-20 → MTU-20	*208*
МТУ-72 → MTU-72	212
МТУ-90 → MTU-90	*209*
Мурманск-БН → GT-01	184
Н	
«Небо-СВ» → 1L13-3	170
«Небо-СВУ» 1Л119 → 1L119	170
Нетто → RPG-22	
Нокаут-2 → PTM-4	*330*
Ночной охотник → Mi-28N	285

ОБОЗНАЧЕНИЕ, НАЗВАНИЕ	PAGE
НРТК → NRTK	264
НСВ → NSV	
О	
Объект 137 → T-54	94
Объект 148 → T-14	*93*
Объект 166 → T-62	95
Объект 172М → T-72	96
Объект 184 → T-72B	96
Объект 188 → T-90	98
Объект 219АС → T-80U	97
Объект 219Р → T-80B	97
Объект 434 → T-64A	95
Объект 447 → T-64B	95
Объект 501 → BRM-3K	*105*
Объект 564 → BMO-T	101
Объект 675 → BMP-2	102
Объект 676 → BRM-1K	104
Объект 688 → BMP-3	103
Объект 6МА → MT-LBM 6MA	*107*
Объект 6МБ → MT-LBM 6MB	*107*
Объект 765 → BMP-1	101
Объект 950 → BMD-3	*100*
Овод → Kh-59	148
ОЗМ-72 → OZM-72	*325*
Омич-2 → NRTK	264
Орешник → Oreshnik	*319*
Орешник → SS-X-31	149
Орион → Orion	272
Орлан-10 → Orlan-10	268
Орлан-30 → Orlan-30	268
Отёк → POM-2	327
П	
П-18 «Терек» → P-18	172
П-19 «Дунай» → P-19	*172*
П-35 «Сатурн» → P-35	*172*
П-800 «Оникс» → P-800	*146*
«Палантин» → Palantin	190
«Палантин-К» → Palantin	190
Панцирь-С1 → 96K6	158
Панцирь-С2 → Pantsir-S2	158
Панцирь-СМ → Pantsir-S1M	158
Панцирь-СМД-Е → Pantsir-SMD-E	*159*
Панцирь-СМ-СВ → Pantsir-SM-SV	158
Патруль → Asteis-7020	109
ПДМ-1 → PDM-1	325
ПДМ-1М → PDM-1	325
«Пенициллин» → 1B75	174
ПЗМ-2 → PZM-2	214
«Плавск» → MKTK-1	*194*
Пламя → AGS-17	
ПМ-38 → M-1938	*139*
ПММ-2 → PMM-2	211
ПММ-2М → PMM-2	211
ПМН → PMN	*326*
ПМН-1 → PMN	327
ПМН-2 → PMN	327
ПМП → PMP	210
ПМП-М → PMP	210
ПМУО → 9S933	*233*
Поиск → R-161	236
Поляна-Д4 → 9S52	233
ПОМ-2 → POM-2	*327*
ПОМ-2Р → POM-2R	*327*
ПОМ-2Р → POM-2	327
ПОМ-3 → POM-3	328
ПП-2005 → PP-91M	210
ПП-91 → PP-91	210
ПП-91М → PP-91M	210
ППС-84 → PPS-84	*211*
проект 02800 → Project 02800	*298*
проект 03160 → Project 03160	299
проект 1171 → Project 1171	294
проект 11711 → Project 11711	294
Проект 1176 → Project 1176E	295
проект 11770 → Project 11770E	296
проект 1204 → Project 1204	*300*

ОБОЗНАЧЕНИЕ, НАЗВАНИЕ	PAGE
проект 12322 → Project 12322	*295*
проект 21820 → Project 21820	*295*
Проект 21980 → Project 21980	298
проект 775 → Project 775	294
Прорыв-3 → T-90M	*98*
Противник-ГЕ → 59N6	*168*
ПРП-3 «Вал» → PRP-3	*176*
ПРП-4А «Аргус» → PRP-4A	234
ПРП-4М «Дейтерий» → PRP-4M	234
ПРП-4 Нард → PRP-4	234
ПТ-76 → PT-76	*108*
ПТМ-1 → PTM-1	*329*
ПТМ-1Г → PTM-1	328
ПТМ-3 → PTM-3	*329*
ПТМ-4 → PTM-4	*330*
ПТМ-4М → PTM-4	330
ПТС-2 → PTS-2	211
ПТС-3 → PTS-3	211
ПТС-4 → PTS-4	211
ПТС-М → PTS-2	211
ПУ-12 → PU-12	234
ПФМ-1 → PFM-1	*326*
ПФМ-1С → PFM-1	*326*
Р	
Р-142Н → R-142N	236
Р-149БМР → R-149BMR	228
Р-161 → R-161	236
Р-166 → R-166	237
Р-168 → R-168	
Р-17 → 9K72	*140*
Р-325УМВ → R-325UMV	*188*
Р-330Б «Мандат-Б» → R-330B	191
Р-330БМВ → R-330BMV	191
Р-330Ж «Житель» → R-330Zh	192
Р-330КМА → R-330KMA	*191*
Р-330КМВ → R-330KMV	*188*
Р-330М1П «Диабазол» → R-330M1P	191
Р-330 «Мандат» → R-330	
Р-330Т → R-330T	191
Р-340РП «Поле-21» → R-340RP	200
Р-378А(Б) → R-378A	
Р-378БМВ → R-378BMV	*188*
Р-381Т → R-381T	194
Р-412АМ → R-412A	237
Р-439 → R-439	238
Р-500 → 9M728	143
Р-934БМВ → R-934BMV	191
Р-934Б «Синица» → R-934B	191
Ракушка → BTR-MDM	106
«Рапира» → MT-12	134
«Раптор» → Project 03160	299
РБ-109А «Былина» → RB-109A	196
РБ-301Б «Борисоглебск-2» → RB-301B	188
РБ-341В «Леер-3» → RB-341V	190
РБ-531Б «Инфауна» → RB-531B	199
РБ636 «Свет-КУ» → RB-636AM2	197
Резонер → R-412A	237
Репеллент-1 → Repellent-1	200
Рефлекс-М → 9K119	306
РЛМ-Д → RLM-D	*170*
РЛМ-М → RLM-M	*170*
РЛМ-С → RLM-S	*170*
Росток → BTR-90	111
РПГ-22 → RPG-22	
РПГ-26 → RPG-26	
РПГ-28 → RPG-28	
РПГ-29 «Вампир» → RPG-29	
РПГ-30 → RPG-30	
РПГ-32 → RPG-32	
РПГ-7 → RPG-7	
РПО-А «Шмель» → RPO-A	
РХМ-4 → RKhM-4	222
РХМ-6 → RKhM-6	222
РХМ-8 → RKhM-8	222
РХМ-9 → RKhM-9	222

ОБОЗНАЧЕНИЕ, НАЗВАНИЕ	PAGE
Рысь → BRM-3K	*105*
Рысь → Rys	*111*
Рычаг-АВ → Mi-8MTPR-1	288
С	
С-300В → S-300V	154
С-300В4 → S-300V4	154
С-300ПМ → S-300PM	153
С-300ПМ2 → S-300PM	153
С-300ПМУ → S-300PS	153
С-300ПМУ1 → S-300PM	153
С-300ПС → S-300PS	153
С-350 «Витязь» → S-350	154
С-400 «Триумф» → S-400	155
С-500 «Прометей» → S-500	*156*
С-60 → S-60	159
«Сания» → Saniya	202
Сантиметр → 3OF38	314
Сапсан → Mi-8AMTSh-VN	*286*
«Серна» → Project 11770E	296
СЕРП-ВС6Д → SERP-VS6D	198
«Силок-01» → Silok-01	198
СНАР-10 «Леопард» → SNAR-10	176
СНАР-10М → SNAR-10M	176
«Сосна» → Sosna	159
Сосна-У → Sosna-U	
СПГ-9 → SPG-9	
СПМ-2 → GAZ-233036	*112*
«Стрела-2» → 9K32	*164*
«Стрела-3» → 9K34	*164*
Стрелец → KRUS-VR	240
Стрелец-М → KRUS-VR	240
Т	
Т-12 → T-12	134
Т-12А → MT-12	134
Т-14 → T-14	*93*
Т-15 → T-15	*93*
Т-54 → T-54	94
Т-55 → T-55	94
Т-55А → T-55A	*94*
Т-55АМ → T-55AM	*94*
Т-55АМВ → T-55AM	*94*
Т-62 → T-62	95
Т-62М → T-62M	*95*
Т-62МВ → T-62MV	*95*
Т-64А → T-64A	95
Т-64Б → T-64B	95
Т-72 → T-72	96
Т-72А → T-72A	96
Т-72АВ → T-72AV	*96*
Т-72Б → T-72B	96
Т-72Б1 → T-72B1	*96*
Т-72Б1К → T-72B1	*96*
Т-72Б3 → T-72B3	96
Т-72Б3М → T-72B3M	96
Т-72БА → T-72BA	96
Т-72БМ → T-72BM	96
Т-72М → T-72M1	*96*
Т-72М1 → T-72M1	*96*
Т-72 «Урал» → T-72	96
Т-80Б → T-80B	97
Т-80БВ → T-80BV	*97*
Т-80БВК → T-80BVK	*97*
Т-80БВМ → T-80BVM	*97*
Т-80У → T-80U	97
Т-80УЕ-1 → T-80UE-1	*97*
Т-80УК → T-80UK	*97*
Т-80УМ2 → T-80UM2	*97*
Т-90 → T-90	98
Т-90А → T-90A	*98*
Т-90АК → T-90AK	*98*
Т-90М → T-90M	*98*
Т-90С → T-90S	*98*
Т-90СК → T-90S	*98*
Таволга → RPG-27	
Тайфун-К → KamAZ-53949	113
Тайфун-К → KamAZ-63968	113
Тайфун-У → Ural-63095	113

ОБОЗНАЧЕНИЕ, НАЗВАНИЕ	PAGE
«Тапир» → Project 1171	294
«Таран» → R-381T	194
Тахион → Tachyon	269
ТБС-М3 → TBS-M3	*316*
ТБС-М3 → MO.1.01.04	316
ТДА-2К → TDA-2K	223
ТДА-2М → TDA-2K	223
Терминатор → BMPT	104
Терминатор-2 → BMPT-72	*104*
ТЗМ-Т → TZM-T	*125*
Тигр → GAZ-233014	112
Тигр-М → AMN-233114	112
«Тирада 2.3» → Tirada-2S	186
«Тирада-2С» → Tirada-2S	186
ТКБ-0175 → RPG-29	
ТМ-46 → TM-46	*330*
ТМ-57 → TM-57	*331*
ТМ-62 → TM-62	*332*
ТМ-62М → TM-62	332
ТМ-62П → TM-62	332
ТМ-83 → TM-83	*333*
ТММ-3 → TMM-3	212
ТММ-6 → TMM-6	212
ТММ-7 → TMM-7	212
ТМН-46 → TM-46	331
ТМС-65 → TMS-65	222
«Тобол» → Tobol	186
«Тор-М1-2У» → 9K331MU	161
«Тор-М2ДТ» → 9K331MDT	161
ТОС-1А «Солнцепёк» → TOS-1A	125
ТОС-1 «Буратино» → TOS-1	125
ТОС-2 «Тосочка» → TOS-2	125
ТОС-3 «Дракон» → TOS-3	125
Точка-У → 9K79	141
Ту-134 → Tu-134	*257*
Ту-134А-4 → Tu-134UBL	*257*
Ту-134УБЛ → Tu-134UBL	*257*
Ту-154 → Tu-154	*241*
Ту-154М → Tu-154M	*258*
Ту-214ОН → Tu-214ON	*260*
Ту-214ПУ-СБУС → Tu-214PU-SBUS	*242*
Ту-214СР → Tu-214SR	*259*
У	
УАЗ-452 → UAZ-452	249
УАЗ-469 → UAZ-469	249
УМЗ → UMZ	218
УМПК → UMPK	*320*
УР-67 → UR-67	*215*
УР-77 → UR-77	216
УР-83П → UR-83P	*216*
Урал-375Д → Ural-375D	*249*
Урал-4320 → Ural-4320	*250*
Урал-432009 → Ural-432009	*114*
Урал-43206 → Ural-43206	*252*
Урал-63095 → Ural-63095	113
Урал-ВВ → Ural-432009	*114*
Уран-6 → Uran-6	216
Утёс → NSV	
Ф	
Фагот → 9K111	305
«Флокс» → 2S40	132
Форпост → Forpost	271
Х	
Х-101 → Kh-101	*319*
Х-22 → Kh-22	147
Х-22 «Буря» → Kh-22	*317*
Х-32 → Kh-32	*317*
Х-32 → Kh-22	147
Х-47М2 → Kh-47M2	*318*
Х-55 → Kh-55	*318*
Х-55 → Kh-101	148
Х-59 → Kh-59	148
Х-59М → Kh-59	148
Х-59 «Овод» → Kh-59	*318*
Х-69 → Kh-69	*319*
Хризантема → 9K123	116

ОБОЗНАЧЕНИЕ, НАЗВАНИЕ	PAGE
Ч	
Чистюля → Chistyulya	198
Ш	
«Шиповник-АЭРО» → Shipovnik-Aero	196
Шквал → BMP-1U	*101*
Шмель → Project 1204	*300*
Штурм → 9K114	115
Э	
Элерон-3 → Eleron-3	266
Элерон-3СВ → Eleron-3	266
Эльбрус → 9K72	*140*
Я	
Як-40 → Yak-40	*258*
Як-52 → Yak-52	*280*
Як-52Б2 → Yak-52B2	*280*
F	
FPV-дроны → FPV drones	279

Table 2. Unit type to equipment

Tag gives basis, date and confidence. See page 3 for explanations.

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
Aerospace Forces	Korsar	Aerospace Forces holding; unit not stated	R 2024 L	271
	Mohajer-6	Aerospace Forces (IISS list, p.38); subunit INA	R 2024-12 M	272
Aerospace Forces (VKS)	Orion	Aerospace Forces (VKS) UAV holdings; IISS lists 'some Inokhodets'	R 2024 M	272
aerospace forces air defence regiment	96L6 all-altitude acquisition radar	3rd SAM battalion. INA (photographed deployed and stowed)	O 2010-02 M	168
	96L6 all-altitude acquisition radar	S-400 'battery' in Armada's usage; APA export diagram lists it as a battery component. 1 per S-400 battery (Armada, term undefined; APA lists 96L6E as a battery component without a count); S-300PMU2 count INA	R 2014 M	168
	96L6 all-altitude acquisition radar	S-400 air defence regiment. INA (APA lists 96L6E as an S-400 battery component; brigade holdings not given)	R 2012-04 L	168
	96L6 all-altitude acquisition radar	S-400 fire unit	R 2026-07 L	168
	Buk-M1 / Buk-M2 / Buk-M3	4 Aerospace Forces regiments with Buk-M1-2, Buk-M2 and S-300V; about 80 Buk-M1-2/Buk-M2 in Aerospace Forces holdings	R 2024 M	152
	Pantsir-S1	Pantsir vehicles deployed with each S-400 battalion (Armada); Lenta: batteries attached to S-400 regiments. 3 per S-400 battalion (Armada, 2024)	D 2024 H	158
	Pantsir-S1	Pantsir-S battery. 6 Pantsir-S delivered to Eastern MD air defence units on Kamchatka, Dec 2015; the regiment was reported due one battery	O 2015-12 M	158
	Pantsir-S1	Pantsir-S1 gun-missile battalion; each battery covers one S-400 battalion	O 2020-02 M	158
	Pantsir-S1	INA per regiment; IISS lists 9 SAM regts with Pantsir-S1 in the 45th, 4 in the 14th, 3 in the 4th and 4 in the 11th AF&AD Army	R 2024 M	158
	S-300PM / S-300PS	SAM battalions	D 2024-11 H	153
	S-300PM / S-300PS	Aerospace Defence Cmd (Moscow) 4 regts PM1/PM2; Moscow MD 2 PM1/PM2; Northern Fleet 4 mixed (PS, PM1, S-400) and 1 PM1/PM2; Central MD 1 PS, 1 PM2; Southern MD 1 PM1; Eastern MD 4 PS with S-400 and Pantsir-S1	R 2024-11 M	153
	S-300PM / S-300PS		R 2021-07 M	153
	S-300PM / S-300PS	S-300 Favorit crews, live firing at Ashuluk in an exercise with the 4th Air Force and Air Defence Army (MoD claim)	R 2019 M	153
	S-400 Triumf	IISS: 13 Aerospace Forces regts with S-400 and Pantsir-S1, plus 2 mixed with S-300	R 2024 M	155
Aerospace Forces army aviation units supporting the Ground Forces	Ka-52 Alligator		D 2024-02 M	284
	Mi-24P/V and Mi-35M		D 2024-02 L	285
Aerospace Forces missile attack warning system	Voronezh-DM	separate radio-technical centre of the missile attack warning system (SPRN). 1 or 2 radars per site (Podvig table)	R 2026 M	178
Aerospace Forces UAV units	Forpost	Aerospace Forces UAV units	R 2024-11 H	271
Africa Corps in Mali	Garpiya-A1	wreckage found near Sévaré, May 2026	R 2026-05 L	273
air assault brigade	BMD-4M	air assault battalion (battalion set); brigade since re-formed as 104th Guards Airborne Division. 31 per battalion; two battalion sets delivered 2017	R 2017-08 M	100
	Verba	brigade air defence; MANPADS spread among march columns	O 2025-07 M	165
	ZU-23-2	anti-aircraft battery (Soviet structure). 6 per brigade	D 1991 M	163
air assault division	BMD-2	1st parachute company, military unit 74268	R 2014-08 L	99
	BMD-4M	air assault battalion of an air assault regiment (battalion set). 31 per battalion (nominal battalion set)	R 2020-06 M	100
	Kornet	reconnaissance troops, Kornet on buggies (RIA photo caption in RT; formation identified as 7th Gds Air Assault Div (Mountain) via WPVDV7)	O 2024 L	307
	Lancet		O 2023-07 L	277
	Verba	all air assault divisions re-armed with Verba (VDV commander, Jul 2017)	R 2017-07 M	165
air assault regiment	2S9 Nona-S	self-propelled artillery battalion (3 batteries of 6 in the 1982 establishment, replacing the regimental mortars). 18 per battalion (6 per battery)	D 2000 L	129
	BMD-1KSh-A	2 to 7 BMD-1KSh per regiment in the 2000 list	R 2000 L	226
	BTR-D	42 in 247th regiment (2017 table); 26-38 per regiment in a 2000 listing	R 2017 L	105
air defence missile battalion	S-300PM / S-300PS	launcher battery; radio-technical battery with mobile command post. 12 launchers (4 5P85S + 8 5P85D, S-300PS); 3 battalions per regiment	D 2000 M	153
	S-300V4	1 battalion (Izvestia)	R 2016 M	154
	S-350 Vityaz	Battalion set: 1 command post 50K6A, 2-3 multifunction radars 50N6A, 12 launchers 50P6A. 12 launchers (12 missiles each) per battalion, per Russian MoD statement	R 2020 M	154
	S-400 Triumf	IISS: 2 SAM bn in Belarus; 1 SAM bty in Syria	R 2024 M	155
	Vityaz DT-10, DT-20 and DT-30	Tor-M2DT battalion, Pechenga area, Kola Peninsula	R 2019-11 M	256
air defence missile brigade	Buk-M1 / Buk-M2 / Buk-M3	4 air defence missile battalions, each 3 batteries; brigade command post Polyana-D4. Buk-M1: 6 TELARs, 3 loader-launchers, 1 CP, 1 search radar per battalion; 24 TELARs per 4-battalion brigade (JIT: 53rd Bde had 3 operational battalions in 2014)	D 2016 H	152
	Buk-M1 / Buk-M2 / Buk-M3	battalion TELAR. INA per battalion; brigade had 3 operational battalions in 2014 (JIT)	O 2014-07 M	152
	Buk-M1 / Buk-M2 / Buk-M3	air defence missile battalion (brigade set of Buk-M3). Buk-M3: up to 6 TELARs or 9S36M radars and up to 12 launchers per battalion	R 2019 M	152
	Buk-M1 / Buk-M2 / Buk-M3	air defence missile battalion	R 2018 L	152
	Nebo-SVU	one unit of the brigade, Kherson area (military unit 54821)	R 2024-01 L	170
	Polyana-D4	brigade command post (combat control post MP06 and command-staff vehicle MP02)	D 2021-12 H	233

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	Polyana-D4	brigade command post; vehicle captioned as 9S52M Polyana-D4M	O 2010-12 M	233
	S-300PM / S-300PS		R 2024-11 M	153
	S-300V4	air defence missile battalion (up to 4 per brigade, under Polyana-D4M1 brigade CP); battalion CP 9S457M controls up to 4 batteries; WEG: an upper-level 9S52 Polyana-D4 command post may integrate S-300V with Buk into one brigade. S-300V battery: 1 9S32, 4 9A83, 2 9A82, 1 9A84, 2 9A85; S-300V4 battery counts INA	D 2017 M	154
	S-300V4	INA. IISS lists S-300V and S-300V4 in Army holdings without a count and counts 16 SAM brigades, but does not say which hold them; Izvestia reports S-300V4 brigades under the OSK	R 2024 M	154
	S-300V4	air defence missile battalion (reported deployed to Crimea Nov 2016)	R 2016 M	154
	ZU-23-2	close-in defence of SA-4 launchers (Soviet structure)	D 1991 L	163
air defence missile regiment	Barnaul-T	regiment CP (9S931-1 MP-K, 9S931); battalion CPs (9S931); battery C2 posts (9S932-1); MANPADS platoons (9S933) and squads (9S935)	R 2025-06 L	233
	Buk-M1 / Buk-M2 / Buk-M3	INA; CNA p.22 says only that the regiment's Tor and Osa-AKM are being retired in favour of Buk-M2 (2019); holdings not stated	R 2019 L	152
	Pantsir-S1	30 held by the Navy (IISS p. 187)	R 2024 M	158
	Pantsir-S1	INA (1 SAM regt with S-400 and Pantsir-S1)	R 2024 M	158
	PU-12M7	Osa regiment main control means (PU-12, from late 1970s per ARMF)	D 1979 L	234
	S-350 Vityaz	INA; planned to receive S-350 about three years after the Krasnoyarsk brigade (RG), by 2025 (Army Recognition); delivery not confirmed	R 2020 L	154
	S-400 Triumf	about 12 launchers reported at the unit site; 4 launchers and 96L6 and 92N6 radars reported destroyed	O 2025-11 M	155
	S-400 Triumf	air defence missile battalion (divizion). usually 2 battalions of 8 launchers each (16 per regiment); 2012 press report relaying MoD press service	R 2012 M	155
	S-400 Triumf	Navy: regiments under fleet air defence divisions. IISS: 64 S-400 in Navy; 3 SAM regts: 2 Baltic Fleet, 1 Pacific Fleet (naval aviation)	R 2024 M	155
	S-400 Triumf	1st and 2nd battalions. 8 launchers per battalion (Wikipedia order of battle, undated)	R 2025 L	155
Air Force and Air Defence Army, Northern Fleet	Nebo-SVU	subunits attached to the army	R 2021-04 L	170
airborne division	120 mm gun-mortar rounds (3OF49, 3OF50, 3BK19)	artillery regiment, self-propelled artillery battalion with 2S9	D 2024 M	311
	122 mm howitzer rounds	artillery regiment: one battalion of 12 D-30A in 2 batteries (Soviet organisation). 12 per battalion	D 1991 M	311
	2S12 Sani	mortar battery of airborne regiments, towed 2B11 (Soviet era). 6 or 8 per battery	D 1991 M	130
	2S9 Nona-S	artillery regiment, self-propelled artillery battalion (3 batteries of 6 in the 1982 establishment; no later establishment found). 18 per battalion (6 per battery)	D 2000 L	129
	2S9 Nona-S	2S9 artillery subunits near Klishchiivka (date from MILKL losses, Apr 2023)	O 2023 L	129
	Barnaul-T	air defence missile regiment. one full divisional set	O 2018-06 M	233
	Barnaul-T	air defence missile regiment	O 2018 L	233
	BMD-2	airborne regiment, battalion, company: 3 BMD per platoon, one per squad (BMD-1 in source). over 100 BMD per regiment, BMD-1 as squad vehicle (Soviet structure)	D 1991 M	99
	BMD-2	parachute regiment (Kostroma); MoD claim via RIA	O 2021 M	99
	BMD-2	parachute regiment	O 2011-09 L	99
	BMD-2	about 650 BMD-2 across the VDV (IISS estimate); 150 BMD-1 in store	R 2024 H	99
	BMD-4M	lost at Hostomel, 3 Mar 2022, as the 31st Guards Air Assault Brigade	O 2022-03 M	100
	BMD-4M	parachute battalion of a parachute regiment (battalion set). 31 per battalion (nominal battalion set)	R 2021-07 M	100
	BMD-4M	200 in the Airborne Forces in total, not broken down by formation (IISS estimate)	R 2024 M	100
	BTR-D	150 BTR-D in all Airborne Forces (IISS estimate); per-division count INA	R 2024-12 M	105
	BTR-MDM Rakushka	Procurement plan, replacing BTR-D; not a holding. Plan (2015) of 2,500 by 2025; not met, IISS estimate 150 in 2024	D 2015 L	106
	D-30	artillery regiment: howitzer battalion (18) and composite battalion (12 with 6 BM-21V). 30 per artillery regiment	D 1991 M	137
	Eleron-3SV	UAV subunit (planned 2018)	R 2018-05 L	266
	Lancet		O 2023-07 L	277
	Leer-2	EW subunit (FOI: VDV EW companies formed from 2016). INA; MoD announced 10 complexes for VDV EW units, Dec 2012 (title only, state claim)	R 2018 M	189
	Supercam S350	separate unmanned systems battalion	O 2026-03 L	269
	T-72B3/B3M	tank battalion. about 35 T-72B3 per division (2021)	D 2024 H	96
	T-90	INA; 7th, 76th and 106th Airborne Divisions each have one tank battalion (IISS). 30 T-90M across the Airborne Forces (IISS estimate); IISS does not say which formation holds them	R 2024 L	98
	Verba	air defence missile regiment	O 2024-01 H	165
	ZU-23-2	anti-aircraft artillery battalion (Soviet structure). 18 per division	D 1991 M	163
Airborne Forces	2S31 Vena	Listed under Airborne Forces equipment; holding unit not stated	R 2024 L	131
	BM-21 Grad 122 mm MRL	Airborne Forces, holding unit not stated	R 2024 M	122
	BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	Toros: on Airborne Forces AUV list; no unit named	R 2024-12 M	109
Airborne Forces (VDV)	2S5 Giatsint-S	Airborne Forces artillery; unit not named	R 2024 M	128
	9K111 Fagot / 9K111-1 Konkurs	Fagot crews, dismounting from BTR-D	O 2024-07 H	305
	D-20	howitzer crews (subunit not named), near Chasiv Yar	R 2025-09 L	137
	KM-8 Gran	2S9 Nona-S self-propelled 120 mm gun-mortar (entry 2s9); 2B23 Nona-M1 towed 120 mm mortar	R 2025 L	313
	Kornet	mobile ATGM crews working with UAV spotters (MoD claim via RG, Jun 2022)	R 2024 H	307

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
Airborne Forces (VDV) and Border Troops	GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	after 1991, undated; statement unsourced in ru Wikipedia	R 1992 L	246
Airborne Forces (VDV) EW units	Dzyudoist	EW units of the Airborne Forces (VDV)	R 2012-07 M	189
Airborne Forces (VDV) units	2S25 Sprut-SD	battery. 24 in four batteries in 2009 (TASS claim via English Wikipedia)	R 2009 L	99
	BRDM-2	Airborne Forces (VDV) units; no formation named	R 2023 L	109
Airborne Forces subunits	DJI Mavic, Air, Mini and Matrice quadcopters (China)	thermal-camera Mavics for night bombing, southern front across the Dnieper	R 2023-04 L	265
airborne regiment	2S25 Sprut-SD	regimental anti-tank battery	R 2025 L	99
anti-sabotage detachment	Grachonok	Northern Fleet detachment for combating underwater sabotage forces and means (Russian MoD, Jan 2025)	R 2025-01 M	298
	Raptor	first 3 boats, Mar 2015	O 2015-03 M	299
anti-tank battalion	Khrizantema-S	ATGM battery (two per battalion, Khrizantema-S or Kornet), motor rifle brigade. 6 per battery	D 2024 M	116
	Kornet	ATGM platoon; separate anti-tank artillery battalion, Dnepr group, Orikhiv direction, Oct 2024 (MoD claim via Izvestia)	R 2024-10 L	307
	MT-LB	anti-tank gun battery (prime mover for 100 mm MT-12)	D 2024 M	107
	R-145BM Chayka command and staff vehicle	ACV listed as 'BTR-60PU/BRDM-2'; battery placement unclear in OCR. 5 per battalion (BTR-60PU or BRDM-2)	D 1991 L	227
Anti-tank units of divisions	Kornet	Kornet-D being fielded	R 2019 M	307
Anti-tank units of motor rifle brigades	Kornet	9P162 Kornet-T or Khrizantema-S batteries	D 2016 M	307
Army	BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	Vystrel: on Army AUV list; no unit or subunit given	R 2024-12 M	109
Army air defence units, MANPADS sections	Gibka-S	MANPADS section vehicle (9A332); platoon commander vehicle (9S937) controls up to 6 of them. up to 6 9A332 per 9S937	R 2022-12 M	157
army aviation brigade	Ka-52 Alligator		R 2026-01 M	284
	Ka-52 Alligator		R 2026-01 L	284
	Ka-52 Alligator		R 2021-01 L	284
	Mi-8MTPR-1	Aircraft seen in Ukraine in MoD imagery are tied to the 15th and 18th brigades by The War Zone	R 2022 M	288
	Vikhr	Ka-52A and Ka-52M attack helicopters (IISS estimate: ε62 Ka-52A, ε20 Ka-52M), launchers on wing pylons; Ka-52M crews fire Vikhr-1 (Kalashnikov, 2024)	R 2024 M	321
Army Aviation units	Mi-8MTPR-1	Dedicated EW helicopters inside Army Aviation	D 2024 H	288
army corps	Iskander-M	corps missile brigade. 1 missile brigade (12 launchers)	O 2021 M	143
	Lancet	Kaskad unit	O 2023-07 L	277
	Vityaz DT-10, DT-20 and DT-30	field kitchens, bakeries and water tankers on DT-30PM	O 2020 M	256
artillery battalion	1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	1V18 battery commander's COP vehicle; 1V19 battalion commander's COP vehicle; towed gun and MRL battalions. 3 x 1V18 and 1 x 1V19 per battalion set	D 2016 M	231
	1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	1V152 as battery and battalion command-observation post of the 1V126 Kapustnik-B set; gun, mortar and MRL units	D 2016 M	231
	GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	battery fire control vehicles of the 1VI7 Mashina-B set (towed and MLRS artillery). 3 battery vehicles per battalion set (1V110 or 1V18; RWW inconsistent)	D 2016 L	246
	MT-LB	towed howitzer batteries (prime mover for 122 mm D-30)	R 2000 L	107
	ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	battalion fire direction centre, 1V111 vehicle of 1V17 set (towed and MRL units); RWW: chassis likely replaced in most units. 1 per battalion	D 2016 L	252
artillery brigade	152 mm gun and howitzer rounds	Howitzer battalions: 2S19 self-propelled or towed 2A65	D 2019 H	312
	1B75 Penicillin	1B75; planned recipients were artillery regiments and brigades	R 2020 L	174
	203 mm gun rounds (3OF43, 3OF44)	heavy artillery battery with 2S7 Pion/Malka, reintroduced after Syria	R 2019 M	312
	220 mm rockets (Uragan)	9P140 Uragan rocket artillery battalion (army artillery set). 1 battalion	D 2017 M	315
	220 mm rockets (Uragan)	9P140 Uragan	R 2019 L	315
	240 mm mortar bombs (3F2 HE, 3O8 cluster)	One 2S4 battalion of 12 launchers per army-level brigade; Soviet battalions had three batteries of four. 12 2S4 launchers per brigade; bombs INA	D 2019 M	312
	2A36 Giatsint-B 152 mm towed gun	gun battalion (152 mm) of the army artillery brigade; 2A36 or 2S5 or M-46. 36 per brigade (two 18-tube gun battalions) or 48 (four 24-tube battalions)	D 1991 M	135
	2A36 Giatsint-B 152 mm towed gun	gun brigade of the front artillery division; 2A36 or 2S7. 72 per brigade	D 1991 M	135
	2A65 Msta-B	artillery battalions (several per brigade; 2S19 or 2A65)	D 2019 M	135
	2S19 Msta-S	howitzer battalions (2S19 or towed 2A65); CNA reports gradual replacement by 2S35	D 2019 M	130

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	2S35 Koalitsiya-SV	self-propelled artillery battalions. INA; planned replacement of the brigade's 2S19 by 2S35, reported 2017, not carried out by late 2024	R 2019 L	132
	2S35 Koalitsiya-SV	artillery battalion	R 2026 L	132
	2S4 Tyulpan	heavy (high-power) battalion. 1 battalion per brigade (CNA: batteries); vehicle count INA	R 2017 M	128
	2S4 Tyulpan	2S4 battalion. 12 per battalion (RUWIKI)	R 2019 L	128
	2S5 Giatsint-S	gun battalion (152 mm). 18 per battalion (24 in forward armies); 2S5 or 2A36 or M-46	D 1991 M	128
	2S5 Giatsint-S	gun battalions (self-propelled). 24 to 72 per brigade (1990)	R 1990 L	128
	2S5 Giatsint-S	self-propelled gun battalion, batteries of 6	R 2016 L	128
	300 mm rockets (Smerch, Tornado-S)	BM-30 Smerch battalion; brigade also received BM-27 Uragan	R 2021 M	316
	3RB30 152 mm communications jammer round	152 mm artillery battalions with 2S19 self-propelled or 2A65 towed howitzers	D 2024 L	310
	9K114 Shturm-S	18 per brigade (2000-2009)	O 2021-03 M	115
	BM-27 Uragan	rocket artillery battalion	R 2019 L	122
	BM-27 Uragan	BAZ-69092 variant	R 2026-02 L	122
	D-20	gun-howitzer battalion. 18 per battalion (D-20, ML-20 or M1987); most army brigades had three such battalions	D 1991 M	137
	D-20	gun-howitzer brigade of the front artillery division (Soviet); D-20, ML-20, M1987 or 2S3. 144 per artillery division (152 mm gun-howitzers)	D 1991 M	137
	D-30	battery (Syria, Deir ez-Zor)	O 2018-05 L	137
	Eleron-3SV	UAS company of an army artillery brigade; each platoon flies Orlan-10, Eleron-SV or Granat-4	D 2019 L	266
	FPV drones	FPV drone crews; a subunit of the anti-tank battalion works with UAVs	O 2026-05 L	279
	Khrizantema-S	anti-tank battery (not yet in all brigades, 2019)	O 2021-12 M	116
	Lancet	reconnaissance-strike subunit with ZALA UAVs and Lancet	R 2024-12 L	277
	M-46	gun battalion (alternative to 2A36 or 2S5). 18 per battalion, 36 per brigade	D 1991 M	138
	Orlan-10	UAV company, UAS platoon (BKAR artillery reconnaissance version)	D 2019 M	268
	R-145BM Chayka command and staff vehicle	1 per brigade	O 1994 L	227
	Uragan-1M	MRL battalion (Uragan 'being succeeded' by Uragan-M1; no holding confirmed)	R 2019-10 L	125
	ZALA 421-16E	UAV reconnaissance-strike subunit (Z-16 with Lancet)	R 2024-12 L	270
artillery regiment	122 mm rockets (Grad, Tornado-G, Prima)	MRL battalion; Grad, being replaced by Tornado-G. 1 battalion	D 2019 M	315
	220 mm rockets (Uragan)	9P140 Uragan rocket artillery battalion or batteries in some division artillery regiments. 6 launchers per battery, 3 batteries per battalion	D 2019 M	315
	2S3 Akatsiya	self-propelled artillery battalion. 18 per battalion (3 batteries of 6), 24 in some with 4 batteries (Soviet standard)	D 2019 M	127
	2S31 Vena	Artillery regiment of 98th Airborne Division	O 2023-09 L	131
	2S5 Giatsint-S	24 per regiment (1990)	R 1990 L	128
	3RB30 152 mm communications jammer round	152 mm self-propelled howitzers, 2S19 or 2S3	D 2024 L	310
	BM-21 Grad 122 mm MRL	one Grad MRL battalion in division field artillery regiment, being replaced by Tornado-G	D 2019 M	122
	BMD-1KSh-A	0 to 2 per regiment in the 2000 list	R 2000 L	226
	D-20	18-24 per regiment; 36-48 per brigade (WEG, undated organisation text)	D 2025 L	137
	Kitolov-2 and Kitolov-2M laser-guided rounds	Battery of modernised 2S9 Nona-S, airborne artillery regiments; first Kitolov-2 firing, March 2013. one battery	R 2013-03 M	313
	Kornet	anti-tank platoon (MoD claim via RT)	O 2024-01 L	307
	Lancet	reconnaissance-strike subunit with ZALA UAVs and Lancet	R 2024-12 L	277
	Orlan-10	unmanned systems subunit (Orlan-30)	R 2026-07 L	268
	PFM-1 Lepestok scatterable anti-personnel mine	Uragan (BM-27) rocket batteries or battalions; 9M27K3 mine rocket	D 2019 M	326
	ZALA 421-16E	UAV reconnaissance-strike subunit (Z-16 with Lancet)	R 2024-12 L	270
Artillery units of the Central and Southern Military Districts	PRP-4A Argus / PRP-4M Deytery	artillery units	R 2018-06 L	234
assault detachment	Desertcross 1000-3 all-terrain buggy (China)	carry ammunition, food, troops and wounded to positions	R 2024-12 L	245
	ZSU-23-4 Shilka	assault group (urban assault). 1 ZSU (Shilka or Tunguska) per assault group	D 2024 M	162
Assault units (Roselectronics statement)	Groza-O4K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	Chistyulya	R 2024-08 L	198
At least 12 Russian Army units, not named	Zastava	INA; held by at least 12 units per InformNapalm (via Ukrinform, Ukrainian state media)	R 2020 L	270
aviation regiment	Kh-101 and Kh-55 air-launched cruise missiles	Tu-95MS and Tu-160 heavy bomber regiments, Long-Range Aviation; missiles carried by the aircraft. 8 per Tu-95MS on wing pylons; 12 per Tu-160 in two drums	R 2022 H	148
	Kh-22 and Kh-32 air-launched missiles	Tu-22M3 bombers; eight Kh-22 released on 24 Aug 2022. 8 missiles in one day (2022)	O 2022-08 M	147

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	Kh-47M2 Kinzhal	MiG-31K carrier aircraft; separate regiment announced Dec 2021. 1 missile per MiG-31K; 1 regiment with MiG-31K (IISS 2025)	R 2025 M	147
	Kh-59 Ovod family	ground-attack regiments with Su-34 and Su-24M	R 2024 M	148
	Kh-69	regiments flying Su-34 or Su-35S, the reported carriers	R 2024 L	148
	Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/ Mi-17 family)	transport regiments and squadrons	R 2024 M	287
	Orion	Naval Aviation UAV regiment (also holds Forpost)	R 2024 M	272
	Orion	Navy UAV regiment, reported as expected first operator (2020)	R 2020-12 L	272
	UMPK glide kits and UMPB D-30SN glide bomb	Su-34 ground-attack regiments (IISS: 3 with Su-34, 1 mixed Su-24M/Su-34); Su-34 is the main carrier of UMPK and UMPB. often 4 bombs per aircraft	R 2025 M	321
	UMPK glide kits and UMPB D-30SN glide bomb	Fighter and fighter/ground-attack regiments with Su-35S or Su-30SM (IISS); both types also drop UMPK	R 2025 L	321
Baltic Fleet 25th Coastal Missile Regiment	Bastion-P	one battalion (presumed). 4 launchers (Wikipedia)	R 2021 L	146
Black Sea Fleet naval aviation, against Ukrainian sea drones	Ka-27 and Ka-29	Ka-27 filmed attacking a sea drone, 6 May 2024; Ka-27PS firing a cabin pedestal-mounted PKM at a Magura-V5, Jun 2024; Ka-29 downed near Anapa during a Ukrainian drone attack, 21 Jun 2024 (cause unconfirmed)	R 2024-06 M	290
Border Guard maritime unit	FSB Border Service patrol boats (Mangust, Sobol, Tunets)	57 Mangust, 21 Sobol across the Border Service	R 2024 H	297
	FSB Border Service patrol boats (Mangust, Sobol, Tunets)	Tunets, number INA	R 2024 M	297
Central MD formations (MoD claim)	Garmon	Air defence subunits; five Central MD formations (Chelyabinsk, Samara, Kemerovo, Tuva, Tajikistan)	R 2018-08 M	169
coastal defence brigade	Bastion-P		R 2022-03 L	146
coastal missile brigade	Bal	coastal missile battalion (дивизион). 4 launchers per battalion (ESP24); RWW: four systems per battery	D 2016 H	145
	Bal	Bal battalion on Kunashir, Kuril Islands	O 2016-11 M	145
	Bal	Bal battalion reported moved to Bryansk region (Ukrainian NRC claim)	O 2023-06 L	145
	Bal	4 launchers each (end 2020)	R 2020 L	145
	Bal	4 launchers each (Wikipedia)	R 2021 L	145
	Bastion-P	coastal missile battalion (дивизион): 4 launchers, 1-2 command vehicles, 1 duty-support vehicle, 4 reloaders. 4 launchers per battalion	D 2024 M	146
	Bastion-P	missile battalion. 12 launchers per brigade (Wikipedia)	R 2026-02 M	146
	Bastion-P	12 launchers per brigade (Wikipedia)	R 2022 L	146
Cold War HQ links	R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations	R-412F General Staff-front and front-army; R-412A air defence-air force; R-412B army-grade operational-tactical HQ	D 1983 L	237
combined arms army	1B75 Penicillin	1L271 in rocket, missile and tube artillery units	R 2017 L	174
	Iskander-M	army missile brigade. 1 missile brigade (12 launchers) per army	D 2024 H	143
	Iskander-M	army missile brigade. 12 launchers per brigade	O 2023 M	143
	Iskander-M	army missile brigade	O 2018-07 L	143
	Lancet	56th separate special-purpose battalion	O 2024 L	277
	Leer-3	counter-UAV groups (training exercise)	R 2017-06 L	190
	Palantin	EW units of a Western MD combined arms army in Voronezh Oblast (army not named)	R 2019-04 M	190
	Palantin	EW troops of a Guards combined arms army, Western MD, Luga range, Leningrad Oblast (Palantin-K, Oct 2019); Feb 2022 exercise in Leningrad Oblast names only the Western MD	R 2022-02 M	190
	Pole-21	Army EW specialists; first used in an exercise with battalion tactical groups, with R-934BMV and Silok-01 (MoD via AiF)	O 2021-04 M	200
	Polyana-D4	army air defence and aviation command post (SKP PVO i aviatsii)	R 2021-12 M	233
	REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles	repair-evacuation subunit of the Eastern MD (2019-07); CAA in Priamurye (2019-10); first REM-KL batches	R 2019-10 M	221
	Strelets	Strelets-M: sniper companies and subunits. over 200 sets (first batch)	R 2019-12 L	240
	T-62	army units with T-62MV obr. 2022 (mine ploughs, cages, RP-377), per Forbes as retold by UNIAN	R 2024-02 L	95
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	separate special-purpose (deep reconnaissance) company	R 2021 L	113
	ZALA 421-16E	Z-16 reconnaissance UAV crews	O 2026-01 L	270
Combined arms brigades	P-240I-4 Pereselenets	command company or battalion	D 2019 M	235
Combined-arms formations of the Western Military District	Redut-2US		R 2015 L	239

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
command brigade	KamAZ-4310, -5350 and -6350 Mustang military trucks	communications company (Redut-2US on KamAZ-63501)	D 2019 M	247
	R-149 command and staff vehicles	R-149AKSh-1	O 2022-03 L	228
	R-149 command and staff vehicles	command formation (R-149MA1), per Southern MD press service	R 2018 L	228
	R-416GM Granit-M radio relay station	several (as 'Granit-M')	R 2021-11 L	238
	Redut-2US		O 2017 M	239
	Redut-2US	communications company	R 2019 M	239
Company and battalion level subunits	1B75 Penicillin	1L271 issued to company and battalion level subunits	R 2022 L	174
Company-platoon-squad level command (unit type not stated)	R-149 command and staff vehicles	R-149MA3	R 2025 L	228
Dedicated EW units and manoeuvre reconnaissance units	Infauna		D 2024 L	199
Division reconnaissance battery (Soviet era)	ARK-1M Rys	division's reconnaissance battery (WEG wording, identical to Wikipedia; Soviet-era)	R 2024 L	175
Divisions (divisional SIGINT set)	R-381T Taran		D 1985 L	194
DPRK contingent in Russia (Kursk region)	Bulsae-4 ATGM launcher vehicle (North Korea)	Kursk region, winter 2024-25; DPRK footage shows a pickup or SUV mount, not the 6x6 carrier	R 2025 M	116
Eastern MD air force and air defence formation	Mi-8MTPR-1	delivered to the formation's air units in late 2020 (Russian MoD via TASS, state claim)	R 2020 M	288
Engineer troops (sapper subunits)	TM-83	sapper squads and platoons laying in two-man teams, one mine kit per team	D 2010 L	332
Engineer troops (UMZ and PKM minelaying crews)	PTM-1	UMZ truck minelayers and PKM portable sets firing KPTM-1 cassettes	D 2024 L	328
Engineer Troops sapper platoons and squads	MON-90	Sapper platoon or squad; the 1982 manual has a sapper platoon lay a controlled field	D 1982 M	322
Engineer troops units	BMR-3M	engineer troops units (not named)	R 2024 M	214
Engineer units of the Southern and Eastern Military Districts	Uran-6	engineer units	R 2015-11 L	216
Engineer units with mine-layers (inferred; no source names a unit)	TM-57	Laid by hand or by layers PMR-3, PMZ-4, GMZ-2 and GMZ-3; engineer units and subunits hold the PMZ-4, GMZ-2 and GMZ-3 (Russian catalogue); brigade engineer-sapper companies and engineer regiments and brigades hold mine-layers	R 2024 L	331
Engineer units with UMZ mine-layer trucks	PTM-3	UMZ remote mine-layer trucks (PTM-3 is in the UMZ mine load)	D 2024 M	329
engineer-sapper battalion	BAT-2	route construction and clearing section; usually in the movement support detachment (OOD). 4 per battalion	D 2016 M	213
	BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines	engineer-technical company: engineer-position platoon and command-post equipment squad (brigade battalion). Position squad: 2 MDK-3, 2 BTM-4M, 2 EOV-3521. Command-post squad: 2 EOV-3521	D 2008 L	214
	BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines	engineer-position company, engineer-position platoon (division battalion). Table lists 2 each of BTM, MDK, PZM, EOV (layout unclear)	D 2017 L	214
	FPV drones		R 2024-03 L	279
	IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	mine clearing platoon (brigade engineer battalion). 2 IMR-3M per platoon	D 2016 M	215
	IRM Zhuk		D 1990 M	206
	IRM Zhuk	naval engineer battalion	D 1990 L	206
	ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer	obstacle platoon (brigade engineer battalion per RWW; division engineer battalion per WEG). 3 GMZ-3 per obstacle platoon	D 2016 M	217
	TMM-3 truck-mounted scissors bridge and MTU-72	brigade engineer battalion; sets almost always attached to the movement support detachment (OOD). 4 TMM-3 truck-launched bridge sets per brigade engineer battalion, each laying a 10 m span; together a 42 m bridge	D 2024-02 M	212

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	armoured vehicle-launched bridge			
	UR-77 Meteorit	mine clearing platoon (organic engineer battalion of a maneuver brigade). 2 per platoon	D 2016 M	216
	ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	movement support detachment; TMM-3 bridge sets (KrAZ-255B chassis). 4 TMM-3 sets per battalion (RWW: TMM-3 or TMM-6; TMM-6 is not on KrAZ)	D 2024 M	252
engineer-sapper brigade	IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	2 delivered Nov 2018, 1 more due first half 2019 (Central MD press service, state claim)	R 2018-11 L	215
	ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer		D 2024 L	217
	ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer	battalion (divizion) of the brigade	R 2022-02 M	217
	PMP heavy folding pontoon bridge park	pontoon bridge battalion of the army or front engineer brigade (FM 100-2-3 'Engineer Brigade, Army or Front'). one full set: 32 river and 4 shore links on KrAZ-255, 15 BMK-150 boats	D 1991 M	210
	POM-3 Medalyon scatterable anti-personnel mine	Zemledeliye battalion (divizion), remote-mining launchers	R 2022-02 L	328
	PTM-4	ISDM Zemledeliye battalion (a layer of this mine)	R 2022 L	330
	TM-62 anti-tank blast mine family	obstacle platoon with GMZ-3 tracked layers, which carry TM-62M and P3; engineer regiments hold GMZ too (inferred). 3 GMZ-3 per obstacle platoon	D 2024 L	332
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	assault and obstacle-clearing battalion	O 2017 L	113
engineer-sapper regiment	ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer		D 2024 L	217
	POM-3 Medalyon scatterable anti-personnel mine	mine-laying vehicles: GMZ tracked layers (obstacle platoon) or UMZ; both types are listed for the KPOM-3 cassette	R 2019 L	328
	PTM-4	Separate ISDM Zemledeliye battery (a layer of this mine), planned 2022	R 2022 L	330
	TM-46 anti-tank mine	obstacle platoon, three GMZ-3 minelayers; TM-46 holdings since 2022 unconfirmed	D 2024 L	331
	TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge	engineer and bridge subunit (press-release wording)	O 2020-11 M	212
EW battalion	Infauna	EW battalions of the Airborne Forces (VDV) (WEG 2015); RIA 2012 and FOI say VDV EW units	R 2015 M	199
	Krasukha-2 / Krasukha-4	independent REB-S battalion of an Air and Air Defence Army (VKS); FOI infers, does not name Krasukha there	R 2018 L	183
	Leer-3	Leer-3 drone/EW company	R 2019 M	190
	Orlan-10	Leer-3 crews (battalion or company of a combined arms army)	D 2019 M	268
EW brigade	Dzyudoist	KTK complexes provided by the REB (EW) brigades	D 2024 M	189
	Krasukha-2 / Krasukha-4	REB-S (counter-air) EW battalion. INA; usually one Krasukha-2 and one Krasukha-4 per brigade (reported 2022)	D 2018 H	183
	Krasukha-2 / Krasukha-4		R 2015 M	183
	Krasukha-2 / Krasukha-4	part of 1 Krasukha-4 complex (command-post container found near Makariv); Armada estimates 4 complete Krasukha systems in theatre	R 2022-03 M	183
	Leer-3	Leer-3 platoon. platoon operates the complex; number per brigade INA	D 2024 H	190
	Moskva-1	REB-S (counter-air EW) battalion, reported	D 2018 H	184
	Moskva-1	INA (ARM22 lists one Moskva-1 among five brigade systems)	R 2023-09 L	184
	Moskva-1		R 2018-03 L	184
	Murmansk-BN	Probably a company of the REB-N (anti-ground) battalion (FOI assessment)	D 2018 H	184
	Murmansk-BN	At least 1 complex per brigade (Armada); 2 antenna groups observed at 16th EW bde, vehicle count at 19th suggests 2 (PAS imagery, 2019)	O 2019 M	184
	Murmansk-BN	INA; blog judges it 'highly likely', no system seen	R 2019 L	184
	Orlan-10	Leer-3 platoon. 3 per Leer-3 complex	D 2024 H	268
	R-330M1P Diabazol	REB-S battalion holds Zhitel and Altaets components (FOI); FOI does not place the full complex, probably seldom procured	R 2018 L	191
	R-330Zh Zhitel	REB-S (anti-aircraft communications and navigation) battalion	D 2018 M	192
	RB-109A Bylina	brigade command post (main and reserve CP). one five-truck complex per brigade	D 2024 M	196
	Svet-KU		D 2024 M	197
	Tirada-2		R 2020 M	186
EW company	Borisoglebsk-2	at least 1 set	R 2014 M	188
	Leer-3	2 systems in one deployed EW company	R 2014 L	190
	R-330B Mandat-B and R-934BMV	EW company of a motor rifle or tank brigade: R-330B squad in the VHF-band jamming platoon; R-934B squad (VHF aircraft) in the radio-communications jamming platoon	D 2016 H	191
	R-330M1P Diabazol	Manoeuvre-brigade EW company: R-330Zh component on doctrinal charts (ATP fig. 4-22; RWW p.290); full complex not placed	D 2024 L	191
	R-330Zh Zhitel	EW company, jamming platoon (radio, GPS, cellular, radio-controlled fuses), jamming squad. 1 (single station on RWW chart; no count stated)	D 2016 M	192

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	R-330Zh Zhitel	EW company deployed to Ukraine. 2 in the deployed company	R 2014 L	192
	Rtut-BM	EW company of motor rifle and tank formations (FOI: 'probably')	D 2018 M	201
EW subunits of the Eastern Military District	Palantin	EW subunits of the Eastern MD in Zabaykalsky Krai (planned deliveries by end 2020)	R 2020-07 L	190
Fixed jamming posts at protected sites	Pole-21	Fixed jamming posts on cell towers, buildings or ground mounts at protected sites	R 2016 L	200
fleet	3M14 Kalibr	Ships with 3S14 (UKSK) 8-cell VLS (Projects 22350, 11356, 20385, 21631, 22800, 11661K, modernised 1155); submarines with 3M14K (Projects 06363, 885/08851). 8 cells per UKSK module, 1 to 2 modules per ship; 6 tubes per Project 06363 boat	D 2024 M	147
	BK-16	5 in the Black Sea Fleet (Feb 2026)	R 2026-02 M	297
	Grachonok	6 to 9: 6 in the Russian Wikipedia table (May 2025), 9 per Ukrainian outlets (May 2026)	R 2026-05 M	298
	Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren	LST by fleet: Baltic 4, Northern 6, Black Sea 3, Pacific 4. 17 LST in all	R 2024 M	294
	Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren	Six ships from the Baltic and Northern Fleets, five Ropucha and Project 11711 Pyotr Morgunov, entered the Black Sea on 8-9 Feb 2022, before the invasion. 6 ships	R 2022-02 M	294
	Project 1176 Akula landing craft	D-325 and two Project 21820 craft together landed six BTR-82A with a naval infantry assault subunit, Kaliningrad region, March 2025. 1 craft	R 2025-03 L	295
	Raptor	about 6 (Ukrainian estimate, Mar 2026)	R 2026-03 M	299
	Serna	2 at the February 2022 invasion (Militarnyi count)	R 2023-11 M	296
flotilla	Raptor	1 Kornet-armed boat shown, Jul 2022	O 2022-07 M	299
	Serna		R 2020-02 M	296
FSB Border Guard Service	BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	BPM-97 Vystrel: on FSB Border Guard Service AUV list; no unit named	R 2024-11 M	109
Ground Forces	Kornet	9K135, 9K128-1 Kornet-T and 9P163-3 listed	R 2024 H	307
Ground Forces (SV) units with the UMZ minelayer	PFM-1 Lepestok scatterable anti-personnel mine	UMZ truck-mounted remote minelayer	D 2024 L	326
Ground Forces (SV); holding unit not named	UMZ		D 2024 L	218
Ground Forces artillery batteries	2S40 Floks	artillery batteries (Rostec, state claim: first batch for equipping artillery batteries)	R 2023-10 L	132
Ground Forces EW units	Leer-2	'possibly' in FOI; state media: Southern MD column Mar 2018	R 2018 M	189
Ground Forces reconnaissance subunits	Strelets	first recipients	R 2021 M	240
Ground Forces units with UMZ remote minelayers	POM-2 and POM-2R scatterable anti-personnel mines	UMZ truck-mounted remote minelayers (take KPOM-2 cassettes)	D 2024 L	327
GRU Spetsnaz and SSO subunits	9K111 Fagot / 9K111-1 Konkurs	team equipment (Fagot)	D 2024 M	305
heavy flamethrower battalion	TOS-1A Solntsepek	9-launcher battalion at military district level; parent unit not named (ATP para I-16). 9 per battalion	D 2024 M	125
heavy tractor battalion	MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks	first three battalions: Chita, Khabarovsk, Chebarkul (Central and Eastern MDs). KamAZ-65225 with semi-trailers; 30+ per company (plan)	R 2017-06 M	254
	MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks	unnamed MTKT battalion on a 250 km exercise march, Penza Oblast, 2017 (concurrent with Zapad-17). about 100 KamAZ-65225 and Ural-63704	R 2017 L	254
heavy tractor regiment	MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks	one regiment per military district; a battalion or separate company per army (plan). 600+ KamAZ-65225 per regiment (plan)	R 2017-06 L	254
helicopter regiment	Ka-52 Alligator		R 2026-01 M	284
	Ka-52 Alligator	about 20 in 2021	R 2022-07 L	284
	Mi-28N Night Hunter	first Mi-28N squadron, formed 2009-10. 16	R 2010 L	285
	Mi-8MTPR-1	Attack helicopter regiment also flying Ka-52A, Mi-24P and Mi-8, in the 6th Air Force and Air Defence Army (Moscow MD). 1 regiment	R 2024 M	288
	Mi-8MTPR-1	a few airframes	R 2022 M	288
helicopter squadron	Ka-52 Alligator		R 2024-12 L	284
	Mi-24P/V and Mi-35M	8 Mi-24P in the squadron in Armenia, 4 in the one in Tajikistan	R 2024 M	285
high-power artillery brigade	203 mm gun rounds (3OF43, 3OF44)	2S7/2S7M gun battalions. 24 guns per brigade	D 2024-02 H	312

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	203 mm gun rounds (3OF43, 3OF44)	2S7/2S7M battalions; 17th formed 2023 in 3rd Army Corps	R 2023 L	312
	240 mm mortar bombs (3F2 HE, 3O8 cluster)	2S4 groups of six and four beside eight 2S7	D 2024 M	312
	2S4 Tyulpan	2S4 battalion. Groups of 6 and 4; 8 reported in 45th brigade (2017)	D 2024 H	128
	2S4 Tyulpan	heavy mortar battalion (240-mm); brigade allocated to a front (Soviet RVGK)	D 1991 M	128
	2S4 Tyulpan		O 2026-02 M	128
	2S4 Tyulpan		R 2023 L	128
	2S7 Pion / 2S7M Malka	2S7 battalions (45th bde: two battalions of eight, 2017). ATP fig. 5-18: 24 x 2S7 per brigade, 8 x 2S7 battalion block (OCR uncertain); 16 reported in 45th bde, 2017	D 2024-02 H	129
	2S7 Pion / 2S7M Malka	16 x 2S7 Pion (with 8 x 2S4 Tyulpan)	O 2017-12 M	129
	Lancet	unmanned systems troops Lancet reconnaissance-strike crew	O 2026-06 L	277
Higher-echelon or Aerospace Forces reconnaissance assets	Forpost	higher-echelon or Aerospace Forces reconnaissance assets (ATP fig. 5-8)	D 2024-02 L	271
landing craft division	Serna		R 2026-04 M	296
landing ship brigade	Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren	Ropucha Georgy Pobedonosets and Olenegorsky Gornyak, Ivan Gren Pyotr Morgunov; entered the Black Sea on 9 Feb 2022. 3 ships	R 2022-02 M	294
	Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren	Saratov and Nikolai Filchenkov in the Black Sea Fleet brigade, Nikolay Vilkov in the Pacific Fleet brigade; Orsk in refit. 3 ships	R 2014-03 L	294
	Project 1176 Akula landing craft	Three craft remained in 2015, used in exercise landings. 3 craft	R 2015 L	295
machine-gun artillery division	T-80B/BV/BVM, T-80U		R 2022 L	97
Manoeuvre units	BMP-2	combat reconnaissance patrol, platoon-sized, task-organised from a manoeuvre unit (ATP example). 2 per patrol	D 2024 M	102
Materiel support (MTO) subunits	Ural-6370, -63706 and -532301 trucks (newer Ural family)		R 2020-06 L	251
materiel support battalion	GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	MTO transport trucks (ATP Table H-1 lists GAZ-66 among SV logistic vehicles)	D 2024 M	246
	ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	transport vehicles; ATP lists ZIL-131 among SV MTO trucks without naming the unit	D 2024 L	252
materiel support brigade	KamAZ-4310, -5350 and -6350 Mustang military trucks		D 2016 L	247
	MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks	repair subunits	R 2016 L	254
military base	2S1 Gvozdika	motor rifle brigade of the base. 12	R 2024 M	126
	2S3 Akatsiya	18 to 36 per base (2009)	R 2009 L	127
	Borisoglebsk-2	EW units	O 2018 M	188
	BTR-80	about 100 BTR-82A planned for delivery in 2015	R 2015 M	110
	BTR-80	INA; first Russian unit to receive the BTR-82A, June 2013	R 2013-06 L	110
	Leer-3		R 2015 M	190
	Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/ Mi-17 family)	helicopter squadron. 201st (Tajikistan): 4 Mi-8MTV, 2 Mi-8MTV-5-1; base in Armenia: 4 Mi-8AMTSh, 4 Mi-8MT	R 2024 M	287
	Pole-21	First set delivered by air to Hisor airbase for the 201st Military Base, Tajikistan (CMD press office via Sputnik); deployed early Dec 2019, covered base zones and air defence positions in a Jan 2020 exercise (Topwar). 1 set	R 2019-11 L	200
	R-166 Artek	signal and EW subunits	R 2025-08 L	237
	S-300PM / S-300PS	1 SAM battalion. 8 S-300PS	R 2024-11 M	153
	S-300PM / S-300PS	1 SAM regiment	R 2024-11 M	153
	T-72B3/B3M	motor rifle brigade. 74 T-72 (version not given)	R 2024-11 M	96
	T-90	T-90A from 2009; to be replaced by T-72B3 by summer 2020, the T-90s rebuilt as T-90M (MoD sources)	R 2020 L	98
	Takhion	UAV unit	O 2022-05 L	269
Military bases abroad	9K114 Shturm-S	12 per base (2009)	O 2009 L	115
military district	BMPT Terminator	Central Grouping of Forces, Sievierodonetsk axis; UK MoD assessment (state claim). at most 10 deployed; the only formation fielding BMPT	R 2022-05 L	104
	BMPT Terminator	Yug grouping of forces, near Avdiivka; BMPT commander via News.ru (state claim)	R 2023-07 L	104
	Borisoglebsk-2	EW subunits of district formations. first 8 complexes	R 2013 L	188
	Borisoglebsk-2	EW subunits of district formations	R 2014 L	188

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	Desertcross 1000-3 all-terrain buggy (China)	Southern Military District; shown at its Rostov-on-Don HQ in Nov 2023	R 2024-01 L	245
	Dzyudoist	Western Military District, data collection and processing stations	R 2016 L	189
	Iskander-M	SRBM/GLCM brigade. 13 brigades: Moscow MD 2, Leningrad MD 2, Central MD 2, Southern MD 3, Eastern MD 4; 162 launchers in all	R 2024 M	143
	Leer-3	Leer-3 crews	R 2022-11 M	190
	MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks	automotive units, Kaliningrad. a batch, size INA	R 2016-12 M	254
	Niobiy	Air force and air defence army units; Niobiy and Kasta radars	R 2022-01 M	171
	Niobiy	Air defence units; first radars for troop trials	R 2019-10 L	171
	Niobiy	Units in Crimea and the south; first series batch planned by end of 2019	R 2019-10 L	171
	Polyana-D4	district air defence and aviation command post (KP PVO i aviatsii)	R 2021-12 M	233
	R-166 Artek	signal units	R 2018 L	237
	R-416GM Granit-M radio relay station	Six sets of R-416GM and R-416GM2 delivered (Russian MoD, reported Dec 2023)	R 2023-12 M	238
	S-400 Triumf	SAM regiments of the district's Air Force and Air Defence Army. IISS late 2024, SAM regiments listed with S-400 in each district's Air Force and Air Defence Army: 45th (Leningrad MD) 5, plus 4 listed with S-300PS, S-300PM1 and S-400; 14th (Central MD) 4; 4th (Southern MD) 3; 11th (Eastern MD) 4 listed with S-300PS and S-400, plus 1 with S-300V and S-400; 6th (Moscow MD) none (Moscow area: 5 regiments under Aerospace Defence Command). Launchers per district INA	D 2024 H	155
	SNAR-10 / SNAR-10M1 Leopard	artillery units of the tank formation stationed in the South Urals (MoD wording; formation not named)	R 2019-01 M	176
	Sobolyatnik	Delivery to reconnaissance subunits (with Fara radar sights), March 2021. 20 sets (with Fara)	R 2021-03 M	176
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks		R 2021 L	113
Military police units	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	sent to Syria with KamAZ-63968, early 2017	R 2017 L	113
Mine action centre	Uran-6	International Mine Action Center	R 2022-05 L	216
missile battalion	Bal	Caspian Flotilla coastal missile battalions. 4 launchers each (Wikipedia)	R 2020 L	145
	Bastion-P	Northern Fleet, Novaya Zemlya. 4 launchers	R 2022 L	146
	Iskander-M	4 launchers	O 2008 M	143
missile brigade	9K79-1 Tochka-U	missile battalion (2-3 per brigade), launch battery (2-3 per battalion). 2-3 launchers per battery; 18 per brigade reported (Soviet-era brigades per weaponsystems.net; Jane's 2003 via enwiki)	D 2019 M	141
	9K79-1 Tochka-U		O 2008 M	141
	9K79-1 Tochka-U		O 2008 M	141
	9K79-1 Tochka-U	launchers and transloaders at garrison open day and parade	O 2021-05 M	141
	Iskander-M	3 missile battalions of 2 batteries each; 2 launchers per battery. 12 launchers and 12 transloaders per brigade; 4 of each per battalion	D 2021 H	143
	Iskander-M		R 2023-08 L	143
	Iskander-M		R 2025-04 L	143
	KN-23 and KN-24 (Hwasong-11) (North Korea)	attached North Korean missile unit of about 90 personnel, arriving from Aug 2026. up to 6 launchers and 120 KN-23/KN-24 planned (Ukrainian intelligence claim)	R 2026-08 L	144
	Oreshnik	Strategic Rocket Forces brigade formed in 2025 (Chief of the General Staff, state claim)	R 2025-12 M	149
Motor rifle and tank regiments	2S38 Derivatsiya-PVO	planned for air defence battalions	D 2017 L	157
motor rifle battalion	120 mm mortar bombs (OF-843B and Iranian HE bomb)	mortar battery, 2B11 mortars on 2S12 Sani. 8 per battery; batteries may have 6, 8 or 9 mortars	D 2024 M	311
	120 mm mortar bombs (OF-843B and Iranian HE bomb)	mortar battery with 2S9 Nona-S in place of the 2S12 Sani, in some battalions	D 2016 M	311
	2B14 Podnos	mortar battery (artillery branch); RWW chart lists 2S12/2B14/2B9 as alternative types. INA (battery of 6, 8 or 9 mortars, types not split)	D 2016 M	136
	2B9 Vasilek	mortar battery; chart gives 2S12 Sani, 2B14 Podnos or 2B9 Vasilek as the battery's mortar. 8 per battalion, 120 mm mortars or 2B9 (FM 100-2-3, 1991)	D 2016 L	135
	2S12 Sani	mortar battery. 8 per battery	D 2016 M	130
	2S9 Nona-S	in place of the 2S12 Sani mortar (some battalions)	D 2016 M	129
	9K111 Fagot / 9K111-1 Konkurs	antitank platoon (BTR battalions). 4 Fagot teams, 6 in high-readiness battalions (1991)	D 1991 H	305
	BMP-1	motor rifle companies: 3 per platoon; battalion HQ also has 1 BMP-1K. 42 BMP-1/BMP-2 per BMP-equipped battalion (Soviet table)	D 1991 M	101
	BMP-2	motor rifle companies, one vehicle per squad. 37 per BMP battalion (BMP-2 or BMP-3); 3 per platoon	D 2016 M	102
	BMP-3	motor rifle companies: 11 per company, one per squad. 37 BMP-2 or BMP-3 per battalion on BMPs	D 2016 M	103
	BREM and BTS armoured recovery vehicles	support platoon (evacuation squad). 3 BREM-L (RWW organisation chart)	D 2016 M	220
	BTR-80	motor rifle companies. about 44 BTR-80/BTR-82/MT-LB per BTR-mounted battalion	D 2016 M	110
	Captured US vehicles in Russian use: M2 Bradley, M113, MaxxPro, M88A1	Bradley: taken after the assault on Sokol, restored after mine damage, cage added over turret. 1 vehicle shown	O 2024-11 M	118

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	mortar battery: 2S12 Sani 120 mm mortars with GAZ-66 as base vehicle. INA (8 2S12 Sani per battery)	D 2016 L	246
	KamAZ-4310, -5350 and -6350 Mustang military trucks	logistical support platoon (KamAZ-4350)	D 2016 M	247
	KM-8 Gran	mortar battery; 2S12 Sani towed 120 mm mortar (entry 2s12); some battalions have 2S9 instead. 8 2S12 per battery; 6, 8 or 9 systems per mortar battery in later doctrine	D 2024 L	313
	Metis	antitank platoon of BTR/MT-LB-based battalions (some documents put the ATGM squads in the companies)	D 2016 M	308
	Metis	motor rifle company. 3 per company	D 1996 L	308
	MT-LB	motor rifle companies (squad carriers in BTR/MT-LB-based battalions). about 44 BTR-80/BTR-82/MT-LB per BTR- or MT-LB-based battalion	D 2016 M	107
	REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles	support platoon (43 personnel); one REM-KL on Ural-532362, three MTO-UB1 on Ural in a maintenance squad. 1 REM-KL and 3 MTO-UB1 per battalion	D 2016 M	221
	Zastava	several complexes	R 2014-01 L	270
motor rifle brigade	122 mm rockets (Grad, Tornado-G, Prima)	MRL battalion of the brigade artillery, three batteries of six launchers. 18 BM-21 per battalion	D 2024 H	315
	2B14 Podnos	exercise, Roshchinsky training ground, 2020-10-06; Commons video filed under 2B14, video not watched	O 2020-10 L	136
	2S1 Gvozdika	self-propelled howitzer artillery battalion	O 2025 L	126
	2S19 Msta-S	two self-propelled artillery battalions, each of three batteries of 6 howitzers; ATP notes 2S3 may be held instead. 18 per battalion (6 per battery), 36 per brigade; ATP: some battalions up to 24 systems	D 2024 M	130
	2S23 Nona-SVK	mortar battery attached to each motor rifle battalion. 6 per battery; 18 per brigade	D 2018 M	131
	2S3 Akatsiya	two self-propelled artillery (howitzer) battalions. 18–24 per battalion (18 typical), 2 battalions per brigade	D 2024 M	127
	2S3 Akatsiya	Kharkiv oblast, captured 2022-09-10	O 2022-09 L	127
	2S3 Akatsiya	36 2S3M in most brigades, 18 in the 20th, 18–36 in the 200th (2009)	O 2009 L	127
	2S5 Giatsint-S	artillery subunit	R 2026-09 L	128
	9K111 Fagot / 9K111-1 Konkurs	8-18 9P148 per brigade (2009)	R 2009 L	305
	9K114 Shturm-S	12 or 18 per brigade (2009)	O 2009 L	115
	9P162 Kornet-T	anti-tank battalion, two ATGM batteries (9P157-2 Khrizantema-S as the alternative fit). 6 per battery, 12 per brigade	D 2024 M	115
	ARS-14, TMS-65 and TZ-74 decontamination vehicles	decontamination platoon, RKhBZ company (company also supports tank brigades). 8 ARS-14KM per RKhBZ company	D 2024 M	222
	Barnaul-T	brigade AD subunit; BO quotes a 'missile division' (battalion) commander	O 2021-12 M	233
	Barnaul-T	brigade commander's CP (9S931-1 wheeled); 9S931 planning module; short-range AD battery CPs (9S932-1); MANPADS platoon commanders (9S933); MANPADS squads (9S935)	R 2011 L	233
	BM-21 Grad 122 mm MRL	MRL battalion; 6 launchers per battery. 18 per battalion	D 2016 M	122
	BM-21 Grad 122 mm MRL	BTG, attached BM-21 battery. 1 battery	O 2022-04 M	122
	BM-21 Grad 122 mm MRL	BTG; three BM-21 lost near Kurakhove on 22 April 2022. 3 (lost)	O 2022-04 M	122
	BMO-T	flamethrower platoon, RKhBZ company. 3 per RKhBZ company flame platoon (ATP); BMP-2-based BMO-1 may be used instead (ATP, RWW)	D 2024 M	101
	BMP-1	INA (one BMP-1AM attributed from photos)	O 2023-10 L	101
	BMP-1	Russian military base in Armenia (1 motor rifle brigade). 80 BMP-1 (with 80 BMP-2) at the base (IISS)	R 2024 M	101
	BMP-2	motor rifle battalions	O 2023-06 H	102
	BMP-2	80 BMP-2 and 80 BMP-1 (IISS estimate)	R 2024 M	102
	BMP-2	8 BMP-2M Berezhok in first CMD delivery (CMD press-service claim via TASS/ARMYREC)	R 2018 L	102
	BMP-3	motor rifle battalions, three per brigade, on BMP, BTR or MT-LB. 37 per BMP-equipped battalion	D 2016 M	103
	BMP-3		O 2022-09 L	103
	Borisoglebsk-2	EW company	D 2024-02 H	188
	Borisoglebsk-2	EW subunit	O 2018 M	188
	BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines	a platoon assigned to fortification work in a brigade defence (worked example). 1 PZM with a platoon (worked example)	D 2016 L	214
	BTR-80	motor rifle battalions	O 2022-09 H	110
	BTR-80		O 2022-03 M	110
	Eleron-3SV	UAS company, Eleron platoon; platoons attached to battalions or companies	D 2019 M	266
	FPV drones	FPV drone crews	O 2026-03 L	279
	Granat-1 / Granat-4	UAV company, short-range platoon (Granat-4 with Orlan-10)	D 2016 H	266
	Granat-1 / Granat-4	UAV company, mini-platoon (hand-launched Granat-1)	D 2016 M	266
	Igla / Igla-1 / Igla-S	MANPADS battery of the air defence missile-artillery battalion. 27 MANPADS launchers per brigade (Igla, Igla-S or Verba)	D 2024 M	165
	KamAZ-4310, -5350 and -6350 Mustang military trucks	5 Akhmat Z-STS armoured vehicles on 5350 chassis in one convoy (Ukrainian HUR claim)	R 2023-03 L	247
	Krasnopol, Krasnopol-M1, Krasnopol-M2	two self-propelled artillery battalions, each 18 2S19 Msta-S (msta-s) or 2S3 Akatsiya (2s3) 152 mm howitzers; the 2S19 is named as firing Krasnopol	D 2024 M	314
	ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns	D-1 howitzer shelling near Avdiivka, Oct 2023. at least 1	O 2023-10 L	139

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	MT-12 Rapira	antitank artillery battalion, antitank gun battery (towed by MT-LB). 6 per brigade (one battery); two further batteries hold ATGM launchers	D 2024 M	134
	MT-LB	motor rifle battalions, especially in northern (Arctic) brigades	D 2024 M	107
	MT-LB	MANPADS battery of the brigade's anti-aircraft missile-artillery battalion (ATP fig. 4-19). 9 per MANPADS battery (27 launchers)	D 2024 M	107
	MT-LB	battalion tactical group sent to Ukraine; brigade under Navy Coastal Troops (MILU). 36 MT-LB left the brigade's base in May 2022	O 2022-05 L	107
	MT-LB	Arctic brigades (200th at Pechenga first planned to convert): MT-LBV planned, per Ground Forces commander (state claim via RIA)	R 2012 L	107
	Orlan-10	UAV company, short-range platoon	D 2019 H	268
	PMP heavy folding pontoon bridge park	engineer battalion, pontoon bridge company. one pontoon park; RWW calls it 'PP-61' but its figures (268 m at 60 t; 90- and 120-t bridges) match PP-91, not PMP. 6 BMK boats, 7 PTS-2	D 2016 L	210
	PRP-4A Argus / PRP-4M Deytery	fire control and artillery reconnaissance battery, artillery spotting platoon	D 2016 M	234
	PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	engineer battalion. 7 PTS-2 per engineer battalion (RWW names PTS-2, not PTS-4)	D 2016 M	211
	R-142N Deimos-N	brigade staff	D 2020 M	236
	R-149 command and staff vehicles	R-149MA1	O 2022-09 L	228
	R-149 command and staff vehicles	brigade-level command and staff (R-149MA1, maker); one observed with 27th Sep Gds MRB	R 2022 M	228
	SNAR-10 / SNAR-10M1 Leopard	fire control and artillery reconnaissance battery, radar platoon	D 2016 M	176
	Sobolyatnik	Brigade reconnaissance (used at the brigade tactical exercise)	O 2019-07 M	176
	Strela-10 and Osa short-range SAM	air defence missile-artillery battalion, missile battery (SA-13). 6 launchers per battery	D 2024 M	160
	T-62	platoon; alternative attribution for the T-62MV obr. 2022 platoon filed under the 5th Tank Brigade	R 2024-02 L	95
	T-72B3/B3M	tank battalion. 31 per battalion; 41 where it has four companies	D 2024 M	96
	T-72B3/B3M	tank battalion	O 2022-04 M	96
	T-80B/BV/BVM, T-80U	tank battalion. 26 T-80BVM in the brigade (2022)	O 2022-03 H	97
	T-80B/BV/BVM, T-80U	38th Bde: 40 (2019); others INA	R 2019 L	97
	T-90	INA; T-90A elements geolocated in Luhansk oblast	O 2014 L	98
	T-90	INA; named in 2020 as next to receive T-90M (planned, MoD sources)	R 2020 L	98
	TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	RKhBZ company, aerosol platoon (RKhBZ company also supports tank brigades). 5 TDA-2K per aerosol platoon	D 2024 M	223
	TM-46 anti-tank mine	engineer-sapper company, mobile obstacle detachment with its mine-laying vehicles; TM-46 holdings since 2022 unconfirmed	D 2024 L	331
	Tor	air defence missile battalion, three batteries. 12 launcher vehicles per battalion (4 per battery)	D 2024 M	161
	Tor	air defence missile battalion (Tor-M2DT); brigade link by location and retraining report only	R 2019-11 L	161
	Tornado-G	brigade artillery, MRL battalion. INA for Tornado-G; it replaces the BM-21, 18 per brigade MRL battalion (RWW p.100); 18 delivered to one brigade 2012 (RBASE)	D 2019 M	124
	Tornado-G	18	O 2012-04 M	124
	Tunguska	air defence missile-artillery battalion, Tunguska battery. 6 launcher vehicles per battery	D 2016 M	162
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	INA; first K-53949 built went to this brigade for trials	R 2021 L	113
	Verba	MANPADS battery of the air defence missile-artillery battalion. 27 per brigade (doctrinal figure given for Igla, which Verba replaces)	D 2024 M	165
	Verba	air defence subunit; delivered as a full brigade set	O 2017-12 H	165
	Vityaz DT-10, DT-20 and DT-30	80th: 30 DT-10PM received in 2015	O 2023 H	256
	Vityaz DT-10, DT-20 and DT-30	Tor-M2DT launchers on DT-30 chassis, Kherson region	R 2023 L	256
	Volnorez, Saniya and Sapfir vehicle anti-drone jammers	tank fitted with Saniya, Pervomaisky area near Donetsk	O 2024-01 L	202
	Zoopark-1 / Zoopark-1M	fire control and artillery reconnaissance battery, radar platoon (with SNAR-10M1)	D 2016 M	177
motor rifle division	2S19 Msta-S	artillery regiment, self-propelled howitzer battalions; 2S19 or 2S3. INA; ATP: division artillery regiment of 3-4 battalions	D 2019 M	130
	2S3 Akatsiya	Kharkiv oblast, captured Sep 2022	O 2022-09 L	127
	2S3 Akatsiya	18 2S3M (2018)	O 2018-03 L	127
	2S3 Akatsiya	one gun battalion re-equipped with 2S3M2	O 2006 L	127
	2S34 Khosta	1 destroyed near Yasynuvata, Donetsk, 6 Dec 2023	O 2023-12 L	131
	9K111 Fagot / 9K111-1 Konkurs	antitank battalion, ATGM battery. 9 BRDM-2 ATGM vehicles, AT-3 or AT-5 (1991)	D 1991 H	305
	9K114 Shturm-S	anti-tank battalion: several Shturm ATGM batteries	D 2019 M	115
	9K114 Shturm-S	Shturm-S being replaced by more than 18 Khrizantema-S (Jan 2021)	O 2021-01 M	115
	9K79-1 Tochka-U	SSM battalion, firing battery (Soviet structure; moved to army brigades from late 1980s). 2 per firing battery	D 1991 H	141
	BMP-3		O 2022-11 M	103
	BMP-3	20+ delivered in Jan 2021	R 2021-01 L	103
	Borisoglebsk-2	separate EW battalion	O 2022-01 M	188
	Borisoglebsk-2		O 2022-09 L	188

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	BRM-1K	reconnaissance battalion; two of its three troops operate BRM-1K. 3 per reconnaissance battalion (ARMYREC)	D 2019 M	104
	BTR-80		O 2024-10 M	110
	BTR-80	more than 100 BTR-82AM planned for a Western MD MR division (Voronezh, Belgorod, Bryansk regions) by end-2016; TASS via GlobalSecurity	R 2016-10 L	110
	D-30	artillery regiment, one howitzer battalion in some divisions (Soviet era). 18 per battalion	D 1991 M	137
	Eleron-3SV	UAS company (division asset), Eleron platoon attached to regiments	D 2019 M	266
	Khrizantema-S	anti-tank battalion (to replace Shturm-S). more than 18 planned (MoD, Jan 2021)	R 2021-01 M	116
	Leer-3	separate EW battalion	R 2022-01 M	190
	Orlan-10	UAV company	D 2019 M	268
	Orlan-10	unmanned systems troops subunit	R 2026-04 L	268
	PMP heavy folding pontoon bridge park	engineer battalion, pontoon bridge company (also in tank divisions). half set: 16 river and 2 shore links and 1 service vehicle on KrAZ-214; 6 BMK-90/150 boats per company	D 1991 M	210
	R-142N Deimos-N	regiment (brigade) to division staffs	D 2020 M	236
	R-149 command and staff vehicles	R-149AKSh-1	O 2022-03 L	228
	R-149 command and staff vehicles	R-149MA1	O 2022-09 L	228
	T-54 / T-55	one subunit, presumably of the 42nd Guards MRD, near Robotyne with unmodernised T-55s	O 2024-02 L	94
	Tor	air defence missile regiment. 16 per regiment (4 batteries of 4, bmpd); ATP: two battalions; ru.wikipedia: Tor-M2 'divisional' set of 3 batteries, 12 vehicles	D 2024 H	161
	Tor	air defence missile regiment. one regimental set of Tor-M2 (16 combat vehicles)	O 2017-11 M	161
	Tornado-G	artillery regiment, MRL battalion (replacing Grad battalion)	D 2019 H	124
	Tornado-G	more than 20 across Taman and Kantemirovskaya divisions	O 2015-07 M	124
	Zoopark-1 / Zoopark-1M		D 2024 L	177
motor rifle regiment	9K111 Fagot / 9K111-1 Konkurs	antitank missile battery. 9 BRDM-2 ATGM vehicles, AT-3 or AT-5 (1991)	D 1991 H	305
	BM-21 Grad 122 mm MRL	BTG, attached MRL element. 3 in one BTG	O 2022-04 M	122
	BMP-1	reconnaissance company. 3 BMP-1/BMP-2 with 1 BRM-1 (Soviet table)	D 1991 M	101
	BMP-1KSh command and staff vehicle	regimental command post. 1 in regimental HQ of a BMP-equipped motor rifle regiment (FM 100-2-3 table, OCR scrambled)	D 1991 M	226
	BMP-2	reconnaissance company, tracked platoon (Soviet TOE). 3 BMP-1/BMP-2	D 1991 L	102
	BMP-2	air defence battery (Soviet TOE), some regiments. 6 BMP-2, each carrying three SA-16 launchers	D 1991 L	102
	BMP-3	motor rifle battalions, three per regiment (probable structure). 37 per BMP-equipped battalion	D 2024 L	103
	BMP-3		O 2024-06 M	103
	BMP-3	30+ to the 7th (2021); one battalion set to the 102nd (2018)	R 2021 L	103
	BRM-1K	reconnaissance company. 1 per company (Soviet era, WPEN)	D 1991 L	104
	BTR-80		O 2022-09 M	110
	D-30	howitzer battalion of BTR-equipped regiments (Soviet era). 2-3 batteries of 6	D 1991 M	137
	DJI Mavic, Air, Mini and Matrice quadcopters (China)	command post; Mavic used to find enemy positions	O 2025-10 L	265
	PU-12M7	air defence missile-artillery battery; also regimental air defence chief's post (ARMF: PU-12 family 1977-95; ORUZH: undated PU-12M7 sheet). 1 per battery (PU-12 family)	D 1995 M	234
	PU-12M7	regiment on BTR, Soviet 1980s establishment. 3 PU-12 per regiment	D 1989 L	234
	R-149 command and staff vehicles	R-149MA3	O 2022-09 M	228
	R-149 command and staff vehicles	R-149MA1	O 2022-09 L	228
	T-72B3/B3M	tank battalion. 31 T-72B3 (CNA planning figure)	D 2021 M	96
	T-72B3/B3M	tank battalion	O 2023-12 H	96
	T-80B/BV/BVM, T-80U		R 2019 L	97
	ZSU-23-4 Shilka	air defence missile and artillery battery, SPAA gun platoon (with a platoon of four Strela SAMs). 4 per regiment	D 1991 H	162
	ZU-23-2	air defence battery, in regiments not yet converted to ZSU-23-4 and SA-9 (Soviet structure)	D 1991 L	163
National Guard aviation unit	Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/ Mi-17 family)	transport squadrons (8 in the force, aircraft and helicopters)	R 2024 M	287
naval aviation regiment	Ka-27 and Ka-29	one regiment each in the Northern, Baltic and Black Sea Fleets; the Baltic and Black Sea regiments are mixed (Ka-27/29 with Mi-8 and Mi-24; the Black Sea regiment also Ka-31 and Be-12)	R 2026-01 M	290
	Ka-27 and Ka-29	Black Sea Fleet mixed regiment; Ka-31R radar picket received January 2020, still listed with the regiment in 2026. 1 Ka-31R (2020)	R 2026-01 M	290
	Kh-59 Ovod family	anti-surface warfare regiments with Su-24M and Su-30SM	R 2024 M	148
naval aviation squadron	Ka-27 and Ka-29	Pacific Fleet, one squadron with Ka-27 and Ka-29	R 2024 H	290
Naval Infantry	1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	1V119 in naval infantry artillery (RWW, ru-wiki), used with 2S9 Nona-S	D 2016 M	231
	BM-21 Grad 122 mm MRL	Naval Infantry, holding unit not stated	R 2024 M	122
	BTR-MDM Rakushka		D 2024 L	106
	KM-8 Gran	2S9 Nona-S and 2S23 Nona-SVK (entries 2s9, 2s23) and towed 2B16 Nona-K 120 mm	R 2025 L	313
	MT-12 Rapira	IISS lists 100mm T-12 (original carriage) in Naval Infantry equipment; count not given	R 2024 M	134

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	Tigr and Vodnik armoured cars	branch; no unit named	R 2026 L	112
	ZSU-23-4 Shilka	air defence subunits	R 2024 H	162
Naval Infantry (Coastal Troops of the Navy)	2A65 Msta-B	Naval Infantry artillery; brigade not named	R 2024 M	135
Naval Infantry (first two Volnorez sets, trials on boats)	Volnorez, Saniya and Sapfir vehicle anti-drone jammers	2 sets	R 2023 L	202
naval infantry brigade	2S1 Gvozdika	brigade artillery	O 2024-04 H	126
	2S23 Nona-SVK	battalion mortar battery	D 2024 H	131
	2S9 Nona-S	6 to 12 per brigade (336th: 12 in 2009; 810th: 6, undated)	R 2009 M	129
	BMP-2	100 in Naval Infantry total (IISS estimate; 6 bde, 1 regt; holding unit not stated)	R 2024 M	102
	BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	Vystrel on Naval Infantry equipment list; no unit named	R 2024-12 M	109
	BTR-80	Naval Infantry branch total 200 BTR-82A, 100 BTR-80 (IISS estimate); IISS lists 6 naval infantry brigades and 1 regiment	R 2024 H	110
	Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren	Planned first-wave landing force for two detachments of three large landing ships, between Mykolaiv and Odesa; landing dropped in early April 2022. 6 ships in two detachments	R 2022-04 M	294
	MT-LB	IISS estimate 250 MT-LB in Naval Infantry (6 brigades, 1 regiment)	R 2024 M	107
	T-54 / T-55	30 T-55A across Naval Infantry (IISS estimate); not allocated by brigade	R 2024 M	94
	T-80B/BV/BVM, T-80U	IISS estimate 30 T-80BV/BVM in all Naval Infantry (2024)	O 2024-10 H	97
	T-80B/BV/BVM, T-80U		R 2019 L	97
naval infantry division	BMP-3	one battalion re-equipped with BMP-3F in 2021. 40 BMP-3F delivered in 2021	O 2024-10 H	103
	Kurier / Omich-2 / Bogomol-7V ground robotic complexes	company of ground unmanned systems, unmanned systems battalion	O 2026 L	264
naval special-purpose unit	Raptor	commando teams being formed in 2017, Project 03160 their planned main transport	R 2017 L	299
Navy coastal troops and Naval Infantry	Khrizantema-S	coastal artillery brigades	O 2019-01 M	116
Navy fleet EW units	Svet-KU	EW manoeuvre group, technical control station (Northern Fleet)	O 2025-04 M	197
Navy units	S-350 Vityaz	INA; MoD (2020) says S-350 deliveries are planned to Aerospace Forces and Navy units; no Navy unit named	R 2020-04 L	154
Newly formed infantry units	MT-LB	newly formed infantry units, per UK Defence Intelligence 9 Jul 2022 (state claim)	R 2022-07 L	107
Northern Fleet Arctic air defence units (Pantsir-SA)	Vityaz DT-10, DT-20 and DT-30	Pantsir-SA battalion; tactical group on Alexandra Land	O 2020-08 M	256
Northern Fleet EW centre (possible trials)	Tirada-2	Tirada-2S possibly tested there, 2014	R 2014 L	186
pontoon-bridge regiment	PMP heavy folding pontoon bridge park	two pontoon bridge battalions (army or front/district level). three full sets: 96 river and 12 shore links on KrAZ-255	D 1991 M	210
radio-technical battalion	Oborona-14	radar post (RLU) of a radio-technical battalion or centre; Soviet-era ex-service recollection, undated	R 1990 L	171
radio-technical regiment	96L6 all-altitude acquisition radar	5 radars delivered to Moscow-area radio-technical regiments, early 2014	R 2014-05 L	168
Radio-technical troops (RTV) of the air defence	Kasta 35N6 / 39N6	Low-altitude radar company in border cruise-missile warning belts; mobile low-altitude radar platoon	D 2015 M	169
Railway Troops pontoon-bridge battalions	MLZh-VF-VT		D 2018 M	207
	MLZh-VF-VT	34th Railway Brigade; bridge demonstration on the Oka River, Moscow Oblast	O 2022-08 L	207
Reconnaissance and special operations units	Tigr and Vodnik armoured cars	force protection for forward air controller detachments, Syria	R 2019 L	112
Reconnaissance assets of the reconnaissance-fire system	Orion	medium-range reconnaissance UAV among reconnaissance assets of the reconnaissance-fire system (ATP fig. 5-8, OCR garbled)	D 2024-02 L	272
reconnaissance battalion	BRDM-2	reconnaissance companies of division or brigade	D 2016 M	109
	R-381T Taran	radio and radio-technical reconnaissance company (Soviet-era TOE). 1 complex of 7 vehicles: 1 R-381T3, 4 R-381T2, 2 R-381T1	D 1985 M	194
	Tigr and Vodnik armoured cars		D 2016 M	112
Reconnaissance patrols (ATP example, UAZ-469)	UAZ-469, UAZ-452 and UAZ-39094 utility vehicles	combat reconnaissance patrol (platoon-sized, task-organized), 1 UAZ-469 with 12.7 mm MG. 1 per patrol (example)	D 2024 L	249

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
Reconnaissance subunits, Western MD, Tambov oblast (MoD claim)	KamAZ-4310, -5350 and -6350 Mustang military trucks	INA; armoured 5350 with MM-501 module	R 2018-03 L	247
Reconnaissance units of motor rifle and tank brigades and divisions	Torn	reconnaissance subunits of brigades and divisions	R 2018 M	197
Regiments with UMZ minelayers (1996 organisation)	POM-2 and POM-2R scatterable anti-personnel mines	three UMZ remote minelayers per full-strength regiment (1996 organisation). 3 UMZ per regiment	D 1996 L	327
research institute	BTR-90 Rostok	38th Research Institute, Kubinka (storage)	R 2023 L	111
river flotilla	Dnipro small boats	Dnipro River Flotilla and its river boat brigades (GUR: 91st and 92nd), announced Mar 2024; early 2025: boats taken from local people, plus Raptor, Grachonok and Tunets boats. UK: possibly under the Dnipro Group of Forces	R 2025 M	300
	Dnipro small boats	Flotilla boats used by assault groups training in occupied Zaporizhzhia and Kherson oblasts to cross water, Dec 2024 (Ukrainian Southern Defence Forces spokesman)	R 2024-12 L	300
RKhBZ (NBC protection) troops	R-145BM Chayka command and staff vehicle	Wikipedia names the vehicle BTR-60PU/PUM and equates BTR-60PU with R-145BM	R 2022 L	227
RKhBZ battalion	BRDM-2	BRDM-2RKh: divisional chemical defence battalion or company, regimental chemical defence company or platoon, reconnaissance battalion (Soviet structure)	D 1999 L	109
RKhBZ brigade	220 mm thermobaric rockets (TOS-1A, TOS-2)	Heavy flamethrower battalion: TOS-1A (BM-1) and TOS-2 launchers fire the rockets. 9 launchers per battalion; 24 rockets per BM-1, up to 72 per complex with two TZM-T	D 2024 M	316
	TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	5 TDA-3 delivered in one batch	R 2017 L	223
	TOS-1A Solntsepek	flamethrower battalion of 3 batteries, each 6 BM-1 and 6 TZM-T; RWW places these battalions in NBC defence brigades and regiments and does not state the echelon. 18 per battalion (6 per battery)	D 2016 M	125
	TOS-1A Solntsepek	TOS battalion of 3 companies of 6 launchers (ATP para 5-146). 18 per battalion	D 2024 M	125
RKhBZ regiment	ARS-14, TMS-65 and TZ-74 decontamination vehicles	Eastern Military District NBC protection regiment, Amur Region, received ARS-14KM batch	R 2020 L	222
	TOS-1A Solntsepek	RKhBZ company in the RKhBZ regiment of combined arms and tank armies (ATP para I-16). 3 per company	D 2024 M	125
RKhBZ troops	RKhM CBRN reconnaissance vehicles	RKhBZ troops; deliveries of RKhM-8 and RKhM-9 planned for 2021	R 2021 M	222
RKhBZ units	ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	decontamination complexes; ATP Table I-3 lists ZIL-131 and KrAZ-260 among prime movers (table scrambled)	D 2024 L	252
RKhBZ units of the Eastern MD in Primorye and Buryatia	RKhM CBRN reconnaissance vehicles	batch of RKhM-6 received; holding units not named	R 2015-11 M	222
rocket artillery battalion	PRP-4A Argus / PRP-4M Deytery	MLRS (BM-21) battalion HQ, fire control platoon, artillery spotter squad	D 2016 L	234
rocket artillery brigade	300 mm rockets (Smerch, Tornado-S)	three groups of four 9A52-2 launchers in the army brigade diagram. 12 x 9A52-2 shown (3 groups of 4)	D 2024 M	316
	BM-27 Uragan	rocket launcher battalions. 54 per brigade (3 battalions of 18)	D 1991 M	122
	BM-30 Smerch	three groups of 4 x 9A52-2 in ATP fig. 5-16; whether each group is a battalion or a battery is not readable from the text. 12 x 9A52-2 shown in ATP fig. 5-16 (3 groups of 4)	D 2024 M	123
	BM-30 Smerch	7 delivered April 2017, 5 more announced	O 2017-04 M	123
	BM-30 Smerch		O 2026-09 M	123
	PTM-3	9A52-2 Smerch battalions firing 300 mm 9M55K4 mine rockets (25 PTM-3 each)	D 2025 L	329
rocket artillery regiment	BM-27 Uragan	three rocket launcher battalions. 54 per regiment (3 battalions of 18)	D 1991 M	122
Rosgvardia unit	BK-16	3 (IISS, late 2024); 4 reported Feb 2026	R 2026-02 H	297
	BMP-2	INA; IISS pools 1,600 BMP-1/BMP-2/BTR-70M/BTR-80/BTR-82A/AM (estimate)	R 2024 M	102
	BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	Z-STS Akhmat: Chechen forces; vehicle also on National Guard list. INA (first 20 delivered July 2022)	R 2024-10 M	109
	BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	Patrul: special-purpose police units (SOBR, OMON); Rosgvardia, Zaporizhzhia region. INA (3 to Khanty-Mansi in 2023)	R 2023 L	109
	BTR-80	INA; IISS gives 1,600 BMP-1/BMP-2/BTR-70M/BTR-80/BTR-82A/AM combined; BTR-80S and BTR-82V are Rosgvardia versions	R 2024 H	110
	Grachonok	Naval units of the National Guard. 4 (TASS, Jul 2021; Russian Wikipedia table, May 2025); IISS counts 2+	R 2024 H	298
	Tigr and Vodnik armoured cars	OMON; police SPM-1 and SPM-2 versions	R 2024 M	112
	ZFB-05 or Tiger 4x4 armoured personnel carrier (China)	Akhmat special rapid response unit, Chechnya. 8 shown in a video, Jun 2023	O 2023-06 M	118
Rubicon detachment	FPV drones	FPV drone operators	O 2025-12 M	279

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	Molniya		O 2025-12 M	278
Russian Armed Forces (GAZ-3308)	GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	GAZ-3308 adopted as military truck (2000 source); lost in Ukraine 2022- (Oryx; count under numbers)	R 2026 L	246
Russian Engineer Troops	PDM-1 anti-landing mine		D 2009 M	325
Russian force in Syria	BTR-80	INA; CNA reports BTR-82s guarding artillery with T-90A (2018)	R 2024 M	110
Russian forces	Shahed-107 (Iran)	Frontline zones and regions; a further example filmed over Sumy	R 2025-11 M	278
Russian forces in Syria	Eleron-3SV	Russian group in Syria; artillery spotting	R 2016 M	266
Russian forces in Ukraine	MON-100 directional fragmentation mine	Hand-laid; no unit named	R 2025 L	323
	MON-200 directional mine	Hand-laid; no unit named	R 2025 M	324
	MON-90	Hand-laid; no unit named	R 2025 M	322
	Stupor, Garpun-3 and LPD-801 handheld jammer guns	Stupor, LPD-801	R 2022-07 L	201
Russian forces in Ukraine (Forbes via RG)	Groza-O4K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	Serp-VS6D and Silok-01 named together	R 2025-04 L	198
Russian ground units in Ukraine, many supplied by volunteers	DJI Mavic, Air, Mini and Matrice quadcopters (China)	front-line subunits; Mavics favoured in offensive tactical operations	R 2023-03 M	265
Russian units (anonymous TASS source)	Stupor, Garpun-3 and LPD-801 handheld jammer guns	Garpun-3	R 2022-10 L	201
Russian-supported separatists, eastern Ukraine (PMN-1, PMN-2)	PMN, PMN-2, PMN-4	Donetsk and Luhansk, from 2014; mines with 1980s and 2000s production markings	R 2014 M	327
Satellite tracking stations (NIP), Russian MoD	Tobol	Tobol infrastructure (project 8282) being built at or beside the stations	R 2020 M	186
Second- and third-line units	T-54 / T-55	used as mobile artillery	R 2024 M	94
self-propelled artillery battalion	122 mm howitzer rounds	howitzer batteries; 2S1 is one of the guns shown in the six-gun battery. 6 2S1 per battery	D 2016 M	311
	1B75 Penicillin	battalion fire control network, conceptual ATP fig. 5-3 (1L271)	D 2024 M	174
	1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	each battery: one 1V13 (battery FDC) and one 1V14 (battery COP); battalion HQ: one 1V15 (battalion COP) and one 1V16 (battalion FDC). 8 per battalion: 3 1V13, 3 1V14, 1 1V15, 1 1V16	D 2016 H	230
	2S1 Gvozdika	self-propelled howitzer battery (3 per battalion). 6 per battery, 18 per battalion	D 2016 M	126
	2S35 Koalitsiya-SV	self-propelled howitzer battery. 6 per battery, 18 per battalion	D 2016 M	132
	3RB30 152 mm communications jammer round	battalion of a motor rifle brigade with 18 2S19 or 18 2S3 (152 mm)	D 2024 L	310
	Krasnopol, Krasnopol-M1, Krasnopol-M2	Ukrainian user: captured rounds fired from 2S3 Akatsiya with Obolon-A fire control	O 2023 M	314
	PRP-4A Argus / PRP-4M Deytery	battalion fire control platoon, artillery spotter squad	D 2016 L	234
	Santimetr (3OF38) and Santimetr-M (3OF75)	holds 2S3 (named for 3OF38) or 2S19 (named by the developer for 3OF75); no holding of the round reported. INA rounds; 18 howitzers per battalion	D 2024 L	314
self-propelled artillery regiment	1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	howitzer battalion with 2S19M1. at least 3 1V13 and 3 1V14 seen with one battalion	R 2021-09 L	230
	220 mm rockets (Uragan)	9K512 Uragan-1M launchers (fire 220 mm and 300 mm rockets). 8 Uragan-1M at first delivery	R 2017 L	315
	2S35 Koalitsiya-SV	8 2S35 on troop trials	R 2020-05 M	132
	BM-27 Uragan	Uragan rocket artillery battalion. 8 per battalion	R 2017-12 M	122
	Tornado-G	18 x 2B17M	O 2016 L	124
	Uragan-1M	rocket artillery battalion (planned replacement for 9K57 Uragan, MoD statement; no holding confirmed)	R 2017-12 L	125
separate covering brigade	Borisoglebsk-2		O 2022-03 L	188
	T-80B/BV/BVM, T-80U		R 2019 L	97
Sever Group of Forces units (Leningrad Military District)	M1991 and M-2024 240 mm multiple rocket launchers (North Korea)		R 2025-05 L	124
Signal units	R-149 command and staff vehicles	signal units (R-149AKSh-1, R-149MA1)	R 2019 L	228
Southern MD motor rifle units	Khrizantema-S	reinforced with Khrizantema-S crews; exercise at Gvardeisky range, Chechnya, autumn 2021	R 2021 M	116
Soviet airborne regiments	ZU-23-2	anti-aircraft battery. 6 per regiment	D 1991 M	163

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
Soviet Naval Infantry regiments	ZSU-23-4 Shilka	regimental air defence battery. 4 per regiment	D 1991 M	162
Soviet-era divisional and PVO AA regiments (legacy)	S-60	Four firing batteries of six guns plus fire control. 6 guns per battery; 24 per regiment (FAS; ENWIKI: 12 in divisional regiments)	D 1999 M	159
Special operations forces (GRU Spetsnaz and SSO)	Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/ Mi-17 family)		D 2024 M	287
Special Operations Forces detachments (first users)	Lancet	Special Operations Forces detachments (first users)	O 2023-07 L	277
Spetsnaz battalion	FPV drones	FPV drone operators	O 2025-12 L	279
Spetsnaz brigade	BTR-80		R 2015-10 L	110
	KamAZ-4310, -5350 and -6350 Mustang military trucks	GRU Spetsnaz or SSO teams (ATP vehicle list)	D 2024 L	247
	Kornet	Kornet-D1 on Tigr: small batches delivered, more planned for 2024 (MoD sources via Izvestia); also separate Spetsnaz companies of armies	R 2024-01 M	307
	MON-50	GRU Spetsnaz or SSO team, mission-dependent basic kit	D 2024 M	322
	Strelets	'Commandos' (TASS reprint); Spetsnaz brigade is an inference	R 2021 L	240
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks		O 2018 L	113
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	INA; news titles report deliveries to spetsnaz formations in Novosibirsk and Altai (Central MD), Tambov (Western MD), Kuban (Southern MD) and Zabaikalye (Eastern MD)	R 2018 L	113
Spetsnaz brigades and separate Spetsnaz companies	Gibka-S	first deliveries planned for 2024 (MoD sources)	R 2024-01 L	157
Spetsnaz units	Orlan-10	Leer-3 complex (three Orlan-10 and a command post)	R 2017-12 L	268
Squad to company level	Strelets	Squad to company level; platoon and section leaders wear the full set	D 2024 H	240
Strategic Rocket Forces	Dzyudoist	Strategic Rocket Forces	R 2013 L	189
Strategic Rocket Forces (RVSN)	Krasukha-2 / Krasukha-4		R 2015 L	183
tank army	BMP-3	BMP-3 crews firing from indirect positions, Kupyansk direction	R 2024-01 L	103
	Iskander-M	army missile brigade. 1 missile brigade (12 launchers)	O 2021 M	143
	T-62	'realistic possibility' that 1st Guards Tank Army units would be re-equipped with T-62 (UK MoD assessment, state claim)	R 2023-03 L	95
	T-80B/BV/BVM, T-80U	INA; 'majority' of the army's tanks were T-80U (2022)	R 2022-03 M	97
tank battalion	T-90	tank companies; tank type not fixed by doctrine. 31 tanks per battalion of a motor rifle brigade; 41 with four companies (strength for tanks of any type; sources do not tie the T-90 to it)	D 2024 L	98
tank brigade	2S19 Msta-S	two howitzer (self-propelled artillery) battalions, three batteries of 6. 18 per battalion, 36 per brigade	D 2016 M	130
	2S3 Akatsiya	18 2S3M each (2009)	O 2009 L	127
	Borisoglebsk-2	EW company	D 2024-02 H	188
	Igla / Igla-1 / Igla-S	MANPADS battery of the air defence missile-artillery battalion. 27 MANPADS launchers per brigade (Igla, Igla-S or Verba)	D 2024 M	165
	PRP-4A Argus / PRP-4M Deytery	fire control and artillery reconnaissance battery, artillery spotting platoon	D 2016 L	234
	PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	engineer battalion. 7 PTS-2 per engineer battalion (RWW names PTS-2, not PTS-4)	D 2016 M	211
	SNAR-10 / SNAR-10M1 Leopard	fire control and artillery reconnaissance battery, radar platoon	D 2016 M	176
	Strela-10 and Osa short-range SAM	air defence missile-artillery battalion, missile battery (SA-13). 6 launchers per battery	D 2024 L	160
	T-62	platoon	R 2024-02 L	95
	T-72B3/B3M	three tank battalions	O 2022-03 H	96
	T-90	INA; named in 2020 as next to receive T-90M (planned, MoD sources)	R 2020 L	98
	Tor	air defence missile battalion, three batteries. 12 launcher vehicles per battalion (4 per battery)	D 2024 M	161
	TOS-1A Solntsepek	TOS-1/1A battalion allocated as a fire subunit for a penetration; not organic (ATP para 5-145). INA (allocated battalion)	D 2024 M	125
	Verba	began to receive Verba in 2015 (with motor rifle and airborne brigades)	R 2015 L	165
	Zoopark-1 / Zoopark-1M	fire control and artillery reconnaissance battery, radar platoon	D 2016 M	177
tank division	1B75 Penicillin	1L271	O 2018-01 M	174
	2S19 Msta-S	artillery regiment, self-propelled howitzer battalions; 2S19 or 2S3	D 2019 M	130
	9K114 Shturm-S	anti-tank battalion: several Shturm ATGM batteries	R 2019 M	115
	9K79-1 Tochka-U	SSM battalion, firing battery (Soviet structure; moved to army brigades from late 1980s). 2 per firing battery	D 1991 H	141
	BMP-3	motor rifle battalions (announced re-equipment with BMP-3 and BTR-82A)	R 2021 L	103

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	BMPT Terminator	BMPT company (first formed Dec 2021); a further subunit formed 2024. 9 per company	O 2024-12 H	104
	D-30	artillery regiment, one or more howitzer battalions in divisions not yet at standard (Soviet era). 18 per battalion	D 1991 M	137
	T-80B/BV/BVM, T-80U	about 200 T-80 in the division (2019, Russian Wikipedia)	O 2022-03 H	97
	T-90	tank regiments (80th, 6th, 239th named as its regiments, not tied to T-90M). on paper about 300 tanks, mostly T-90M (analyst estimate quoted by TRENCH); IISS lists the division with 2 tank regiments	R 2025 L	98
	T-90	about 334 T-90 of various types (2007)	R 2007 L	98
	Tor	air defence missile regiment. one regimental set of Tor-M2 (16 combat vehicles)	O 2017-03 M	161
	Tornado-G	artillery regiment, MRL battalion	D 2019 H	124
	Tornado-G	more than 20 across Taman and Kantemirovskaya divisions	O 2015-07 M	124
tank regiment	BMP-1	BMP motor rifle battalion of a tank division's tank regiment; regimental reconnaissance company. 42 BMP-1/BMP-2 per battalion; 3 BMP-1/BMP-2 with 1 BRM-1 in the recce company (Soviet table)	D 1991 M	101
	BMP-1KSh command and staff vehicle	regimental command post. INA (FM 100-2-3 table reads 0 for the tank regiment HQ)	D 1990 M	226
	BMP-2	INA (BMP-2M Berezhok)	O 2023-02 M	102
	BMPT Terminator	separate BMPT company. 9 per company	O 2021-12 M	104
	D-30	howitzer battalion in some tank regiments of MRD and TD (Soviet era). 2-3 batteries of 6	D 1991 M	137
	D-30	howitzer battalion	O 2025 M	137
	M-46	M-46 gun crews (regimental artillery)	O 2026-04 L	138
	PU-12M7	air defence missile-artillery battery; also regimental air defence chief's post (ARMF: PU-12 family 1977-95; ORUZH: undated PU-12M7 sheet). 1 per battery (PU-12 family)	D 1995 M	234
	R-149 command and staff vehicles	R-149MA3	O 2022-09 L	228
	T-72B3/B3M	three tank battalions. 31 T-72B3 per battalion (CNA planning figure)	D 2021 M	96
	ZSU-23-4 Shilka	air defence missile and artillery battery, SPAA gun platoon (with a platoon of four Strela SAMs). 4 per regiment	D 1991 H	162
Tank units	9K120 Svir / 9K119 Refleks / 9K119M Refleks-M	with T-72B/B3, T-80U or T-90 tanks, also in the tank battalions of motor rifle brigades	D 2024 M	306
Tornado-G, Grad and Msta units	1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	1V1003 command and observation vehicle of the 1V198 system	R 2022-09 L	231
TOS-1A batteries allocated to manoeuvre brigades	Strelets	TOS-1A battery allocated to a manoeuvre brigade gets Orlan-10 data over the Strelets network	D 2024 L	240
training centre	1B75 Penicillin	1B75; the only complex in the armed forces in 2020. 1 (2020)	R 2020 L	174
	Ka-52 Alligator	8 in the 696th Regiment (Sep 2010)	R 2010-12 L	284
	Nebo-U	Nebo-U cab and antenna base shown in photographs, 2011	O 2011 L	171
	S-350 Vityaz	training centre of the Anti-aircraft Missile Forces, Zhukov Military Academy of Aerospace Defence. first S-350 set (crews and instructors training)	R 2020-02 M	154
Troop reconnaissance units	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	a news title reports one in Buryatia (Eastern MD)	R 2018 L	113
Troops covering positions or guarding sites (kit purpose)	MON-50	VKPM-2 mine kit (4 mines) for covering positions and guarding troop sites. 4 per VKPM-2 kit	D 2008 M	322
Ukrainian Army and Marine Corps (same 9P140 launcher)	220 mm rockets (Uragan)	9P140 Uragan	R 2024 M	315
Ukrainian artillery (same 2S7 guns)	203 mm gun rounds (3OF43, 3OF44)	2S7 Pion; fired by the 43rd Artillery Brigade in 2022	R 2024 M	312
Units in the war zone (Rostec statement)	Groza-O4K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	Groza-O4K	R 2024-03 L	198
Units using T-72B3, T-80BVM, T-90M tanks in Ukraine	9K120 Svir / 9K119 Refleks / 9K119M Refleks-M	tank units in Ukraine using T-72B3/B3M, T-80BVM and T-90M	R 2024-03 L	306
Units with 9P140 Uragan rocket launchers	PTM-1	9P140 Uragan launchers firing the 9M27K2 mine rocket, 16 rockets per salvo	D 2024 L	328
Units with D-20 gun-howitzers (2K24)	Santimetr (3OF38) and Santimetr-M (3OF75)	fire platoon: 3 D-20 gun-howitzers, 1 laser designator, 300 rounds (Soviet-era 2K24 organisation). 300 rounds per fire platoon	D 1999 M	314
Units with PMP pontoon bridge park	ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	PMP pontoon park, bridge sections launched from KrAZ-255B	D 2024 M	252
Units with UMZ remote minelayer	ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	UMZ minelayer, 6 firing modules on a ZiL-131 truck	D 2024 H	252
unmanned systems unit	Forpost	UAV detachment of a naval aviation base. 6 UAV (Kamchatka, 2014)	R 2014-01 M	271
	Forpost	fleet UAV subunit	R 2026-05 M	271
	Forpost	UAV unit of the Syria group	R 2024-11 M	271

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	FPV drones	FPV crews of the unmanned systems troops	R 2026-02 M	279
	Geran-2	strike crews; regiment has one UAV strike battalion. 2 Geran-2 crews per drone regiment	O 2025-05 H	274
	Geran-2	launch teams, combat groups	O 2026-09 M	274
	Geran-2	strike UAV detachment, Aerospace Forces. 5 detachments (2025)	R 2025-03 M	274
	Gerbera		R 2024-07 L	275
	Korsar	platoon in brigade or division UAS company (CNA 2019 conjecture)	R 2019 L	271
	Lancet	Lancet crew	R 2026-07 M	277
	Molniya		R 2026-06 M	278
	Molniya		R 2026-06 L	278
Unnamed Tobol sites nearest Ukraine (US leak)	Tobol	Three sites nearest Ukraine named in a leaked US slide; Tobol-1 tested against Starlink, estimated centre near Bakhmut, from late Sep 2022. 3 sites	R 2023-03 L	186
VDV	1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	1V119 in VDV artillery and mortar units (RWW), used with 2S9 Nona-S (WEG15, ru-wiki)	D 2016 M	231
VDV air defence subunits, Dnepr group of forces	ZU-23-2	air defence subunit; ZU-23-2 crews (Kherson region, Russian MoD claim)	R 2024-05 L	163
volunteer formation	Kurier / Omich-2 / Bogomol-7V ground robotic complexes	NRTK company	O 2026 M	264
	Lancet		O 2023-05 L	277
Wagner Group (Russia-based private military contractor), Libya	MON-200 directional mine	Tripoli, Libya, 2019-2020: MON-200 among mines laid; Wagner Group reported responsible	R 2020 L	324
Wagner PMC	KM-8 Gran	Gran reported fired by Wagner PMC against Ukrainian supply routes near Bakhmut, 2023; launcher not named	R 2023 L	313

Table 3a. Reach of indirect fire

Guns, howitzers, mortars and rocket launchers, including mine-laying rockets. Practical rows give observed employment ranges.

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
BM-30 Smerch 9M544 and 9M549 guided Tornado-S guided cluster rockets, inertial and GLONASS; Tornado-S guided rockets; crew statement **CEP 5-10 m (inertial and GLONASS; official claim)**	**120 km**	20–40 km	maximum (claim), minimum (claim)	123
Uragan-1M 9M544 guided 300 mm 9M544 guided rocket; claim in Russian press (ZR gives 120 km as the system maximum without naming the rocket)	**120 km**		claimed	125
BM-30 Smerch Employment range, Tornado-S guided rockets against a command post (2026-08) and a fortified strongpoint (2026-09); MoD figures via state media	**about 100 km**		practical (claim)	123
UMPK glide kits and UMPB D-30SN glide bomb UMPK-PD / UMPK-5R (FAB-500T) no jet motor; release from 12,000 m at about 1,000 km/h (Kommersant press report, Oct 2025)	**95–100 km**		claimed	321
300 mm rockets (Smerch, Tornado-S) 9M528 Extended-range HE-fragmentation, separating warhead **CEP 150 m (Unguided, electronic time fuze)**	**90 km**	25 km	maximum (claim), minimum	316
300 mm rockets (Smerch, Tornado-S) 9M525, 9M529, 9M531, 9M533 90 km series described as under development, most of which remained design work	**Up to 90 km**		maximum (claim)	316
BM-30 Smerch 9M528 HE-frag unguided extended-range rocket, separable HE-frag warhead	**90 km**		maximum (claim)	123
UMPK glide kits and UMPB D-30SN glide bomb UMPB D-30SN air-launched from Su-34; Ukrainian local officials' tentative estimate after a March 2024 Kharkiv strike **CEP 7–8 m (inertial and satellite; claimed accuracy relayed by Ukrainian analyst Oleksii Hetman, not stated as CEP)**	**90 km**		estimated (claim)	321
2S35 Koalitsiya-SV 2S35 guided or extended-range shell precision-guided or rocket-assisted projectile; munition not named	**80 km**		maximum (claim)	132
POM-2 and POM-2R scatterable anti-personnel mines 9M55K3 (300 mm Smerch, 64 POM-2) 9M55K3 cassette rocket from 9A52 Smerch (entry smerch), standard-range rocket set; Smerch system figure, not given for the 9M55K3 itself	**70 km**	20–25 km	maximum, minimum	327
PTM-3 9M55K4 (300 mm) 300 mm rocket with 25 PTM-3; Smerch family launchers	**70 km**	20 km	maximum, minimum	329
220 mm rockets (Uragan) Employment range, observed 9K57 Uragan and 9K58 Smerch together, Donbas, May-June 2022, used at or near maximum range; RUSI does not separate the two	**35–70 km**		practical	315
300 mm rockets (Smerch, Tornado-S) 9M55F, 9M55K, 9M55K1, 9M55K4, 9M55K5, 9M55S Standard-range rockets from the Smerch 9A52-2 launcher; ammunition as listed; Standard-range rockets from the Smerch launcher **CEP 150 m (Unguided, trajectory corrected in pitch and yaw early in flight; electronic time fuze)**	**70 km**	20 km	maximum, minimum	316
BM-30 Smerch 9M55K cluster unguided, range-corrected rocket with fragmentation submunitions **CEP 150 m (inertial range and attitude correction, no terminal guidance; also given for 9M528)**	**70 km**	20 km	maximum, minimum	123
BM-30 Smerch 9M55F HE-frag unguided, separable HE-frag warhead	**70 km**	20 km	maximum, minimum	123
BM-30 Smerch Employment range, Smerch unguided rockets, Ukraine 2022, used at or near maximum range	**35–70 km**		practical	123
UMPK glide kits and UMPB D-30SN glide bomb UMPK (FAB-250, -500, -1500) unpowered glide; early models, set by release altitude and speed (TASS)	**40–70 km**		maximum (claim)	321
Uragan-1M 9M55F HE-frag 300 mm 9M55F HE-frag rocket with trajectory correction	**70 km**	20 km	maximum, minimum	125
BM-27 Uragan Employment range, observed 9K57 and 9K58 Smerch together, Donbas, May-June 2022; RUSI does not separate the two	**35–70 km**		practical	122
M1991 and M-2024 240 mm multiple rocket launchers (North Korea) 240 mm guided rocket guided rocket of the North Korean 2024 tests	**67 km**		maximum (claim)	124
M1989 Koksan (North Korea) HE-frag rocket-assisted rocket-assisted HE-frag shell	**60 km**		maximum (up to)	133
M1991 and M-2024 240 mm multiple rocket launchers (North Korea) 240 mm unguided rocket unguided spin-stabilised rocket; varies with munition	**40–60 km**		approximately	124
UMPK glide kits and UMPB D-30SN glide bomb UMPK (FAB-3000) unpowered glide; TASS citing a defence-industry source, July 2024 **CEP 10 m (inertial and satellite guidance; claimed by a Su-34 pilot on Russian state TV, 2024)**	**50–60 km**		maximum (claim)	321
2S7 Pion / 2S7M Malka HE rocket-assisted RAP projectile, 103 kg	**47.5 km**		maximum	129
203 mm gun rounds (3OF43, 3OF44) HE rocket-assisted 3OF44 Round 3VOF35, full charge	**47.5 km**		maximum	312
2S35 Koalitsiya-SV 2S35 standard HE-frag standard (unassisted) rounds	**40 km**		maximum	132
BM-21 Grad 122 mm MRL 9M521 HE-frag 9M521 HE-frag, export round for 9K51M Tornado-G; in 9K51 only with a manual electronic-fuze setter (RUWP); not adopted by the Russian Army (MISSIL)	**40 km**	15 km	maximum (claim), minimum (claim)	122
M1989 Koksan (North Korea) HE-frag HE-frag shell	**40 km**		range	133
122 mm rockets (Grad, Tornado-G, Prima) 9M521 HE-frag 9K51M Tornado-G; HE-frag, electronic fuze	**40 km**	15 km	maximum (claim), minimum (claim)	315
Tornado-G 9M521 HE-frag 9M521 extended-range HE-frag rocket; attribution to 9M521 from RUWIKI (Karpenko), WEG, ZR and WWW1 give 40 km as system maximum	**40 km**		maximum	124
M-46 HE-frag ERFB-BB Chinese-designed extended-range base-bleed round (also North Korean); not a Soviet round	**38 km**		maximum	138
2S7 Pion / 2S7M Malka HE-frag Conventional HE-frag, 110 kg projectile	**37.5 km**		maximum	129
122 mm rockets (Grad, Tornado-G, Prima) 9M522 HE-frag 9K51M Tornado-G or BM-21 with fuze setter; separating HE-frag warhead	**37.5 km**	8 km	maximum (claim), minimum (claim)	315

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
203 mm gun rounds (3OF43, 3OF44) HE-frag 3OF43 110 kg HE-frag shell, fired from 2S7/2S7M	37.5 km		maximum	312
Tornado-G 9M522 HE-frag 9M522 rocket, separable HE-frag warhead	37.5 km		maximum	124
M-46 HE rocket-assisted rocket-assisted HE-frag (Iranian HE BB per RUWIKI)	37 km		claimed	138
2S19 Msta-S rocket-assisted HE rocket-assisted projectile (HERA/RAP), type not named	36 km		range	130
PTM-3 9M59 (220 mm) 220 mm rocket with 9 PTM-3; 9P140 Uragan	35 km	10 km	maximum, minimum	329
220 mm rockets (Uragan) 9M27K3 anti-personnel mines PFM-1 mine rocket	35 km	10 km	maximum, minimum	315
Uragan-1M 9M27F HE-frag 220 mm 9M27F unguided HE-frag rocket	35 km	10 km	maximum effective, minimum effective	125
Uragan-1M 9M27K cluster 220 mm 9M27K rocket, 30 9N210 fragmentation submunitions	35 km		maximum effective	125
BM-27 Uragan 9M27F HE-frag 9M27F HE-frag rocket	35 km	10 km	maximum, minimum	122
BM-27 Uragan 9M27K cluster 9M27K rocket, 30 9N210 HE-frag submunitions	35 km	10 km	maximum, minimum	122
BM-27 Uragan 9M27K2 AT mines 9M27K2 rocket, 24 PTM-1 anti-tank mines	35 km	10 km	maximum, minimum	122
BM-27 Uragan 9M27K3 AP mines 9M27K3 rocket, PFM-1 anti-personnel mines	35 km	10 km	maximum, minimum	122
PFM-1 Lepestok scatterable anti-personnel mine 9M27K3 mine rocket (PFM-1S) scatterable-mine warhead; Uragan launcher	34 km	8 km	maximum, minimum	326
2A36 Giatsint-B 152 mm towed gun rocket-assisted 3VOF41 active-rocket projectile 3OF30	33.5 km		maximum	135
2S5 Giatsint-S rocket-assisted HE-frag 3OF30 rocket-assisted HE-frag	33 km		maximum	128
2S5 Giatsint-S HE-frag 3OF59 HE-frag 3OF59, improved aerodynamic shape, full charge	30.5 km		maximum	128
152 mm gun and howitzer rounds 3OF59 HE-frag Round 3VOF86, full charge, from 2A36/2A37	30.5 km		maximum	312
122 mm rockets (Grad, Tornado-G, Prima) 9M217 cluster 9K51M Tornado-G; two self-aiming HEAT submunitions	30 km	8 km	maximum, minimum	315
122 mm rockets (Grad, Tornado-G, Prima) 9M218 cluster 9K51M Tornado-G; 45 HEAT-fragmentation submunitions	30 km	8 km	maximum, minimum	315
2A65 Msta-B OF61 HE-frag base bleed OF61 (3OF61) HE-frag with base-bleed gas generator, round 3VOF91	29 km		maximum (claim)	135
2S19 Msta-S HE-frag base bleed 3OF61 HE-frag base bleed (round 3VOF91)	29 km		maximum	130
152 mm gun and howitzer rounds 3OF61 HE-frag base bleed Round 3VOF91, long-range charge Zh61, from 2A64/2A65	29 km		maximum	312
2A36 Giatsint-B 152 mm towed gun HE-frag 3VOF39 HE-frag 3OF29, full charge; ammunition not stated; listed with HE-frag maximum	28.5 km	8.6 km	maximum, minimum	135
152 mm gun and howitzer rounds 3OF29 HE-frag Round 3VOF39, full charge, from 2A36/2A37	28.5 km		maximum	312
2S5 Giatsint-S HE-frag 3OF29 HE-frag 3OF29, full charge; HE-frag, indirect fire	28.4 km	8.6 km	maximum, minimum	128
M-46 HE-frag OF-33 (full charge 3VOF43) HE-frag 3OF33 or OF-482M, full charge	27.5 km		maximum	138
Krasnopol, Krasnopol-M1, Krasnopol-M2 Krasnopol-M2 (152 mm, Russian service) Krasnopol-M2, 152 mm; Russian army channel claim of July 2023, repeated by an analyst in 2026	26 km		maximum (claim)	314
203 mm gun rounds (3OF43, 3OF44) HE-frag 3OF43 reduced charge Round 3VOF42, charge 4-z-3	25.4 km		maximum	312
Krasnopol, Krasnopol-M1, Krasnopol-M2 Krasnopol-M 3OF39M 3OF39M Krasnopol-M1 with base-bleed gas generator, long-range charge; Rosoboronexport 2002 catalogue	25 km		maximum (claim)	314
Krasnopol, Krasnopol-M1, Krasnopol-M2 K155M Krasnopol-M2 (155 mm export) open or closed position; depends on gun and region **CEP 0.6 at 5-9 km; 0.8 at 9-16 km; 0.7 at 16-20 (25) km (K155M, by range band; KBP figure shown at Army-2024)**	20–25 km		maximum (claim)	314
2A65 Msta-B OF45 HE-frag OF45 (3OF45) HE-frag projectile; OF45 HE-frag projectile	24.7 km	6.5 km	maximum (claim), minimum (claim)	135
2S19 Msta-S HE-frag 3OF45 (OF-45) HE-frag, full charge	24.7 km		maximum	130
152 mm gun and howitzer rounds 3OF45 HE-frag Round 3VOF72, long-range charge Zh61, from 2A64/2A65. Round 3VOF58 (full charge) 19.4 km; 3VOF73 (reduced) 14.37 km	24.7 km		maximum	312
152 mm gun and howitzer rounds 3OF64 HE-frag Round 3VOF96, long-range charge Zh61. Round 3VOF97 (full charge) 19.4 km; 3VOF98 (reduced) 14.37 km	24.7 km		maximum	312
2S35 Koalitsiya-SV 2S43 HE-frag 2A64 gun; munition not stated by WEG or WPMALRU (Rostec: HE-frag more than 24 km)	24.5 km		maximum	132
D-20 HE-frag OF-96 HE-frag OF-96 as WEG names it; WEG does not say rocket-assisted	24.4 km		maximum	137
M-46 guided shell Firn-1 Firn-1 guided shell, 33.4 kg; Russian service status not stated	24 km		maximum	138
152 mm gun and howitzer rounds 3OF59 HE-frag, reduced charge Round 3VOF87	23 km		maximum	312

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
M-46 HE-frag OF-33 (reduced charge 3VOF44) HE-frag 3OF33, reduced charge	22.5 km		maximum	138
3RB30 152 mm communications jammer round 3RB30 long-range charge (3VRB38) Long-range charge, long-barrelled 152 mm guns (2S19, 2A65)	22 km		maximum	310
Krasnopol, Krasnopol-M1, Krasnopol-M2 K155 (155 mm export) KM-1 export round for 155 mm guns	22 km		maximum (claim)	314
2S1 Gvozdika HE rocket-assisted Croatian ERBB 122 HB rocket-assisted HE shell; not in the 2S1's standard load	21.9 km		maximum	126
D-30 HE-frag rocket-assisted rocket-assisted HE-frag	21.9 km		maximum	137
2S5 Giatsint-S HE-frag 3OF29 reduced charge HE-frag 3OF29 with reduced charge 4Zh48	21.5 km		maximum	128
152 mm gun and howitzer rounds 3OF29 HE-frag, reduced charge Round 3VOF40	21.5 km		maximum	312
152 mm gun and howitzer rounds 3O23 cluster Round 3VO28, long-range charge. Round 3VO30 (reduced) 14 km	21 km		maximum	312
2S3 Akatsiya HE-frag rocket-assisted 3OF22 rocket-assisted HE-frag	20.5 km		maximum	127
122 mm rockets (Grad, Tornado-G, Prima) 9M53F HE-frag 9K59 Prima (9A51); separating HE-frag warhead	20.5 km	5 km	maximum, minimum	315
BM-21 Grad 122 mm MRL 9M22U HE-frag 9M22U (M-21OF) HE-fragmentation rocket	20.4 km	5 km	maximum, minimum	122
122 mm rockets (Grad, Tornado-G, Prima) 9M22U HE-frag Fired from BM-21 Grad or 9K51M Tornado-G; ground target; HE-frag	20.4 km	5 km	maximum, minimum	315
122 mm rockets (Grad, Tornado-G, Prima) 9M22 HE-frag Fired from BM-21 Grad or 9K51M Tornado-G; ground target; HE-frag	20.4 km	5 km	maximum, minimum	315
Tornado-G 9M22U HE-frag legacy Grad 9M22U HE-frag rocket	20.4 km	5 km	maximum effective, minimum effective	124
122 mm rockets (Grad, Tornado-G, Prima) 9M53K cluster 9K59 Prima (9A51); cluster warhead	20.3 km		maximum	315
2S3 Akatsiya Krasnopol guided 3OF39 Krasnopol laser-guided **CEP 1 m or less (laser-guided, target designated from Orlan-30 UAV; commentator claim)**	20 km		maximum	127
2S5 Giatsint-S Krasnopol guided 3OF39 laser-guided HE-frag Krasnopol	20 km		maximum	128
Krasnopol, Krasnopol-M1, Krasnopol-M2 Krasnopol 3OF39 3OF39 with rocket motor, full variable charge, 152 mm gun; lower limit of the stated effective range 3 to 20 km **CEP 1 m or less (laser terminal guidance; a Russian commentator's claim for Krasnopol and Krasnopol-M2, not a measured figure)**	20 km	3 km	maximum, effective	314
M-46 Practical range, HE-frag targets located by UAV, Dnipropetrovsk area, Apr 2026	about 20 km		practical (claim)	138
2S19 Msta-S guided Krasnopol laser-guided projectile; laser designation by an observer required	20 km		maximum	130
122 mm rockets (Grad, Tornado-G, Prima) 9M538 HE-frag 9K51 Grad or 9K51M Tornado-G; HE-frag, 34.5 kg warhead; made for the Russian MoD	20 km		maximum (claim)	315
122 mm rockets (Grad, Tornado-G, Prima) 9M539 HE-frag 9K51 Grad or 9K51M Tornado-G; separating HE-frag warhead, 35 kg; time or contact fuze; made for the Russian MoD	20 km		maximum (claim)	315
122 mm rockets (Grad, Tornado-G, Prima) 9M541 cluster 9K51 Grad or 9K51M Tornado-G; cluster warhead of HEAT-fragmentation elements, 33.7 kg; made for the Russian MoD	20 km		maximum (claim)	315
122 mm rockets (Grad, Tornado-G, Prima) 9M53S incendiary 9K59 Prima (9A51); incendiary, contact fuze	20 km		maximum	315
220 mm thermobaric rockets (TOS-1A, TOS-2) TOS-2 thermobaric rockets as employed Russian MoD account of a TOS-2 salvo on the Avdiivka axis, July 2024; rocket type not named	about 20 km		practical (claim)	316
Tornado-G 9M538 HE-frag 9M538 rocket, enhanced monobloc HE-frag warhead	20 km		maximum (claim)	124
Tornado-G 9M539 HE-frag 9M539 rocket, separable HE-frag warhead; Tecmash statement at IDEX 2019; 9M539 rocket; Tecmash statement at IDEX 2019	20 km	5 km	maximum (claim), minimum (claim)	124
Tornado-G 9M541 cluster 9M541 rocket, cluster warhead with HEAT-frag submunitions	20 km		maximum	124
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns BS-3 ammunition not stated by WEG or Wikipedia	20 km		maximum	139
122 mm rockets (Grad, Tornado-G, Prima) 9M22S incendiary Fired from BM-21 Grad or 9K51M Tornado-G; ground target; incendiary	19.89 km	1.5 km	maximum, minimum	315
2S4 Tyulpan 3O8 rocket-assisted cluster bomb cluster bomb, 14 submunitions	19.3 km	7.1 km	maximum, minimum	128
240 mm mortar bombs (3F2 HE, 3O8 cluster) 3O8 rocket-assisted cluster bomb 3O8 cluster bomb, rocket motor fired, no brake rings	19.3 km	7.1 km	maximum, minimum	312
2S4 Tyulpan Sayda incendiary rocket-assisted bomb incendiary (napalm) rocket-assisted bomb; incendiary rocket-assisted bomb	19 km	0.7 km	maximum, minimum	128
2S4 Tyulpan 3F2 rocket-assisted HE bomb 228 kg rocket-assisted HE bomb; WEG and GS do not name the round, 3F2 per RUWIKI	18 km	0.8 km	maximum, minimum	128
3RB30 152 mm communications jammer round 3RB30 full variable charge (3VRB37) Full variable charge ZhN-546; same figure from the 2A64 (2S19) and the 2A33 (2S3)	18 km		maximum	310
240 mm mortar bombs (3F2 HE, 3O8 cluster) 3F2 rocket-assisted HE bomb rocket-assisted HE-frag bomb, 228 kg, rocket motor fired; 3F2 HE-frag bomb, rocket motor fired	18 km	7.5 km	maximum, minimum	312
2S3 Akatsiya HE-frag 3OF25 HE-frag	17.4 km		maximum	127

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
D-20 HE-frag OF-32 HE-frag OF-32 as WEG names it	17.4 km	4.6 km	maximum, minimum	137
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns HE-frag OF-540, ML-20 OF-540 HE-frag; WEG gives 17,230 m for OF-540	17.23 km		maximum	139
152 mm gun and howitzer rounds 3OF25 HE-frag Round 3VOF32, full charge, from 2A64/2A65	17 km		maximum	312
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns HE O-365K, D-44 O-365K HE; WEG's 15.65 m is a transcription error (its ammunition tab gives 15,650 m)	15.65 km		maximum	139
122 mm rockets (Grad, Tornado-G, Prima) 9M28D leaflet Short-range leaflet (agitation) warhead	15.42 km	1.65 km	maximum, minimum	315
D-30 HE-frag HE-frag (OF-81 in FAS); HE-frag, indirect fire	15.3 km	1 km	maximum, minimum	137
2S1 Gvozdika HE HE-frag (OF-462, 3OF56 etc.), full charge	15.2 km	4.2 km	maximum, minimum	126
122 mm howitzer rounds 3OF24 HE-frag HE-fragmentation shell, full charge, from D-30 or 2S1	15.2 km		maximum	311
122 mm howitzer rounds 3OF56 HE-frag HE-fragmentation shell, full charge, from D-30 or 2S1	15.2 km		maximum	311
122 mm rockets (Grad, Tornado-G, Prima) 9M28S incendiary Short-range incendiary; BM-21 or 9P138	15.07 km	1.65 km	maximum, minimum	315
BM-21 Grad 122 mm MRL 9M28F HE-frag 9M28F HE-fragmentation rocket	15 km	1.5 km	maximum, minimum effective	122
POM-3 Medalyon scatterable anti-personnel mine Zemledeliye rocket Distance from the launcher to the minefield; the system's range, not the mine's	5–15 km		flight range (claim)	328
122 mm rockets (Grad, Tornado-G, Prima) 9M28F HE-frag Short-range HE-frag; BM-21 or 9P138 Grad-1	15 km	1.5 km	maximum, minimum	315
220 mm thermobaric rockets (TOS-1A, TOS-2) TBS-M3 thermobaric rocket TOS-2 launcher, also expected on the TOS-3; claimed for the TBS-M3 in two sources, for the TOS-2 system in the third	15 km		claimed	316
240 mm mortar bombs (3F2 HE, 3O8 cluster) 3O8 with brake rings fitted 3O8 cluster bomb with brake device 3Ch20 fitted	15 km		maximum	312
Santimetr (3OF38) and Santimetr-M (3OF75) 3OF75 (Santimetr-M) guided round; designator needed; 1999 developer table	15 km	0.5 km	maximum (claim), minimum (claim)	314
Tornado-G 9M28F HE-frag legacy Grad 9M28F HE-frag rocket	15 km	1.5 km	maximum effective, minimum effective	124
ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer ISDM mine rocket cassette rocket with AP or AT mines	15 km	5 km	maximum (claim), minimum (claim)	217
Ka-52 Alligator LMUR (izdeliye 305) ground target; made for the Ka-52M; UK MoD (Jul 2023) says the Ka-52 fleet carries it	up to 14.5 km		maximum (claim)	284
Mi-28N Night Hunter LMUR (izdeliye 305) Mi-28NM; inertial with satellite correction, thermal-imaging seeker with two-way datalink to the operator	over 9 miles (about 14.5 km)		maximum	285
152 mm gun and howitzer rounds 3O13 cluster Round 3VO13, full charge. Round 3VO14 (reduced charge) 11 km	14.5 km		maximum	312
3RB30 152 mm communications jammer round 3RB30 reduced charge (3VRB36) Reduced charge Zh-546U; same figure from the 2A64 (2S19) and the 2A33 (2S3)	13.5 km		maximum	310
POM-2 and POM-2R scatterable anti-personnel mines 3M16 (122 mm Grad, five POM-2) 3M16 cassette rocket from BM-21 Grad (entry grad); also called 9M18; 3M16 cassette rocket from BM-21 Grad; figures differ between sources	13.4 km	2.5–4 km	maximum, minimum	327
PTM-3 9M28K (122 mm) 122 mm rocket with 3 PTM-3; Grad family launchers	13.4 km	2.5 km	firing range	329
122 mm rockets (Grad, Tornado-G, Prima) 9M28K AT mines Fired from BM-21 Grad or 9K51M Tornado-G; ground target; three PTM-3 anti-tank mines	13.4 km	2.5 km	maximum, minimum	315
122 mm rockets (Grad, Tornado-G, Prima) 3M16 AP mines Fired from BM-21 Grad or 9K51M Tornado-G; ground target; five POM-2 anti-personnel mines	13.4 km	2.5 km	maximum, minimum	315
152 mm gun and howitzer rounds 3OF25 HE-frag, reduced charge Round 3VOF33	13.4 km		maximum	312
2S31 Vena HE-frag 3VOF110 (rifled) rifled HE-frag shell	13 km		maximum	131
2S31 Vena rocket-assisted HE-frag shell rocket-assisted HE-frag shell (3VOF55 in the ru.wikipedia table); the same round reaches 12.8 km from the shorter 2A51	13 km		maximum	131
2S34 Khosta HE-frag 3VOF110 (rifled) rifled HE-frag shell 3VOF110, not rocket-assisted	13 km		maximum	131
2S34 Khosta rocket-assisted HE-frag shell rocket-assisted 120 mm shell (3VOF55 in the 2S31 tables); the same round reaches 12.8 km from the shorter 2A51	13 km		maximum	131
220 mm rockets (Uragan) 9M51 thermobaric thermobaric rocket	13 km	5 km	maximum, minimum	315
BM-27 Uragan 9M51 thermobaric 9M51 thermobaric rocket	13 km	5 km	maximum, minimum	122
2S9 Nona-S HE-frag rocket-assisted shell 3OF50 rocket-assisted HE-frag shell 3OF50 (round 3VOF55)	12.8 km		maximum	129
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns HE-frag OF-530, D-1 OF-530 HE-frag, 508 m/s muzzle velocity	12.4 km		maximum	139
2S1 Gvozdika Kitolov-2M laser-guided 122 mm shell Kitolov-2M, needs laser designation	12 km		maximum effective (claimed) (claim)	126

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
D-30 Kitolov-2M Kitolov-2M laser-guided shell, target laser-designated	**12 km**		declared maximum effective (claim)	137
Kitolov-2 and Kitolov-2M laser-guided rounds Kitolov-2M (122 mm) fired from the 2S1 Gvozdika or D-30 at a target lit by a laser designator; lower end of a 2 to 12 km effective band, target lit by a laser designator	**12 km**	2 km	maximum (claim), effective (claim)	313
Santimetr (3OF38) and Santimetr-M (3OF75) 3VOF63 (3OF38, full charge) guided round, full variable charge No. 1; designator needed	**12 km**		maximum	314
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns HE-frag OF-462, M-30 OF-462 HE-frag, full charge	**11.72 km**		maximum	139
122 mm rockets (Grad, Tornado-G, Prima) 9M22M HE-frag Grad-P: 9P132 single-tube man-portable launcher; HE-frag	**10.8 km**	3 km	maximum, minimum	315
2S40 Floks guided projectile Guided projectile (Kitolov-2M per Defense Express)	**10 km**		declared (claim)	132
220 mm thermobaric rockets (TOS-1A, TOS-2) MO.1.01.04M2 thermobaric rocket TOS-1A launcher; rocket introduced March 2020; TOS-1A launcher; the shorter-range MO.1.01.04M is kept for close targets	**10 km**	1.6 km	maximum, minimum	316
2S4 Tyulpan 53-F-864 HE bomb HE bomb 130.7 kg, full charge; HE bomb, smallest charge	**9.65 km**	0.8 km	maximum, minimum	128
2S4 Tyulpan Smel'chak-M laser-guided bomb laser-guided bomb, 134 kg	**9.5 km**	0.9 km	maximum, minimum	128
2S4 Tyulpan 3F5 Smel'chak laser-guided bomb laser-guided bomb, target designated by 1D15 from 0.2–5 km **CEP 80–90% within a 2–3 m circle (semi-active laser homing, target lit in final 400–800 m of flight)**	**9.2 km**	3.6 km	maximum, minimum	128
2S12 Sani 120 mm HE-frag rocket-assisted Frag-HE-RA	**9.1 km**		maximum	130
2S12 Sani KM-8 Gran 120 mm laser-guided HE-frag bomb with laser designator; Rostec says Sani can use Gran	**9 km**		maximum	130
2S23 Nona-SVK Kitolov-2 3VOF112 Kitolov-2 laser-guided projectile, target lit by laser designator	**9 km**		maximum	131
2S31 Vena Kitolov-2 guided 3VOF112 Kitolov-2 laser-guided projectile, rifled; the same round as from the 2A51	**9 km**		maximum	131
2S34 Khosta Kitolov-2 guided 3VOF112 Kitolov-2 laser-guided shell; the same round as from the 2A51	**9 km**		maximum	131
2S9 Nona-S Kitolov-2 laser-guided shell 3VOF112 Kitolov-2 laser-guided shell, target lit by laser designator	**9 km**		maximum	129
KM-8 Gran KM-8 Gran guided bomb from a 120 mm mortar or gun-mortar (the same figure from the 2A51 and 2A80 guns), target lit by laser; guided bomb from a 120 mm mortar, target lit by laser	**9 km**	1.5 km	maximum (claim), minimum (claim)	313
Kitolov-2 and Kitolov-2M laser-guided rounds Kitolov-2 (120 mm) fired from the 2A51, 2A60 and 2A80 guns (2S9, 2B16, 2S23, 2S31, 2S34) at a target lit by a laser designator; fired from the 2S9 Nona-S at a target lit by a laser designator	**9 km**	1.5 km	maximum, effective (claim)	313
2S31 Vena HE-frag 3OF49 (rifled) older rifled HE-frag shell 3OF49 (round 3VOF54), the same shell as from the 2A51	**8.8 km**		maximum	131
2S34 Khosta HE-frag 3OF49 (rifled) older rifled HE-frag shell 3OF49 (round 3VOF54), the same shell as from the 2A51 and the 2S31	**8.8 km**		maximum	131
2S9 Nona-S HE-frag shell 3OF49 rifled HE-frag shell 3OF49 (round 3VOF54); the 3OF51 shell (rounds 3VOF49, 3VOF75) has the same figure	**8.8 km**		maximum	129
2S40 Floks HE-frag projectile (OFS) HE-frag projectile OFS, 17.3 kg per Defense Express; declared Russian figure	**8.5 km**		declared (claim)	132
203 mm gun rounds (3OF43, 3OF44) 2A44 gun Lower limit of the 2A44 gun's firing range		8.4 km	minimum	312
D-30 Practical range, HE-frag two-gun fire mission, Dnipropetrovsk direction, 2025	**about 8 km**		practical (claim)	137
Krasnopol, Krasnopol-M1, Krasnopol-M2 Krasnopol 3VOF93 (reduced charge) 3OF39 projectile in the 3VOF93 round, reduced charge Zh-546U	**8 km**		maximum	314
Santimetr (3OF38) and Santimetr-M (3OF75) 3VOF66 (3OF38, reduced charge) guided round, reduced charge; designator needed	**8 km**		maximum	314
2S12 Sani 120 mm HE-frag standard bomb; RWW, AR18 and TI do not name the munition (WEG15: 7,000 m for 3OF843B); Rosoboronexport catalogue figure	**7.1 km**	0.48 km	maximum, minimum (claim)	130
2S23 Nona-SVK mortar bomb OF-843B OF-843B smoothbore mortar bomb (round 3VOF79)	**7.1 km**		maximum	131
2S31 Vena mortar bomb (smoothbore HE) smoothbore HE mortar bomb 53-OF-843B (round 3VOF79), the same bomb as from the 2A51	**7.1 km**		maximum	131
2S34 Khosta standard 120 mm mortar bomb smoothbore HE mortar bomb 53-OF-843B (round 3VOF79), the same bomb as from the 2A51 and the 2S31	**7.1 km**		maximum	131
2S9 Nona-S 120 mm HE mortar bomb smoothbore HE-frag mortar bomb 53-OF-843B (round 3VOF79)	**7.1 km**		maximum	129
120 mm mortar bombs (OF-843B and Iranian HE bomb) OF-843B 120 mm HE-frag Soviet-pattern bomb fired from the 2S9, 2B16 and 2S23 gun-mortars; the same 7.1 km is given for the bomb from the 2S31; fired from the 2B16, 2S9-1, 2S9-1M and 2S12	**7.1 km**	0.45 km	maximum, minimum	311
2S40 Floks HE mortar bomb (OFM) HE mortar bomb	**7 km**		declared (claim)	132
152 mm gun and howitzer rounds 2A65 howitzer Gun figure, no round named		6.5 km	minimum	312
220 mm thermobaric rockets (TOS-1A, TOS-2) MO.1.01.04M thermobaric rocket TOS-1A launcher; export data sheet, repeated by Russian press; TOS-1A launcher; export sheet row 'minimum vertical' (high-angle fire)	**6 km**	0.6 km	maximum (claim), minimum (claim)	316
TOS-1A Solntsepek thermobaric rocket MO.1.01.04M thermobaric rocket, 3.7 m, 217 kg	**6 km**		maximum	125

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
TOS-1A Solntsepek incendiary rocket MO.1.01.04M.OP incendiary rocket, 3.7 m, 204 kg	6 km		maximum effective	125
MT-12 Rapira 9M117 Kastet Gun-launched laser beam-riding missile, 3UBK10 round (RUWIKI) (MT-12K, 9K116)	0.1–5 km		range	134
2S25 Sprut-SD HE-frag 125 mm HE-frag, 1A40M-1 day sight	5 km		maximum aimed	99
2B14 Podnos 82 mm bomb bomb type not stated by RWW; WSYS: with newer ammunition	4.27 km	0.087 km	maximum, minimum	136
2B9 Vasilek O-832DU HE-frag 82 mm HE-frag, sea level, standard conditions; 82 mm HE-frag, high-angle fire	4.27 km	0.8 km	maximum, minimum	135
Mi-28N Night Hunter 30 mm 2A42, personnel personnel; NPPU-28 turret	4 km		maximum (claim)	285
2S25 Sprut-SD APFSDS 125 mm APFSDS, 1A40M-1 day sight	4 km		maximum aimed	99
220 mm thermobaric rockets (TOS-1A, TOS-2) MO.1.01.04 thermobaric rocket Original TOS-1A rocket; TOS-1 and TOS-1A launchers; TOS-1 and TOS-1A launchers; given as the TOS-1 launcher minimum and, by Russian state media, for both without naming a rocket	2.7 km	0.4 km	maximum, minimum	316
TOS-1A Solntsepek original short rocket MO.1.01.04 thermobaric rocket, 3.3 m, 173 kg, fired from TOS-1A	2.7 km		maximum	125
Mi-28N Night Hunter 30 mm 2A42, air targets low-speed air targets; NPPU-28 turret	2.5 km		effective (claim)	285
MT-12 Rapira APFSDS APFSDS (3BM-2 per ENWT12; RUWIKI rounds 3UBM1, 3UBM2, 3UBM10, 3UBM15); APFSDS, direct fire; RUWIKI lists rounds 3UBM1, 3UBM2, 3UBM10, 3UBM15 but does not tie the figure to one	1.88–2.13 km		maximum, effective	134
Santimetr (3OF38) and Santimetr-M (3OF75) 3OF38 guided round; lower end of the 2 to 12 km span given for 3OF38 **CEP 0.8 (inside a 4.5 m radius circle) (after 1 to 2 ranging rounds)**		2 km	minimum	314
Mi-28N Night Hunter 30 mm 2A42, light armour light armoured vehicles; NPPU-28 turret, AP or HE-frag-incendiary rounds	1.5 km		effective (claim)	285
122 mm howitzer rounds 3BK13 HEAT HEAT shell, from D-30 or 2S1	1 km		maximum	311
TOS-1A Solntsepek minimum range MO.1.01.04M rocket		0.6 km	minimum	125
MON-200 directional mine fragment beam Directional fragments, against personnel; kill zone 10.5 to 14.5 m wide at 200 m	0.2 km		effective	324
MON-100 directional fragmentation mine fragments 400 steel fragments; kill zone 6.5 to 9.5 m wide at 100 m	0.1 km		effective	323
MON-50 lethal fragment flight (cylinders / balls) Maximum flight of lethal fragments	0.08 km / 0.085 km		maximum (claim)	322
MON-90 steel-cylinder fragments Flight range of lethal fragments; the continuous-effect zone is 60 m wide at 90 m range	up to 0.08 km		flight range of lethal fragments (claim)	322
MON-50 fragments (cylinders / balls) 54 degree horizontal sector, 15 cm to 4 m high at that range; zone 45 m (cylinders) or 54 m (balls) wide at 50–58 m; 485 steel cylinders (6 x 7 mm, 1.5 g) or 540 steel balls (6.35 mm)	0.05 km / 0.058 km		solid casualty zone (claim)	322
TM-83 EFP Against a tank from the side, 100 mm armour pierced, 80 mm hole: 50 m in the Belarusian manual, Veremeev and WEG 2015; 30 m at 30 degrees in Jane's via English Wikipedia; Same conditions as the range row	0.03–0.05 km	0.005 km	range of destruction (дальность поражения); WEG: effective, minimum	332
MON-100 directional fragmentation mine Fragment spread to rear and sides behind and beside the mine	0.03 km		up to	323

Table 3b. Reach of long-range missiles, one-way attack drones and loitering munitions

Ballistic, cruise and coastal missiles, one-way attack drones and loitering munitions: the reach of long-range attack in one table, since the line between a one-way drone and a cruise missile is blurred. CEP, where known, is printed under the munition.

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
Kh-101 and Kh-55 air-launched cruise missiles Kh-555 Launched from a bomber, with conformal fuel tanks **CEP about 20 m (Inertial and terrain-contour guidance with optical correction and satellite navigation)**	3,500 km		maximum	148
Kh-101 and Kh-55 air-launched cruise missiles Kh-55SM With conformal fuel tanks	3,000 km		maximum	148
Kh-101 and Kh-55 air-launched cruise missiles Kh-101 Launched from a bomber, subsonic cruise at 30–70 m above terrain **CEP 10–20 m (Inertial, satellite and terrain-map guidance with terminal optical sensor)**	2,500–2,800 km		maximum	148
3M14 Kalibr 3M14 land-attack Domestic 3M14 from ship or submarine, subsonic, conventional warhead; Western estimate **CEP 5-7 m (Russian authorities' claim for their cruise missiles in general, maximum deviation, not a CEP; reported Oct 2022)**	1,500–2,500 km		estimated maximum	147
Kh-101 and Kh-55 air-launched cruise missiles Kh-55 Launched from a bomber; Kh-55 base missile **CEP 25 m (Inertial with terrain-contour matching)**	2,500 km		maximum	148
Kh-47M2 Kinzhal Kh-47M2 Launched from MiG-31K; Russian military figure; sources disagree whether it includes the carrier's flight before release **CEP 1 m (Russian state claim; guidance inertial, with satellite correction and optical seeker claimed)**	more than 2,000 km		claimed (claim)	147
Geran-2 Geran-2 50 kg warhead; leaked Alabuga documents; see mobility data for alternatives	1,350 km		reported	274
Geran-2 Flight range, Geran-2 standard 50 kg warhead; figure from leaked Alabuga (manufacturer) documents	1,350 km		reported	274
Bastion-P 3M22 Tsirkon open-source figures; Zircon fired from Bastion-M per Ukrainian claims	about 1,000 km		reported	146
Garpiya-A1 Garpiya-A1(E) Export variant, fixed target at preset coordinates, Rostec release 2026 **CEP not more than 4 m (Export variant; Rosoboronexport release, Aug 2026)**	at least 1,000 km		maximum	273
Geran-2 Flight range, Geran-1 estimate; DIA estimate 900 km	700–1,000 km		estimated	274
Geran-2 Flight range, Geran-3 U-series, Telefly JT80 turbojet; Ukrainian intelligence	up to 1,000 km		operational, maximum	274
Kh-22 and Kh-32 air-launched missiles Kh-32 Air launch from a Tu-22M3 or Tu-22M3M; analyst and press figures	600–1,000 km		claimed	147
Oreshnik Oreshnik US government estimates; payload not specified; Flown in combat to Dnipro, 21 Nov 2024, from a test range in Astrakhan region (launch site reported, not announced)	about 800 km		estimated, practical	149
KN-23 and KN-24 (Hwasong-11) (North Korea) KN-23 500 kg warhead; warhead lighter than 500 kg **CEP 35-200 m (inertial and satellite (35 m) to inertial only (200 m); pre-war analyst estimate)**	690 km		estimated, maximum	144
Geran-2 Flight range, Geran-2 with BCh-90 90 kg warhead, smaller fuel tank; leaked Alabuga documents	650 km		reported	274
Bastion-P Coastline covered against amphibious landings	over 600 km		claimed (claim)	146
Gerbera Flight range without payload; shorter with warhead; some have a second fuel tank in the nose for extended range	600 km		maximum	275
Iskander-M 9M723 ballistic missile 9M723, domestic Iskander-M; From the MIS Iskander-E (export) data table, max 280 km; domestic 9M723 minimum not confirmed **CEP 10 to 30 m (With electro-optical terminal seeker)**	up to 500 km	50 km	maximum, minimum	143
Iskander-M 9M728 (R-500) cruise missile 9M728 cruise missile, Iskander-K	500 km		official maximum (claim)	143
Kh-22 and Kh-32 air-launched missiles Kh-22 Air launch from a Tu-22M3 or earlier carrier **CEP up to 5 km (Passive-seeker version firing at area targets)**	460–500 km		maximum	147
KN-23 and KN-24 (Hwasong-11) (North Korea) KN-24 test flight, 21 Mar 2020 **CEP 35-200 m (inertial and satellite (35 m) to inertial only (200 m); pre-war analyst estimate)**	410 km		demonstrated	144
3M14 Kalibr 3M-14E export Export version (Club-N, Club-S); not the domestic figure	300 km		export limit (claim)	147
Kh-69 Kh-69 Air-launched, subsonic cruise, fixed target with known coordinates	at least 300 km		claimed (claim)	148
Shahed-107 (Iran) Shahed-107 28 L fuel tank; Ukrainian intelligence estimate, Nov 2025	about 300 km		operational range, estimated	278
Shahed-107 (Iran) Flight range Ukrainian intelligence estimate from a 28 L fuel tank, sample examined Nov 2025	about 300 km		operational range, estimated	278
Kh-59 Ovod family Kh-59MK Against destroyer or cruiser-type ship; active radar seeker, INS and satellite correction; launch altitude 0.2-11 km; export brochure figure (ARGS-59E seeker); Active radar seeker; export brochure figure (ARGS-59E seeker)	285 km	5–25 km	maximum (claim), minimum (claim)	148
Kh-59 Ovod family Kh-59MK2 Land attack on fixed targets; correlation-optical seeker, INS and satellite correction **CEP 3-5 m (Terminal correlation-optical homing)**	285 km		maximum (claim)	148
Bal Kh-35U Kh-35U missile (KNIISE director); AIF22 gives 260 km for export Kh-35UE	260 km	7 km	maximum (claim), minimum (claim)	145

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
Kh-22 and Kh-32 air-launched missiles Practical range, Kh-22/Kh-32 in Ukraine Distance from launch point to target in 2022 strikes, launched over Belarus or from the Sea of Azov	**150–250 km (93–155 miles)**		practical	147
Italmas one-way attack claimed (Rossiya 1 TV: over 200 km); warhead not specified	**200 km**		claimed	275
Italmas Flight range claimed, over 200 km per Rossiya 1 TV; Ukrainian sources call the claim possible propaganda	**200 km**		claimed	275
Kh-59 Ovod family Kh-59ME Export version of Kh-59M, offered 1999; not the Russian figure	**200 km**		maximum (claim)	148
Bal Kh-35 Kh-35 missile, sea target	**130 km**		approximately (RWW); range (KTRV) (claim)	145
Bastion-P P-800 Oniks high-low flight profile; RWW calls 300 km the export Yakhont figure, domestic Oniks about 600 km; low-altitude (sea-skimming) profile	**120 km**		maximum (claim)	146
Fath-360 short-range ballistic missile (Iran) Fath-360 150 kg HE warhead 150 kg high-explosive warhead; Iranian figure, judged plausible by an independent trajectory simulation; 150 kg high-explosive warhead; low end of the reported 30-120 km band **CEP 30 m (inertial and satellite guidance; Iranian claim; one analyst expects a larger error where satellite navigation is jammed)**	**120 km**	30 km	maximum, claimed (claim), minimum, reported	142
Kh-59 Ovod family Kh-59M TV-command guidance, 140 km command link; launch altitude 200-5,000 m **CEP 2-3 m (TV-command guidance, at maximum range)**	**120 km**	10–15 km	maximum (claim), minimum (claim)	148
9K79-1 Tochka-U 9M79-1 9M79-1 missile, Tochka-U **CEP 165-235 m (inertial; source's term is deviation from target at 35-70 km, 9N123F or 9N123K warhead, incl. target location error up to 100 m and launch point error up to 80 m)**	**120 km**	15–20 km	maximum (claim), minimum (claim)	141
Lancet Lancet MiG-29 struck at Dolgintsevo airfield 2023-09, shown on video (KYIV); about 70 km from the front per Russian claims reported by Wikipedia	**about 70 km**		practical	277
9K79-1 Tochka-U 9M79 9M79 missile, Tochka (Scarab A) **CEP 250 m (inertial)**	**70 km**	15 km	maximum (claim), minimum (claim)	141
Molniya Molniya-2 with warhead Molniya-2; MoD figure, control link not stated	**up to 50 km**		maximum	278
Kh-59 Ovod family Kh-59 Carrier-launched, TV-command guidance; target must be visible to the operator in clear weather **CEP 2-3 m (TV-command guidance with operator, clear weather and visible ground reference)**	**40 km**		maximum (claim)	148
Lancet Lancet-3 (Izdeliye 52) flight range with 3 kg warhead	**40 km**		range	277
Molniya Molniya-1 with warhead Kharkiv regional prosecutor's office; manual FPV control, no GPS	**about 40 km**		maximum	278
KUB-BLA KUB HE-frag warhead radius of action, KUB-E export figure (Kalashnikov via TASS); flight altitude band, KUB-E export figure (Kalashnikov via TASS)	**25 km**		radius, operating	276

Table 3c. Reach of direct fire

Guns, cannons, machine guns and grenade launchers, smallest calibre first, with the vehicles that carry them. The headline range follows the manufacturer, then WEG, then other sources; 'Sources' gives the spread where they disagree. Line charges are in the engineering table.

WEAPON, TARGET AND AMMUNITION	TERM	RANGE	SOURCES
PKT 7.62 mm vehicle machine gun Carried by, e.g.: T-62M, T-62MV, T-72A, T-72B, T-72B3, T-72B3M *(96)*, T-80BV, T-80U, T-80BVM, T-90, T-90A, T-90M, T-14, BMPT, BMP-1, BMP-2, BMP-3 *(103)*, BMD-1, BMD-2, BMD-3, BMD-4, BMD-4M, BTR-D, BTR-60PB, BTR-70, BTR-80, BTR-80A, BTR-82, BTR-82A, BTR-82AM, BRDM-2, BRM-1K, BRM-3K, MT-LB, GAZ-3937 Vodnik, 2S3, 2S3M Akatsiya, 2S5 Giatsint-S *(128)*, 2S34 Khosta, 2S25 Sprut-SD, 9K35 Strela-10 *(160)*, SNAR-10 *(176)*, PRP-4M *(234)*, GMZ-3			
ground. ball and API (57-N-323S, 7BZ-3)	effective	**1.5 km (disputed)**	1–2 km
ground. ball and API (57-N-323S, 7BZ-3)	maximum	**4 km**	3.8–4 km
DShKM 12.7 mm heavy machine gun; anti-aircraft gun on older tanks Carried by, e.g.: T-62M, T-62MV, T-55A			
ground. API (B-32), API-T (BZT-44)	effective	**2 km**	2–3.5 km
air. API (B-32), API-T (BZT-44)	effective	**1 km**	
ground. API (B-32)	maximum	**7.85 km**	2.5–7.85 km
Kord 6P49 12.7 mm heavy machine gun, vehicle version of the Kord Carried by, e.g.: T-72B3 (2016 standard) *(96)*, T-90 (late production), T-90M, T-14, 2S35 Koalitsiya-SV *(132)*, MT-LBVMK, GAZ-3937 Vodnik, Tigr, Tigr-M			
ground, personnel, light armour. B-32 API, BZT-44 API-T	effective	**2 km**	
air. B-32 API, BZT-44 API-T	effective	**1 km (disputed)**	1–1.5 km
ground. B-32 API	maximum	**7.85 km**	6–7.85 km
NSVT 12.7 mm heavy machine gun, vehicle version of the NSV Carried by, e.g.: T-72A, T-72B, T-72B3 (early) *(96)*, T-80BV, T-80U, T-90 (early production), T-62M (some), 2S19 Msta-S *(130)*, BREM-1, MT-LBVM			
ground. API (B-32), API-T (BZT-44)	effective	**2 km**	
air. API (B-32), API-T (BZT-44)	effective	**1 km (disputed)**	1–1.5 km
ground. API (B-32)	maximum	**7.85 km**	2–7.85 km
KPVT 14.5 mm heavy machine gun, vehicle version of the KPV Carried by, e.g.: BTR-60PB, BTR-70, BTR-80, BTR-82, BRDM-2, MT-LBM 6MA (Object 6MA), GAZ-3937 Vodnik			
ground, light armour. API, API-T (B-32, BZT)	effective	**2 km**	
air. API, API-T (B-32, BZT)	effective	**1.5 km**	1–1.5 km
ground. 14.5 mm (not specified)	maximum	**9 km**	
2A14 23 mm automatic cannon, twin mount ZU-23-2 Carried by, e.g.: Ural-4320, Ural-43206 (truck-mounted ZU-23-2), KamAZ trucks (truck-mounted ZU-23-2), MT-LB, MT-LBM 6MA4, BTR-ZD Skrezhet			
ground. BZT, OFZ	effective	**2.5 km**	2–2.5 km
air. BZT, OFZ	effective	**2.5 km**	
2A38M 30 mm twin-barrel anti-aircraft automatic cannon Carried by: 2S6M, 2S6M1 Tunguska-M, -M1 *(162)*, Pantsir-S1, Pantsir-SM (96K6) *(158)*			
air. HE-I, AP-T	effective	**4 km**	2–4 km
ground	maximum	**2 km**	
2A42 30 mm automatic cannon Carried by, e.g.: BMP-2, BMP-2D, BMP-2M Berezhok, BMD-2, BMD-3, BTR-90, BTR-82AT, BMPT, BMPT-72, Ka-52 *(284)*, Mi-28N, Mi-28NM, Ka-29, T-15, Kurganets-25, VPK-7829 Bumerang			
light armour. armour-piercing (BT, APDS)	effective	**1.5 km**	1.5–2 km
personnel. HE (OFZ, OT)	effective	**4 km**	
air. HE	effective	**2 km**	2–4 km
2A72 30 mm automatic cannon Carried by, e.g.: BMP-3, BMP-3M *(103)*, BMD-4, BMD-4M, BTR-80A, BTR-82A, BTR-82AM, BRM-3K Rys, BTR-90M, MT-LBM 6MB, BMP-1AM Basurmanin, GAZ Vodnik with BPPU, Uran-9			
light armour	effective	**1.5 km**	1.5–2 km
personnel. HE	effective	**4 km**	2–4 km
air. HE	effective	**4 km (disputed)**	1.5–4 km
AGS-17 30 mm automatic grenade launcher Carried by, e.g.: BMPT (Terminator), BMD-3, Mi-24 (Hind), Mi-8T, LuAZ-967M			
personnel, ground. Frag-HE VOG-17M	effective	**1.2 km**	0.8–1.73 km
personnel, ground. Frag-HE VOG-17M	maximum	**1.73 km**	
personnel, ground. Frag-HE GPD-30 (extended range)	maximum	**2.1 km**	
AGS-30 30 mm automatic grenade launcher Carried by, e.g.: BMP-2M Berezhok			
personnel, ground. Frag-HE VOG-17M, VOG-30	maximum	**1.7 km**	
personnel, ground. Frag-HE GPD-30 (extended range)	maximum	**2.1 km**	2.1–2.2 km
57 mm gun of AU-220M Baikal (2A91 or 2A90, disputed) 57 mm automatic gun in AU-220M remote weapon station Carried by, e.g.: BMP-3 'Derivatsiya' (with AU-220M) *(103)*, BRM-3K with AU-220M, 2S38 Derivatsiya-PVO			
ground	effective	**3 km**	
air	effective	**7.5 km**	6–7.5 km
ground	maximum	**more than 14 km**	12–14.5 km
2A28 73 mm low-pressure smoothbore gun Carried by: BMP-1, BMP-1P, BRM-1K, BMD-1, BMD-1P, Improvised towed mount			
armour. HEAT-FS PG-15V	effective	**1.3 km**	0.5–1.3 km
armour. HEAT-FS PG-15V	maximum	**1.3 km**	
ground. Frag-HE OG-15V	maximum	**4.4 km**	4.4–4.5 km

WEAPON, TARGET AND AMMUNITION	TERM	RANGE	SOURCES
SPG-9 73 mm recoilless gun Carried by, e.g.: UAZ-469			
armour. HEAT PG-9VS (PG-9V)	effective	1.3 km	0.8–1.3 km
armour. tandem HEAT PG-9VNT	effective	1 km	0.7–1 km
personnel, ground. Frag-HE OG-9VM1	maximum	4.5 km	
2A70 100 mm rifled gun-launcher Carried by, e.g.: BMP-3, BMP-3M, BMP-3K *(103)*, BMP-3F, BMD-4M, BMD-4			
ground. HE-Frag 3UOF17 (3OF32)	effective	4 km	
air. HE-Frag	effective	4 km	
ground. HE-Frag 3UOF19 (3OF70)	maximum	6.5 km	6.5–7 km
D-10T2S 100 mm rifled tank gun of the T-54B/T-55, manually loaded Carried by, e.g.: T-55, T-55A, T-55AM, T-55AMV			
armour. APFSDS (BM-412M, BM-25 type)	effective	2–2.5 km	
armour. HEAT (BK-17)	effective	1 km	
ground. HE-Frag (OF-32)	effective	2.5–4 km	2.5–6 km
ground. HE-Frag	maximum	15 km	14.6–16 km
MT-12 100 mm smoothbore towed anti-tank gun Carried by, e.g.: MT-LB, Ural-4320, Ural-375D			
armour. APFSDS (BM-412M)	effective	2.5 km	1.88–2.5 km
armour. direct fire sight OP4M-40U	sighting	3 km	
ground. HE-Frag (OF-15)	maximum	8.2 km	
2A20 115 mm smoothbore tank gun of the T-62, manually loaded Carried by: T-62M, T-62MV			
armour. APFSDS (BM-6, BD/36-2)	effective	1.8 km	1.8–2.1 km
armour. HEAT (3BK4)	effective	1.5 km	1.2–1.5 km
ground. HE-Frag (OF-27)	effective	4 km	4–6 km
ground. HE-Frag	maximum	9 km	
2A45M 125 mm smoothbore towed anti-tank gun with auxiliary power unit Carried by, e.g.: MT-LB			
armour. APFSDS (BM-42M)	effective	3 km (disputed)	2–3 km
ground. HE-Frag OF-26	direct fire	5 km	
ground. HE-Frag	maximum	12.2 km	12–12.2 km
2A46M 125 mm smoothbore tank gun and ATGM launcher, autoloaded Carried by, e.g.: T-72B, T-72BM *(96)*, T-90, T-80BV, T-80U, T-80BVM, T-64BV			
armour. APFSDS (3BM42M type)	effective	3 km	2.5–4 km
armour. HEAT (3BK29M, 3BK27 type)	effective	3 km	2–4 km
ground. HE-Frag (3OF26)	effective	5 km	4–5 km
ground. HE-Frag	maximum	10 km	
2A46M-5 125 mm smoothbore tank gun and ATGM launcher, autoloaded; improved-accuracy 2A46M Carried by, e.g.: T-72B3, T-72B3M *(96)*, T-90A, T-90M			
armour. APFSDS (3BM42M type)	effective	3–4 km	3–4 km
armour. HEAT-MP (3BK29M)	effective	4 km	
ground. HE-Frag (3OF26)	effective	5 km	
air. HE-shrapnel, time-fuzed (Ainet)	effective	4–5 km	
ground. HE-Frag	maximum	10 km	
2A75 125 mm smoothbore gun with autoloader, a version of the 2A46M tank gun Carried by: 2S25 Sprut-SD, 2S25M Sprut-SDM1			
armour. APFSDS (BM-42M / 3BM42)	effective	3 km	
armour. APFSDS, HEAT (BK-29M) and guided rounds with 1A40M-1 sight	sighting	4 km	
ground. HE-Frag OF-26 (3OF26)	effective	5 km	
2A82-1M 125 mm smoothbore tank gun of the T-14, in an unmanned turret Carried by: T-14 Armata			
armour. APFSDS	effective	3,500+ m	3.5–5 km
ground. HEAT, HE-Frag	effective	4.7 km	
ground	maximum	12 km (disputed)	7–12 km

Other direct-fire figures in the entries

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
220 mm rockets (Uragan) 9M27F HE-fragmentation HE-fragmentation rocket, indirect fire	35 km	10 km	maximum, minimum	315
220 mm rockets (Uragan) 9M27K, K1, K2 and 9M59 cargo cluster, PTM-1 and PTM-3 mine rockets, indirect fire	35 km	10 km	maximum, minimum	315
T-54 / T-55 100 mm HE Indirect fire with side level and azimuth pointer; round type not named for this figure	14.6 km		maximum	94
2S23 Nona-SVK rocket-assisted 3OF50 3OF50 rocket-assisted HE-frag (round 3VOF55), indirect fire	12.8 km		maximum	131
120 mm gun-mortar rounds (3OF49, 3OF50, 3BK19) rocket-assisted HE-frag 3OF50 round 3VOF55, indirect fire from the 2A51 or 2A60 gun-mortar; the longer 2A80 (2S31, 2S34) is printed at 13 km in those entries	12.8 km		maximum	311
2S23 Nona-SVK HE-frag 3OF49 (rifled) 3OF49 HE-frag (round 3VOF54), indirect fire; the 3OF51 shell has the same figure	8.8 km		maximum	131
120 mm gun-mortar rounds (3OF49, 3OF50, 3BK19) HE-frag 3OF49 round 3VOF54, indirect fire from the 2A51, 2A60 or 2A80 gun-mortar	8.8 km		maximum	311

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
MT-12 Rapira HE-frag HE-frag (RUWIKI rounds 3UOF3, 3UOF12), indirect fire, at maximum elevation of +20 degrees	8.2 km		maximum	134
BMP-3 100 mm HE-frag 3UOF19 indirect fire	6.5 km		maximum (claim)	103
T-64A/B/BV 125 mm HE-frag OF-26 day; night 800-1,300 m; maximum aimed range 5,000 m	5 km		max effective	95
T-72B3/B3M HE-frag HE-frag, fin-stabilised	5 km		maximum	96
T-80B/BV/BVM, T-80U HE-Frag direct fire, day; RUWIKI's 5,000 m is 'greatest sighting range'	5 km		maximum effective	97
BRM-1K 73 mm (munition not stated) ammunition type not stated by WEG	4.5 km		maximum firing range	104
BMD-2 73 mm OG-15V HE-frag BMD-1, HE-fragmentation	4.4 km		maximum	99
BMP-3 100 mm gun, indirect fire from concealed positions, Bakhmut area; Russian crew statements, Jan 2024	4–4.26 km		practical (claim)	103
2S3 Akatsiya HEAT 53-BP-540 HEAT, direct fire	4 km		maximum	127
BMD-2 30 mm (type not stated) ammunition not stated by WEG	4 km		effective, maximum	99
BMD-2 30 mm HE (BMD-2M) high-explosive, BMD-2M fire control	4 km		effective (claim)	99
BMD-4M HE-Frag 100 mm, day; ammunition not stated by WEG	4 km		maximum effective	100
BMP-2 30 mm HE ground targets, Frag-HE; day (1,300 m night, WEG15)	4 km		effective	102
BMP-3 100 mm HE-frag 3UOF17 day, direct fire	4 km		maximum effective	103
T-54 / T-55 9M117 Bastion Only T-55M/AM/MV with Volna; day; laser beam-riding round fired through the gun	4 km		effective	94
T-62 HE-Frag OF-27 HE-Frag, day, direct fire	4 km		maximum aimed	95
T-64A/B/BV 9M112 Kobra (AT-8 Songster) gun-launched, radio command guidance; day sight only unless target illuminated	4 km		range	95
T-90 HEAT 3BK12M day/night not stated by WEG	4 km		effective	98
T-90 HE-Frag 3OF19 day/night not stated by WEG	4 km		effective	98
T-64A/B/BV 125 mm APFSDS-T BM-42M day; night 800-1,300 m; maximum aimed range 3,000-4,000 m	2–3 km		max effective	95
T-64A/B/BV 125 mm HEAT-MP BK-29M day; night 800-1,300 m; maximum aimed range 4,000 m	3 km		max effective	95
T-72B3/B3M APFSDS 3BM60 Svinets-2 APFSDS 3VBM23 round (3BM60 Svinets-2)	2–3 km		effective	96
T-72B3/B3M HEAT 3BK31 HEAT 3VBK27 round (3BK31 Start)	3 km		maximum	96
T-80B/BV/BVM, T-80U APFSDS day	2–3 km		effective	97
T-80B/BV/BVM, T-80U HEAT 3BK31 Start, day	3 km		maximum effective	97
T-90 APFSDS 3BM42M day; night	2–2.6 km		effective	98
BMP-2 30 mm, air targets helicopters and slow aircraft; ammunition not stated	2.5 km		effective	102
BTR-MDM Rakushka 23 mm ZU-23-2 ammunition Ground targets; ZU-23-2 fit on BTR-MDM, 2021 exercise; Air targets; ZU-23-2 fit on BTR-MDM, 2021 exercise	2.5 km		claimed (claim)	106
2A65 Msta-B Direct fire range ATP Table E-2 and RWW table; projectile not stated; the same table's maximum-range row is misaligned	2.13 km		direct fire	135
2S1 Gvozdika HEAT HEAT 3BK6, 3BP1, direct fire at armour; day or night not stated	2 km		maximum	126
BMD-2 30 mm AP (BMD-2M) armour-piercing, BMD-2M fire control	2 km		effective (claim)	99
BMD-2 9M111 Fagot 9M111-2; 9M111M reaches 2,500 m	2 km		maximum	99
BMP-2 30 mm APDS day (1,300 m night)	2 km		maximum effective	102
Captured US vehicles in Russian use: M2 Bradley, M113, MaxxPro, M88A1 12.7 mm M2HB Day	2 km		maximum effective	118
2S19 Msta-S secondary MG 12.7x108 mm, ground and air targets	2 km ground; 1.5 km air		effective	130
T-62 APFSDS APFSDS, 2 m high target, day; 2,260 m against 3 m high target	1.87 km		effective	95
2A36 Giatsint-B 152 mm towed gun direct fire ammunition and target not stated in source	1.53 km		direct fire	135
BMP-2 30 mm AP-T armour; day (1,300 m night, WEG15)	1.5 km		effective	102
T-62 HEAT BK-4 HEAT, day	1.5 km		maximum effective	95

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
BMD-2 73 mm PG-15V HEAT BMD-1, anti-armour	1.3 km		maximum	99
MT-12 Rapira HEAT HEAT (RUWIKI rounds 3UBK2, 3UBK8); RUWIKI gives no fire mode, ARMYREC says direct fire; HEAT (RUWIKI rounds 3UBK2, 3UBK8), direct fire	1.02–1.15 km		maximum, effective	134
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns HVAP-T, D-44 HVAP-T (BR-365PK in WEG 2015), direct fire, day	1.15 km		effective	139
M-46 APC-T BR-482B direct fire, armour-piercing tracer	1.14 km		direct fire	138
T-54 / T-55 100 mm HE-frag, direct fire Grazing shot at 2 m high target	1.1 km		grazing shot	94
T-54 / T-55 100 mm AP, direct fire Grazing shot (point-blank range) at 2 m high target	1.08 km		grazing shot	94
2S23 Nona-SVK 3BK19 HEAT 3BK19 HEAT (round 3VBK14), direct fire; 500 m practical maximum without modern fire control (WEG, 2S31 row)	1.0 km		maximum effective	131
2S31 Vena HEAT direct fire HEAT round 3BK19 (3VBK14), direct fire against armoured vehicles; 500 m is the practical maximum without modern fire control (WEG)	1.0 km		maximum effective	131
2S5 Giatsint-S HEAT BP-540 HEAT BP-540, direct fire	1 km		direct fire	128
2S9 Nona-S HEAT shell 3BK19 HEAT shell 3BK19 (round 3VBK14), direct fire; 500 m practical maximum without modern fire control (WEG, 2S31 row)	1.0 km		maximum effective	129
BRM-1K HEAT-FS day; firing on the move; night	0.8–1 km		maximum effective	104
BTR-D 7.62 mm API (bow machine gun) Day; 400–500 m on the move	1 km		maximum effective	105
D-20 HEAT BP-540 HEAT BP-540, direct fire; day or night not stated	1 km		maximum	137
D-30 Direct fire range, HEAT-FS HEAT-FS, direct fire; day or night not stated	1 km		maximum	137
120 mm gun-mortar rounds (3OF49, 3OF50, 3BK19) HEAT 3BK19 round 3VBK14, direct fire from the 2A51, 2A60 or 2A80 gun-mortar (not listed for the 2S34); 500 m is the practical maximum against vehicles without modern fire control	1.0 km		maximum effective	311
T-62 APFSDS (night) night, with IR night vision equipment; WEG does not name the ammunition	0.8 km		effective	95
BMO-T RPO-A rocket 93 mm RPO-A thermobaric rocket	0.4 km		effective	101

Table 3d. Reach of anti-tank weapons

Anti-tank guided missiles.

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
Bulsae-4 ATGM launcher vehicle (North Korea) Bulsae-4 missile Missile with electro-optical seeker and fibre-optic command guidance, non-line-of-sight; no official DPRK figure	10–25 km		estimated	116
Kornet 9M133FM-3 HE day; Kornet-D/D1 launchers; HE blast-frag, also for slow air targets; designation per WPRU, WEG writes 9M133F-3	10 km		maximum (claim)	307
Vikhr 9A4172 Vikhr daytime launch, launch altitude 5 to 4,000 m; 1990s table figure for Vikhr and Vikhr-M **CEP 0.8 moving, 0.95 stationary target (claimed for a small tank-class target, automatic tracking)**	10 km	0.5 km	maximum (claim), minimum (claim)	321
Ka-52 Alligator 9A4172K Vikhr-1 ground target; tandem HEAT, laser beam-riding; 2 x 6 on UPP-800 launchers; launched from low level at vehicles, including moving ones; Russian MoD and Telegram videos, 2023	about 8 km or more (slant range)		range (claim), practical	284
Kornet 9M133M-2 tandem HEAT day; Kornet-D/EM launchers	8 km	0.15 km	maximum (claim), minimum	307
Kornet 9M133FM-2 thermobaric day; Kornet-D/EM launchers	8 km	0.15 km	maximum (claim), minimum	307
Mi-24P/V and Mi-35M 9M120M Ataka-V Mi-24VM (Mi-35M); 9M120M tandem HEAT, radio-command guidance; launch altitude 0 to 4,000 m	8 km	0.8 km	maximum (claim), minimum (claim)	285
Mi-28N Night Hunter 9M120M Ataka-V 9M120M tandem HEAT, radio-command guidance; launch altitude 0 to 4,000 m	8 km	0.8 km	maximum (claim), minimum (claim)	285
Vikhr Practical range, 9A4172K Vikhr-1 from Ka-52 launches on Ukrainian vehicles seen in Russian MoD head-up display videos, 2023; flight time about 23 to 25 s	about 8 km slant range		practical	321
Kornet Kornet HEAT, missile type not stated (observed) MoD claims: BMP hit, Artemovsk direction, Jan 2024 (missile not stated); mast hit with a HEAT round, Orikhiv direction, Oct 2024	7.8 km		practical (claim)	307
BMPT Terminator 9M120-1 / 9M120-1F Ataka-T tandem HEAT (9M120-1) or thermobaric (9M120-1F); laser beam riding	6 km		maximum (claim)	104
Ka-52 Alligator 9M120-1 Ataka ground target; 9K113U Shturm-VU, 2 x 6 missiles	6 km		maximum (claim)	284
Khrizantema-S 9M123 (laser) tandem HEAT, laser beam-riding (SACLOS)	6 km	0.4 km	maximum (claim), minimum (claim)	116
Khrizantema-S 9M123F/9M123F-2 thermobaric	6 km		maximum (claim)	116
Mi-24P/V and Mi-35M 9M120 Ataka-V Mi-24VM (Mi-35M); 9M120 tandem HEAT, radio-command guidance; launch altitude 0 to 4,000 m	6 km	0.4 km	maximum (claim), minimum (claim)	285
Mi-28N Night Hunter 9M120 Ataka-V 9M120 tandem HEAT, radio-command guidance; launch altitude 0 to 4,000 m	6 km	0.4 km	maximum (claim), minimum (claim)	285
9K114 Shturm-S 9M120 Ataka tandem HEAT or thermobaric 9M120F, ground target, from 9P149/9P149M	6 km	0.4 km	maximum, minimum	115
BMD-4M 9M117M1 Arkan ATGM laser beam-riding, fired through 100 mm gun; tanks; 3UBK23-3 round	5.5 km	0.1 km	maximum (claim), minimum	100
BMP-2 9M133 Kornet (BMP-2M) Kornet-LR; day (3,500 m night)	5.5 km		maximum effective	102
9P162 Kornet-T 9M133F-1 day; thermobaric	5.5 km	0.1 km	maximum, minimum	115
Kornet 9M133-1 tandem HEAT day; day or night	5.5 km	0.1 km	maximum (claim), minimum (claim)	307
Kornet 9M133F-1 thermobaric day	5.5 km		maximum	307
Raptor Kornet ATGM anti-tank missile; Kornet-armed boats only	5.5 km by day, 3.5 km at night		maximum (claim)	299
9P162 Kornet-T 9M133 tandem HEAT; original 9M133 missile	5 km	0.1 km	maximum, minimum	115
Kornet 9M133 HEAT original 9M133 missile	5 km	0.1 km	maximum, minimum	307
9K114 Shturm-S 9M114 Kokon HEAT or thermobaric 9M114F, ground target; air target (hovering or slow helicopter), launch at sea level **CEP 0.6–0.8 (target at 4,000 m)**	5 km	0.4 km	maximum, minimum	115
2S25 Sprut-SD gun-launched ATGM Laser beam-riding missile fired from the gun; WEG names no missile type	5 km		effective	99
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M 9M119M Invar 9M119M/9M119M1, day, direct optical visibility of target; 3UBK20 round, ground target	5 km	0.1 km	maximum, minimum	306
T-80B/BV/BVM, T-80U 9M119 Refleks ATGM T-80U, T-80BVM; laser beam-riding; ATP: 4,000 m, 5 km against helicopters	4–5 km		operational	97
T-90 ATGM 9M119M Refleks (AT-11 Sniper-B) day	5 km		maximum effective	98
Vikhr 9A4172 Vikhr, night night launch	5 km		maximum (claim)	321
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M Practical range, 9M119M1 Invar-M T-90M crews: Sep 2023 three launches at 6,370, 6,460, 6,830 m; 11 Feb 2024 4,815 m on a Bradley	4.82 km to 6.83 km		practical	306
BMD-2 9M113 Konkurs SACLOS wire-guided ATGM, BMD-2 and BMD-1P	4 km	0.07 km	maximum, minimum	99
BMP-2 9M113 Konkurs SACLOS, wire-guided ATGM	4 km	0.07 km	maximum, minimum	102
BMP-3 9M117 Bastion ATGM laser beam-riding; base 1K13-2 sight	4 km	0.1 km	effective	103
BMP-3 9M117M1 Arkan ATGM laser beam-riding; base fire control	4 km		maximum	103

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
BTR-90 Rostok 9M113 Konkurs 9M113 Konkurs (WEG15: also AT-5B Konkurs-M, 4,000 m), wire-guided SACLOS, four missiles; WEG15 term; WEG online calls 70 m - 4 km 'operational range'; 9M113 Konkurs, lower bound of WEG 'operational range'	4 km	0.07 km	maximum effective, minimum	111
9K111 Fagot / 9K111-1 Konkurs 9M113 Konkurs HEAT, day, optical sight	4 km	0.075 km	maximum, minimum	305
9K111 Fagot / 9K111-1 Konkurs 9M113M Konkurs-M tandem HEAT, day	4 km	0.075 km	maximum (claim), minimum (claim)	305
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M 9M119 Svir 9M119 fired by the 9K120 Svir complex of the T-72B	4 km		maximum	306
T-62 9M117 ATGM 9K116-2 Sheksna laser beam-riding missile, T-62M and T-62MV only, day only	4 km		effective	95
T-72B3/B3M 9M119M Refleks ATGM gun-launched laser beam-riding missile, ground target	4 km	0.1 km	maximum effective, minimum effective	96
T-80B/BV/BVM, T-80U 9M112 Kobra ATGM T-80B; radio command guidance; RUWIKI: 4,000 m greatest sighting range for guided round	4 km	0.1 km	effective	97
9P162 Kornet-T 9M133-1 day; tandem HEAT; laser beam riding; night, thermal sight; tandem HEAT	3.5 km	0.1 km	maximum (claim), minimum (claim)	115
Kornet 9M133-1 tandem HEAT (night) night, with thermal sight	3.5 km		maximum (claim)	307
BMD-2 9M14 Malyutka MCLOS wire-guided ATGM, BMD-1	3 km	0.5 km	maximum, minimum	99
BMP-1 9M14M Malyutka (AT-3 Sagger) MCLOS wire-guided ATGM, day only; BMP-1; MCLOS wire-guided ATGM; BMP-1	3 km	0.5 km	effective, minimum	101
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M 9M119M Invar night 9M119M, night	2.6 km		maximum	306
9K111 Fagot / 9K111-1 Konkurs 9M111M Faktoriya HEAT, day	2.5 km	0.075 km	maximum, minimum	305
9K111 Fagot / 9K111-1 Konkurs 9M113 Konkurs, night HEAT, night, 1PN86-1 Mulat or 1PN65 thermal sight	2.5 km		maximum	305
BMP-1 9M111 Fagot (AT-4 Spigot) SACLOS ATGM from roof launcher; BMP-1P	2 km		maximum effective	101
BMP-2 9M111 Fagot SACLOS, wire-guided ATGM	2 km		maximum effective	102
9K111 Fagot / 9K111-1 Konkurs 9M111 Fagot HEAT, day, optical sight	2 km	0.07 km	maximum, minimum	305
Metis 9M131M tandem HEAT Metis-M1, 9M131M tandem HEAT or 9M131FM thermobaric, day and night	2 km	0.08 km	maximum (claim), minimum (claim)	308
Metis 9M131 tandem HEAT Metis-M, 9M131 tandem HEAT; day, or night with Mulat-115 sight; 9M131F thermobaric also fired	1.5 km	0.08 km	maximum, minimum	308
Metis 9M115 HEAT Metis, 9M115 single HEAT	1 km	0.04 km	maximum, minimum	308

Table 3e. Reach of air defence weapons

Missiles and guns. Range is horizontal; altitude is the vertical reach. Figures are against the target named in the condition.

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	ALTITUDE	TERM	PAGE
S-300V4 9M82MD air targets incl. AEW aircraft; S-300V4 new long-range missile	400 km			claimed maximum (claim)	154
S-400 Triumf 40N6 aerodynamic targets (STRASAM); APA brochure figure is for export 40N6E, 215 nmi; 40N6; the 27 km often quoted is reported for the 48N6DM missile specifically	400 km		30–35 km	maximum (claim)	155
S-400 Triumf 48N6DM (48N6E3) aerodynamic targets; RUSIAD names export 48N6E3 (Army Technology lineage); TASS 2018 state claim: 48N6DM up to 250 km	250 km			maximum (claim)	155
S-300PM / S-300PS 48N6E2 aerodynamic target; S-300PM2 (export S-300PMU2 figure); aerodynamic target; S-300PMU2	200 km	3 km		maximum (claim), minimum (claim)	153
S-300V4 9M82M aircraft targets; S-300VM	200 km		0.025–30 km	maximum (claim), maximum and minimum (claim)	154
S-300PM / S-300PS 48N6 aerodynamic target; S-300PM/PMU1 (48N6E export)	150 km	3–5 km		maximum (claim), minimum (claim)	153
S-350 Vityaz 9M96D extended-range domestic 9M96D; target type not stated by TWZ	about 121 km (75 miles)			range	154
S-350 Vityaz 9M96E2 aerodynamic target; export missile	120 km	1 km	0.005 km to 30 km	maximum (claim), minimum (claim)	154
S-400 Triumf 9M96E2 export 9M96E2; aerodynamic targets; APA gives 64.8 nmi; export 9M96E2; APA gives 15 ft to 100 kft	120 km		0.005–30 km	range (claim)	155
S-300V4 9M82 aircraft and jammer targets; S-300V; aircraft targets; S-300V	100 km	13 km	1–30 km	maximum, minimum (claim), maximum and minimum	154
S-300PM / S-300PS 5V55R aerodynamic target; S-300PS/PMU	5–75 km			engagement zone (claim)	153
S-300V4 9M83 aircraft targets; S-300V	75 km	6 km	0.25–25 km	maximum, minimum, maximum and minimum	154
Buk-M1 / Buk-M2 / Buk-M3 9M317M (Buk-M3) air target	2.5–70 km		35 km	maximum effective, maximum	152
S-350 Vityaz S-350E system aerodynamic targets; export exhibit figure, also given by Russian MoD for the domestic S-350 (state claim); aerodynamic targets; export system brochure	1.5–60 km		0.01 km to 30 km	maximum (claim)	154
S-400 Triumf 48N6 (ballistic targets) ballistic missile targets, 48N6 series	60 km			range	155
Buk-M1 / Buk-M2 / Buk-M3 9M317 (Buk-M2) aircraft; air target	3–50 km		0.015–25 km	engagement zone, intercept altitude	152
Pantsir-S1 Pantsir-SM missile Pantsir-SM with new missile; KBP chief designer, 2016	40 km			claimed (claim)	158
S-300PM / S-300PS 48N6 vs ballistic missile ballistic target; S-300PM/PMU1	40 km			maximum (claim)	153
S-300V4 9M83/9M82 vs ballistic missile ballistic targets; S-300V and S-300VM; ballistic targets; S-300V (S-300VM: 1-30 km)	40 km		1–25 km	maximum, maximum and minimum (claim)	154
S-350 Vityaz 9M96E aerodynamic target; export missile	40 km	1 km	0.005 km to 20 km	maximum (claim), minimum (claim)	154
S-400 Triumf 9M96E export 9M96E; aerodynamic targets; APA gives 21.6 nmi; export 9M96E; APA gives 15 ft to 66 kft	40 km		0.005–20 km	range (claim)	155
Buk-M1 / Buk-M2 / Buk-M3 9M38M1 (Buk-M1) air target	3.25–34 km		0.03–22 km	maximum, intercept altitude	152
Pantsir-S1 Pantsir-S1M missile export Pantsir-S1M; new missile, designation not given by source; High Precision Systems, 2019	30 km			claimed (claim)	158
S-350 Vityaz S-350E system vs ballistic ballistic targets	1.5–30 km		2–25 km	maximum (claim)	154
S-350 Vityaz 9M96 basic domestic 9M96; target type not stated by TWZ	about 29 km (18 miles)			range	154
Buk-M1 / Buk-M2 / Buk-M3 9M317 vs ballistic and cruise missiles ALCM-type cruise missile at 30 m (MISM2; ROE gives 100 m, unchecked); Lance-type tactical ballistic missile 15-20 km (MISM2)	20 km			maximum (claim)	152

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	ALTITUDE	TERM	PAGE
Pantsir-S1 57E6 missile aircraft-type targets; KBP figures for export 57E6-E; KBP figures for export 57E6-E; 5 m only in optical mode over water	20 km	1.2 km	0.005 km to 15 km	maximum (claim), minimum (claim)	158
Tor 9M338K Tor-M2 domestic, air targets	16 km		0.01 km to 10 km	maximum (claim)	161
Strela-10 and Osa short-range SAM 9M33M3 Osa-AKM missile; Osa-AKM missile; WEG figure	15 km		4 km	operational range, maximum flight altitude	160
Tor 9M330/9M331 aircraft and PGM targets, Tor/Tor-M1	12 km	1.5 km	0.01 km to 6 km	maximum, minimum	161
Tor 9M331 (Tor-M2E) Tor-M2E export; target 300 m/s; Tor-M2E export; target 300 m/s (10 m to 6 km at 600 m/s)	1–12 km		0.01 km to 10 km	maximum (claim)	161
S-350 Vityaz 9M100 IR-homing short-range missile; fielding unconfirmed	10 km			maximum (claim)	154
Sosna 9M340 Sosna-R air targets, day and night	10 km		5 km	maximum (claim)	159
Tunguska 9M311-M1 missile Tunguska-M1, air target; Tunguska-M1, air target; APA gives 2.5 km for 2K22 and 2K22M too; air target; ceiling for 9M311 family	10 km	2.5 km	3.5 km	maximum, minimum	162
Pantsir-S1 TKB-1055 small missile anti-drone round, up to 48 per vehicle in cannon-less versions	7 km			claimed (claim)	158
2S38 Derivatsiya-PVO 57 mm gun Air targets; Air targets moving up to 500 m/s	6 km (0.2–6 km)	0.2 km	4.5 km (0–4.5 km)	maximum engagement range (claim), minimum (claim), maximum (claim)	157
Gibka-S 9K338 Igla-S Air targets, head-on and tail-chase	6 km		0.01 km to 3.5 km	engagement range (claim), engagement altitude (claim)	157
Gibka-S 9M336 Verba Air targets	6 km		0.01 km to 4.5 km	engagement range (claim), engagement altitude (claim)	157
Igla / Igla-1 / Igla-S 9M342 (Igla-S) air target; target altitude	6 km		0.01–3.5 km	maximum effective (claim), minimum / maximum (claim)	165
S-60 57 mm anti-aircraft Air target, radar-guided (FAS); RUWIKI gives 6,000 m firing zone	6 km		5 km	tactical, firing zone height	159
S-60 57 mm HE against ground targets Ground targets, S-60 on MT-LB, Pacific Fleet naval infantry unit report	6 km			up to (claim)	159
Verba 9M336 air targets; maximum target altitude; minimum target altitude	6 km	0.5 km	0.01 km	maximum (claim), minimum (claim)	165
Igla / Igla-1 / Igla-S 9M39 (Igla) receding target; engagement zone; target altitude	5.2 km	1 km receding, 0.5 km approaching	0.01–3.5 km	maximum effective, minimum, minimum / maximum	165
Igla / Igla-1 / Igla-S 9M313 (Igla-1) receding target; target engagement range; target altitude	5 km	0.5 km	0.1–3.5 km	maximum, minimum, engagement	165
Strela-10 and Osa short-range SAM 9M37M/9M333 Strela-10 engagement zone, all variants; target closing at up to 415 m/s or receding at 310 m/s; Strela-10; 9M333 minimum 10 m	0.8–5 km		0.025 km to 3.5 km	engagement envelope	160
Pantsir-S1 30 mm 2A38M gun air and ground targets; air targets	4 km	0.2 km	0–3 km	maximum (claim), minimum (claim)	158
Tunguska 30 mm 2A38M guns air target	4 km	0.2 km	3 km	maximum, minimum	162
2S38 Derivatsiya-PVO 57 mm gun, ground targets Ground targets	3 km			engagement range (claim)	157
ZSU-23-4 Shilka 23 mm HEI-T/API-T air target, slant range, 23x152 mm OFZT and BZT; air target up to 450 m/s, 23x152 mm OFZT and BZT	2.5 km	0.2 km	1.5 km	maximum effective, minimum	162
ZSU-23-4 Shilka 23 mm (ZSU-23-4M4) air target up to 500 m/s, ZSU-23-4M4 upgrade, manufacturer figure	2.5 km		0.025–1.5 km	claimed (claim)	162
ZU-23-2 23 mm AA fire air targets, up to 1,500 m altitude	2.5 km		1.5 km	effective	163
ZSU-23-4 Shilka 23 mm (ground target) ground or surface target, 23x152 mm	2 km			maximum effective	162
ZU-23-2 23 mm ground fire light armoured ground targets	2 km			effective	163

Table 3f. Reach of sensors

Detection, tracking and location ranges, grouped by what the sensor is for. Target type and size are part of the figure: a radar that sees a bomber at 600 km sees a small drone much closer.

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
Sights and optics				
20 km	**Tor** Detection range, TV sight. target not stated	not stated	maximum	161
about 15 km (9.3 miles)	**Ka-52 Alligator** Detection range, GOES-451M sight, TV channel. Ka-52M; tank	tank	detection (claim)	284
about 12 km (7.5 miles)	**Ka-52 Alligator** Detection range, GOES-451M sight, thermal channel. Ka-52M; tank	tank	detection (claim)	284
0.3–12 km	**Santimetr (3OF38) and Santimetr-M (3OF75)** Designator range, 1D20M (for 3OF75). laser designator-rangefinder, 18 kg, illumination 1 to 3 s; 1999 developer figure for Santimetr-M	not stated	designation range (claim)	314
10 km	**2S38 Derivatsiya-PVO** Detection range, optical-electronic sight. Thermal channel, 2.3 x 2.3 m target, 80 % probability	not stated	detection (claim)	157
up to 10 km	**Mi-28N Night Hunter** Detection range, sighting system. Mi-28N; sighting system with the night-vision station, search for point, moving and group targets	not stated	maximum (claim)	285
10 km	**PRP-4A Argus / PRP-4M Deytery** Recognition range, laser rangefinder. up to three tank-type targets; large targets incl. buildings 25 km; WEG names the 1D14-1 periscopic rangefinder	tank	up to (claim)	234
0.2–8 km	**Orlan-10** Laser range, Orlan-30 designator-rangefinder. measured distance, 1064 nm laser, export Orlan-30	not stated	range of measured distances (claim)	268
7 km	**BMPT Terminator** Detection range, thermal sight. thermal channel	not stated	detection (claim)	104
5–6 km	**Mi-24P/V and Mi-35M** Detection range, Mi-35M optronic sight. day, targets in general	not stated	detection	285
5.5 km	**Khrizantema-S** Detection range, EO day sight. day	not stated	acquisition	116
5.5 km	**9P162 Kornet-T** Detection range, day sight. day	not stated	acquisition	115
5.2 km	**BMP-3** Detection range, 1K13-2 sight. day, gunner's sight	not stated	acquisition	103
5 km	**BMPT Terminator** Detection range, gunner's sight. optical channel, day	not stated	detection (claim)	104
5 km day; 3.5 km night	**BRDM-2** Detection range, BRDM-2MS thermal sight. BRDM-2MS thermal camera in optronic head at turret rear; target not stated	not stated	claimed (claim)	109
0.2–5 km	**Santimetr (3OF38) and Santimetr-M (3OF75)** Designator range, 1D15 (for 3OF38). laser designator-rangefinder; lights the target for 3 s	not stated	designation range	314
5 km	**T-72B3/B3M** Detection range, Sosna-U sight. gunner's sight, day	not stated	sight range	96
4 km	**2S38 Derivatsiya-PVO** Recognition range, optical-electronic sight. Thermal channel, 2.3 x 2.3 m target	not stated	recognition (claim)	157
4 km	**9P162 Kornet-T** Detection range, thermal sight. night	not stated	acquisition	115
4 km	**Kornet** Detection range, 1PN79M Metis-2 thermal sight. MBT-type target; recognition 2,500 m; export sight	not stated	detection (claim)	307
3–4 km	**Mi-24P/V and Mi-35M** Detection range, Mi-35M optronic sight. night, targets in general	not stated	detection	285
3.7 km	**BMP-3** Detection range, Sodema sight. night; tank or IFV, detection and classification	tank	claimed (claim)	103
over 3.3 km	**T-90** Detection range, T-90MS thermal sight. tank target; T-90MS export variant	tank	detection	98
3.2 km	**Metis** Detection range, 1PN86-VI Mulat-115 thermal sight. night; target type not stated; identification 1.6 km	not stated	detection (claim)	308
3 km	**BRDM-2** Detection range, TPKU-2B commander's sight. day; 5x periscope, target not stated	not stated	observation range	109
3 km	**BTR-80** Detection range, TKN-AI commander's sight (BTR-82A). ground targets, with laser rangefinder	not stated	detection (claim)	110
3 km	**Raptor** Detection range, Uprava-Kord electro-optical module. gyro-stabilised electro-optical channel	not stated	maximum (claim)	299
2–3 km	**T-62** Detection range, 1PN96MT-02 thermal sight. T-62M/MV obr. 2022, uncooled thermal; target type not stated	not stated	approximate	95
2.6 km	**T-80B/BV/BVM, T-80U** Detection range, Agava thermal sight. T-80UK, night	not stated	acquisition	97
2.5 km	**T-90** Detection range, Agava-2 thermal sight. target identification, night	not stated	identification	98
2.5 km	**Tigr and Vodnik armoured cars** Detection range, Arbalet-DM TV camera. target identification; thermal imager 1.5 km	not stated	claimed (claim)	112
1.75 km	**T-80B/BV/BVM, T-80U** Detection range, T-80U gunner night sight. night; classification 1,500 m	not stated	detection	97
1.5 km	**9K114 Shturm-S** Detection range, day sight. day only	not stated	day sight range	115

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
1.5 km	**2S25 Sprut-SD** Detection range, TPN-4R night sight. Tank-type target, night	tank	recognition range	99
1.2–1.5 km	**T-90** Detection range, Buran-PA night sight. target identification, night	not stated	identification	98
1.3 km	**T-80B/BV/BVM, T-80U** Detection range, TPN-3-49 night sight. T-80B; active IR; 850 m passive	not stated	sighting	97
1 km	**BTR-80** Range, KPVT 14.5 mm, air target. air target; BTR-80 1PZ-2 sight; round not named	aircraft	sight range	110
0.65 km	**BMP-2** Detection range, BPK-1-42 sight. night, passive starlight channel; 350 m with IR searchlight	not stated	vision range	102
about 0.4 km	**BMD-2** Detection range, 1PN22M1 night channel. BMD-1 gunner sight, passive image intensifier, night	not stated	vision range	99
0.4 km	**BMP-1** Detection range, 1PN22M1 sight. night, passive image intensifier; 900 m with IR searchlight	not stated	maximum	101
0.4 km	**T-62** Detection range, commander's night sight. IR night channel with OU-3GK searchlight (specs match TKN-3)	not stated	range	95
0.25–0.3 km	**BRDM-2** Detection range, TKN-1S night sight. night, with OU-3 infrared illuminator; target not stated	not stated	observation range	109
about 0.04 km	**MT-LB** Detection range, driver's TVN-2 IR periscope. night, with OU-3GK IR searchlight	not stated	approximate	107
Ground surveillance				
up to 800 km	**RB-109A Bylina** Detection range, radio emitters. emitters at the front and in depth; depends on radio horizon and height of SIGINT (RTR) modules; Army Recognition, origin not stated	emitters	up to	196
600 km	**Nebo-U** Detection range, air targets incl. stealth and hypersonic. Nebo-U; Russian MoD release, May 2016; target size not stated	person	claimed (claim)	171
250–300 km	**Nebo-U** Detection range, hypersonic cruise missile. RCS 0.9 m²; 250 km at 10,000 m, 300 km at 20,000-50,000 m	cruise missile, person	detection (claim)	171
up to 40 km	**SNAR-10 / SNAR-10M1 Leopard** Detection range, SNAR-10M1 radar. tanks and vehicles; Russian MoD figure; instrumented range 0.2-40 km	tank, vehicle	maximum (claim)	176
up to 40 km	**R-381T Taran** Detection range, R-381T radio emitters. Ground radio emitters; complex of 7 vehicles	vehicle, emitters	up to	194
30 km	**SNAR-10 / SNAR-10M1 Leopard** Detection range, SNAR-10 radar. moving ships, without MTI	ship	maximum (claim)	176
25 km	**Kh-59 Ovod family** Detection range, ARGS-59E seeker. Destroyer-type ship target, reflecting area over 5,000 m²; export seeker ARGS-59E, manufacturer brochure	ship	maximum (claim)	148
20 km	**3M14 Kalibr** Detection range, ARGS-14E seeker. Ground targets, seeker sector azimuth +/-45 degrees; export sheet	not stated	maximum (claim)	147
20 km	**1B75 Penicillin** Detection range, 1L271. tank-type moving ground target	tank	maximum (claim)	174
>20 km	**Sobolyatnik** Detection range, 1L277 radar (vehicles). Vehicles; ATP chart	vehicle	stated	176
at least 17 km	**Sobolyatnik** Detection range, 1L277 radar (tank). Moving tank target; catalogue gives 'not less than'	tank	stated minimum (claim)	176
16 km	**SNAR-10 / SNAR-10M1 Leopard** Detection range, SNAR-10 radar. moving vehicles, without MTI; 10 km with MTI	vehicle	maximum (claim)	176
15 km	**SNAR-10 / SNAR-10M1 Leopard** Detection range, SNAR-10M1 radar. moving person; developer figure	person	claimed (claim)	176
about 12 km (7.5 miles)	**Ka-52 Alligator** Detection range, FH01 Arbalet-52 radar. tank; about 25 km (15.5 miles) for a large ground target such as a railway bridge	tank	detection	284
12 km	**PRP-4A Argus / PRP-4M Deytery** Detection range, radar (moving tank-type target). moving tank-type target	tank	up to	234
up to 10 km	**1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex** Detection range, 1V14 optical reconnaissance. day	not stated	maximum	230
10 km	**PRP-4A Argus / PRP-4M Deytery** Detection range, PSNR-5M radar on PRP-4M. moving tank, PRP-4M application; Jane's 2001 export data, confidence reported	tank	range (claim)	234
8 km	**PRP-4A Argus / PRP-4M Deytery** Detection range, optical-electronic (tank-type target, day). tank-type target, daytime	tank	up to	234
7 km	**PRP-4A Argus / PRP-4M Deytery** Detection range, radar (person). single soldier	person	up to	234
at least 7 km	**Sobolyatnik** Detection range, 1L277 radar (personnel). Moving person; catalogue 'not less than'	person	stated minimum (claim)	176
3 km	**PRP-4A Argus / PRP-4M Deytery** Detection range, optical-electronic (tank-type target, night). tank-type target, night	tank	up to	234
up to 2.5 km	**1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex** Detection range, 1V14 optical reconnaissance (night). night	not stated	maximum	230
2 km	**PRP-4A Argus / PRP-4M Deytery** Detection range, stationary tank, engine off (sensor not stated). stationary tank-type target, engine not running; ARMYR and RWW name no sensor, WEG lists it under radar	tank	no less than (claim)	234
0.1–1.5 km	**BRDM-2** Range, 7.62 mm ball (PKT). ground target, day; FAS calls 1,500 m maximum aimed range	not stated	effective (with sight adjustments)	109
0.75 km	**1B75 Penicillin** Minimum range, 1L271. mortar firing positions; 200 m for moving ground targets	mortar	minimum (claim)	174
Counter-battery				

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
65 km	**Zoopark-1 / Zoopark-1M** Detection range, tactical missile, 1L260. Launch positions of Lance / ATACMS type missiles	tactical missile	up to	177
45 km	**Zoopark-1 / Zoopark-1M** Detection range, rocket artillery, 1L260. MLRS firing position (DOGS, unverified, specifies M270 type)	rocket launcher, artillery	up to	177
40 km	**Zoopark-1 / Zoopark-1M** Detection range, tactical missile, 1L219M. Tactical missile launch position	tactical missile	detection of launch position	177
mortar 22, artillery 20, MLRS 35, tactical missile 40 km	**Zoopark-1 / Zoopark-1M** Fire-correction range, 1L219M. Adjusting friendly fire, by weapon type	not stated	fire correction range	177
30 km	**ARK-1M Rys** Detection range, ARK-1M vs battlefield missiles. Missile (WEG)	not stated	unspecified	175
30 km	**Zoopark-1 / Zoopark-1M** Detection range, rocket artillery, 1L219M. MLRS firing position	rocket launcher, artillery	detection of launch position	177
23–27 km	**Zoopark-1 / Zoopark-1M** Detection range, tube artillery, 1L260. 155-203 mm gun firing positions (23 km for 155 mm, 27 km for 203 mm)	artillery	up to	177
Iskander 80, Smerch 70, Uragan 50, Grad 40, 203 mm 32, 152 mm 27 km	**Zoopark-1 / Zoopark-1M** Own-fire tracking range, 1L260. Tracking friendly fire, by weapon	not stated	up to	177
25 km	**ARK-1M Rys** Detection range, ARK-1M vs MRL rockets. Rocket (WEG); mode not stated	rocket launcher	unspecified	175
up to 25 km	**1B75 Penicillin** Detection range, 1B75. radius; artillery, mortar and MLRS firing positions, sound and thermal	rocket launcher, mortar, artillery	maximum (claim)	174
20 km	**Zoopark-1 / Zoopark-1M** Detection range, mortar, 1L219M. Mortar firing position; calibre not stated	mortar	detection of launch position	177
20 km	**Zoopark-1 / Zoopark-1M** Detection range, mortar, 1L260. Mortar firing position; calibre not stated. ATP lists this figure under '1L219M Zoopark-1M'	mortar	range as listed by ATP (no qualifier)	177
15 km	**1B75 Penicillin** Detection range, 1L271 (fire adjustment). by shell bursts; by trajectory 5 km	shell bursts	maximum (claim)	174
15 km	**Zoopark-1 / Zoopark-1M** Detection range, tube artillery, 1L219M. Field artillery firing position	artillery	detection of launch position	177
13 km	**ARK-1M Rys** Detection range, ARK-1M vs mortars. Mortar (WEG); mode not stated	mortar	unspecified	175
10 km	**SNAR-10 / SNAR-10M1 Leopard** Detection range, SNAR-10 radar. shell impact (100 mm), without MTI	shell bursts	maximum (claim)	176
10 km	**SNAR-10 / SNAR-10M1 Leopard** Detection range, SNAR-10M1 radar. shell burst on land; 20 km on water; developer figure	shell bursts	claimed (claim)	176
8 km	**ARK-1M Rys** Detection range, ARK-1M vs artillery (howitzers). Artillery (WEG), howitzers (JREW02); target and mode not stated by WEG	artillery	unspecified	175
5 km	**1B75 Penicillin** Detection range, 1L271 (mortar positions). mortar firing positions, 81-120 mm	mortar	maximum (claim)	174
5 km	**122 mm rockets (Grad, Tornado-G, Prima)** Range, 9M42 illumination. Illumination rocket; BM-21 or 9P132	rocket launcher	maximum	315
1 km	**122 mm rockets (Grad, Tornado-G, Prima)** Minimum range, 9M42 illumination. Illumination rocket; BM-21 or 9P132	rocket launcher	minimum	315
SIGINT and DF				
400 km	**Moskva-1** Detection range, airborne emitters. passive; emitting aircraft and cruise missiles; 360 deg sector	cruise missile, emitters	up to (claim)	184
70 km	**Torn** Detection range, HF emitters. HF band emitters; emitter type and height not stated. Ukrainian MoD media relaying an online presentation	emitters	maximum ('up to') (claim)	197
50 km	**Bal** Detection range, Kh-35U seeker. Kh-35U active/passive radar seeker; target size not stated	not stated	seeker range (claim)	145
up to 30 km	**Repellent-1** Detection range, UAV control-link signals. ground-station command signals; UAV telemetry up to 10 km; target size and altitude not given	UAV, emitters	up to (claim)	200
30 km	**Svet-KU** Detection range, emitter search. any emitting source, stated as radius by Northern Fleet operator, 2025	emitters	claimed (claim)	197
30 km	**Torn** Detection range, VHF emitters. VHF band emitters; emitter type and height not stated. Ukrainian MoD media relaying an online presentation	emitters	maximum ('up to') (claim)	197
about 10 km	**Shipovnik-Aero** Detection range, UAV control signals. Detect and identify control signals of enemy UAVs; developer statement	UAV, emitters	radius (claim)	196
6 km	**Leer-3** Detection range, GSM base stations. cellular base stations, GSM and possibly 3G/4G, measured from the UAV	UAV, cell base station	within	190
Laser designation				
0.3–7 km	**Kitolov-2 and Kitolov-2M laser-guided rounds** Designation range, 1D22 laser designator (Reostat-1). illumination range of the 1V119-1 Reostat-1 post used with Kitolov-2	not stated	effective (claim)	313

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
3 km	**Granat-1 / Granat-4** Range, laser designation, Granat-4. laser illumination of targets for guided munitions (Krasnopol)	not stated	claimed (claim)	266
Air tracking and fire control				
200 km	**S-300PM / S-300PS** Detection range, 30N6E. target tracking; export 30N6E/E1	not stated	tracking range (claim)	153
120 km	**Buk-M1 / Buk-M2 / Buk-M3** Detection range, 9A317 / 9A317M TELAR radar (M2/M3). RCS 1-2 m² at 3 km altitude and 18-20 km vs same target at 10-15 m (M2); M3: RCS 1-2 m², altitude not stated	not stated	detection range	152
100 km search; 180 km tracking	**Nebo-SVU** Upper limit of coverage, altitude. circular scan search / tracking mode	not stated	minimum (claim)	170
80 km	**Buk-M1 / Buk-M2 / Buk-M3** Detection range, 9S35 TELAR radar (M1). RCS 2 m²; 100 km vs RCS 3 m²	not stated	detection range	152
80 km	**Strela-10 and Osa short-range SAM** Detection range, Dog Ear (PPRU-1M) battery radar. Strela-10 battery acquisition radar, F/G-band; target type not stated; tracking 35 km (JREW02)	not stated	acquisition range	160
36 km	**Pantsir-S1** Detection range, 1RS1 search radar. 2 m² target; S-band; up to 20 targets tracked	not stated	maximum (claim)	158
16–30 km aircraft; 10–14 km helicopters	**Sosna** Detection range, optical system. auto-track acquisition, 15 km meteorological visibility, probability 0.8	not stated	auto-track range (claim)	159
28 km	**Pantsir-S1** Detection range, 1RS2-1 tracking radar. target size not stated; WEG and Armada	not stated	maximum (claim)	158
17–26 km	**Pantsir-S1** Detection range, optical post. F-16 autotracking, 10 km visibility; 13-15 km for HARM missile	fighter, anti-radiation missile	auto-tracking (claim)	158
20 km	**Strela-10 and Osa short-range SAM** Detection range, Land Roll tracking radar. Osa; target type not stated in source	not stated	tracking range	160
15 km	**Tor** Detection range, tracking radar (Tor/Tor-M1). 60-degree sector; target and variant not stated	not stated	maximum	161
13 km	**ZSU-23-4 Shilka** Tracking range, RPK-2 (1RL33) radar. air target; may refer to the Sborka command post	aircraft	maximum	162
13 km	**Tunguska** Detection range, 1RL144M tracking radar. J-band tracker	not stated	maximum	162
Air surveillance				
8000 km	**Voronezh-DM** Detection altitude, early warning radar. Vertical coverage into near space; target not stated	not stated	claimed (claim)	178
6000 km	**Voronezh-DM** Detection range, early warning radar. Horizontal range; target type and size not stated by source	not stated	claimed (claim)	178
700 km	**Nebo-U** Detection range, maximum. maximum range stated for 55Zh6U; target not stated	not stated	maximum (claim)	171
600 km	**Nebo-U** Detection range, Nebo-UM. aerodynamic and ballistic targets, altitude to 80 km; Nebo-UM; Russian state-media figure	ballistic missile	claimed (claim)	171
600 km	**Nebo-M** Detection range, Nebo-M. complex; target type, size and altitude not stated	not stated	maximum (claim)	170
600 km	**Nebo-M** Altitude coverage, Nebo-M. complex, ballistic targets implied; not stated	ballistic missile	maximum (claim)	170
580–600 km	**S-400 Triumf** Detection range, 91N6E. target RCS >10 m² (strategic bomber)	bomber	detection/ tracking	155
400 km	**Nebo-U** Detection range, fighter-type target, 20,000 m altitude and above. export 55G6-UE; fighter-type target at 20,000 m and above; RCS 2.5 m² per Military Russia sheet	fighter	detection (claim)	171
400 km	**Niobiy** Detection range, Niobiy-SV. Export variant of Niobiy-SV; maximum scan range of the radar	not stated	maximum (claim)	171
up to 400 km	**Oborona-14** Detection range, 5N84A (Ukrainian claim). aerial targets at high altitude; Ukrainian military information on the SSO strike, Mar 2026	not stated	up to (claim)	171
380 km	**Nebo-SVU** Detection range, 1 m² aircraft or ballistic target at 20 km altitude. RCS 1 m²; target at 20 km altitude; export sheet	ballistic missile	claimed (claim)	170
330 km	**S-300V4** Detection range, 9S15 Bill Board. target size not stated by WEG	not stated	maximum	154
310 km	**Nebo-U** Detection range, fighter-type target, 10,000 m altitude. export 55G6-UE; fighter-type target at 10,000 m	fighter	detection (claim)	171
300 km	**96L6 all-altitude acquisition radar** Detection range. Range band 5 to 300 km for detected targets; target size and altitude not stated	not stated	instrumented (claim)	168
300 km	**Niobiy** Detection range, Niobiy-SV. Even difficult targets, in heavy jamming	not stated	detection (claim)	171
300 km	**Oborona-14** Detection range, low-beam mode. fighter-type target at 10,000 m, low-beam mode; Jane's 2001	fighter	range (claim)	171
300 km	**S-300PM / S-300PS** Detection range, 96L6E. target size not stated; export 96L6E	not stated	max (claim)	153
300 km	**S-400 Triumf** Detection range, 96L6E. export 96L6E in S-300PMU family, target not stated; JREW-p1877, PDF p. 1877	not stated	max (claim)	155
280 km	**Oborona-14** Detection range, high-beam mode. fighter-type target at 10,000 m, high-beam mode; Jane's 2001	fighter	range (claim)	171
270 km	**Nebo-SVU** Detection range, 1 m² target at 10 km altitude. RCS 1 m²; export sheet	not stated	claimed (claim)	170

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
260 km	**S-300PM / S-300PS** Detection range, 64N6E. MiG-21 sized target; export 64N6E	not stated	detection range (claim)	153
250 km	**Ka-27 and Ka-29** Detection range, FH-A radar (Ka-27M). all-round mapping of sea and ground surface; figure given for export FHA01E	not stated	radius (claim)	290
250 km	**Ka-27 and Ka-29** Detection range, Oko radar (Ka-31R). surface vessels; E-801E as described in 1999; Russian media give more than 250 km for the E-801M	not stated	maximum surveillance radius	290
At least 250 km	**Niobiy** Detection range, Niobiy-SV. Low-observable target at 4 km altitude; export variant of Niobiy-SV	not stated	at least (claim)	171
250 km	**P-18 Terek** Detection range, P-18. Target type, size and altitude not stated; unmodernised P-18	not stated	maximum	172
230 km at 10 km altitude; 53 km at 0.5 km altitude	**Niobiy** Detection range, Niobiy-SV. Target RCS 1 m²; analyst's figures	not stated	detection	171
200 km	**Nebo-M** Detection range, Podlet-K1. main mode, 10-200 km; target size not stated	not stated	maximum (claim)	170
180 km	**P-18 Terek** Detection range, P-18 (MiG-21, 10,000 m). MiG-21 target, 10,000 m altitude, no jamming; 90 km in jamming (source figure); unmodernised P-18	not stated	detection	172
175 km	**S-300V4** Detection range, 9S19 High Screen. ballistic missile search; target size not stated	ballistic missile	maximum	154
170 km	**Nebo-U** Detection range, fighter-type target, 3,000 m altitude. export 55G6-UE; fighter-type target at 3,000 m	fighter	detection (claim)	171
160 km	**Buk-M1 / Buk-M2 / Buk-M3** Detection range, 9S18M1-3 / 9S18M3 search radar (M2/M3). RCS 1-2 m²; Buk-M2 9S18M1-3	not stated	detection range	152
100–150 km	**Buk-M1 / Buk-M2 / Buk-M3** Detection range, 9S18M1 search radar (M1). target size and altitude not stated	not stated	detection range	152
100–150 km	**Ka-27 and Ka-29** Detection range, Oko radar (Ka-31R). fighter-size air target below the helicopter; E-801E as described in 1999	fighter, helicopter	maximum surveillance radius	290
150 km	**Ka-27 and Ka-29** Detection range, Oko radar (Ka-31R). small air targets such as cruise missiles; E-801M, Russian media figure	cruise missile	detection range (claim)	290
5–150 km	**Kasta 35N6 / 39N6** Coverage, range. 51U6 and 39N6E export sheets; 360 deg azimuth	not stated	coverage zone (claim)	169
150 km	**S-300V4** Detection range, 9S32 Grill Pan. 2 m² RCS target, manual mode (140 km automatic)	not stated	maximum acquisition	154
120–130 km	**Niobiy** Detection range, Niobiy-SV. Target RCS 0.1 m², e.g. ATACMS; analyst's figure	tactical missile	detection	171
120 km	**Buk-M1 / Buk-M2 / Buk-M3** Detection range, 9S36 mast radar (M2). RCS 1-2 m² at 3 km altitude; 30-35 km vs same target at 10-15 m	not stated	detection range	152
120 km	**S-300PM / S-300PS** Detection range, 36D6. 1 m² target at 1,000 m altitude	not stated	detection range (claim)	153
at least 115 km	**Kasta 35N6 / 39N6** Detection range, 35N6 (1,000 m). MiG-23-type fighter at 1,000 m altitude, standard antenna	fighter	not less than	169
100 km	**96L6 all-altitude acquisition radar** Maximum target altitude. All-altitude mode, aerodynamic targets	aircraft	maximum (claim)	168
100 km	**Nebo-SVU** Detection range, 0.1 m² target. RCS 0.1 m²; altitude not stated	not stated	claimed (claim)	170
up to 100 km	**R-381T Taran** Detection range, R-381T aviation radio. Aircraft radio communications	aircraft	up to	194
90 km	**S-300PM / S-300PS** Detection range, 76N6. 0.02 m² target at 500 m altitude	not stated	detection range (claim)	153
1–80 km	**Garmon** Detection range, 1L122E-2. Export designation; air targets up to 20 km altitude, up to 700 m/s; target RCS not given	aircraft	detection (claim)	169
75 km	**Pantsir-S1** Detection range, Pantsir-SM radar. target size not stated	not stated	claimed (claim)	158
70 km	**Buk-M1 / Buk-M2 / Buk-M3** Detection range, 9S36M mast radar (M3). cruise missile flying at 5 m	cruise missile	detection range	152
70 km	**Nebo-U** Detection range, fighter-type target, 500 m altitude. export 55G6-UE; fighter-type target at 500 m	fighter	detection (claim)	171
65 km	**Nebo-SVU** Detection range, 1 m² target at 0.5 km altitude. RCS 1 m²; fighter-type per Almaz-Antey as quoted by WPRU	fighter	claimed (claim)	170
60 km	**Kasta 35N6 / 39N6** Detection range, 35N6 (500 m). 2 m² target at 500 m altitude, standard antenna, detection probability 0.5 (35N6 lecture)	not stated	detection range	169
60 km	**P-18 Terek** Detection range, P-18 (MiG-21, 500 m). MiG-21 target, 500 m altitude, no jamming; 40 km in jamming (source figure); unmodernised P-18	not stated	detection	172
55 km	**Kasta 35N6 / 39N6** Detection range, 39N6. aircraft at 100 m altitude, antenna raised to 50 m, probability 0.8	aircraft	detection range	169
53 km	**Kasta 35N6 / 39N6** Detection range, 51U6 Kasta-2E1 (50 m mast). Export sheet; 2 m² target at 100 m altitude, phase centre 50 m	not stated	claimed (claim)	169
45 km	**Oborona-14** Altitude coverage, low-beam mode. low-beam mode, elevation coverage 12 deg (17 deg high-beam)	not stated	coverage (claim)	171
at least 44 km	**Kasta 35N6 / 39N6** Detection range, 35N6. MiG-23-type fighter at 100 m altitude, standard antenna	fighter	not less than	169
41 km	**Kasta 35N6 / 39N6** Detection range, 39N6E Kasta-2E2. Export sheet; target at 100 m altitude, phase centre 14 m	not stated	claimed (claim)	169

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
40 km	**Barnaul-T** Detection range, 1L122-1E. aircraft, helicopters, cruise missiles, UAVs at up to 700 m/s; export 1L122-1E brochure figure	cruise missile, helicopter, UAV	maximum (1–40 km) (claim)	233
1–40 km	**Garmon** Detection range, 1L122E-1. Air targets (aircraft, helicopters, cruise missiles, UAVs) up to 10 km altitude, up to 700 m/s; RCS not given. Export designation; MoD gives same for 1L122	cruise missile, helicopter, UAV	maximum (claim)	169
40 km	**Gibka-S** Detection range, 1L122 Garmon. Air targets up to 10 km altitude and 700 m/s	aircraft	up to (claim)	157
40 km	**Niobiy** Detection altitude, Niobiy-SV. Export variant of Niobiy-SV	not stated	maximum (claim)	171
40 km	**Verba** Detection range, 1L122 Garmon radar. air targets at altitudes up to 10 km	aircraft	maximum (claim)	165
35 km	**P-18 Terek** Altitude, P-18. Target type not stated; unmodernised P-18	not stated	maximum	172
32 km	**Kasta 35N6 / 39N6** Detection range, 51U6 Kasta-2E1. Export sheet; 2 m² target at 100 m altitude, antenna phase centre 7 m	not stated	claimed (claim)	169
32 km	**Tor** Detection range, surveillance radar (Tor-M2). air targets, size not stated	aircraft	detection (claim)	161
up to 30 km	**Sobolyatnik** Detection range, 1L277 radar (small objects). Small objects (MoD, 2020); moving and stationary objects of various sizes (Southern MD, 2021)	not stated	maximum claimed (claim)	176
30 km	**Strela-10 and Osa short-range SAM** Detection range, Land Roll surveillance radar. Osa; target type not stated in source	not stated	acquisition range	160
30 km	**Volnorez, Saniya and Sapfir vehicle anti-drone jammers** Detection range, Sapfir. Drones; Sapfir; source unspecific on size	UAV	claimed (claim)	202
25–27 km	**Tor** Detection range, surveillance radar (Tor/Tor-M1). aircraft; WEG does not state the variant	aircraft	maximum	161
25 km	**Ka-27 and Ka-29** Detection range, Initsiativa-2KM radar. surface target of 250 m² radar cross-section, helicopter at 100-500 m	helicopter	not less than	290
20 km	**Bal** Detection range, ARGS-35 seeker. Kh-35 active radar seeker, 8-12 GHz; target size not stated	not stated	maximum (claim)	145
20 km	**ZSU-23-4 Shilka** Detection range, RPK-2 (1RL33) radar. air target; may refer to the Sborka command post	aircraft	maximum	162
20 km	**Sobolyatnik** Instrumented range. 1L277 radar	not stated	instrumented (claim)	176
18 km	**Tunguska** Detection range, 1RL144 surveillance radar. E-band; low-flying search mode for targets at about 15 m (JREW02)	not stated	maximum	162
9–15 km	**Tor** Detection range, surveillance radar (Tor/Tor-M1), UAV. UAVs	UAV	maximum	161
12 km	**Tor** Detection range, surveillance radar (Tor/Tor-M1), helicopter. helicopters	helicopter	maximum	161
10 km	**Barnaul-T** Detection altitude, 1L122-1E. export 1L122-1E; 'at least 10 km'	not stated	maximum (claim)	233
10 km	**BRM-1K** Detection range, PSNR-5K (1RL133-1). target type not stated by WEG	not stated	maximum	104
10 km	**Khrizantema-S** Detection range, MMW radar. millimetre-wave guidance radar	not stated	acquisition	116
10 km	**Nebo-M** Minimum range, Podlet-K1. air targets, lower limit of stated 10-200 km detection zone	aircraft	minimum (claim)	170
10 km	**Nebo-M** Altitude coverage, Podlet-K1. maximum detection altitude	not stated	maximum (claim)	170
0.45–10 km	**Strela-10 and Osa short-range SAM** Detection range, 9S86 Snap Shot. Strela-10 range-only radar; target type not stated; minimum 0.45 km	not stated	maximum	160
8 km	**Ka-27 and Ka-29** Detection range, VGS-3 dipping sonar. Project 613 diesel submarine at 6-8 kt and 100 m depth, sea state 2	not stated	detection range	290
up to 6 km	**Kasta 35N6 / 39N6** Altitude coverage. 51U6 and 39N6E export sheets	not stated	maximum (claim)	169
5 km	**Ka-27 and Ka-29** Detection range, Initsiativa-2KM radar. surface target of 2 m² radar cross-section, helicopter at 100-500 m	helicopter	not less than	290
3 km people; 12 km vehicles	**1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles** Detection range, PSNR-5K Tall Mike (1V119 optional). I-band ground surveillance radar, roof-mounted on 1V119; reference-site figure	not stated	claimed (claim)	231
1.5 km	**Volnorez, Saniya and Sapfir vehicle anti-drone jammers** Detection range, Saniya detector. FPV drone, passive radio detection	UAV	claimed (claim)	202
1 km	**Barnaul-T** Minimum detection range, 1L122-1E. export 1L122-1E	not stated	minimum (claim)	233
Other				
200 km	**Mohajer-6** Data link range, line of sight. Ground control station data link, direct line of sight	not stated	claimed (claim)	272
up to 100 km	**PU-12M7** Coordinates measurement envelope, PU-12M7 (connected radars). coordinates measurement envelope from connected radars; PU-12M7 has no radar of its own	not stated	maximum (claim)	234
50–80 km	**BRM-1K** Reconnaissance depth, BRM-1KM. Front-line reconnaissance, distance from own troops' positions	not stated	intended (claim)	104
20 km	**R-330M1P Diabazol** Telecode exchange range. Telecode information exchange; link partner not stated (source also mentions link to higher command post)	not stated	claimed (claim)	191

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
18–20 km	**R-381T Taran** Practical employment frontage. Soviet-era radio and radio-technical company front; DF baseline could be extended, by not more than 40 km, mainly within R-415 link range	not stated	practical	194
up to 7 km	**1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex** Range, laser target illumination (1V14). for laser-guided (corrected) munitions	not stated	maximum	230
6 km	**Khrizantema-S** Range, 9M123-2 (radar). tandem HEAT, radar beam-riding	not stated	maximum (claim)	116
5.3 km	**2S12 Sani** Range, 120 mm illumination. illumination bomb S-843	not stated	maximum	130
1.5 km	**BMD-2** Range, 7.62 mm PKT. ball, coaxial	not stated	maximum effective (with sight adjustments)	99
1 km	**2S12 Sani** Minimum range, 120 mm illumination. illumination bomb S-843	not stated	minimum	130
0.4 km	**Khrizantema-S** Minimum range, 9M123-2 (radar). tandem HEAT, radar beam-riding	not stated	minimum (claim)	116

Table 3g. Reach of communications

Radio and data-link ranges. Ranges depend on antenna, terrain and whether the vehicle is halted.

REACH	SYSTEM, DATUM AND CONDITION	TERM	PAGE
2000 km	**R-161 Poisk HF radio station** Communication range, HF. R-161A2M, stationary; UTIN: V 2x46 antenna, 10-30 MHz	maximum	236
2,000 km	**R-166 Artek** Communication range, HF, stationary. R-166, at the halt	up to (claim)	237
450 km	**R-149 command and staff vehicles** Range, HF air-ground Prima, R-149MA1. HF to aircraft	maximum (claim)	228
350 km	**R-142N Deimos-N** Communication range, R-130M HF. R-142N, roof loop (AZI) antenna or wire dipole, day and night, between like stations	communication range	236
350 km	**R-142N Deimos-N** Communication range, R-142NMR. R-142NMR, HF 1.5-30 MHz and VHF 30-108 MHz FH, voice and data	maximum range	236
350 km	**R-145BM Chayka command and staff vehicle** Range, R-130M dipole. HF, halted only, symmetrical dipole	range	227
350 km	**R-149 command and staff vehicles** Range, HF R-168-100KBE, R-149MA1. halted, mast antenna; 50 km (20 km moving) on ASh-4 whip	maximum (claim)	228
350 km	**R-149 command and staff vehicles** Range, HF, R-149BMR. HF band 1.5-30 MHz	maximum (claim)	228
350 km	**R-166 Artek** Communication range, HF, on the move. R-166, moving	up to (claim)	237
300 km	**BMD-1KSh-A** Range, HF radio R-130. Up to, with 4 m whip antenna; BMD-1KSh	maximum	226
15–300 km	**R-149 command and staff vehicles** Range, HF R-168-5KV, R-149AKSh-1. 1.5-30 MHz, 2 sets	maximum	228
220–250 km	**1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex** Radio range, R-111. 1V15 and 1V16, vehicle radio	stated	230
250 km	**R-166 Artek** Communication range, VHF, stationary. R-166, at the halt	up to (claim)	237
150 km	**Merlin-VR** Datalink range. Flight distance without loss of link; Russian serviceman's statement	claimed	267
at least 150 km	**R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations** Link range, R-412A. between two stations of the same type	at least (claim)	237
130 km	**1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex** Radio range, R-130MT. 1V15 and 1V16, HF vehicle radio	stated	230
120 km	**R-149 command and staff vehicles** Range, VHF air-ground Prima, R-149MA1. VHF to aircraft	maximum (claim)	228
100 km	**Supercam S350** Range, command and telemetry radio link. radio line of sight to ground control station	maximum (claim)	269
75 km	**R-145BM Chayka command and staff vehicle** Range, R-130M zenith antenna. HF, halted or moving, symmetrical zenith-radiation antenna	range	227
75 km, 300 km	**R-161 Poisk HF radio station** Communication range, moving. R-161A2M moving at 30 km/h: roof whip 75 km, zenith-radiating antenna (1.5-14 MHz) 300 km	maximum	236
70 km	**Granat-1 / Granat-4** Data link range, Granat-4. photo, video and thermal data transmitted near real time	claimed (claim)	266
70 km	**R-166 Artek** Communication range, VHF, on the move. R-166, moving	up to (claim)	237
60 km	**R-142N Deimos-N** Communication range, R-111 VHF. R-142N, antenna on 11 m mast, at halt	communication range	236
60 km	**R-149 command and staff vehicles** Range, VHF, R-149BMR. VHF band 30-108 MHz	maximum (claim)	228
25–60 km	**R-149 command and staff vehicles** Range, VHF R-168-100U-2, R-149AKSh-1. 30-108 MHz, 2 sets	maximum	228
55 km	**R-149 command and staff vehicles** Range, VHF R-168-100UE-2 on mast, R-149MA1. halted, mast antenna	maximum (claim)	228
up to 55 km	**Redut-2US** Radio-relay range. radio-relay link at up to 155 Mbit/s	maximum	239
50 km	**Lancet** Range, Izdeliye 51. control link range, 5 kg warhead; ZALA website figure reported by RT	communication range (claim)	277
50 km day, 20 km night	**R-142N Deimos-N** Communication range, R-130M HF. R-142N, 4 m whip, at halt and on the move	communication range	236
50 km	**ZALA 421-16E** Control range, video/radio link. 421-16E; average radius of video/radio link	radius of action (claim)	270
at least 40 km	**P-240I-4 Pereselenets** Communications range. medium and conditions INA	claimed (claim)	235
40 km	**1B75 Penicillin** Radio range, 1B75. to external subscribers	maximum (claim)	174
up to 40 km	**PU-12M7** Data link range, PU-12M7 by radio. radio link to higher and subordinate posts	maximum (claim)	234
40 km	**R-142N Deimos-N** Communication range, R-123MT VHF. R-142N, antenna on 11 m mast, at halt	communication range	236
25–40 km	**R-149 command and staff vehicles** Range, VHF R-168-25U-2, R-149MA3. 30-108 MHz, 2 sets	maximum	228
35 km	**R-145BM Chayka command and staff vehicle** Range, R-111 3.4 m whip. VHF, halted or moving	range	227
up to 30 km	**PU-12M7** Data link range, 9S737 to higher post. radio	maximum (claim)	234
up to 30 km	**Redut-2US** Wireless access range. broadband wireless access at up to 37 Mbit/s	maximum	239

REACH	SYSTEM, DATUM AND CONDITION	TERM	PAGE
20–25 km	**1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex** Radio range. 1V13 and 1V14, vehicle radios	stated	230
25 km	**R-149 command and staff vehicles** Range, VHF R-168-100UE-2, R-149MA1. on the move, vehicle antenna	maximum (claim)	228
20 km	**Barnaul-T** Data link range, 9S932-1. stationary; 10 km on the move (9S933: 3 km / 1 km)	communication range	233
20 km	**R-145BM Chayka command and staff vehicle** Range, R-123MT 4 m whip. VHF, halted or moving	range	227
6–20 km	**R-149 command and staff vehicles** Range, UHF R-168-MRA, R-149MA3. 1.5-1.75 GHz data radio	maximum	228
17 km stationary, 8 km moving	**Gibka-S** Radio link range, 9S937 to 9A332. Guaranteed range, command vehicle to launcher vehicles	guaranteed (claim)	157
Mavic 3, Matrice 30T and 300 RTK 15 km; Air 2S and Mini 3 Pro 12 km; Mavic 2 Enterprise Advanced 10 km	**DJI Mavic, Air, Mini and Matrice quadcopters (China)** Control and video link range. unobstructed, free of interference, FCC setting; CE setting 8 km (Mavic 2 Enterprise Advanced 6 km)	maximum (claim)	265
up to 15 km	**PU-12M7** Data link range, PU-12M7 by field cable. field telephone cable	maximum (claim)	234
up to 8 km	**Strelets** Range, R-853-V2M to aircraft. Target designation data to aircraft, no relay	claimed (claim)	240
6 km	**PRP-4A Argus / PRP-4M Deytery** Dismounted observation post, distance from vehicle. dismounted observation post	maximum	234
6 km	**R-142N Deimos-N** Communication range, R-809M2 air band. R-142N, discone on mast, to aircraft	communication range	236
up to 5 km	**PU-12M7** Data link range, 9S737 to fire units. radio	maximum (claim)	234
3–5 km	**Strelets** Range, PDU-4 laser rangefinder. Operating range ('дальность действия'); target type not stated	operating range (claim)	240
about 1.5 km	**Strelets** Range, squad radio network. Line of sight; each set acts as relay, so reach grows	claimed (claim)	240
up to 0.03 km	**R-416GM Granit-M radio relay station** Mast height, raised. Ukrainian border guard description of R-416G-MS	sometimes reaches (claim)	238

Table 3h. Reach of electronic attack

Jamming ranges. Most are manufacturer claims.

REACH	SYSTEM, DATUM AND CONDITION	TERM	PAGE
5,000 km	**Murmansk-BN** Jamming range, HF communications. HF (shortwave) radio links, skywave; ship, aircraft and ground emitters	effective (Armada's term) (claim)	184
about 1,000 km wide strip	**Palantin** Jamming frontage, radio communications. ground target: radio communications and radio reconnaissance; battalion tactical group exercise near Voronezh, Sep 2019	claimed (claim)	190
150–300 km	**Krasukha-2 / Krasukha-4** Krasukha-4: jamming range. air and ground-based radar targets; target size and altitude not stated	maximum (claim)	183
up to 250 km	**Krasukha-2 / Krasukha-4** Krasukha-2: jamming range. air target: AEW aircraft radar; target altitude not stated	up to	183
250 km	**Moskva-1** Jamming range, airborne S-band radar. air targets; ARM23 says the 1L267 'can engage targets' per unnamed sources; Moskva-1 itself has no jammer (FOI)	up to	184
150 km (93 mi)	**Mi-8MTPR-1** Jamming range, air-defence fire-control radars. C- and X-band radars, chiefly ground-based SAM fire-control radars; Rychag-AV with L187A jammer; effective radiated power 105 kW per target; KNIRTI figure	up to (claim)	288
150 km	**P-18 Terek** Detection range, P-18-2 (MiG-21, 10,000 m, jammed). MiG-21 target at 10,000 m under 200 W/MHz noise jamming; P-18-2 modernisation (LEMZ/NITEL)	detection (claim)	172
50 km or more	**R-330M1P Diabazol** Jamming range, user equipment installed on aircraft. R-330Zh Zhitel station; airborne equipment	claimed (claim)	191
50 km or more	**R-330Zh Zhitel** Jamming range, airborne users. User equipment installed on aircraft	claimed minimum (claim)	192
30 x 30 km	**R-330M1P Diabazol** Jamming range, complex. Area figure for emission-source jamming; target type not stated by source	claimed (claim)	191
up to 30 km	**Repellent-1** Jamming range, small UAV control and telemetry links. air target: small UAVs; telemetry and satellite-navigation links; control link up to 10 km	up to (claim)	200
20–25 km	**R-330M1P Diabazol** Jamming range, ground cellular and satellite user equipment. R-330Zh Zhitel station; ground-based consumer equipment	claimed (claim)	191
up to 25 km	**Pole-21** Jamming range, GNSS receivers (ground or air not stated). WEG (Pole-21E); Russian press gives 25 km per jamming module for the domestic Pole-21	effective	200
25 km	**R-330Zh Zhitel** Jamming range. Ground user equipment (WEG gives no target type; matches manufacturer's ground-user figure)	maximum effective	192
22 km	**2S19 Msta-S** Range, jammer round. 3RB30 radio jamming projectile; jamming radius 700 m	range (claim)	130
up to 20 km	**Palantin** Jamming range, UAV control links. air target: UAV radio control links	maximum (claim)	190
up to 6 km	**Leer-3** Jamming range, cellular terminals (ground). radius of the zone of blocked GSM terminals around the UAV	up to (claim)	190
up to 5 km	**Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers** Jamming range, UAV communication and navigation links (Serp-VS6D). Forbes as summarised by Rossiyskaya Gazeta (state media); original source not stated	claimed (claim)	198
5 km	**Volnorez, Saniya and Sapfir vehicle anti-drone jammers** Jamming range, tactical drones (Sapfir). Air target (drones); Sapfir; ground control stations also jammed	maximum (claim)	202
3–4 km	**Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers** Jamming range, UAV control, telemetry and communication links (Silok-01). Maker (Sozvezdie) presentation figure per Defence-UA; Gagadget gives 'claimed range 4 km'	claimed (claim)	198
3 km	**Infauna** Jamming range, target not stated. WEG 'Disruption Range'; target and conditions not given	disruption range	199
2 km	**Stupor, Garpun-3 and LPD-801 handheld jammer guns** Jamming range, small UAV, Stupor. Air target: UAV in line of sight; 20 degree sector; source is TASS report, Russian MoD developer	claimed (claim)	201
up to 2 km	**Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers** Jamming range, UAV control and navigation channels (Strizh-3). Blocking range; detection to 2,500 m. Retailer sheet copying maker (NTT) data	claimed (claim)	198
1.5 km	**Stupor, Garpun-3 and LPD-801 handheld jammer guns** Jamming range, small UAV, Garpun-3. Air target: small UAV; manufacturer sheet	not less than (claim)	201
1 km	**Stupor, Garpun-3 and LPD-801 handheld jammer guns** Jamming range, small UAV, LPD-801. Air target: small UAV; manufacturer sheet	effective (claim)	201
up to 1 km	**Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers** Jamming range, UAV control and navigation channels (Chistyulya). Radius over the upper hemisphere; Chistyulya; also blocks drone photo and video links	claimed (claim)	198
1 km	**Volnorez, Saniya and Sapfir vehicle anti-drone jammers** Jamming range, FPV drone (Saniya). Air target (FPV drone); Saniya; depends on weather, terrain, drone	claimed (claim)	202
0.7 km	**3RB30 152 mm communications jammer round** Jamming range, HF/VHF radio. Radius around the landed jammer body, against tactical HF and VHF radio communications	jamming radius (claim)	310
0.6 km	**Volnorez, Saniya and Sapfir vehicle anti-drone jammers** Jamming range, drone control link (Volnorez). Air target (drone); Volnorez; Russian claim	claimed (claim)	202

Table 3i. Reach of reusable UAVs

Reconnaissance and strike UAVs that return: how far from its control point a UAV operates, and at what altitude. One-way attack drones and loitering munitions are in Table 3b.

REACH	SYSTEM, DATUM AND CONDITION	TERM	PAGE
2,000 km	**Mohajer-6** Flight range. 'Operational range (radius of action)' 2,000 to 2,400 km per Wikipedia, from Iranian press	claimed	272
600 km	**Merlin-VR** Flight range. Kyiv Post, basis and source not given	claimed	267
600 km	**Orlan-10** Flight range, Orlan-10 autonomous. pre-programmed flight without radio link	maximum	268
300 km	**Orlan-10** Flight range, Orlan-30 autonomous. autonomous mode, export Orlan-30	maximum	268
250 km	**Forpost** Operating range. directional antenna; 150 km with omnidirectional antenna	range of employment	271
250 km	**Orion** Radius of action. without relay UAV; Orion-E (WIKIRU); HUR claim (UPDIU)	up to	272
at least 240 km	**Supercam S350** Flight range. total flight distance per maker, not radius of action	maximum	269
200 km	**ZALA 421-16E** Range, flight distance. 421-16E per 2011 article text, in more than 3.5 h; the article's table gives 210 km	claimed	270
150 km	**Orlan-10** Flight range, Orlan-10 under radio control. maximum link range with ground antenna, Orlan-10M	maximum	268
120 km	**Korsar** Flight range, radius from control post. terrain reconnaissance mission	claimed	271
120 km	**Leer-3** Practical range, Orlan-10 from control vehicle. radius of UAV employment from the control point	up to (claim)	190
120 km	**Orlan-10** Flight range, Orlan-30 under radio control. data-link range, export Orlan-30	maximum	268
100 km	**Granat-1 / Granat-4** Range of action, Granat-4. flight range per Kalashnikov	claimed (claim)	266
over 100 km	**Orlan-10** Practical range, Leer-3 EW tasks. distance from unit deployment site, Russian MoD statement, after Feb 2022	practical (claim)	268
70 km	**Supercam S350** Range, video link. standard video channel to ground control station	maximum (claim)	269
about 70 km	**Supercam S350** Practical range, video link. good picture and link, operator's account 2024-08	practical	269
50 km	**Eleron-3SV** Flight range, autonomous. no link, imagery recorded on board	maximum	266
40–50 km	**Orlan-10** Practical range, artillery spotting. distance mentioned in Russian press articles on artillery spotting c. 2015, per RWW; RWW suggests a video-link limit	practical	268
over 40 km	**FPV drones** Range, Provod fibre-optic. spool length; Ovod centre statement via TASS, Aug 2026	claimed (claim)	279
12–40 km	**Mohajer-6** Range, Qaem-series guided bomb. Glide release from 1,219 to 3,048 m; series-wide figure stated by Iranian minister Hatami, 2019	claimed (claim)	272
40 km	**Takhion** Range, radius of action. Radius of action; kalashnikov.club: within direct radio line of sight	claimed (claim)	269
40 km	**Takhion** Radius of action. kalashnikov.club: within direct radio line of sight	claimed	269
Mavic 3 30 km; Air 2S 18.5 km; Mini 3 Pro 18 km	**DJI Mavic, Air, Mini and Matrice quadcopters (China)** Flight range, one battery. no wind, near sea level, constant cruise speed, battery 100% to 0%	maximum	265
25 km	**BK-16** Radius of action, deck-launched UAV. reconnaissance UAV launched from the deck	radius	297
25 km	**Eleron-3SV** Control range, real-time link. real-time video over data link	maximum	266
20 km	**FPV drones** Range, KVN fibre-optic. fibre-optic spool; figure 'according to Russian resources', Jan 2025	maximum (claim)	279
15 km	**Granat-1 / Granat-4** Range, Granat-1 photo. line of sight, still camera	maximum (claim)	266
7–10 km	**FPV drones** Range, VT-40. munitions of 1.3-3 kg	claimed (claim)	279
over 10 km	**FPV drones** Range, fibre-optic types. Russian fibre-optic drones striking Kostiantynivka, just over 10 km from the contact line, Apr 2025	practical	279
10 km	**Granat-1 / Granat-4** Range, Granat-1 video. line of sight, video camera	claimed (claim)	266
10 km	**Orion** Range, Kh-BPLA. air-launched Kornet derivative; ground or low slow air target; TWZ gives 6.2 miles from RIA source	maximum (claim)	272
10 km	**Zastava** Range of action. Flight range from the ground station; ROBOT 'up to 10 km', CNA 'range', WPRU (Bird-Eye 400) 'radius'	up to	270
8 km	**Forpost** Range, KAB-20. released from high altitude; KAB-20L laser or KAB-20S satellite guidance	maximum stand-off	271
7.5 km	**Orion** Ceiling. Orion-E developer figure (WIKIRU); Inokhodets per RT, Russian state media	maximum	272
Mavic 3 and Mavic 2 Enterprise Advanced 6	**DJI Mavic, Air, Mini and Matrice quadcopters (China)** Service ceiling. above sea level; Matrice 7,000 m with high-altitude propellers		265

REACH	SYSTEM, DATUM AND CONDITION	TERM	PAGE
km; Air 2S 5 km; Mini 3 Pro 4 km; Matrice 30T and 300 RTK 5 km			
6 km	**Forpost** Service ceiling, Forpost-R		271
6 km	**Orlan-10** Ceiling, Orlan-10. above sea level	maximum	268
5.4 km	**Mohajer-6** Maximum altitude. 'Open data' figure in Ukrainian press	maximum	272
5.1 km	**Korsar** Ceiling	maximum	271
up to 5 km	**Leer-3** Altitude, Orlan-10. operating altitude	up to (claim)	190
5 km	**Merlin-VR** Service ceiling. Claimed; operating altitude 450–2500 m per PLANDIY	maximum	267
0.15–5 km	**Supercam S350** Operating altitude		269
4 km	**Granat-1 / Granat-4** Ceiling, Granat-4. above sea level; working band 300–2,000 m	maximum (claim)	266
4 km	**Takhion** Ceiling. Minimum flight height 50 m (WRU)	maximum	269
3.6 km	**ZALA 421-16E** Altitude, maximum. 421-16E	maximum (claim)	270
3.5 km	**Granat-1 / Granat-4** Ceiling, Granat-1. working band 40–1,500 m above ground	maximum (claim)	266
3.5 km	**Orlan-10** Ceiling, Orlan-30. above sea level, export Orlan-30	maximum	268
1.22–3.05 km	**Mohajer-6** Release altitude, Qaem-series guided bomb. Release height 4,000 to 10,000 ft, same Iranian statement	claimed (claim)	272
3 km	**Eleron-3SV** Operating altitude, Eleron-3SV. above launch point	maximum (claim)	266
2.2 km	**Zastava** Ceiling. above sea level	maximum	270
0.5–1.5 km	**ZALA 421-16E** Altitude, operating. current Z-16E	operating altitude range (claim)	270
0.003–1.2 km	**DJI Mavic, Air, Mini and Matrice quadcopters (China)** Measuring range, laser rangefinder (Matrice 30T). 0.5 x 12 m vertical surface, 20% reflectivity	measuring range (claim)	265
0.02–0.05 km	**FPV drones** Flight altitude, fibre-optic types. reported by a Ukrainian drone commander	practical	279

Table 3j. Reach of aircraft

Combat radius, range, ceiling and endurance, one line per type, fixed-wing aircraft first and then helicopters, each in alphabetical order. The condition in brackets names the load or profile the figure holds for.

TYPE	COMBAT RADIUS	RANGE	CEILING	ENDURANCE	PAGE
Helicopters					
Ka-27 and Ka-29	200 km (1.4 h on station); 100 km (six to eight attack runs over the target)	740 km (ferry fuel); 1,000 km (with extra tank)	5 km (service ceiling); 4.3 km (Ka-29); 5 km (hover ceiling 3,500 m); 3 km (out of ground effect)		290
Ka-52 Alligator		460 km (flight range, not combat radius); 1,110 km (ferry configuration)	5.5 km (dynamic ceiling); 4 km (static ceiling)		284
Mi-24P/V and Mi-35M		915–1,000 km (Mi-24V with drop tanks)	5.4 km (Mi-35M export figure, dynamic ceiling, 2018 sheet as relayed); 3.1 km (Mi-35M export figure, static ceiling)		285
Mi-26 Halo		1,920 km (With auxiliary tanks)	4.6 km (Operational ceiling, Mi-26T); 1.8 km (Mi-26T)		289
Mi-28N Night Hunter		450 km (Mi-28N, internal fuel); 1,100 km (Mi-28N, with external fuel tanks)	5.7 km (Mi-28N); 3.6 km (Mi-28N, out of ground effect)		285
Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/Mi-17 family)		1,600 km (export Mi-17V-5 brochure figure, modernised fuel system)	5 km (ATP 'ceiling' for Mi-8/Mi-17); 6 km (level flight, TV3-117VM engines); 4 km (TV3-117VM engines)		287
Mi-8MTPR-1		960 km (Mi-8/Mi-17 in general and Mi-8MT, earlier types than the…)	above 3 km (10,000 ft) (Orbit height for best jamming effect); 5 km (Mi-8/Mi-17 in general and Mi-8MT, earlier types than the…)		288

Table 3k. Deployment distances

Where the system has been seen deployed or employed relative to the line of contact, and how far its elements spread. These are observations and reports, not rules; they indicate what may lie at a given depth.

REACH	SYSTEM, DATUM AND CONDITION	TERM	PAGE
more than 150 km	**Mi-28N Night Hunter** Forward refuelling site, distance behind the line. field airstrip with four Mi-28 and Mi-17 refuelling, Voronezh Oblast, 29 Apr 2026; Ukrainian Unmanned Systems Forces claim	practical (claim)	285
up to 100 km	**S-400 Triumf** Fire unit distance from command post. 98Zh6E fire unit from 55K6E, export composition	maximum (claim)	155
35–50 km	**UMPK glide kits and UMPB D-30SN glide bomb** Release distance behind front line, UMPK. Su-34 releases, 2024 and 2025	practical	321
5–40 km	**Takhion** Design employment distance from line of contact. Design figure, not observed: 'designed to operate at a distance of 5 to 40 km from the line of contact'	design	269
15–30 km	**Borisoglebsk-2** Employment distance from line of contact. Donbas 2014-15, with Leer-3, Zhitel, R-934UM	practical	188
15–30 km	**R-330M1P Diabazol** Employment distance from line of contact. R-330Zh and R-934UM components, Donbas 2014-15	practical	191
25 km	**BM-27 Uragan** Distance from front line, observed. one launcher hit by FPV drone, reported c. 2024-07	practical	122
about 15 km from enemy positions	**2S4 Tyulpan** Employment distance. reported MoD video, Ukraine, Nov 2022	practical (claim)	128
about 10 km	**Mi-24P/V and Mi-35M** Range, unguided rockets. Mi-35M, lofted fire in a nose-up climb with the PrVK-24 sighting computer; S-8KOM rockets named for the practice; spread about 250 m in range, 150 m laterally	firing distance	285
5–10 km behind forward edge	**Tor** Deployment distance, Tor-M1 in defence. first defensive position; 5-10 km between vehicles	practical	161
1–3 km	**Rtut-BM** Employment distance from line of contact. Supporting Infauna, Donbas 2014-15	practical	201
1.5–2.0 km	**BMO-T** Dismount distance from enemy line. Doctrinal scenario: platoon attached to motor rifle battalion, then advances on foot to about 600 m	practical	101
up to 0.1 km	**9K111 Fagot / 9K111-1 Konkurs** Remote control distance, Konkurs-M kit. wired remote control of launcher	(claim)	305
UMZ 0.03–0.06 km from the vehicle; PKM 0.03–0.1 km from the operator	**PFM-1 Lepestok scatterable anti-personnel mine** Laying distance, UMZ and PKM. UMZ on ZiL-131 truck moving 10-40 km/h; PKM canister of 64 PFM-1S		326

Table 3l. Engineering equipment

What engineer vehicles can do, grouped by task: gap crossing, breaching, mine laying, earthmoving and transport across water. Mine-laying rockets also appear under indirect fire.

SYSTEM, DATUM AND CONDITION	CAPABILITY	PAGE
Gap crossing		
MLZh-VF-VT	about 500 m	207
Bridge length. MLZh bridge-ribbon received by the Railway Troops in 2016; carries rail and road traffic		
MMK bridge-mechanised complex	40 m	208
Bridge span length. single unsupported span		
Bridge width	4 m	
Load class, tracked vehicles. maximum gross weight of tracked IFVs and MBTs	60 t	
PMP heavy folding pontoon bridge park	227 m	210
Bridge, full set, 60-t. 32 river + 4 shore links, 6.5 m roadway		
Bridge, full set, 20-t. split half-links, 3.29 m roadway	382 m	
Bridge, half set, 60-t. 16 river + 2 shore links	119 m	
Bridge, half set, 20-t. 16 river + 2 shore links, split	191 m	
Load capacity, bridge. full-width bridge; 20 t on split-link bridge	60 t	
Roadway width. 60-t bridge	6.5 m	
Rafts. 2, 3, 4, 5+1 shore, 8+1 shore links	40, 60, 80, 110, 170 t	
Raft assembly, 40-t. 2 river links, working party 6	8 min	
Maximum current. PMP	2 m/s	
Tank speed on bridge. tanks on 60-t bridge	up to 30 km/h	
Working party, full bridge. full bridge set	approx. 65	
TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge	up to 40 m wide, 3 m deep	212
Obstacle, TMM-3 bridge set. Set of four spans; ATP gives 42 m total length		
Load class, TMM-3. Wheeled and tracked loads; tracked vehicles at 15 km/h on bridge	60 t	
Bridge geometry, TMM-3. Spans can be connected to 10.5, 21, 31.5 or 42 m (RWW); ATP gives 10 m per set and 42 m together	4 spans of 10.5 m; roadway 3.8 m	
Bridge geometry, TMM-7. Folded scissor span launched rearwards by a hydraulic arm, resting on two variable-length struts; span with support under 6 t (design weight)	4 spans of 16 m; 64 m per set	
Obstacle, TMM-7 bridge set. Two-track crossing over water or dry gaps	up to 100 m wide, 5 m deep	
Load class, TMM-7. Wheeled and tracked loads	60 t	
Bridge, MTU-72. Single-span bridge; ENT72 and RUWM support only the 18 m span and 50 t	20 m long, 3.3 m wide, spans 18 m; 6,400 kg	
Load class, MTU-72	50 t	
TMM-7	16 m	212
Span length. One span per truck		
Bridge length, set. Four trucks, four spans	64 m	
Bridge width. Span width	4 m	
Load class. Wheeled and tracked loads	60 t	
Span weight. Span with support, design weight, not more than	6 t	
Breaching and mine clearing		
BMR-3M	2 tracks x 0.8 m	214
Swept lane width. KMT-7, against track-width mines; uncleared strip of 1.62 m between		
Swept lane width, continuous. belly mines with contact fuze; 6-7 m vs magnetic fuzes	3.2 m	
Swept lane width, Vepr. Vepr on T-90A, 2024	almost 4 m	
Mine roller trawl. BMR-3MA: TMT-S	KMT-7 (or KMT-8)	
Roller blast resistance. TMT-S trawl rollers	up to 10 TM-62 blasts	
IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	6 km/h	215
Mine plough lane clearing, IMR-2M. AT mines, lane clearing rate (WEG term)		
UR-77 Meteorit	200 to 500 m	216
Range, UZP-77 line charge. charge launch distance, UZP-77; UZ-67 charge 200 to 350 m (WEG)		
Cleared lane length, UZP-77. anti-tank minefield; UZ-67 charge 75 to 80 m	80 to 90 m	
Cleared lane width. one line charge	up to 6 m	
Line charge length. UZP-77; UZ-67 is 83 m	93 m	
Cleared lane length, ZRShch. lane 6 m wide; charge in 6 m sections of 41 kg	100 m	
Time to clear a path. one full demining cycle	3 to 5 min	
Uran-6	1.6 m	216
Clearing width. flail fitted		
Clearing depth. flail fitted	35 cm	
Smoke and CBRN		
ARS-14, TMS-65 and TZ-74 decontamination vehicles	30-40 vehicles/h	222
Throughput, TMS-65, decontamination and disinfection. One vehicle takes 150-200 L water or suspension		
BMR-3M	2 banks of 81 mm, forward-firing	214
Smoke grenade launchers		
TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	over 1,000 m	223
Smokescreen length. TDA-2K, length of the opaque part of the screen		
Smoke duration per fill. TDA-2K, one tank charge	4-13 h	
Smoke duration per fill. TDA-3, depends on flow rate 10-30 l/min	110 min-6 h	
Speed while laying smoke. TDA-2K	10-40 km/h	
Smoke mixture tank. TDA-2K	4,800 l (4,200 l working)	
Smoke tanks. TDA-3	2,500 l + 900 l liquid, 2,700 l powder	
Mine laying		
IRM Zhuk	RShM-2 wide-span detector; ferrous mines to 0.3 m depth in a 3.6 m lane	206
Mine detection. antitank mines with ferromagnetic parts		

SYSTEM, DATUM AND CONDITION	CAPABILITY	PAGE
ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer Range, ISDM mine rocket. cassette rocket with AP or AT mines	15 km	217
Minimum range, ISDM mine rocket. cassette rocket with AP or AT mines	5 km	
Reload, ISDM. container swap by transloader at a technical position	several minutes	
Mine load, GMZ-3	208 AT mines	
Minefield length per load, GMZ-3. one vehicle, one load	1 km (pressure mines); 2 km (influence mines)	
Platoon minefield, GMZ-3. 3 GMZ-3 of obstacle platoon	1,200 m, three rows, 624 mines in 26 min	
Laying speed, GMZ-3	16 km/h surface; 6 km/h buried	
Laying rate, GMZ-3	8 mines/min surface; 4 mines/min buried	
Mine spacing, GMZ-3	5 or 10 m	
UMZ Mines per load, PFM-1S / POM-2 / PTM-3. basic load by mine type; one source gives 180 to 11,520 range	11,520 / 720 / 180	218
Minefield length. WEG general figure, mine type not stated; WEG gives one-load maxima of 3,200 m (PFM-1S), 5,000 m (POM-2), 600 m (PTM-3)	1,000 to 1,200 m	
Laying distance from vehicle. vehicle moving 10 to 40 km/h	30 to 60 m	
Laying speed	10 to 40 km/h	
Earthmoving		
BAT-2 Earthwork capacity, filling ditches and craters. ditch digging 200 to 250 m³/h	350 to 450 m³/h	213
BREM and BTS armoured recovery vehicles Dozer blade width, BREM-1	3.1 m	220
BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines Trench depth, BTM-3. soils up to category IV, unfrozen	up to 1.5 m	214
Output, BTM-3, trench 1.1 m deep. technical output, depends on soil	270 - 810 m/h	
Output, BTM-3, trench 1.5 m deep. technical output, depends on soil	270 - 560 m/h	
Trench depth, PZM-2. unfrozen and frozen ground	1.2 m	
Digging depth, EOV-4421. backhoe, bucket 0.65 m³	3.25 m	
Digging depth, EOV-3521. backhoe, bucket 0.65 m³, Ural-5557-31 chassis	4.0 m	
Digging depth, EOV-3521M. backhoe, bucket 0.65 m³, Ural-4320 chassis	4.0 m	
Digging depth, EOV-3523. bucket 0.8 m³, KamAZ-53501 chassis	5 m	
IMR-2 / IMR-2M / IMR-3M combat engineer vehicle Boom lifting capacity	2 t	215
Boom reach. IMR-2M	8.4 m	
Dozer capacity. IMR-2 earthmoving	200 to 250 m³/h	
Uran-6 Bulldozer blade width	1.8 m	216
Transport across water		
Kurier / Omich-2 / Bogomol-7V ground robotic complexes Payload, Omich-2. Claimed, July 2025	over 500 kg; trailer over 1 t	264
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry Payload on land, PTS-4	12 t	211
Payload on water, PTS-4	18 t	
Payload, PMM-2 single ferry. WEG; RUWM gives 42.5 t for the PMM-2M	42.5 t	
Payload, PMM-2 two joined. WEG gives 85 t for two PMM-2; RUWM gives 85 t for two PMM-2M, assembly 8 min	85 t	
Recovery and repair		
BAT-2 Crane capacity. boom reach 7.3 m	2 t	213
Winch. cable length 100 m	25 t	
BREM and BTS armoured recovery vehicles Crane capacity, BREM-1. crane length 4.4 m; WEG and RWW share one lineage	19 t at 2 m; 3 t at 4.4 m	220
Main winch, BREM-1	25 t; 100 t with snatch blocks; 200 m cable	
Tow load, BREM-1. semi-rigid tow bars	50 t	
Crane capacity, BREM-1M. upgraded T-90 based variant; Army Recognition report	up to 20 t; winch pull up to 35 t	
Crane capacity, BREM-L. reach 4.85 m	5 t; 11 t with double tackle	
Winch pull, BREM-L. 150 m cable	14 to 16 tf	
Crane capacity, BREM-2. winch 6.5 tf, 19.5 tf with tackle, 150 m cable	1.5 t	
Winch pull, BTS-4. 200 m cable	30 t	
Crane capacity, RM-G. maximum lifting height 4.01 m	3,000 kg	
REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles Crane lifting capacity, REM-KL. REM-KL crane; hook height 8.25 m	2.8 t at 3 m; 0.95 t at 8.1 m	221
Winch pull, REM-KL. REM-KL	10.5 t	
Crane lifting capacity, MTP-A2.1. MTP-A2.1 BAKM-890 crane-manipulator; maximum lift height 7.1 m	1,650 kg at 5.4 m; 2,300 kg at 3.8 m; 4,000 kg at 2.1 m	
Recovery pull, KT-L. KT-L (model TK6A); pulling out stuck vehicles on evacuation routes	14 t	
Crane lifting capacity, MTO-UB1. MTO-UB1 on Ural-4320	2.5 t	
Uran-6 Gripper lifting capacity	1,000 kg	216
Engineer reconnaissance		
BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines Pit depth, MDK-3. maximum digging depth	3 m	214
Pit depth, PZM-2. unfrozen ground only	up to 3.0 m	
IRM Zhuk Echo sounder depth range. water depth measured by EIR sounder	0.5 to 20 m (EIR echo sounder)	206

SYSTEM, DATUM AND CONDITION	CAPABILITY	PAGE
Reconnaissance rate. WEG attributes these to unnamed Russian sources	land route 8 to 10 km/h; minefield 5 km/h; 100 m water barrier in 5 min	
RKhM CBRN reconnaissance vehicles	about 3 km	222
Detection range, PKhRDD-2B remote chemical detector (RKhM-6). Remote vapour detection; target and conditions not stated		
Detection range, UAV reconnaissance complex (RKhM-9). Terrain survey distance of the onboard unmanned aerial complex	up to 25 km	
Speed, chemical and radiation reconnaissance, RKhM-6	less than 50 km/h	
TMM-7	1.8 to 5 m	212
Gap depth or support height. Bridge height; designer gives obstacles up to 5 m deep		
Ground robots		
BMR-3M	PR 377 IV transmitter on KMT-7	214
Radio-fuze jammer		
Kurier / Omich-2 / Bogomol-7V ground robotic complexes	3 km direct; 10 km with air relay	264
Control range, Kurier. Radio control; relay is an aerial repeater		
MLZh-VF-VT	6	207
Pontoons per river link		
Uran-6	1 km	216
Remote control distance. by radio from a control panel		
Other		
BAT-2	4.5 m	213
Blade width. bulldozer position; 4.2 m road clearing; 4.1 to 4.35 m grading		
Operating speed, graded track. WEG online: graded track; WEG15 road building: 6 to 8 km/h unobstructed ground, 2 to 3 km/h with trees under 30 cm, 8 to 15 km/h in snow	up to 6.8 km/h	
BMR-3M	2,000 m	214
Range, 12.7 mm MG. ground targets, 12.7x108 mm		
Range, 12.7 mm MG vs air. air targets, 12.7x108 mm	1,500 m	
BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines	180 m/h trench unfrozen; 35 m/h trench frozen; 140 m^3/h pits	214
Output, PZM-2. technical output		
MLZh-VF-VT	325.5 m	207
Length, river part, maximum. Design figure, design documentation finished after March 2000; river part is built from ferries		
Length, shore part, maximum. Design figure; approaches add 43.35 m on each bank	82.16 m each, two	
Length, transitional part. Design figure; one to four tower lifting supports per part	13.55 m each, two	
Ferry length. Design figure; ferries are assembled from river links	34.5, 46, 57.5 or 69 m, or more	
MMK bridge-mechanised complex	15 km/h	208
Crossing speed, tracked vehicles. maximum speed on the bridge		
Crossing speed, wheeled vehicles. maximum speed on the bridge	20 km/h	
RKhM CBRN reconnaissance vehicles	up to 6 km	222
Chemical monitoring radius, RKhM-6. around troop positions, chemical situation		
TMM-7	up to 100 m	212
Gap width, set. Water or dry gaps, two-track crossing; designer's figure		

Table 4. Mobility and time into action

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
120 mm gun-mortar rounds (3OF49, 3OF50, 3BK19)	**NA**	19.8 kg	INA	INA	INA	311
120 mm mortar bombs (OF-843B and Iranian HE bomb)	**NA**	16 kg	INA	INA	INA	311
122 mm howitzer rounds	**NA**	21.76 kg	INA	INA	INA	311
122 mm rockets (Grad, Tornado-G, Prima)	**NA**	66.6 kg	INA	INA	INA	315
152 mm gun and howitzer rounds	**NA**	INA	INA	INA	INA	312
1B75 Penicillin	**WH-AT**	INA	INA	5 min	INA	174
1K148 Yastreb-AV	**WH-AT**	INA	INA	INA	INA	174
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	**TR-A**	14.8 t	Amphibious	INA	INA	230
1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	**WH-AT**	10.1 t	10 km/h	10 min	INA	231
203 mm gun rounds (3OF43, 3OF44)	**NA**	110 kg	INA	INA	INA	312
220 mm rockets (Uragan)	**NA**	280 kg	INA	INA	INA	315
220 mm thermobaric rockets (TOS-1A, TOS-2)	**NA**	173 kg	INA	INA	INA	316
240 mm mortar bombs (3F2 HE, 3O8 cluster)	**NA**	228.1 kg	INA	INA	INA	312
2A36 Giatsint-B 152 mm towed gun	**TW**	9.76 t	INA	4 min	4 min	135
2A65 Msta-B	**TW**	7 t	INA	2 to 2.5 min	2 min	135
2B14 Podnos	**MP**	42 kg	INA	1.3 min	INA	136
2B9 Vasilek	**TW**	632 kg	INA	1.5 min	1.5 min	135
2S1 Gvozdika	**TR-A**	15.7 t	amphibious	3 min	INA	126
2S12 Sani	**WH-AT**	11 t	0.8 m	3 min	3 min	130
2S19 Msta-S	**TR**	42 t	1.2 m unprepared; 5 m prepared	1.5 min	1.5 min	130
2S23 Nona-SVK	**WH-AT-A**	14.5 t	10 km/h	1 min	1 min	131
2S25 Sprut-SD	**TR-A+AD**	18 t	10 km/h	INA	INA	99
2S3 Akatsiya	**TR**	27.5 t	1 m	0.5 min	INA	127
2S31 Vena	**TR**	19.1 t	10 km/h	20 s to first round at unplanned target; 1 min after fire manoeuvre	INA	131

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
2S34 Khosta	TR-A	16 t	INA	INA	INA	131
2S35 Koalitsiya-SV	TR	48–55 t	2.1 m	1.5 min	under 1 min	132
2S38 Derivatsiya-PVO	TR-A	21.5 t	INA	INA	INA	157
2S4 Tyulpan	TR	27.5 t	1.0 m	25 min	25 min	128
2S40 Floks	WH-AT	20 t	1.75 m	20–60 s	INA	132
2S5 Giatsint-S	TR	28.2 t	1.05 m	less than 2 min	less than 2 min	128
2S7 Pion / 2S7M Malka	TR	46.5 t	1.2 m	5-6 min	3-5 min	129
2S9 Nona-S	TR-A+AD	8.0–8.7 t	9 km/h	5-7 min (2S9, 2S9-1); 0.5-0.9 min (2S9-1M)	INA	129
300 mm rockets (Smerch, Tornado-S)	NA	800 kg	INA	INA	INA	316
3M14 Kalibr	NA	1.77 t	INA	INA	INA	147
3RB30 152 mm communications jammer round	NA	43.56 kg	INA	INA	INA	310
96L6 all-altitude acquisition radar	WH-AT	INA	1.3 m	5 min	5 min	168
9K111 Fagot / 9K111-1 Konkurs	MP+AD	22.5 kg	10 km/h	25 s or less	INA	305
9K114 Shturm-S	TR-A	12.3 t	4.5 km/h	INA	INA	115
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M	NA	17.2 kg	INA	INA	INA	306
9K79-1 Tochka-U	WH-AT-A	18.1 t	8 km/h	16 min	1.5 min	141
9P162 Kornet-T	TR-A	under 18 t	10 km/h	INA	INA	115
Aleut and Plastun articulated and light tracked carriers	TR	11 t	INA	INA	INA	255
ARK-1M Rys	TR	15.7 t	6 km/h	5 min	5 min	175
ARS-14, TMS-65 and TZ-74 decontamination vehicles	WH-AT	15.3 t	1.75 m	6-8 min	10-12 min	222
Bal	WH-AT	INA	1.4 m	10 min	INA	145
Barnaul-T	TR-A	11 t	5 km/h	5 min	7 min	233
Bastion-P	WH-AT	41 t	1.4 m	5 min	INA	146
BAT-2	TR	39.7 t	1.3 m	INA	INA	213
BK-16	SHIP	INA	INA	INA	INA	297
BM-21 Grad 122 mm MRL	WH-AT	13.7 t	1.5 m	3 min	2 min	122
BM-27 Uragan	WH-AT	20 t	1.2 m	3 min	3 min	122
BM-30 Smerch	WH-AT	43.7 t	1.1 m	3 min	3 min	123
BMD-1KSh-A	TR-A	8.7 t	10 km/h	INA	INA	226
BMD-2	TR-A+AD	8.22 t	10 km/h	INA	INA	99
BMD-4M	TR-A+AD	13.5 t	10 km/h	INA	INA	100
BMO-T	TR	43.9 t	1.2 m	INA	INA	101
BMP-1	TR-A	13.5 t	7 km/h	INA	INA	101
BMP-1KSh command and staff vehicle	TR	13 t	7 km/h	INA	INA	226
BMP-2	TR-A	14.3 t	amphibious	INA	INA	102
BMP-3	TR-A	18.7 t	10 km/h	INA	INA	103
BMPT Terminator	TR	48 t	1.2 m unprepared; 1.8 m prepared; 5 m with snorkel	INA	INA	104
BMR-3M	TR	48 t	1.2 m unprepared; 5 m prepared	INA	INA	214
Borisoglebsk-2	TR-A	11 t	5 km/h	15 min or less	15 min or less	188
BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	WH-AT	10.5 t	1.75 m	INA	INA	109
BRDM-2	WH-AT-A	7.0 t	10 km/h	INA	INA	109
BREM and BTS armoured recovery vehicles	TR	41 t	1.2 m	INA	INA	220
BRM-1K	TR-A	13.3 t	7 km/h	INA	INA	104
BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines	TR	27.7 t	1.5 m	5-7 min	INA	214
BTR-80	WH-AT-A	13.6 t	9 km/h	INA	INA	110
BTR-90 Rostok	WH-AT	22 t	amphibious, no preparation; 9 km/h afloat	INA	INA	111
BTR-D	TR+AD	8.2 t	10 km/h	INA	INA	105
BTR-MDM Rakushka	TR-A+AD	13.2 t	10 km/h	INA	INA	106
Buk-M1 / Buk-M2 / Buk-M3	TR	34 t	1 m	5 min	5 min	152
Bulsae-4 ATGM launcher vehicle (North Korea)	WH-AT	INA	INA	INA	INA	116
Captured US vehicles in Russian use: M2 Bradley, M113, MaxxPro, M88A1	TR	30.1 t	INA	INA	8.27 m	118
D-20	TW	5.56 t	0.5 m	2.5 min	2.5 min	137
D-30	TW+AD	3.2 t	0.5 m	1.5 min	3.5 min	137
Desertcross 1000-3 all-terrain buggy (China)	WH-AT	1.05 t	0.4 m	INA	INA	245
DJI Mavic, Air, Mini and Matrice quadcopters (China)	AIR-RW	895 g	INA	INA	INA	265
Dnipro small boats	SHIP	INA	INA	INA	INA	300
Dzyudoist	WH-AT	INA	INA	INA	INA	189
Eleron-3SV	AIR-FW	5.3 kg	INA	10 min	INA	266
Fath-360 short-range ballistic missile (Iran)	WH-LT	787 kg	INA	INA	INA	142
Forpost	AIR-FW	500 kg	INA	INA	INA	271

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
FPV drones	AIR-RW	INA	INA	INA	INA	279
FSB Border Service patrol boats (Mangust, Sobol, Tunets)	SHIP	INA	INA	INA	INA	297
Garmon	MP+AD	150 kg	INA	5 min	5 min	169
Garpiya-A1	AIR-FW	250 kg	INA	INA	INA	273
GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	WH-AT+AD	3.44 t	1.2 m	INA	INA	246
Geran-2	AIR-FW	200 kg	INA	INA	INA	274
Gerbera	AIR-FW	about 18 kg	INA	INA	INA	275
Gibka-S	WH-AT	7.2 t	1.2 m	not more than 3 minutes	INA	157
Grachonok	SHIP	INA	INA	INA	INA	298
Granat-1 / Granat-4	AIR-FW	30 kg	INA	15 minutes	INA	266
Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	MP	up to 8 kg	INA	INA	INA	198
Igla / Igla-1 / Igla-S	MP+AD	13.9 kg	INA	13 s	30 s	165
IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	TR	44.3 t	1.2 m unprepared; 5.0 m with equipment	6 min	INA	215
Infauna	WH-AT-A	13.6 t	9 km/h	INA	INA	199
IRM Zhuk	TR-A	18 t	10 km/h	3 min	INA	206
ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer	WH-AT	INA	1.8 m	INA	INA	217
Iskander-M	WH-AT	42.85 t	1.4 m	16 min to first launch from the march; 4 min from highest readiness	INA	143
Italmas	AIR-FW	50 kg	INA	INA	INA	275
Ka-27 and Ka-29	AIR-RW	12 t	INA	INA	INA	290
Ka-52 Alligator	AIR-RW	10.8 t	INA	INA	INA	284
KamAZ-4310, -5350 and -6350 Mustang military trucks	WH-AT	9.2 t	1.75 m	INA	INA	247
Kasta 35N6 / 39N6	WH-AT	12.5 t	1.75 m	20 min	20 min	169
Kh-101 and Kh-55 air-launched cruise missiles	NA	2.2–2.4 t	INA	INA	INA	148
Kh-22 and Kh-32 air-launched missiles	NA	5.78–6 t	INA	INA	INA	147
Kh-47M2 Kinzhal	NA	4.3 t	INA	INA	INA	147
Kh-59 Ovod family	NA	760–790 kg	INA	15 s from standby to launch	INA	148
Kh-69	NA	about 1,700 lb (770 kg)	INA	INA	INA	148
Khrizantema-S	TR-A	18.7 t	amphibious, 10 km/h	INA	INA	116
Kitolov-2 and Kitolov-2M laser-guided rounds	NA	28 kg	INA	INA	INA	313
KM-8 Gran	NA	27 kg	INA	INA	INA	313
KN-23 and KN-24 (Hwasong-11) (North Korea)	WH-AT	3.42 t	INA	INA	INA	144
Kornet	MP	63.7 kg	INA	under 1 min	INA	307
Korsar	AIR-FW	200 kg	INA	INA	INA	271
Krasnopol, Krasnopol-M1, Krasnopol-M2	NA	50 kg	INA	INA	INA	314
Krasukha-2 / Krasukha-4	WH-AT	39 t	1.75 m	less than 20 min	less than 20 min	183
KUB-BLA	AIR-FW	8 kg	INA	20 min	10 min or less	276
Kurier / Omich-2 / Bogomol-7V ground robotic complexes	TR+AD	250 kg	INA	3 to 5 minutes	INA	264
Lancet	AIR-FW	12 kg	INA	under 1 min	INA	277
Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren	SHIP	INA	INA	INA	INA	294
Leer-2	WH-AT	7.8 t	1.3 m	INA	INA	189
Leer-3	WH-AT	INA	INA	30 min	INA	190
Lesochek	MP	INA	INA	INA	INA	199
M-46	TW	8.45 t	INA	6 min	7 min	138
M1989 Koksan (North Korea)	TR	about 40 t	INA	INA	INA	133
M1991 and M-2024 240 mm multiple rocket launchers (North Korea)	WH-AT	407 kg	INA	INA	INA	124
MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks	WH-AT	21.6 t	1.3 m	INA	INA	254
Merlin-VR	AIR-FW	6.5 kg	INA	INA	INA	267
Metis	MP+AD	10.2 kg	INA	15-20 s	15-20 s	308
Mi-24P/V and Mi-35M	AIR-RW	11.5 t	INA	INA	INA	285
Mi-26 Halo	AIR-RW	56 t	INA	INA	INA	289
Mi-28N Night Hunter	AIR-RW	12 t	INA	INA	INA	285
Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/Mi-17 family)	AIR-RW	13 t	INA	INA	INA	287
Mi-8MTPR-1	AIR-RW	13 t	INA	INA	INA	288
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns	TW	2.45 t	INA	less than 2 min	INA	139
MLZh-VF-VT	TW	INA	INA	3 days	INA	207
MMK bridge-mechanised complex	WH-AT	INA	INA	45 min	INA	208
Mohajer-6	AIR-FW	600 kg	INA	INA	INA	272
Molniya	AIR-FW	10 kg	INA	INA	INA	278
MON-100 directional fragmentation mine	NA	5 kg	INA	INA	INA	323

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
MON-200 directional mine	NA	25 kg	INA	Directional fragmentation anti-personnel mine, command-detonated; placed by hand on the ground or on a fixed object	INA	324
MON-50	NA	2.0 kg / 0.7 kg PVV-5A	INA	INA	INA	322
MON-90	NA	12.1 kg; 345 x 153 x 202 mm	INA	INA	INA	322
Moskva-1	WH-AT	12.4 t	1.75 m	45 min	INA	184
MT-12 Rapira	TW	3.1 t	INA	2 min	INA	134
MT-LB	TR-A	11.9 t	5-6 km/h	INA	INA	107
Murmansk-BN	WH-AT	up to 35 t	INA	72 h	INA	184
Nebo-M	WH-AT	INA	INA	12 m	15 min	170
Nebo-SVU	TW	INA	INA	20 min	20 min	170
Nebo-U	TW	INA	INA	22 h	INA	171
Niobiy	WH-AT	INA	INA	5 h	INA	171
Oborona-14	TW	INA	INA	24 h	INA	171
Oreshnik	NA	INA	INA	INA	INA	149
Orion	AIR-FW	1 t	INA	INA	INA	272
Orlan-10	AIR-FW	18 kg	INA	under 15 min	INA	268
OZM-72 bounding fragmentation mine	NA	5 kg; 108 mm diameter; 172 mm high	INA	INA	INA	324
P-18 Terek	WH-AT	INA	INA	45 min	INA	172
P-240I-4 Pereselenets	WH-AT	INA	INA	INA	INA	235
Palantin	WH-AT	INA	INA	about 30 min	INA	190
Pantsir-S1	WH-AT	14.85 t	1.8 m	3 min	INA	158
PDM-1 anti-landing mine	NA	55–60 kg with ballast plate; 21 kg without	INA	INA	INA	325
PFM-1 Lepestok scatterable anti-personnel mine	NA	70–80 g: 70 g WEG 2015, 75 g GICHD guide, 80 g Russian Wikipedia	INA	INA	INA	326
PMN, PMN-2, PMN-4	NA	PMN 0.55 kg; PMN-2 0.4 kg; PMN-4 0.3 kg	INA	INA	INA	327
PMP heavy folding pontoon bridge park	WH-AT	INA	INA	7 m of bridge per minute	a few minutes	210
Pole-21	FX	INA	INA	INA	INA	200
Polyana-D4	WH-AT	13.2 t	1.2 m	35 min	35 min	233
POM-2 and POM-2R scatterable anti-personnel mines	NA	1.6 kg	INA	INA	INA	327
POM-3 Medalyon scatterable anti-personnel mine	NA	1.2 kg	INA	INA	INA	328
Project 1176 Akula landing craft	SHIP	INA	INA	INA	INA	295
PRP-4A Argus / PRP-4M Deytery	TR-A	13.8 t	7 km/h	2 min	INA	234
PTM-1	NA	1.4 kg (WEG 2015) or 1.6 kg (Russian handbook texts)	INA	INA	INA	328
PTM-3	NA	4.9 kg	INA	INA	INA	329
PTM-4	NA	INA	INA	INA	INA	330
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	TR-A	33.1 t	INA	5 min	INA	211
PU-12M7	WH-AT-A	13.6 t	10 km/h	3 min	INA	234
R-142N Deimos-N	WH-AT	5.97 t	0.8 m	INA	INA	236
R-145BM Chayka command and staff vehicle	WH-AT-A	10.3 t	10 km/h	INA	INA	227
R-149 command and staff vehicles	WH-AT-A	15–15.1 t	10 km/h	10 min on the move / 30 min halted	INA	228
R-161 Poisk HF radio station	WH-AT	10.4 t	INA	1 hour	INA	236
R-166 Artek	WH-AT	14.8 t	INA	5 min	INA	237
R-330B Mandat-B and R-934BMV	WH-AT	11 t	INA	30 min	INA	191
R-330M1P Diabazol	WH-AT	INA	INA	30 min or less	INA	191

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
R-330Zh Zhitel	WH-AT	INA	INA	40 min or less	40 min or less	192
R-381T Taran	TR	15.6 t	INA	10 min	INA	194
R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations	WH-AT	INA	INA	INA	INA	237
R-416GM Granit-M radio relay station	WH-AT	INA	INA	INA	INA	238
R-439 Legenda-2	WH-AT	132.5 kg	INA	15 min	INA	238
Raptor	SHIP	INA	INA	INA	INA	299
RB-109A Bylina	WH-AT	INA	INA	INA	INA	196
Redut-2US	WH-AT	INA	INA	INA	INA	239
REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles	WH-AT	18.25 t	1.2 m	INA	INA	221
Repellent-1	WH-AT	23.6 t	1.0 m	15 min	INA	200
RKhM CBRN reconnaissance vehicles	WH-AT-A	13.6 t	9 km/h	INA	INA	222
Rtut-BM	TR	INA	INA	10 min or less	INA	201
S-300PM / S-300PS	WH-AT	INA	INA	5 min	5 min	153
S-300V4	TR	50 t	1.2 m	5 min	5 min	154
S-350 Vityaz	WH-AT	22 t	1.2 m	5 min	5 min	154
S-400 Triumf	WH-AT	INA	INA	5-10 min	INA	155
S-60	TW	4.66 t	1.5 m	3 to 5 min	6 to 7 min	159
Santimetr (30F38) and Santimetr-M (30F75)	NA	49.5 kg	INA	INA	INA	314
Serna	SHIP	INA	INA	INA	INA	296
Shahed-107 (Iran)	AIR-FW	about 27 kg (60 lb)	INA	INA	INA	278
Shipovnik-Aero	WH-AT	INA	INA	20-40 min	INA	196
SNAR-10 / SNAR-10M1 Leopard	TR	12.7 t	INA	5 min	INA	176
Sobolyatnik	MP	36 kg	INA	A few minutes (observed as 5 minutes, Jan 2024)	A few minutes	176
Sosna	TR	INA	INA	INA	INA	159
Strela-10 and Osa short-range SAM	TR	12.1 t	1.2 m	3 to 5 min	3 to 5 min	160
Strelets	MP+AD	2.4 kg	INA	INA	INA	240
Stupor, Garpun-3 and LPD-801 handheld jammer guns	MP	4.1 kg	INA	INA	INA	201
Supercam S350	AIR-FW	15.5 kg	INA	15 min	INA	269
Svet-KU	WH-AT	INA	INA	10 min	INA	197
T-54 / T-55	TR	41 t	1.4 m unprepared; 5.5 m with snorkel	INA	INA	94
T-62	TR	40 t	1.40 m	INA	INA	95
T-64A/B/BV	TR	39.5 t	1.8 m unprepared; 5.0 m with snorkel	INA	INA	95
T-72B3/B3M	TR	45 t	1.2 m	INA	INA	96
T-80B/BV/BVM, T-80U	TR	43.7 t	1.8 m unprepared; 5.0 m with snorkel	N/A	INA	97
T-90	TR	46 t	1.2 m	INA	INA	98
Takhion	AIR-FW	25 kg	INA	INA	INA	269
TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	WH-AT	15.75 t	1.75 m	5.5 min	INA	223
Tigr and Vodnik armoured cars	WH-AT	6 t	1.2 m	INA	INA	112
Tirada-2	WH-AT	INA	INA	INA	INA	186
TM-46 anti-tank mine	NA	8.6 kg complete	INA	INA	INA	331
TM-57	NA	9.0–9.5 kg	INA	INA	INA	331
TM-62 anti-tank blast mine family	NA	9.5–10 kg	INA	INA	INA	332
TM-83	NA	20.4 kg fully equipped (Belarusian manual, Russian encyclopedia, WEG 2015); 28.1 kg full assembly (Veremeev 2013, English Wikipedia); fuze 2.7 kg; charge 9.6 kg TG 40/60	INA	INA	INA	332
TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge	WH-AT	19.5 t	1.0 m	72 min	8 min	212

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
TMM-7	WH-AT	24.0 t	INA	5 min one span; 40 min set of four	INA	212
Tobol	FX	INA	INA	INA	INA	186
Tor	TR	32 t	1.0 m	less than 3 min	less than 5 min	161
Torn	WH-AT	INA	INA	15 min or less	INA	197
Tornado-G	WH-AT	14 t	1.75 m	2 min	3 min	124
TOS-1A Solntsepek	TR	44.3 t	1.2 m	90 s from halt to fire	INA	125
Tunguska	TR	34 t	1.0 m	not more than 5 min	not more than 5 min	162
Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	WH-AT	13.7 t	1.5 m	INA	INA	113
UAZ-469, UAZ-452 and UAZ-39094 utility vehicles	WH-AT	1.65 t	0.5 m	INA	INA	249
UMPK glide kits and UMPB D-30SN glide bomb	NA	INA	INA	INA	INA	321
UMZ	WH-AT	10 t	1.4 m	INA	INA	218
UR-77 Meteorit	TR-A	15.5 t	5 km/h	INA	30 to 40 min	216
Uragan-1M	WH-AT	40 t	1.4 m	3 min	3 min	125
Ural-6370, -63706 and -532301 trucks (newer Ural family)	WH-AT	33 t	1.8 m	INA	INA	251
Uran-6	TR	6 t	INA	INA	INA	216
Verba	MP	18 kg	INA	12 s or less	INA	165
Vikhr	NA	40–45 kg	INA	INA	INA	321
Vityaz DT-10, DT-20 and DT-30	TR-A	27.5 t	5 km/h	INA	INA	256
Volnorez, Saniya and Sapfir vehicle anti-drone jammers	NA	INA	INA	INA	INA	202
Voronezh-DM	FX	INA	INA	INA	INA	178
VTS Ladoga	TR	42 t	1.2 m	INA	INA	229
ZALA 421-16E	AIR-FW	8–10.5 kg	INA	INA	INA	270
Zastava	MP	5.5 kg	INA	20 min	10 min	270
ZFB-05 or Tiger 4x4 armoured personnel carrier (China)	WH-LT	4.5 t	INA	INA	INA	118
ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	WH-AT	10.4 t	1.4 m	INA	INA	252
Zoopark-1 / Zoopark-1M	TR	38.1 t	INA	5 min	5 min	177
ZSU-23-4 Shilka	TR	20.5 t	1.0 m	INA	INA	162
ZU-23-2	TW+AD	0.95 t	INA	15–20 min	35–40 min	163

Table 5. Radar and visual horizon

Distance in km at which a target at the height across the top is first above the horizon for a sensor at the height down the side. Radar horizon d (km) = 4.12 ($\sqrt{h_1} + \sqrt{h_2}$), with the heights h_1 and h_2 in metres above the sea or a flat plain, for a standard atmosphere (4/3 earth radius). Visual horizon: multiply by 0.87 ($d = 3.57 (\sqrt{h_1} + \sqrt{h_2})$). The figure is the farthest a target at height h_2 can be seen by a sensor at height h_1 with nothing in between; hills, trees and buildings shorten it, ducting over sea can lengthen it.

Sensor height ↓ / Target height →	0 m	2 m	10 m	30 m	100 m	300 m	1 km	3 km	10 km
1.7 m	5.4	11.2	18.4	28	47	77	136	231	417
2.5 m	6.5	12.3	19.5	29	48	78	137	232	419
4 m	8.2	14.1	21	31	49	80	139	234	420
10 m	13.0	18.9	26	36	54	84	143	239	425
20 m	18.4	24	31	41	60	90	149	244	430
30 m	23	28	36	45	64	94	153	248	435
50 m	29	35	42	52	70	100	159	255	441
100 m	41	47	54	64	82	113	171	267	453
300 m	71	77	84	94	113	143	202	297	483
1 km	130	136	143	153	171	202	261	356	542
3 km	226	231	239	248	267	297	356	451	638
6 km	319	325	332	342	360	390	449	545	731
10 km	412	418	425	435	453	483	542	638	824
13 km	470	476	483	492	511	541	600	695	882
18 km	553	559	566	575	594	624	683	778	965
22 km	611	617	624	634	652	682	741	837	1023

Typical heights: a soldier's eye 1.7 m; a vehicle sight or commander's cupola 2.5–4 m; the telescopic masts of vehicle radars, jammers and radio relays 10–30 m; a ship's mast 20–40 m; hills 50–300 m; a quadcopter or Orlan-class UAV 300–3,000 m; an attack helicopter in a pop-up 30–100 m, in transit 100–300 m; an Orion or Forpost-class UAV 3–7 km; strike aircraft at low level 100–300 m, at medium level 5–8 km; an A-50 or Il-20M on station 9–11 km; an RQ-4 Global Hawk 18–20 km; a U-2 about 21–22 km.

Table 6. Frequency bands

Radar band letters (IEEE Std 521) are the ones used in this guide and in most open sources: an X-band fire-control radar works at 8–12 GHz. NATO's letter bands (STANAG and the EW community) divide the spectrum differently and use some of the same letters for other ranges: NATO's C band is 500–1,000 MHz, the radar C band 4–8 GHz. The ITU names cover communications: VHF radios at 30–300 MHz, UHF at 300–3,000 MHz. 1 GHz = 1,000 MHz = 1,000,000 kHz; wavelength = 300 / f(MHz) metres.

Radar bands (IEEE)

Band	Frequency	Wavelength
HF	3–30 MHz	10–100 m
VHF	30–300 MHz	1–10 m
UHF	300–1,000 MHz	30–100 cm
L	1–2 GHz	15–30 cm
S	2–4 GHz	7.5–15 cm
C	4–8 GHz	3.75–7.5 cm
X	8–12 GHz	2.5–3.75 cm
Ku	12–18 GHz	1.7–2.5 cm
K	18–27 GHz	1.1–1.7 cm
Ka	27–40 GHz	7.5–11 mm
V	40–75 GHz	4–7.5 mm
W	75–110 GHz	2.7–4 mm

NATO letter bands

Band	Frequency
A	0–250 MHz
B	250–500 MHz
C	500–1,000 MHz
D	1–2 GHz
E	2–3 GHz
F	3–4 GHz
G	4–6 GHz
H	6–8 GHz
I	8–10 GHz
J	10–20 GHz
K	20–40 GHz
L	40–60 GHz
M	60–100 GHz

ITU bands (radio)

Band	Frequency
LF	30–300 kHz
MF	300–3,000 kHz
HF	3–30 MHz
VHF	30–300 MHz
UHF	300–3,000 MHz
SHF	3–30 GHz
EHF	30–300 GHz

2 Armoured vehicles

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
MAIN BATTLE TANKS						
Armata	–	Армата	tracked armoured platform · trial	–	–	*93*
T-54 / T-55	–	Т-54, Т-55	Medium tank · 1946	**1.5–5.5 km** APDS to Bastion ATGM	**TR**	94
T-62	–	Т-62	Medium tank with 115 mm smoothbore gun · 1961	**1.8–5.5 km** APFSDS to 9M117 ATGM	**TR**	95
T-64A/B/BV	–	Т-64Б	Main battle tank, 3-man crew with autoloader · 1967	**2–4 km** APFSDS to Kobra ATGM	**TR**	95
T-72B3/B3M	M1988	Т-72Б3	Main battle tank · 1973	**2–5 km** APFSDS to Refleks ATGM	**TR**	96
T-80B/BV/BVM, T-80U	M1989	Т-80	Main battle tank with gas turbine · 1978	**2–5 km** APFSDS to Refleks ATGM	**TR**	97
T-90	–	Т-90 «Владимир»	Main battle tank · 1992	**2–5 km** APFSDS to Refleks ATGM	**TR**	98
TRACKED IFVS, APCS AND OTHER AFVS						
2S25 Sprut-SD	–	2С25 «Спрут-СД»	Airborne self-propelled anti-tank gun, 125 mm, amphibious · 2005	**3–7 km** APFSDS to ATGM	**TR-A+AD**	99
BMD-2	M1981/1, M1970	БМД-2	Air-droppable amphibious tracked IFV of the VDV · 1969	**2–4 km** 2A42, AP to HE	**TR-A+AD**	99
BMD-3	–	БМД-3	airborne fighting vehicle · legacy	–	–	*100*
BMD-4M	–	БМД-4М	Air-droppable amphibious tracked IFV of the Airborne Forces · 2004	**4–5.5 km** HE-frag to Arkan ATGM	**TR-A+AD**	100
BMO-T	–	БМО-Т	Heavy flamethrower-crew carrier on T-72 chassis, carries RPO-A rocket flamethrowers · 2001	**0.4–1 km** RPO-A rocket, eff. to max	**TR**	101
BMP-1	M-1967	БМП-1	Amphibious tracked infantry fighting vehicle, 73 mm gun and ATGM, 3 crew and 8 infantry · 1966	**1.3–4.5 km** HEAT-FS to HE-frag	**TR-A**	101
BMP-2	M1981	БМП-2	Tracked amphibious IFV · 1980	**1.5–4 km** 2A42, AP to HE	**TR-A**	102
BMP-3	M1990/1	БМП-3	Amphibious tracked infantry fighting vehicle · 1987	**4–6 km** HE-frag to Bastion ATGM	**TR-A**	103
BMPT Terminator	–	БМПТ «Терминатор»	Tank support vehicle · 2018	**1.5–4 km** 2A42, AP to HE	**TR**	104
BRM-1K	M1976/2	БРМ-1К	Tracked amphibious combat reconnaissance vehicle on BMP-1 chassis · 1972	**1.3–4.5 km** 73 mm gun, HEAT-FS to max	**TR-A**	104
BRM-3K Rys	–	БРМ-3К	armoured reconnaissance vehicle	–	–	*105*
BTR-50	–	БТР-50	tracked armoured personnel carrier · legacy	–	–	*105*
BTR-D	M1979	БТР-Д	Airborne tracked APC on a lengthened BMD-1 hull · 1974	**1–1.5 km** 7.62 mm MG, eff. to max	**TR+AD**	105
BTR-MDM Rakushka	–	БТР-МДМ «Ракушка»	Airborne tracked amphibious APC and carrier chassis for VDV · 2016	**1.5–4 km** 7.62 mm PKTM, eff. to max	**TR-A+AD**	106
BTR-T	–		heavy armoured personnel carrier · legacy	–	–	*106*
Kurganets-25	–	Курганец-25	infantry fighting vehicle · trial	–	–	*106*
MT-LB	M1970	МТ-ЛБ	Light armoured amphibious tractor and APC · 1964	**1–4 km** 7.62 mm PKT, eff. to max	**TR-A**	107
PT-76	–	ПТ-76	light amphibious tank · legacy	–	–	*108*
WHEELED APCS AND ARMOURED CARS						
BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	–		Light armoured cars and MRAP-type utility vehicles for security and special units · 1999	–	**WH-AT**	109
BRDM-2	–	БРДМ-2	Amphibious 4x4 armoured scout car for reconnaissance and patrol · 1962	**2–4 km** 14.5 mm KPVT, eff. to max	**WH-AT-A**	109
BTR-80	M1978	БТР-80	Wheeled 8x8 amphibious APC · 1971	**2–4 km** KPVT/2A72, eff. to max	**WH-AT-A**	110
BTR-90 Rostok	–	БТР-90 «Росток»	8x8 amphibious armoured personnel carrier with 30 mm turret · 2008	**2–4 km** 2A42 HE-frag, eff. to max	**WH-AT**	111
Rys	–	Рысь	armoured utility vehicle	–	–	*111*
SBA-60K2 Bulat	–	«Булат»	armoured personnel carrier	–	–	*111*
Tigr and Vodnik armoured cars	–	ГАЗ-233014 «Тигр», «Водник»	Light 4x4 armoured cars for escort, reconnaissance, patrol and troop carriage · 2006	**1.5–2.5 km** Arbalet-DM sight, detect	**WH-AT**	112
Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	–	КамАЗ-63968, КамАЗ-53949, КамАЗ-4386, Урал-63095 «Тайфун»	Mine-protected 4x4 and 6x6 armoured trucks · 2014	**2 t** payload, Typhoon-K 4x4, 6–16 troops	**WH-AT**	113
Ural-432009 Ural-VV	–	Урал-432009	armoured truck	–	–	*114*
VPK-7829 Bumerang	–	Бумеранг	armoured personnel carrier · trial	–	–	*114*
ATGM CARRIER VEHICLES						
9K114 Shturm-S	AT-6 SPIRAL	9К114 «Штурм-С»	Self-propelled radio-command anti-tank missile launcher on MT-LB, 12 missiles · 1979	**0.4–6 km** Kokon/Ataka, min–max	**TR-A**	115
9P162 Kornet-T	AT-14 SPRIGGAN, M1995	9П162 «Корнет-Т»	Tracked ATGM launcher vehicle on the BMP-3 chassis · 1996	**0.1–5.5 km** 9M133-1, day, min–max	**TR-A**	115
Bulsae-4 ATGM launcher vehicle (North Korea)	–		Non-line-of-sight ATGM launcher on a 6x6 armoured carrier, eight missiles · 2018	**10–25 km** Bulsae-4, max, estimated	**WH-AT**	116
Khrizantema-S	AT-15 SPRINGER	9К123 «Хризантема-С»	Tracked tank destroyer on BMP-3 hull · 2005	**0.4–6 km** Khrizantema, min–max	**TR-A**	116
RECOVERY AND REPAIR						
T-54-T	–		armoured recovery vehicle · legacy	–	–	*117*
FOREIGN AND CAPTURED ARMOURED VEHICLES						

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
Captured US vehicles in Russian use: M2 Bradley, M113, MaxxPro, M88A1	–	M113	Captured US IFV, APC, MRAP and recovery vehicle, repaired and reused by Russian units · 2023	1.5–2 km 2A72, M2HB, max effective	TR	118
ZFB-05 or Tiger 4x4 armoured personnel carrier (China)	–		Light 4x4 armoured personnel carrier, Chinese-built · 2023	1.1 t payload, 7–9 troops	WH-LT	118

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
BMP-1KSh command and staff vehicle	Command and staff vehicle for regimental and battalion commanders	8 Command and signals	226
BMD-1KSh-A	Airborne battalion chief-of-staff command and staff vehicle	8 Command and signals	226
R-149 command and staff vehicles	Tactical command and staff vehicles with HF/VHF radios and data terminals	8 Command and signals	228
R-145BM Chayka command and staff vehicle	Turretless radio command and staff vehicle for mobile command posts	8 Command and signals	227
VTS Ladoga	Armoured command, staff and reconnaissance vehicle for NBC conditions	8 Command and signals	229
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	Tracked command, observation and fire direction vehicles, SP howitzer battalion	8 Command and signals	230
PRP-4A Argus / PRP-4M Deytery	Mobile artillery reconnaissance post on BMP-1 chassis	8 Command and signals	234
Zoopark-1 / Zoopark-1M	Tracked radar that locates enemy guns, mortars, rockets and missile launchers	5 Radars	177
ARK-1M Rys	Artillery weapon-locating and fire-control radar	5 Radars	175
SNAR-10 / SNAR-10M1 Leopard	Tracked battlefield surveillance and artillery-adjustment radar	5 Radars	176
Borisoglebsk-2	Tactical HF/VHF/UHF radio intercept, direction-finding and jamming complex	6 Electronic warfare	188
Strela-10 and Osa short-range SAM	Short-range SAM	4 Air defence	160
Tunguska	Tracked short-range gun and missile air defence vehicle, 30 mm guns and SAMs	4 Air defence	162
Tor	Short-range tracked SAM with own radars	4 Air defence	161
IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	Tank-based heavy engineer vehicle for obstacle and minefield clearing	7 Engineers	215
BMR-3M	Armoured mine-clearing vehicle on T-90 chassis with roller trawl	7 Engineers	214
UR-77 Meteorit	Tracked mine-clearing vehicle firing rocket-towed explosive line charges	7 Engineers	216
IRM Zhuk	Amphibious engineer reconnaissance of routes, water obstacles and minefields	7 Engineers	206
BREM and BTS armoured recovery vehicles	Armoured recovery and repair vehicles for tank and infantry vehicle units	7 Engineers	220
RKhM CBRN reconnaissance vehicles	Radiation, chemical and biological reconnaissance	7 Engineers	222
Kornet	Laser beam-riding heavy ATGM, portable or vehicle-mounted, vs tanks and bunkers	13 Weapons	307

Main battle tanks

Armata Армата

tracked armoured platform trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

T-54 / T-55 T-54, T-55 TR

Medium tank; reserve stock, reactivated since 2023 In service 1946

OPERATED BY **motor rifle division**, one subunit, presumably of the 42nd Guards MRD, near Robotyne with unmodernised T-55s O 2024-02 L seen with 42nd Guards Motor Rifle Division (presumed)
Second- and third-line units, used as mobile artillery R 2024 M
naval infantry brigade, 30 T-55A across Naval Infantry (IISS estimate); not allocated by brigade R 2024 M

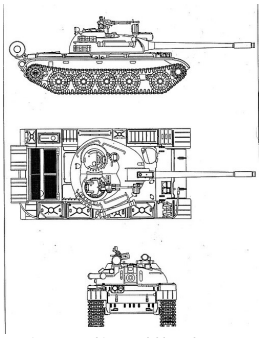
NUMBERS **Holdings** 70 T-55A (IISS estimate, Army); T-55A also among 2,900+ tanks in store (2024); **Holdings** about 100 T-55 reported moved out of storage (2024)

INDICATES *From mid-2023 storage T-55s armed second- and third-line units and served in a limited mobile artillery role; in 2024 they joined assaults near Robotyne. IISS lists 30 with naval infantry. Seeing them suggests a unit short of modern tanks.*

RECOGNISE **Turret** Circular turret, sloped all round. Loader's cupola on right normally mounts 12.7 mm AA MG; T-55 had none until 1970 retrofit.
Armament 100 mm gun, no thermal sleeve, bore evacuator just behind muzzle; IR searchlight right of gun. KTD laser box over mantlet on units refitted from 1974.
Hull Splash board midway up glacis; flat hull top, driver's hatch front left, vertical rear. Exhaust on left track guard above wheels 4-5; fuel tanks right.
Suspension Close only: five road wheels, distinct gap between 1st and 2nd; idler front, sprocket rear; no return rollers. Hull length 6.2 m (T-55A), 6.04 m (T-54).

CONFUSED WITH **T-62** p. 95 Hull-down: T-62 bore evacuator about one third back from the muzzle, T-55 just behind it. Full view or caged: T-55 gap after 1st road wheel; T-62 gaps after 3rd and 4th.
T-62M, T-62MV p. 95 Add-on armour or ERA as on T-55AM/MV, so armour alone does not settle it: check the bore evacuator position and the road wheel gaps.

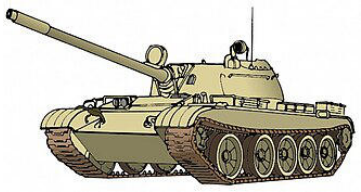
VARIANTS **T-54B** As T-54A, gun with fume extractor; late production adds IR searchlight right of gun (Jane's: first with infra-red night equipment). D-10T2S gun with STP-2 two-plane stabiliser; IR night sights on late production. No NBC system on T-54 (Jane's). **T-55** No dome ventilator front right of turret and no hull MG port (both on T-54). No AA MG on loader's hatch until 1970 retrofit. Basic PAZ NBC protection, V-55 engine, 43-round gun load. **T-55A** Hull 6.2 m (T-54 6.04 m); enlarged driver's hatch and turret hatch coamings; late ones have rubber skirts. Plastic lead anti-radiation lining, full PAZ/FVU filtration, PKT coax gun. **T-55AM** Add-on BDD armour with armour band round the turret, rubber side skirts, thermal sleeve on the gun. Volna fire control; fires 9M117 Bastion through the gun. Entered service 1983. Not listed in Russian holdings (IISS). **T-55AMV** As T-55AM but explosive reactive armour on glacis, turret and sides in place of the BDD armour. As T-55AM; entered service 1985. Not listed in Russian holdings (IISS). **T-55A obr. 1974** KTD-1 laser rangefinder in an armoured box over the gun mantlet. KTD-1 Neva laser rangefinder and R-123 radio, fitted to T-55A from 1974. Russian losses in Ukraine (Oryx). **T-55A obr. 1981** INA. INA. Russian losses in Ukraine (Oryx). **T-54-3M** INA. INA. Russian losses in Ukraine (Oryx).



Drawing: No machine-readable author provided. Ttreudler~commonswiki assumed (based on copyright claims)., Public domain



Sergey Bobylev / Ministry of Defence of the Russian Federation, CC BY 4.0



Drawing: Orlovic, CC BY-SA 3.0

MOBILITY Fords 1.4 m unprepared, 5.5 m with snorkel; not amphibious. T-54 has no NBC system.

Weight, combat	**41,000 kg** WEG figure; see open_questions *also 36,000 kg WP-RU230*
L × W × H	**6.2 × 3.37 × 2.40 m** T-55 (RUWP), T-55A (ENWP), T-55AMV (WEG15). WEG 6.54 m also given; WEG figure treated as a transcription error (WEG 2015 agrees with the others; decision 1 Oct)
Road speed, maximum	**50 km/h** T-55 (RUWP), T-54 (JANESRG), T-55AMV (WEG15). WEG figure treated as a transcription error (WEG 2015 agrees with the others; decision 1 Oct) *also 48 km/h WEG97*
Road range	**400 km** WEG figure; fuel load not stated *also 485-500 km WP-RU230*
Fording	**1.4 m unprepared; 5.5 m with snorkel** Not amphibious *also 1.4 m unprepared; 5.0 m with preparation JANESRG*
Ground pressure	**0.81 kg/cm²** Jane's figure is for T-54 *also 0.85 kg/cm² WEG2015*
Length, gun forward	**9.00 m** Jane's figure is for T-54 *also 9.0 m WP-RU230*
Vertical obstacle	**0.8 m**
Trench	**2.85 m** *also 2.7 m JANESRG*

Rate of fire, main gun	**4 rpm** average, Average; WEG max 5-6
Range, 100 mm AP, direct fire	**1,080 m** grazing shot, Grazing shot (point-blank range) at 2 m high target
Range, 100 mm HE-frag, direct fire	**1,100 m** grazing shot, Grazing shot at 2 m high target
Range, 100 mm HE	**14,600 m** maximum, Indirect fire with side level and azimuth pointer; round type not named for this figure
Range, 7.62 mm PKT coaxial	**800 m** effective, Day; T-55AMV
Range, 9M117 Bastion	**4,000 m** effective, Only T-55M/AM/MV with Volna; day; laser beam-riding round fired through the gun *also 5,500 m ATP*
Crew	**4** Commander, gunner, loader, driver
Main gun	**D-10 Tank Gun, 100 mm** Designation is D-10T2S on T-55 per RUWP and WEG15
Ammunition, 100 mm	**43 rounds** T-55 / T-55A. WEG 45 also given; WEG figure treated as a transcription error (WEG 2015 agrees with the others; decision 1 Oct) *also 45 rounds WEG97*
Elevation, main gun	**-5 to +18 deg** T-55; +9 deg before 1962 per RUWP. WEG figure treated as a transcription error (WEG 2015 agrees with the others; decision 1 Oct) *also -3 to +18 deg WEG97*
Penetration, 3BM-8 APDS	**275 mm at 2 km** Round introduced 1967; armour type not stated. WEG text copies ENWP: one lineage *also 200 mm at 1,000 m WEG2015*
Anti-aircraft machine gun	**12.7 mm DShKM** Fitted from 1970; WEG extract names a QJZ-89
Penetration, 9M117 Bastion	**550 mm RHA** T-55AMV only; WEG variants tab *also 500-550 mm ATP*

SEEN WITH T-54/55 armoured recovery vehicle; MT-55A bridgelayer; KMT-5 mine plough and roller set

SOURCES ATP BABEL3 DEFUA14 FAS22 IISS25 JANESRG MIL121 ORYX1 WEG97 WEG2015 WP-EN175 WP-RU230 Updated 2026-10-09

T-62 T-62 TR

Medium tank with 115 mm smoothbore gun; Cold War reserve type returned to combat in 2022 In service 1961

OPERATED BY **tank brigade**, platoon R 2024-02 L
motor rifle brigade, platoon; alternative attribution for the T-62MV obr. 2022 platoon filed under the 5th Tank Brigade R 2024-02 L
combined arms army, army units with T-62MV obr. 2022 (mine ploughs, cages, RP-377), per Forbes as retold by UNIAN R 2024-02 L
tank army, 'realistic possibility' that 1st Guards Tank Army units would be re-equipped with T-62 (UK MoD assessment, state claim) R 2023-03 L

INDICATES *Russia has drawn T-62s from storage since 2022 to replace losses (UK MoD assessment: about 800 by March 2023). A T-62 suggests a unit refilled from reserve stocks, with lower frontline quality.*

RECOGNISE **Turret** Circular cast turret, sloped all round, set over the third road wheel; hatch for ejecting spent cases in turret rear; snorkel at left rear.
Armament 115 mm gun with bore evacuator about one third back from the muzzle; IR searchlight right of gun; 12.7 mm AA MG at loader's hatch on turret right.
Hull Splash board midway up glacis; flat hull top, driver's hatch front left. Exhaust on left track guard above 4th/5th road wheel; flat fuel and oil tanks on right guard.
Suspension Close only: five road wheels (810 mm), no return rollers, idler front, sprocket rear; first three close together, wide gaps between 3rd, 4th and 5th.

CONFUSED WITH **T-54, T-55** p. 94 Hull-down: T-55 bore evacuator just behind the muzzle, T-62 about one third back. Full view or caged: T-55 gap after 1st road wheel; T-62 wide gaps after 3rd and 4th.
T-55AM, T-55MV Add-on armour (AM) or ERA (MV) as on T-62M/MV, so armour alone does not settle it: check the bore evacuator position and the road wheel gaps.


Nickel nitride, CC0


Nickel nitride, CC0

MOBILITY Not amphibious. Fords 1.4 m unprepared, 5.5 m with snorkel. Crosses 2.8 m trench, 0.8 m step. Add-on armour and cages lower power-to-weight.

Weight, combat	**40,000 kg** base T-62
L × W × H	**6.63 × 3.30 × 2.40 m**
Road speed	**50 km/h** maximum
Road range	**450 km** operational, internal and fixed external fuel, paved road

Range, APFSDS	**1,870 m** effective, APFSDS, 2 m high target, day; 2,260 m against 3 m high target
Range, APFSDS (night)	**800 m** effective, night, with IR night vision equipment; WEG does not name the ammunition
Range, HEAT	**1,500 m** maximum effective, BK-4 HEAT, day
Range, HE-Frag	**4,000 m** maximum aimed, OF-27 HE-Frag, day, direct fire
Range, 9M117 ATGM	**4,000 m** effective, 9K116-2 Sheksna laser beam-riding missile, T-62M and T-62MV only, day only
Range, 7.62 mm PKT	**800 m** maximum effective, coaxial PKT, day and night (T-62AM sheet)
Range, 12.7 mm DShKM	**1,500 m** maximum aimed, day, target type not stated (T-62AM sheet)
Detection range, 1PN96MT-02 thermal sight	**2–3 km** approximate, T-62M/MV obr. 2022, uncooled thermal; target type not stated
Detection range, commander's night sight	**400 m** IR night channel with OU-3GK searchlight (specs match TKN-3)
Crew	**4** commander, gunner, loader, driver
Main gun	**115 mm 2A20 (U-5TS) smoothbore, manual loading**

SEEN WITH 9K116-2 Sheksna (AT-12 Swinger) gun-launched ATGM (9M117 missile); KMT-5 mine plough-roller set; RP-377 jammer (on some since 2022)

SOURCES ATP ESPRESO FAS22 FAS23 IISS25 JANESRG MIL122 ORYX1 RSUPPLY RWW UKMOD UNIAN8 WEG98 WEG2015 WP-EN35 WP-RU231 Updated 2026-10-09

T-64A/B/BV T-64Б TR

Main battle tank, 3-man crew with autoloader (older Kharkiv design) In service 1967

NUMBERS **Holdings** 50 T-64A/BV (IISS estimate) (2024)

INDICATES *Few Russian formations use T-64s: former DPR/LPR formations. Ukraine holds 250+ T-64BM/BV/BV mod. 2017 (IISS est.), so most T-64s seen are Ukrainian; pro-Russian forces also use captured mod. 2017 tanks. Check markings.*

RECOGNISE **Turret** Circular turret, raised cupola with external 12.7 mm MG on right of roof. Two stowage boxes right side, one on rear (snorkel above), three MG ammo boxes left.
Armament 125 mm smoothbore gun with thermal sleeve and fume extractor. Infra-red searchlight to the left of the gun (right on T-72 and T-80B).
Hull Driver top centre behind V splash plate; no exhaust outlet on left hull side or in hull rear. From above: radiator grille near the turret, not near hull rear as on T-72.
Suspension Close only: six evenly spaced stamped road wheels, idler front, sprocket rear, four return rollers. Side skirts or gill panels often over upper suspension.

CONFUSED WITH **T-72 family (T-72B, T-72B3)** p. 96 Look alike. Full view or caged: T-72 has an exhaust on the left hull side above the last road wheel and three return rollers; T-64 has no side exhaust and four.
T-72B3 Similar outline. Hull-down: T-72B3 has Kontakt-5 wedges and a Sosna-U sight box sticking up from the roof; T-64BV has its ERA in blocks.
T-80B, T-80BV, T-80BVM p. 97 Full view: T-80 wheels in three spaced pairs and an oblong exhaust outlet in hull rear; T-64 wheels evenly spaced, four return rollers, no rear outlet.

SEEN WITH BREM-64 ARV

VARIANTS **T-64A** Smoke grenade dischargers either side of gun, side skirts. **T-64B** INA. **T-64B1** INA. **T-64BV** Explosive reactive armour blocks fitted; smoke grenade launchers on turret left. **T-64BVK** INA.


Vitaly V. Kuzmin, CC BY-SA 4.0


Донор, CC BY-SA 3.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Tracked; fords 1.8 m unprepared, 5 m with snorkel (WEG15). Road range about 400 km, more with external tanks.

Combat weight	**39.5 t** T-64B
Road speed	**60 km/h** maximum, T-64B
Road range	**400 km** maximum, T-64B, internal fuel
Fording	**1.8 m unprepared; 5.0 m with snorkel** T-64B

Range, 125 mm APFSDS-T BM-42M	**2,000–3,000 m** max effective, day; night 800–1,300 m; maximum aimed range 3,000–4,000 m
Range, 125 mm HE-frag OF-26	**5,000 m** max effective, day; night 800–1,300 m; maximum aimed range 5,000 m
Range, 125 mm HEAT-MP BK-29M	**3,000 m** max effective, day; night 800–1,300 m; maximum aimed range 4,000 m
Range, 9M112 Kobra (AT-8 Songster)	**4,000 m** gun-launched, radio command guidance; day sight only unless target illuminated
Crew	**3**
Main gun	**125 mm smoothbore** T-64B

SOURCES BCAT7 FAS24 FAS25 FAS26 IISS25 JANESRG ORYX1 TRENCH2 WEG2015 WP-EN176 not in WEG Updated 2026-10-09

T-72B3/B3M T-72B3

NATO: M1988 **TR**

Main battle tank; the most numerous tank of Russian tank and motor rifle units In service 1973

OPERATED BY **airborne division**, tank battalion, about 35 T-72B3 per division (2021) D 2024 H
motor rifle brigade, tank battalion, 31 per battalion; 41 where it has four companies D 2024 M
motor rifle regiment, tank battalion, 31 T-72B3 (CNA planning figure) D 2021 M
tank regiment, three tank battalions, 31 T-72B3 per battalion (CNA planning figure) D 2021 M
motor rifle regiment, tank battalion O 2023-12 H
tank brigade, three tank battalions O 2022-03 H
motor rifle brigade, tank battalion O 2022-04 M
military base, motor rifle brigade, 74 T-72 (version not given) R 2024-11 M

NUMBERS **Holdings** 700 T-72A/AV/B/BA and 470 T-72B3/B3M in Army service; T-72, T-72A and T-72B among 2,900+ tanks in store (IISS estimate) (2024-11); **Holdings** 50 T-72B3/B3M in the Airborne Forces; 30 T-72B/B3/BM in the Naval Infantry (IISS estimate) (2024-11); **Holdings** 550+ T-72AMT/AV/AV mod 2021/B1/B3/EA/M1/M1R in Ukrainian Army service (IISS estimate) (2024-11); **Losses** 1,854 Russian T-72s lost: 819 T-72B3 (all models), 691 T-72B/B1 incl. 211 T-72B obr. 2022, 32 T-72BA, 83 T-72/A/AV, 229 unidentified (photo-confirmed, Oryx) (2026-09)

INDICATES *A T-72B3/B3M points to a tank regiment or brigade, or a motor rifle unit's tank battalion; airborne divisions hold them too. Destroyed or captured in 2022-24 in the hands of tank regiments. Ukraine also fields T-72s, incl. captured T-72B3s (2025).*

RECOGNISE **Hull** Turret centred, engine at rear; driver's position top centre, V splash plate on glacis; exhaust outlet on left hull side above last road wheel
Turret T-72B3: Kontakt-5 wedge blocks on both sides of the gun, no searchlight there; Sosna-U sight box on left of turret; wind sensor mast at turret rear
Hull fittings T-72B3M: twelve flat ERA panels along each hull side over a rubber flap with zigzag lower edge; slat armour around turret rear and engine deck
Suspension Close only: six road wheels, three return rollers, idler front, drive sprocket rear; upper run often under a rubber skirt

CONFUSED WITH **T-72B obr. 1989 / T-72BM** Turret front: obr. 1989 has an IR searchlight left of the gun and no wind sensor mast; T-72B3 has Kontakt-5 wedges on both sides of the gun
T-72BA Both have Kontakt-5 and a wind sensor mast, so neither settles it; T-72BA keeps the IR searchlight and a small 1K13-49 sight head, not the larger Sosna-U box
T-80BVM p. 97 Same ERA side skirts and slat armour. Full view: T-72 exhaust on left hull side above last road wheel; T-80 has none there, an outlet at hull rear
T-90A p. 98 Chassis hidden: T-90A welded turret with sharp edges and Shtora-1 emitters on turret front. Hull does not settle it: T-90 exhaust is also on the left
T-90M p. 98 Chassis hidden: T-90M turret has an ammunition bustle beyond the fighting compartment and a remote 12.7 mm MG; T-72 has an external roof MG
T-64BV p. 95 Full view: road wheels much smaller, four return rollers, no exhaust on left hull side. Chassis hidden: ERA blocks on turret, not Kontakt-5 wedges

VARIANTS **T-72B3 obr. 2011** Kontakt-5 wedges on both sides of gun, no IR searchlight; Sosna-U sight box on turret; wind sensor mast at rear; plain rubber side skirts. Sosna-U day and thermal gunner's sight, 2A46M-5 gun, autoloader for longer APFSDS; many kept the 840 hp V-84 engine. **T-72B3M / T-72B3 obr. 2016** Relikt ERA modules on turret sides; twelve flat ERA panels each hull side over a zigzag rubber flap; slat armour at turret rear and engine deck. 1,130 hp V-92S2F engine; Relikt side protection. Commander's panoramic sight on the Tank Biathlon tanks; serial 2017 tanks seen without it. **T-72B3M obr. 2022** Extra ERA on lower glacis, hull sides, turret, track guards and mantlet; armour over turret ring; roof screen (cope cage). Some built 2022-23 with the simpler 1PN96MT-02 thermal sight in place of Sosna-U, or without wind sensor. **T-72B3M obr. 2023 / obr. 2024** 2023: ERA at hull rear, standard roof cage. From summer 2024: rubber-fabric screens over turret rear and engine deck. Screens and cages against drones; May 2026 batches add factory anti-drone screens and mounts for Tucha smoke launchers. **T-72B obr. 1989 / T-72BM** Kontakt-5 in arrow-shaped arrays of large cassettes on turret front; IR searchlight left of gun; no wind sensor, no Sosna-U box. Fires the 9K120 Svir missile through the 1K13-49 sight; 840 hp V-84 engine. **T-72BA** Kontakt-5 like obr. 1989 but with wind sensor mast on turret; keeps IR searchlight and small 1K13-49 sight head. Upgrade of the T-72B, reported with a stronger engine and a steadier gun; keeps the 1K13-49 sight, no Sosna-U. **T-72B / T-72B1** Kontakt-1 ERA blocks on glacis, turret front and hull sides; thicker turret front than T-72A; cages over turret from 2021. T-72B fires the 9K120 Svir missile; T-72B1 lacks the missile fit; 840 hp V-84 engine. **T-72A / T-72AV** Near-vertical turret front, no rangefinder port on turret right; T-72AV adds Kontakt ERA. 780 hp V-46-6 engine; laser rangefinder; no gun-launched missile. Also held in store.


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0


Ministry of Defence of the Russian Federation, CC BY 4.0


Mil.ru, CC BY 4.0

MOBILITY Not amphibious. Fords 1.2 m unprepared and 5 m with the OPVT snorkel kit, which takes about 20 minutes to prepare

Weight, combat	**45 t** T-72B3
Weight, combat (T-72B)	**41 t** T-72B
L × W × H	**9.53 × 3.59 × 2.23 m**
Road speed	**70 km/h** maximum
Road range	**500 km**
Fording	**1.2 m** unprepared
Fording, with snorkel	**5.0 m** OPVT kit, after preparation
Ground pressure	**0.898 kg/cm²**
Bridge load class	**MLC 50** 45 t x 1.10, rounded up, estimated
Length, hull	**6.95 m**
Engine power	**1,130 hp** V-92S2F diesel
Fuel capacity	**1,200 l** internal tanks
Gradient	**60 %**
Trench	**2.8 m**
Vertical step	**0.85 m**

Range, APFSDS 3BM60 Svinets-2	**2,000-3,000 m** effective, APFSDS 3VBM23 round (3BM60 Svinets-2)
Range, HEAT 3BK31	**3,000 m** maximum, HEAT 3VBK27 round (3BK31 Start)
Range, HE-frag	**5,000 m** maximum, HE-frag, fin-stabilised
Range, 9M119M Refleks ATGM	**4,000 m** maximum effective, gun-launched laser beam-riding missile, ground target
Minimum range, 9M119M Refleks ATGM	**100 m** minimum effective, gun-launched laser beam-riding missile, ground target
Detection range, Sosna-U sight	**5,000 m** sight range, gunner's sight, day
Crew	**3**
Main gun	**125 mm 2A46M-5 smoothbore**
Ammunition, 125 mm	**45 rounds**
Rounds in autoloader	**22**
Rate of fire, main gun	**8 rpm** autoloader
Elevation, main gun	**-6° to +14°**
Penetration, 9M119M Refleks ATGM	**700 mm** steel armour
Missiles carried	**6**
Fire control	**1A40-4 with Sosna-U gunner's sight; TKN-3MK commander's sight**
Machine guns	**7.62 mm coaxial; 12.7 mm on commander's cupola**
Smoke grenade launchers	**8 x 81 mm** 902B Tucha
Explosive reactive armour	**Kontakt-5 on turret front and glacis; Relikt on turret and hull sides of T-72B3M**

SEEN WITH 9K119M Refleks gun-launched ATGM (6 missiles per tank); BREM-1 armoured recovery vehicle; BMPT Terminator; KMT-6 mine plough

SOURCES AB AR115 ATP BCAT7 BCAT8 BTR CNA21 E24 FAS25 GS32 GS33 IISS25 JANESRG MIL123 MIL124 ORYX1 RUSIPL RWW TA W1 WDN WEG99 WEG100 WEG101 WEG102 WEG103 WEG2015 WP-RU232 WP-RU233 WSN10 WSPOT25 WSPOT29 WSPOT38 WSPOT39 WSPOT40
Updated 2026-10-17

T-80B/BV/BVM, T-80U T-80

NATO: M1989 **TR**

Main battle tank with gas turbine; 125 mm gun that also fires a guided missile In service 1978

OPERATED BY **tank division**, about 200 T-80 in the division (2019, Russian Wikipedia) O 2022-03 H seen with 4th Guards Tank Division
motor rifle brigade, tank battalion, 26 T-80BVM in the brigade (2022) O 2022-03 H seen with 200th Separate Motor Rifle Brigade
naval infantry brigade, IISS estimate 30 T-80BV/BVM in all Naval Infantry (2024) O 2024-10 H seen with 155th Naval Infantry Brigade (by 2024 the 55th Guards Naval Infantry Division), Pacific Fleet naval infantry (10 T-80BV reported 2019, state media)
tank army, INA; 'majority' of the army's tanks were T-80U (2022) R 2022-03 M seen with 1st Guards Tank Army
motor rifle brigade, 38th Bde: 40 (2019); others INA R 2019 L seen with 38th Guards Motor Rifle Brigade, 39th Separate Motor Rifle Brigade, 57th Guards Motor Rifle Brigade
naval infantry brigade R 2019 L seen with 40th Naval Infantry Brigade
motor rifle regiment R 2019 L seen with 394th Motor Rifle Regiment
machine-gun artillery division R 2022 L seen with 18th Machine-Gun Artillery Division (Kuril Islands)
separate covering brigade R 2019 L seen with 69th Separate Cover Brigade

INDICATES *T-80s were seen with 4th Guards Tank Division and the Arctic 200th Motor Rifle Brigade in 2022 and with 155th Naval Infantry Brigade in 2024; Rosgvardia also holds T-80BV. A T-80 may point to these formations, but Ukraine also fields T-80BV/BVM/U.*

RECOGNISE **Turret** Rounded turret: MG ammunition boxes left, stowage box right, snorkel carried at rear. BV: Kontakt-1 ERA; U: new turret with Kontakt-5; BVM: Relikt ERA and slat screens.
Armament 125 mm gun with thermal sleeve and central fume extractor; IR searchlight right of gun; smoke dischargers each side of gun; 12.7 mm AA MG on roof, right.
Hull Hull rear: oblong exhaust outlet in the centre; none on the left side, where T-72 and T-90 have theirs. Fuel drums and unditching beam often carried at the rear.
Suspension Close only: six road wheels in three spaced pairs (gaps after 2nd and 4th); idler front, sprocket rear; five return rollers, usually behind full-length skirts.

CONFUSED WITH **T-72 family (T-72B, T-72B3, T-72B3M)** p. 96 Very alike. Full view or caged: T-72 exhaust on left hull side above last road wheel; T-80 has none there but an oblong outlet in hull rear, wheels in three pairs.
T-90, T-90A, T-90M p. 98 Full view: T-72 hull, exhaust on left above last road wheel; T-80 oblong outlet in hull rear. Hull-down: Shtora boxes beside the gun are not decisive: also on T-80UK.
T-64A, T-64B, T-64BV p. 95 Full view: T-64 wheels evenly spaced, four return rollers, no outlet in hull rear; T-80 wheels in three pairs, five rollers. Hull-down: T-64 IR searchlight left of gun.

SEEN WITH T-80BK / T-80BVK / T-80UK command tanks; BREM-80 armoured recovery vehicle

VARIANTS **T-80B** No ERA; IR searchlight right of gun; snorkel stowed at turret rear. 1A33 FCS with laser rangefinder; 9K112-1 Kobra gun-launched ATGM; 1,100 hp turbine from 1980. **T-80BV** Kontakt-1 ERA boxes added. T-80B with explosive reactive armour; 43.7 t. **T-80BVK** Additional antennas (stated for the T-80BK command tank). Command tank with additional communications equipment. **T-80U** New turret with built-in Kontakt-5 ERA; four smoke dischargers each side; armoured skirts. 1A45 Irtysh FCS; 9K119 Refleks laser beam-riding ATGM; 1,250 hp GTD-1250 from 1990; 46 t. **T-80UK** INA. Command version: R-163-50K and R-163-U radios, TNA-4 navigation, Agava thermal sight. **T-80BVM** Relikt ERA and slat screens; later batches add a turret-roof ERA module. GTD-1250 turbine, 2A46M-4 gun, Sosna-U thermal gunner sight on some batches, Kord AA MG; 45.7 t.


Mike1979 Russia, CC BY-SA 4.0


Ministry of Defence of the Russian Federation, CC BY 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0


Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Tracked, not amphibious. Fords 1.8 m unprepared, 5 m with snorkel. High fuel use limits road range to about 335 km without extra drums.

Weight, T-80B/BV	**43.7 t** combat; RUWIKI gives 43.7 t for T-80BV
Weight, T-80U	**46 t** combat
Weight, T-80BVM	**45.7 t** combat, Army-2020 display, claim
L × W × H	**9.65 × 3.58 × 2.22 m** T-80B/BV
Road speed	**70 km/h** maximum
Road range	**335 km** maximum, internal fuel; RUWIKI gives 335 km as the dirt-road figure and 500 km on road
Fording	**1.8 m unprepared; 5.0 m with snorkel**
Ground pressure	**0.86 kg/cm²** T-80B; T-80U 0.92 kg/cm² (WEG15)
Bridge load class	**49 (T-80B/BV), 51 (T-80U)** 43.7 t and 46 t x 1.10, rounded up, estimated
Length, hull	**6.98 m** T-80B/BV; T-80U 7.01 m
Trench	**2.85 m**
Vertical step	**1.0 m**
Engine power	**1,100 hp** GTD-1000TF, T-80B/BV from 1980; 1,250 hp GTD-1250 on T-80U from 1990 and T-80BVM
Time into action	**N/A**

Range, APFSDS	**2,000–3,000 m** effective, day
Range, HEAT	**3,000 m** maximum effective, 3BK31 Start, day
Range, HE-Frag	**5,000 m** maximum effective, direct fire, day; RUWIKI's 5,000 m is 'greatest sighting range'
Range, 9M112 Kobra ATGM	**4,000 m** effective, T-80B; radio command guidance; RUWIKI: 4,000 m greatest sighting range for guided round
Minimum range, 9M112 Kobra ATGM	**100 m** effective, T-80B
Range, 9M119 Refleks ATGM	**4,000–5,000 m** operational, T-80U, T-80BVM; laser beam-riding; ATP: 4,000 m, 5 km against helicopters
Range, 7.62 mm PKT coax	**1,000 m** maximum effective, day; 850 m night
Range, 12.7 mm NSVT AA MG	**2,000 m** effective, ground targets; 1,500 m air targets
Detection range, TPN-3-49 night sight	**1,300 m** sighting, T-80B; active IR; 850 m passive
Detection range, T-80U gunner night sight	**1,750 m** night; classification 1,500 m
Detection range, Agava thermal sight	**2,600 m** acquisition, T-80UK, night
Crew	**3**
Main gun	**125 mm 2A46M-1** T-80B built with 2A46-2 until 1982; T-80BVM 2A46M-4
Ready rounds in autoloader	**28** carousel
Main gun rounds, T-80B/BV	**36**
Main gun rounds, T-80U and T-80BVM	**45** 28 in carousel + 17 stowed (WEG15, RUWIKI table); T-80BVM 45 per RG (state claim); RUWIKI infobox gives 42
Rate of fire	**6–8 rpm** autoloader
Elevation	**-5 to +14 deg**

SOURCES ATP BARENTS FAS24 FAS26 GS34 GS35 IISS25 JANESRG MILIN4 OVD RG12 RWW WEG62 WEG2015 WP-RU234 WSPOT9 WSPOT20 WSPOT23 WSPOT41 Updated 2026-10-09

T-90 T-90 «Владимир» TR

Main battle tank; 125 mm gun-launcher with autoloader. Derived from the T-72B. In service 1992

OPERATED BY **tank battalion**, tank companies; tank type not fixed by doctrine, 31 tanks per battalion of a motor rifle brigade; 41 with four companies (strength for tanks of any type; sources do not tie the T-90 to it) D 2024 L
motor rifle brigade, INA; T-90A elements geolocated in Luhansk oblast O 2014 L
Unidentified unit, Central MD: tank units (Dec 2022); a motor rifle formation (May 2024), Central MD: T-90M to tank units Dec 2022; 23 T-90M to a motor rifle formation May 2024 (MoD claims) R 2024-05 M
tank division, tank regiments (80th, 6th, 239th named as its regiments, not tied to T-90M), on paper about 300 tanks, mostly T-90M (analyst estimate quoted by TRENCH); IISS lists the division with 2 tank regiments R 2025 L
airborne division, INA; 7th, 76th and 106th Airborne Divisions each have one tank battalion (IISS), 30 T-90M across the Airborne Forces (IISS estimate); IISS does not say which formation holds them R 2024 L
motor rifle brigade, INA; named in 2020 as next to receive T-90M (planned, MoD sources) R 2020 L
tank brigade, INA; named in 2020 as next to receive T-90M (planned, MoD sources) R 2020 L
military base, T-90A from 2009; to be replaced by T-72B3 by summer 2020, the T-90s rebuilt as T-90M (MoD sources) R 2020 L
tank division, about 334 T-90 of various types (2007) R 2007 L
NUMBERS **Holdings** about 500 T-90M in service, held by about 20 units: battalion set of 30-40, company set of about 10, or a few (2025-09)
INDICATES *T-90M went first to Guards formations of the 1st Guards Tank Army; by 2025 about 20 units held it, from battalion to platoon sets, and the Airborne Forces hold some. A T-90M alone does not show unit type or echelon.*
RECOGNISE **Turret** ERA on turret front and sides, smoke dischargers each side. T-90: cast, rounded turret, ERA not aligned; T-90A: welded, sharp-edged, ERA aligned. T-90M: rear ammo box.
Armament 125 mm gun; on T-90 and T-90A a box-shaped Shtora sensor head each side of the gun. 12.7 mm MG on right of turret roof; remote MG mount on T-90M.
Hull Hull rear: exhaust outlet on left side above last road wheel, as on T-72; none there on T-80. Fuel drums and unditching beam often carried on hull rear.
Suspension Close only: six road wheels each side, idler front, drive sprocket rear, three return rollers; upper run covered by skirts with large square armour panels at front.
T-90M add-ons T-90M: net screen around the lower turret, bar armour on hull and turret rear, armour plates on forward skirts. Exhaust in an over-track outlet.
CONFUSED WITH **T-72 family (T-72B, T-72B3, T-72B3M)** p. 96 Under a cope cage: hull cues do not separate them; T-90 keeps the T-72 layout and the exhaust on the left above the last road wheel. Check the gun-side fittings.
T-72B3, T-72B3M p. 96 Hull-down: T-72B3 has Kontakt-5 wedges either side of the gun and a Sosna-U sight box sticking up from the roof; T-90 and T-90A have Shtora boxes beside the gun.
T-72B, T-72B obr. 1989 p. 96 Hull-down: T-72B has an IR searchlight beside the gun where T-90/T-90A have Shtora boxes. Obr. 1989 also has Kontakt-5 wedges, so the ERA alone does not settle it.
T-80B, T-80BV, T-80U, T-80BVM p. 97 Full view: T-80 has no exhaust on the left side but an oblong outlet in hull rear, wheels in three pairs. Shtora boxes are also on T-80UK, so not decisive alone.
BMPT Terminator p. 104 Hull-down: two thin 30 mm barrels side by side and box missile launchers on both turret sides, not one 125 mm gun. Built on a T-72 or T-90S tank chassis.
VARIANTS **T-90** Cast turret, Shtora-1 boxes beside the gun, Kontakt-5 ERA. 840 hp; early night sight was image-intensifier, not thermal. **T-90K** INA. Command tank: R-163-50K HF radio and TNA-4-3 navigation added; adopted 1994. **T-90A** Welded turret in place of the cast one. V-92S2 1,000 hp engine and ESSA thermal sight. **T-90AK** INA. Command tank with added radio, navigation and tactical control equipment. **T-90S** Export model; may lack the Shtora infra-red dazzlers beside the gun. Export model; figures for it are not domestic figures. A few in Russian service and lost in Ukraine. **T-90M Proryv** New turret with ammunition box at rear, Relikt ERA, remote Kord MG mount, net and bar screens. Kalina fire control with Sosna-U gunner sight, 1,130 hp, ammunition outside the crew compartment. Gun designation disputed.


Mike1979 Russia, CC BY-SA 4.0


Ministry of Defence of the Russian Federation, CC BY 4.0


Тухачевский, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Not amphibious. Fords 1.2 m unprepared and 5 m with snorkel after preparation.

Weight, combat	**46 t** T-90
Weight, combat	**51 t** T-90M
L × W × H	**9.53 × 3.78 × 2.2 m**
Road speed	**60 km/h** maximum
Road range	**550 km** maximum
Fording	**1.2 m** without preparation
Fording	**5.0 m** with snorkel, after preparation
Ground pressure	**0.94 kg/cm²**
Bridge load class	**51** 46 t x 1.10, rounded up, estimated
Length, hull	**6.86 m**
Trench	**2.85 m**
Vertical step	**0.8 m**

Rate of fire, gun	**7 rpm** maximum
Range, APFSDS 3BM42M	**2,000-3,000 m** effective, day
Range, APFSDS 3BM42M	**2,000-2,600 m** effective, night
Range, HEAT 3BK12M	**4,000 m** effective, day/night not stated by WEG
Range, HE-Frag 3OF19	**4,000 m** effective, day/night not stated by WEG
Range, ATGM 9M119M Refleks (AT-11 Sniper-B)	**5,000 m** maximum effective, day
Range, 12.7 mm Kord MG	**2,000 m** effective, target and day/night not stated by WEG
Range, 7.62 mm PKT coaxial MG	**1,000 m** effective, iron sights
Detection range, Agava-2 thermal sight	**2.5 km** identification, target identification, night
Detection range, Buran-PA night sight	**1.2-1.5 km** identification, target identification, night
Detection range, T-90MS thermal sight	**over 3,300 m** tank target; T-90MS export variant
Crew	**3**
Main gun	**1 x 2A46M smoothbore gun** T-90
Main gun	**INA (disputed)** T-90M
Gun ammunition	**43 rounds, 22 in autoloader** T-90
Elevation	**-6 to +14 deg**
Engine power	**840 hp** T-90, V-84MS diesel
Engine power	**1,000 hp** T-90A, V-92S2 diesel
Engine power	**1,130 hp** T-90M, claim
Defensive aids	**Shtora-1 optronic jammer and laser warning** T-90, T-90A; partial or none on export tanks

SEEN WITH IMR-3M combat engineer vehicle; MTU-90 bridgelayer; BREM-1M armoured recovery vehicle; BMPT tank support vehicle (T-72 or T-90S chassis)

SOURCES AR116 ATP BCAT7 BCAT9 FAS26 GS36 IISS25 IZV11 JANES25 JANESRG MIL125 NI ORYX1 RWW TRENCH3 WEG25 WEG104 WEG2015 WP-EN177 WP-RU234 WP-RU235 WP-RU236 WWW120
Updated 2026-10-09

Tracked IFVs, APCs and other AFVs

2S25 Sprut-SD 2С25 «Спрут-СД» TR-A+AD

Airborne self-propelled anti-tank gun, 125 mm, amphibious (light tank) In service 2005

OPERATED BY **Airborne Forces (VDV) units**, battery, 24 in four batteries in 2009 (TASS claim via English Wikipedia) R 2009 L
airborne regiment, regimental anti-tank battery R 2025 L

INDICATES *Seen in Russian use, it points to an Airborne Forces unit; one unsourced report places it in a regimental anti-tank battery. IISS listed 36+ in late 2024; Oryx records no loss. Not the 2A45M Sprut-B, the towed gun of the same name.*

RECOGNISE **Hull** BMD-3-derived tracked hull lengthened by two road wheels, to seven per side; driver centre front, engine at rear.
Turret Two-man welded steel turret on the mid-hull; smoke grenade dischargers at the turret rear.
Armament 125 mm 2A75 smoothbore gun with no muzzle brake; coaxial 7.62 mm PKT on the left of the gun.

CONFUSED WITH **BMD-3** Full view: five road wheels a side against seven. Chassis hidden: BMP-2-type turret with a 30 mm cannon, no 125 mm gun.

VARIANTS **2S25M Sprut-SDM1** BMD-4M-based chassis, extra armour screens and grilles, remote weapon station with a second PKTM on the turret roof.



Boevaya mashina, CC BY-SA 4.0

MOBILITY Amphibious without preparation; fires afloat within +/-35 degrees ahead; airdrop by Il-76 or An-124 (Il-76 with crew inside); Mi-26 sling load. Sea state 3 claimed.

Weight, combat	**18 t**
L × W × H	**7.08 × 3.15 × 2.72 m** Hull without gun
Speed, road	**70 km/h** maximum

Range, HE-frag	**5 km** maximum aimed, 125 mm HE-frag, 1A40M-1 day sight
Range, APFSDS	**4 km** maximum aimed, 125 mm APFSDS, 1A40M-1 day sight
Range, gun-launched ATGM	**5 km** effective, Laser beam-riding missile fired from the gun; WEG names no missile type
Detection range, TPN-4R night sight	**1.5 km** recognition range, Tank-type target, night
Crew	**3** Driver, commander, gunner

SOURCES AMLN AR26 AR113 ATP IISS25 JANESRG ORYX2 RWW VPK22 WEG95 WEG2015 WP-EN171 WP-RU224 Updated 2026-10-13

BMD-2 БМД-2 NATO: M1981/1, M1970 TR-A+AD

Air-droppable amphibious tracked IFV of the VDV; BMD-1 is the 73 mm predecessor In service 1969

OPERATED BY **airborne division**, airborne regiment, battalion, company: 3 BMD per platoon, one per squad (BMD-1 in source), over 100 BMD per regiment, BMD-1 as squad vehicle (Soviet structure) D 1991 M
airborne division, parachute regiment (Kostroma); MoD claim via RIA O 2021 M
airborne division, parachute regiment O 2011-09 L
airborne division, about 650 BMD-2 across the VDV (IISS estimate); 150 BMD-1 in store R 2024 H
air assault division, 1st parachute company, military unit 74268 R 2014-08 L

INDICATES *In Russia IISS lists the BMD-2 only under the Airborne Forces (VDV), pointing to a VDV formation. VDV units also field BMP-2 and BTR-82AM. Ukraine's Air Assault Troops also hold BMD-2.*

RECOGNISE **Hull** Tracked hull 2.175 m high (BMD-2): pointed nose, trim vane on the glacis; vertical sides with a chamfer along two-thirds of their length; two waterjets at the rear.
Turret One-man turret on the forward hull roof. BMD-1: the BMP-1 turret. BMD-2: a new turret shaped like a frying pan.
Armament BMD-2: long thin 30 mm cannon with muzzle brake, ATGM launcher on right of turret roof, one bow MG. BMD-1: 73 mm gun, Sagger rail above, two bow MGs.
Suspension Close only: five small road wheels, idler front, drive sprocket rear, four return rollers (1st and 4th support only the inside of the track); ride height adjustable.

CONFUSED WITH **BTR-D (Oryx bucket BTR-D/BMD-2)** p. 105 Oryx files photos it cannot split as 'Unknown BTR-D/BMD-2'. Full view: BTR-D has six road wheels, not five, a higher roof and no turret.
BMD-4M p. 100 Hull-down: two-man turret with a 100 mm gun and a coaxial 30 mm cannon, not a one-man turret with 30 mm only. Full view: dual rubber-tyred road wheels.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Amphibious with waterjets after trim vane is raised. Air-droppable from Il-76 by PRSM-916/PRSM-925 rocket-parachute systems from 500-1,500 m.

Weight, combat (BMD-2)	**8,225 kg**
Weight, combat (BMD-1)	**7,500 kg**
L × W × H	**5.91 × 2.63 × 2.175 m** gun forward
Road speed (BMD-2)	**61 km/h** maximum
Road speed (BMD-1)	**70 km/h** maximum

Range, 30 mm (type not stated)	**2,000 m** effective, ammunition not stated by WEG
Range, 30 mm (type not stated)	**4,000 m** maximum, ammunition not stated by WEG
Range, 30 mm AP (BMD-2M)	**2,000 m** effective, armour-piercing, BMD-2M fire control, claim
Range, 30 mm HE (BMD-2M)	**4,000 m** effective, high-explosive, BMD-2M fire control, claim
Range, 7.62 mm PKT	**1,500 m** maximum effective (with sight adjustments), ball, coaxial
Range, 9M113 Konkurs	**4,000 m** maximum, SACLOS wire-guided ATGM, BMD-2 and BMD-1P
Minimum range, 9M113 Konkurs	**70 m** SACLOS wire-guided ATGM, BMD-2 and BMD-1P
Range, 9M111 Fagot	**2,000 m** maximum, 9M111-2; 9M111M reaches 2,500 m
Range, 73 mm PG-15V HEAT	**1,300 m** maximum, BMD-1, anti-armour
Range, 73 mm OG-15V HE-frag	**4,400 m** maximum, BMD-1, HE-fragmentation
Range, 9M14 Malyutka	**3,000 m** maximum, MCLOS wire-guided ATGM, BMD-1
Minimum range, 9M14 Malyutka	**500 m** MCLOS wire-guided ATGM, BMD-1

SEEN WITH BTR-D (INA (IISS: 150 BTR-D in VDV, estimate)); BMD-1KSh-A / BMD-KShM; BREM-D; 2S9 Nona-S

SOURCES AR25 AR26 ATP GS8 IISS25 JANESRG MIL16 ORYX1 ORYX4 PROFILE RBC W1RU WEG18 WEG2015 WMC5 WP-EN27 WP-RU30 WP-RU39 ZR4 Updated 2026-10-09

BMD-3 БМД-3

airborne fighting vehicle legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BMD-4M БМД-4M

TR-A+AD

Air-droppable amphibious tracked IFV of the Airborne Forces (VDV) In service 2004

OPERATED BY **airborne division**, lost at Hostomel, 3 Mar 2022, as the 31st Guards Air Assault Brigade O 2022-03 M
airborne division, parachute battalion of a parachute regiment (battalion set), 31 per battalion (nominal battalion set) R 2021-07 M
air assault division, air assault battalion of an air assault regiment (battalion set), 31 per battalion (nominal battalion set) R 2020-06 M
air assault brigade, air assault battalion (battalion set); brigade since re-formed as 104th Guards Airborne Division, 31 per battalion; two battalion sets delivered 2017 R 2017-08 M
airborne division, 200 in the Airborne Forces in total, not broken down by formation (IISS estimate) R 2024 M

INDICATES *BMD-4M points to an Airborne Forces (VDV) parachute or air assault unit; it was delivered in battalion sets of about 31 vehicles with BTR-MDM, so a group of them suggests a VDV battalion. ATP gives a planned VDV total of 1,500.*

RECOGNISE **Hull** BMD-3 layout: flat-topped aluminium hull, pointed nose, near-vertical sides; driver front centre, a hatch each side; engine at rear. New hull on BMD-4M.
Turret Two-man Bakhcha-U turret behind the driver, with commander's panoramic sight; three smoke dischargers each side at the turret front.
Armament 100 mm 2A70 gun-launcher with a 30 mm 2A72 cannon and a 7.62 mm MG mounted coaxially to its right; ATGMs are fired through the 100 mm gun.
Details Two water jets at the hull rear; trim vane raised at the hull front to swim. From 2024 delivered with slat and screen armour kits fitted in units.

CONFUSED WITH **BMP-3 / BMP-3M (Oryx bucket BMP-3 or BMD-4M)** p. 103 Oryx keeps 'Unknown BMP-3 or BMD-4M'. Hull-down: not decisive, both carry a 100 mm gun with a coaxial 30 mm. Full view: six road wheels, three return rollers.



Mike1979 Russia, CC BY-SA 4.0

MOBILITY Swims with water jets after raising a trim vane. Air-droppable by parachute with crew inside. Light aluminium armour.

Weight, combat	**13.5 t**
L × W × H	**6.1 × 3.1 × 2.5 m**
Road speed	**70 km/h** maximum
Road range	**500 km** maximum

Range, 9M117M1 Arkan ATGM	**5,500 m** maximum, laser beam-riding, fired through 100 mm gun; tanks, claim
Minimum range, 9M117M1 Arkan ATGM	**100 m** 3UBK23-3 round
Range, HE-Frag	**4,000 m** maximum effective, 100 mm, day; ammunition not stated by WEG
Range, 30 mm 2A72	**2,000 m** effective, ammunition not stated
Range, 7.62 mm PKT	**1,500 m** effective, ammunition not stated; WEG gives 100–1,500 m with sight adjustments
Crew	**3**
Dismounts	**6**
Main armament	**100 mm 2A70 gun-launcher, coaxial 30 mm 2A72 and 7.62 mm PKT**
Rate of fire, 100 mm	**10 rpm**
Ammunition, 100 mm	**34 rounds** in autoloader
Ammunition, 30 mm	**464 rounds** claim

SEEN WITH BTR-MDM Rakushka (About 8 per battalion set (nominal); 6 (RDP21) or 16 (WPEN) in other reports); Bakhcha-U turret module (1 per vehicle)

SOURCES AR26 AR27 ARCH36 ATP GS9 GS10 IISS25 JANESRG MIL17 ORYX1 RDP2 RDP3 RG172 RWW WEG19 WEG2015 WP-EN28 WP-RU40 WP-RU41 WP-RU42 WSPOT8 Updated 2026-10-09

BMO-T БМО-Т

TR

Heavy flamethrower-crew carrier on T-72 chassis, carries RPO-A rocket flamethrowers In service 2001

OPERATED BY **motor rifle brigade**, flamethrower platoon, RKhBZ company, 3 per RKhBZ company flame platoon (ATP); BMP-2-based BMO-1 may be used instead (ATP, RWW) D 2024 M

INDICATES *Doctrine gives a brigade RKhBZ company's flamethrower platoon three BMO-T or BMP-2-based carriers; named holders are RKhBZ units and one tank brigade. A sighting suggests RPO teams supporting an assault on fortified or built-up positions.*

RECOGNISE **Hull** T-72 hull, turret removed, with a box-shaped armoured superstructure over the crew and troop compartment; height 2.24 m. ERA on upper front, dozer blade under the nose.

Turret No turret. Roof hatches over the troop compartment, an extra hatch in the rear plate, and 12 smoke grenade launchers (902A) at the front.

Armament No main gun. 12.7 mm machine gun on a small commander's cupola, offset left of centre.

CONFUSED WITH **T-72B tank** p. 96 Full view: no gun; a box superstructure with roof hatches stands where the turret would be, with one 12.7 mm MG on a small cupola. Hull and running gear are the same.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Tank-chassis mobility. Fords 1.2 m. Climbs 30 degrees, crosses 0.85 m wall and 2.6 to 2.8 m ditch.

Weight	**43.9 t** Combat weight
L × W × H	**7.22 × 3.787 × 2.24 m** Hull length
Road speed	**60 km/h**

Range, RPO-A rocket	**400 m** effective, 93 mm RPO-A thermobaric rocket
Dismount distance from enemy line	**1.5 to 2.0 km** practical, Doctrinal scenario: platoon attached to motor rifle battalion, then advances on foot to about 600 m
Crew	**2 plus 7 dismounted flamethrower troops** Driver and commander; dismounts ride in troop compartment
Rocket flamethrowers carried	**30 RPO-A** 93 mm RPO-A Shmel, on racks in troop compartment

SOURCES ARMYIN ATP BTVT GS11 IISS25 ORYX1 RWW TENC2 UNIAN WP-RU43 not in WEG

Updated 2026-10-09

BMP-1 БМП-1

NATO: M-1967 TR-A

Amphibious tracked infantry fighting vehicle, 73 mm gun and ATGM, 3 crew and 8 infantry In service 1966

OPERATED BY **motor rifle battalion**, motor rifle companies: 3 per platoon; battalion HQ also has 1 BMP-1K, 42 BMP-1/BMP-2 per BMP-equipped battalion (Soviet table) D 1991 M

motor rifle regiment, reconnaissance company, 3 BMP-1/BMP-2 with 1 BRM-1 (Soviet table) D 1991 M

tank regiment, BMP motor rifle battalion of a tank division's tank regiment; regimental reconnaissance company, 42 BMP-1/BMP-2 per battalion; 3 BMP-1/BMP-2 with 1 BRM-1 in the recce company (Soviet table) D 1991 M

motor rifle brigade, INA (one BMP-1AM attributed from photos) O 2023-10 L

motor rifle brigade, Russian military base in Armenia (1 motor rifle brigade), 80 BMP-1 (with 80 BMP-2) at the base (IISS) R 2024 M

INDICATES *Usually indicates a motor rifle unit: Soviet tables gave BMP-equipped motor rifle battalions 42 BMPs. IISS lists 750 BMP-1/-1AM in service; the BMP-1AM upgrade reached motor rifle units from 2020 (state claim).*

RECOGNISE **Hull** Tracked hull 2.15 m high: pointed nose, almost horizontal ribbed glacis; turret near the centre, troop compartment at the rear; vertical rear with two bulged doors.

Turret Low circular one-man turret with well-sloped sides, single hatch on the left of its roof. BMP-1AM: BTR-82A gun module in its place.

Armament 73 mm gun, coaxial MG to its right, Sagger rail above the gun (BMP-1). BMP-1P: no rail, ATGM launcher on the turret roof. BMP-1AM: long 30 mm cannon.

Hull fittings Driver front left, engine louvres on the roof right; four roof hatches over the troop compartment, two each side, against two on the BMP-2.

CONFUSED WITH **BMP-2 (Oryx bucket BMP-1/2)** p. 102 Oryx files photos it cannot split as 'Unknown BMP-1/2'. Hull-down: two-man turret with a long 30 mm cannon with muzzle brake, ATGM launcher on the turret roof.



User:Jno, CC BY-SA 1.0

MOBILITY Swims with tracks after trim vane is raised; currents up to 1.2 m/s, waves up to 25 cm. Added armour may jeopardise swimming.

Weight, combat	**13,500 kg** BMP-1
L × W × H	**6.735 × 2.94 × 2.15 m**
Road speed	**65 km/h** maximum, maximum, road
Road range	**600 km** maximum, road; 600 km per WEG 2015 and Jane's, so WEG's 550 km is taken as a transcription error (kept as 'also')

Range, PG-15V HEAT-FS (73 mm 2A28)	**1,300 m** maximum effective, day, stationary; 600 m on the move, 800-1,000 m at night
Range, OG-15V HE-frag (73 mm 2A28)	**4,500 m** maximum, HE-frag; WEG gives 4,500 m as gun maximum, round not named
Range, 9M14M Malyutka (AT-3 Sagger)	**3,000 m** effective, MCLOS wire-guided ATGM, day only; BMP-1
Minimum range, 9M14M Malyutka (AT-3 Sagger)	**500 m** MCLOS wire-guided ATGM; BMP-1
Range, 9M113 Konkurs (AT-5 Spandrel)	**4,000 m** maximum effective, SACLOS ATGM from roof launcher; BMP-1P
Range, 9M111 Fagot (AT-4 Spigot)	**2,000 m** maximum effective, SACLOS ATGM from roof launcher; BMP-1P
Range, 30 mm 2A72	**2,000 m** claimed, BMP-1AM, against lightly armoured vehicles, claim

SOURCES FM100 IISS25 JANESRG LENTA22 MIL18 ORYX1 RG20 RG23 RG222 RIA222 VPK5 WEG20 WEG2015 WP-EN29 WP-RU44 WP-RU45

Updated 2026-10-09

BMP-2 БМП-2

NATO: M1981 **TR-A**

Tracked amphibious IFV: carries a 7-man squad; 30 mm cannon and ATGM In service 1980

OPERATED BY **motor rifle battalion**, motor rifle companies, one vehicle per squad, 37 per BMP battalion (BMP-2 or BMP-3); 3 per platoon D 2016 M
Manoeuvre units, combat reconnaissance patrol, platoon-sized, task-organised from a manoeuvre unit (ATP example), 2 per patrol D 2024 M
motor rifle regiment, reconnaissance company, tracked platoon (Soviet TOE), 3 BMP-1/BMP-2 D 1991 L
motor rifle regiment, air defence battery (Soviet TOE), some regiments, 6 BMP-2, each carrying three SA-16 launchers D 1991 L
motor rifle brigade, motor rifle battalions O 2023-06 H
tank regiment, INA (BMP-2M Berezhok) O 2023-02 M
naval infantry brigade, 100 in Naval Infantry total (IISS estimate; 6 bde, 1 regt; holding unit not stated) R 2024 M
motor rifle brigade, 80 BMP-2 and 80 BMP-1 (IISS estimate) R 2024 M
Rosgvardia unit, INA; IISS pools 1,600 BMP-1/BMP-2/BTR-70M/BTR-80/BTR-82A/AM (estimate) R 2024 M
motor rifle brigade, 8 BMP-2M Berezhok in first CMD delivery (CMD press-service claim via TASS/ARMYREC) R 2018 L

NUMBERS **Holdings** 50 in Airborne Forces (VDV) total (IISS estimate) (2024)

INDICATES *Usually marks a motor rifle subunit: one per squad, about 37 per BMP battalion. Since 2022 also lost by tank divisions and regiments, and IISS lists it in Naval Infantry and Airborne holdings, so it does not fix the branch.*

RECOGNISE **Hull** Low tracked hull, pointed nose, almost horizontal ribbed glacis; turret slightly to rear of centre, troop compartment at rear; vertical rear with two bulged doors.
Turret Two-man turret shaped like a frying pan; three forward-firing smoke dischargers each side; large IR searchlight on the turret.
Armament Long-barrelled 30 mm cannon with muzzle brake, coaxial MG on its left; ATGM launcher on the turret roof. BMP-1: 73 mm gun under a Sagger rail.
Hull fittings Driver front left, engine louvres on the roof right, exhaust top right; two roof hatches over the troop compartment, against four on the BMP-1.
Suspension Close only: six road wheels, gaps between 4th, 5th and 6th; drive sprocket front, idler rear; ribbed skirts over the return rollers. Four firing ports left, three right.
BMP-2M BMP-2M: same turret with twin Kornet launchers on it, a 30 mm grenade launcher at the turret rear and a new sight head; slat armour and skirts.

CONFUSED WITH **BMP-1 (Oryx bucket BMP-1/2)** p. 101 Oryx files photos it cannot split as 'Unknown BMP-1/2'. Hull-down: BMP-1 has a low circular one-man turret and a 73 mm gun with a Sagger rail above, no 30 mm barrel.
BMP-1P Hull-down: ATGM launcher on the turret roof as on the BMP-2, so not decisive alone; the gun is a 73 mm in a circular one-man turret, not a long 30 mm with muzzle brake.
BMP-1AM Basurmanin 30 mm cannon too, in the BTR-82A turret, so the gun is not decisive. From above or close: a BMP-1 with its turret replaced; BMP-1 has four troop roof hatches, BMP-2 two.
PRP-4M Deytery p. 234 Some carry a fake gun mantlet and offset barrel made to resemble a BMP-2. Close only: radar hatch in the turret roof with an antenna mount behind it.
BMD-2, BMD-3 (airborne) p. 99 Hull-down: not decisive: BMD-3 carries the BMP-2 turret and BMD-2 the same 30 mm cannon. Full view: five small road wheels with the drive sprocket at the rear, not six.
BMP-3 p. 103 Full view: drive sprocket at the rear and a bow MG each side of the hull front. Hull-down: long 100 mm gun with a 30 mm cannon coaxial to its right.

VARIANTS **BMP-2K** Extra whip antennas on hull rear and a telescopic mast mount (WEG). Command vehicle with an additional HF radio. **BMP-2D** Spaced steel appliqué plates on hull sides and turret. Better protection; no longer swims; fords 1.2 m (RUWIKI). **BMP-2 obr. 1984** 'Kovriki' armour on turret front. Improved version; other changes INA. **BMP-2 obr. 1986** INA. BPK-2-42 gunner's sight instead of BPK-1-42; Konkurs-M missile (RUWIKI). **BMP-2M Berezhok** Two twin Kornet launchers on the turret, 30 mm grenade launcher at turret rear, new sight heads. Four Kornet ATGM, AG-30M grenade launcher, thermal sight with laser rangefinder, commander's panoramic sight (manufacturer). **BMP-2 675-sb3KDZ** Add-on panel armour on hull and turret, polymer-filled (MILUA24) or ceramic-filled (D24), usually with slat cages. Kontakt-1 ERA field-fitted on top (May 2023). Panels meant to stop heavy MG fire; about 100 kits bought by 2021 (reported), production continued; Oryx lists 485+ lost by 2026.



Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Swims with little preparation, track-propelled at up to 7 km/h; trim vane raised and bilge pumps on before entry. Add-on-armour BMP-2D cannot swim (fords 1.2 m).

Weight, combat	**14,300 kg**
L × W × H	**6.735 × 3.15 × 2.45 m**
Road speed	**65 km/h** maximum
Road range	**600 km** maximum
Fording	**amphibious**
Ground pressure	**0.65 kg/cm²**
Bridge load class	**16** 14.3 t tracked x 1.10, rounded up, estimated
Cross-country speed	**45–50 km/h** maximum
Water speed	**7 km/h** maximum
Vertical obstacle	**0.7 m**
Trench	**2.5 m**
Gradient	**60%**

Range, 30 mm AP-T	**1,500 m** effective, armour; day (1,300 m night, WEG15)
Range, 30 mm APDS	**2,000 m** maximum effective, day (1,300 m night)
Range, 30 mm HE	**4,000 m** effective, ground targets, Frag-HE; day (1,300 m night, WEG15)
Range, 30 mm, air targets	**2,500 m** effective, helicopters and slow aircraft; ammunition not stated
Range, 7.62 mm PKT	**1,500 m** effective, ground targets, 57-N-323S cartridge (WEG)
Range, 9M113 Konkurs	**4,000 m** maximum, SACLOS, wire-guided ATGM
Minimum range, 9M113 Konkurs	**70 m** SACLOS, wire-guided ATGM
Range, 9M111 Fagot	**2,000 m** maximum effective, SACLOS, wire-guided ATGM
Range, 9M133 Kornet (BMP-2M)	**5,500 m** maximum effective, Kornet-LR; day (3,500 m night)
Range, 30 mm AG-30M (BMP-2M)	**1,700 m** maximum effective, WEG15 figure for AGS-30 or AGS-17 grenade launcher; day and night
Detection range, BPK-1-42 sight	**650 m** vision range, night, passive starlight channel; 350 m with IR searchlight
Crew	**3 + 7 dismounts**
Main gun	**30 mm 2A42, dual feed, stabilised (2E36-1)**
Ammunition, 30 mm	**500 rds (340 HE + 160 AP)**
Rate of fire, 30 mm	**200–300 / 550–800 rpm** low / high setting
Gun elevation	**-5° to +75°**
ATGM carried	**4**
Sights, BMP-2M	**thermal imager and laser rangefinder (gunner); panoramic (commander)** claim
Armour, turret front	**23–33 mm** steel
Armour, hull	**5–19 mm** rolled steel
Smoke dischargers	**6**
Engine power	**300 hp (UTD-20)**

SEEN WITH 9P135M-series launcher for 9M113 Konkurs / 9M111 Fagot (WEG15: 9P135M1 or 9P135M3) (1 per vehicle, 4 missiles carried); BO5Ya01 Berezhok combat module (1 per BMP-2M); BMO-1 flamethrower vehicle (BMP-2 based)

SOURCES AR28 ATP D24 FM100 IISS25 JANESRG MILUA22 MILUA24 ORYX1 ROSTEC23 ROSTEC25 RWW WEG23 WEG2015 WP-EN30 WP-EN31 WP-RU47 WSPOT4 WSPOT9 WSPOT10 WSPOT11 WSPOT12

Updated 2026-10-09

BMP-3 БМП-3

NATO: M1990/1 TR-A

Amphibious tracked infantry fighting vehicle; 100 mm gun-launcher, coaxial 30 mm cannon In service 1987

OPERATED BY **motor rifle battalion**, motor rifle companies: 11 per company, one per squad, 37 BMP-2 or BMP-3 per battalion on BMPs D 2016 M

motor rifle brigade, motor rifle battalions, three per brigade, on BMP, BTR or MT-LB, 37 per BMP-equipped battalion D 2016 M

motor rifle regiment, motor rifle battalions, three per regiment (probable structure), 37 per BMP-equipped battalion D 2024 L

naval infantry division, one battalion re-equipped with BMP-3F in 2021, 40 BMP-3F delivered in 2021 O 2024-10 H seen with 55th Guards Naval Infantry Division (ex-155th Naval Infantry Brigade): BMP-3F 2021; kit-fitted BMP-3 lost at Vuhledar Feb 2023 and in Sudzha raion Oct 2024

motor rifle regiment O 2024-06 M seen with 245th Motor Rifle Regiment (captured Sep 2022, Izium and Balakliia areas), 429th Motor Rifle Regiment (captured Mar 2022, Volnovakha raion), 283rd Motor Rifle Regiment (destroyed Jun 2024, Chervonopopivka)

motor rifle division O 2022-11 M seen with 20th Guards Motor Rifle Division (captured Feb 2022, Posad-Pokrovske; destroyed Nov 2022, Rozlyv)

motor rifle brigade O 2022-09 L seen with 136th Separate Guards Motor Rifle Brigade (destroyed Mar 2022, Yevhenivka), 27th Separate Guards Motor Rifle Brigade (captured Sep 2022, Izium)

motor rifle regiment, 30+ to the 7th (2021); one battalion set to the 102nd (2018) R 2021 L seen with 7th Separate Motor Rifle Regiment, 11th Army Corps (2021), 102nd Motor Rifle Regiment, 150th Motor Rifle Division (2018)

motor rifle division, 20+ delivered in Jan 2021 R 2021-01 L seen with 42nd Motor Rifle Division

tank division, motor rifle battalions (announced re-equipment with BMP-3 and BTR-82A) R 2021 L seen with 4th Guards Tank Division

tank army, BMP-3 crews firing from indirect positions, Kupyansk direction R 2024-01 L seen with 1st Guards Tank Army

NUMBERS **Holdings** 650 BMP-3/-3M in Army service; 40 BMP-3F with Naval Infantry (IISS estimate) (2024); **Holdings** 60 BMP-3 with the Ukrainian Army; further BMP-3 with Ukrainian Naval Infantry (IISS) (2024); **Losses** 819 Russian BMP-3 of all sub-types lost, of which 651 destroyed and 68 captured (Oryx, photo-confirmed) (2026-09); **Holdings** 750 BMP-3 in Russian service (English Wikipedia, citing IISS Military Balance 2026) (2026)

INDICATES *A BMP-3 points to a motor rifle battalion on BMPs (37 vehicles) in a motor rifle brigade or regiment; a BMP-3F to Naval Infantry. Destroyed or captured in 2022-2024 in the hands of motor rifle regiments and brigades. Ukraine also uses the BMP-3.*

RECOGNISE **Hull** Large box hull, glacis almost horizontal, nose sloping back under the front; engine and exhaust at the right rear; two small doors high in the rear

Turret Circular two-man turret in the hull centre, an extra armour layer over its front half

Armament Long 100 mm barrel with a 30 mm cannon coaxial on its right and a box over the rear of the guns; one 7.62 mm bow MG each side of the hull front

Hull fittings Deliveries since 2023: side armour screens, slat grilles, grilles over turret and hull top against drones; Kaktus kit adds ERA and turret rubber shields

Suspension Close only: six road wheels, idler front, drive sprocket rear, three return rollers, upper track under a light cover

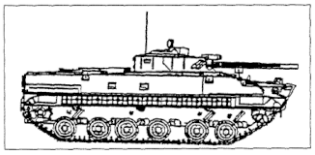
CONFUSED WITH **BMD-4M (Oryx bucket BMP-3 or BMD-4M)** p. 100 Full view: six road wheels against five; hull length 6.7 m against 6.1 m (BMD-4). Chassis hidden: both have 100 mm and coaxial 30 mm guns, not decisive

BMP-2 p. 102 Chassis hidden: two barrels, 100 mm with 30 mm on its right, against one long 30 mm with muzzle brake. Full view: turret central, not set back

VARIANTS **BMP-3 Sodema** New gunner's sight head on the turret in place of the earlier sight; 2023 and later deliveries also carry screens and slat grilles. Sodema sight with thermal channel, laser rangefinder, missile guidance, two-axis stabilisation; 2019 deliveries were called BMP-3M. **BMP-3 688A-sb6-2KP** Armour screens on hull sides, slat grilles, upper protection against drones; kits delivered with the vehicle and mounted by the units. EW device on each vehicle from 2024; by 2026 also signature reduction, belly blast protection and a newer EW set (Rostec). **BMP-3 4S24 NKDZ** Kaktus ERA modules; rubber shields on the turret; grilles at the engine compartment. Cannot swim with the kit fitted. **BMP-3M** Bakhcha-U turret with TKN-AI commander's device; extra armour screens on hull sides. UTD-32 660 hp engine; new fire control extends Arkan ATGM range to 5,500 m. **BMP-3F** Telescopic air intake tube, lighter anti-surge vane, anti-surge vanes on turret; no self-entrenching blade. Swims in sea state 3, fires in sea state 2, 7 h afloat; held by Naval Infantry.



Mike1979 Russia, CC BY-SA 3.0



Drawing: US Army (FMSO Red Star, 1996), public domain

MOBILITY Swims at 10 km/h by waterjets after raising the trim vane; with the Kaktus ERA kit it cannot swim. Add-on armour raises weight to about 22 t.

Weight, combat	**18.7 t** *also 22.2–22.7 t WP-RU48 WP-EN32*
L × W × H	**7.14 × 3.23 × 2.65 m**
Road speed	**70 km/h**
Speed, cross-country	**45 km/h** *also 35 km/h FAS6*
Road range	**600 km**
Swimming	**10 km/h** two waterjets
Ground pressure	**0.61 kg/cm²** *also 0.62 kg/cm² FAS6*
Length, hull	**6.715 m** *also 6.73 m FAS6*
Height, turret roof	**2.30 m**
Gradient	**60%** *also 30 degrees WP-RU48*
Trench	**2.5 m** *also 2.2 m WP-RU48*
Vertical step	**0.8 m** *also 0.7 m WP-RU48*
Bridge class	**21** 18.7 t x 1.10, rounded up, estimated *also 25 WP-RU48*

Range, 9M117 Bastion ATGM	**4,000 m** effective, laser beam-riding; base 1K13-2 sight *also 5,000–6,000 m RWW ATP*
Minimum range, 9M117 Bastion ATGM	**100 m** effective, laser beam-riding
Range, 9M117M1 Arkan ATGM	**4,000 m** maximum, laser beam-riding; base fire control *also 5,500 m WEG24*
Range, 100 mm HE-frag 3UOF17	**4,000 m** maximum effective, day, direct fire *also 5,000 m WEG24 FAS6*
Range, 100 mm HE-frag 3UOF19	**6,500 m** maximum, indirect fire, claim *also 7,000 m day, 5,000 m night WEG2015*
Range, 100 mm gun, indirect fire	**4,000–4,260 m** practical, from concealed positions, Bakhmut area; Russian crew statements, Jan 2024, claim
Range, 30 mm 2A72	**2,000 m** maximum effective, ground targets
Range, 30 mm 2A72	**1,500 m** maximum effective, light armoured vehicles
Range, 30 mm 2A72	**4,000 m** maximum effective, air targets
Detection range, 1K13-2 sight	**5,200 m** acquisition, day, gunner's sight
Detection range, Sodema sight	**3,700 m** claimed, night; tank or IFV, detection and classification, claim
Crew	**3 + 7 dismounts** *also 3 + 5, with 2 extra seats beside the driver WP-RU48*
Armament	**100 mm 2A70 gun-launcher, 30 mm 2A72 cannon, 3 x 7.62 mm PKT**
Penetration, 9M117M1 Arkan ATGM	**650 mm behind ERA; 750 mm without** HEAT warhead, RHA *also 700 mm behind ERA; 750 mm without WEG2015*
Rate of fire, 100 mm	**8–10 rpm** *also 10 rpm WP-RU48*
Ammunition, 100 mm	**40 rounds (22 in autoloader) and 8 ATGM**
Rate of fire, 30 mm	**330 rpm** *also 350 rpm FAS6*
Ammunition, 30 mm	**500 rounds**
Elevation, 100 mm and 30 mm	**-5 to +60 degrees** *also -6 to +60 degrees WP-RU48*
Engine	**UTD-29M diesel, 500 hp** *also UTD-29, 450 hp WP-RU48 WP-EN32*

SEEN WITH 2K23 armament complex (2A70 100 mm, 2A72 30 mm, coaxial PKT) (1 per vehicle); 9K116-3 Basnya guided weapon system, 9M117 missiles fired through the 100 mm gun (8 missiles per vehicle); BREM-L armoured recovery vehicle on BMP-3 chassis

SOURCES ALT AR29 ATP BMPD4 FAS6 IISS25 JANESRG LENTA MF2 MIL17 MIL19 MILIN ORYX1 PROF RWW TECH TNI W1R1 W1R2 W1R3 WEG24 WEG2015 WP-EN28 WP-EN32 WP-RU48 WSN7 WSPOT4 WSPOT8 WSPOT13 WSPOT14 WSPOT15 WSPOT16 WSPOT17 WSPOT18 WSPOT19 WSPOT20

Updated 2026-10-17

BMPT Terminator БМПТ «Терминатор»

TR

Tank support vehicle: twin 30 mm guns and ATGMs on a tank hull against infantry AT teams In service 2018

OPERATED BY **tank division**, BMPT company (first formed Dec 2021); a further subunit formed 2024, 9 per company O 2024-12 H
tank regiment, separate BMPT company, 9 per company O 2021-12 M
military district, Central Grouping of Forces, Sievierodonetsk axis; UK MoD assessment (state claim), at most 10 deployed; the only formation fielding BMPT R 2022-05 L
military district, Yug grouping of forces, near Avdiivka; BMPT commander via News.ru (state claim) R 2023-07 L

NUMBERS **Losses** 3 losses photo-confirmed by 2026-09 (1 destroyed, 2 damaged); one reported on the Kurakhove direction, Oct 2024 (2026-09)

INDICATES *Russia fields BMPT in few companies of nine, the first in a tank regiment of 90th Guards Tank Division. A BMPT most likely marks that division or a unit given one, attached to tanks for assaults on fortified or urban areas.*

RECOGNISE **Turret** Low unmanned turret on a tank hull, commander's panoramic sight on roof; ERA on front and sides, slat armour at rear. 2025 batch: chain anti-drone screens, nose and rear.
Armament Two slender 30 mm 2A42 barrels side by side; a pair of boxed Ataka-T missile tubes on each side of the turret, armoured covers since 2018.
Hull Tank hull of T-90A components. BMPT: grenade launcher mounts in niches above both tracks; BMPT-72 has none.
Suspension Close only: T-90 running gear, six road wheels, idler front, drive sprocket rear. BMPT-72: three return rollers.

CONFUSED WITH **T-72B3, T-90A, T-90M tanks** p. 98 Hull-down: two thin 30 mm barrels side by side and box missile launchers on both turret sides, not one 125 mm gun. Full view: grenade launcher niches above tracks.
BMPT-72 (Terminator-2) Full view: BMPT has grenade launcher housings in niches above both tracks; BMPT-72 has none.


Nickel nitride, CC0


Mike1979 Russia, CC BY-SA 4.0

MOBILITY Tank-class mobility. Fords 1.2 m unprepared, 1.8 m prepared, 5 m with snorkel kit. Crosses 2.8 m trench, 0.85 m step.

Weight, combat	**48 t** BMPT, claim
Weight, combat, BMPT-72	**44 t** BMPT-72
L × W × H	**7.2 × 3.8 × 3.44 m** gun forward, claim
Road speed	**60 km/h** maximum, maximum, road
Road range	**550 km** maximum, BMPT; with external fuel tanks (RUWIKI), claim

Range, 9M120-1 / 9M120-1F Ataka-T	**6,000 m** maximum, tandem HEAT (9M120-1) or thermobaric (9M120-1F); laser beam riding, claim
Range, 30 mm HE (2A42)	**4,000 m** maximum effective, personnel and unarmoured targets; WEG BMPT-72 sheet: maximum firing range, HEI
Range, 30 mm AP (2A42)	**2,000 m** effective, light armour, AP-T
Range, 30 mm (2A42) vs air	**2,500 m** capable of destroying, low-speed air targets
Range, 30 mm grenade (AG-17D)	**1,700 m** effective, Frag-HE grenade; BMPT only
Range, 7.62 mm PKTM	**1,500 m** effective, personnel and unarmoured targets
Detection range, gunner's sight	**5,000 m** optical channel, day, claim
Detection range, thermal sight	**7,000 m** thermal channel, claim
Crew	**5 (commander, gunner, driver, two grenade launcher operators)** BMPT
Missiles carried	**4** in launchers, no reloads
30 mm rounds carried	**850** both guns
Gun elevation	**-5° to +45°** 30 mm guns; missiles -5° to +25°
Simultaneous targets	**3** manufacturer, 2025 model, claim

SEEN WITH T-90A; T-72; Ataka-T (9M120-1, 9M120-1F) (4 missiles per vehicle); 2A42 (2 per vehicle); AG-17D (2 per vehicle (BMPT only))

SOURCES ATP CNA DUA IISS25 INTFX IZV2 JANESRG MIL20 MIL21 NEWSRU2 ORYX1 PROF2 RUBR RWW TENC2 TWZ5 WEG25 WP-EN33 WP-RU43 WP-RU49 WP-RU50 WWW1A2 WWW1B2
Updated 2026-10-09

BRM-1K БРМ-1К

NATO: M1976/2 TR-A

Tracked amphibious combat reconnaissance vehicle on BMP-1 chassis In service 1972

OPERATED BY **motor rifle division**, reconnaissance battalion; two of its three troops operate BRM-1K, 3 per reconnaissance battalion (ARMYREC) D 2019 M
motor rifle regiment, reconnaissance company, 1 per company (Soviet era, WPEN) D 1991 L

INDICATES *Points to a reconnaissance subunit of a motor rifle or tank formation, most likely a division reconnaissance battalion or a regiment reconnaissance company. A modernised 30 mm turret indicates a BRM-1KM.*

RECOGNISE **Hull** BMP-1 hull: pointed nose, ribbed glacis, driver front left, engine louvres on the roof right; turret set towards the rear, not near the centre as on the BMP-1.
Turret Two-man turret with three smoke dischargers in a row each side; the radar stows behind the turret roof and is raised from a rear-opening hatch.
Armament 73 mm 2A28 Grom smoothbore gun with coaxial 7.62 mm PKT. Most vehicles have no Sagger launcher over the gun, unlike the BMP-1; some had one.

CONFUSED WITH **BMP-1** p. 101 Hull-down: one-man turret near the hull centre, Sagger rail over the gun when fitted. From above or close: four rear roof hatches, not two.


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Amphibious; swims on its tracks at 7 km/h (WEG). BMP-1 base uses trim vane and bilge pumps before entering water.

Weight, combat	**13.3 t**
L × W × H	**6.74 × 2.94 × 2.15 m**
Speed, road	**65 km/h**

Range, 73 mm (munition not stated)	**4,500 m** maximum firing range, ammunition type not stated by WEG
Range, HEAT-FS	**1,300 m** maximum effective, day
Range, HEAT-FS	**600 m** maximum effective, firing on the move
Range, HEAT-FS	**800-1,000 m** maximum effective, night
Detection range, PSNR-5K (1RL133-1)	**10,000 m** maximum, target type not stated by WEG

SOURCES AR35 CNA IISS25 JANESRG MIL26 ORYX1 RG23 RGRU4 RIA23 WEG31 WEG2015 WP-EN36 WP-RU62 WSN8

Updated 2026-10-09

BRM-3K Rys БРМ-3К

armoured reconnaissance vehicle

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BTR-50 БТР-50

tracked armoured personnel carrier legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BTR-D БТР-Д

NATO: M1979 TR+AD

Airborne tracked APC on a lengthened BMD-1 hull; base of a variant family In service 1974

OPERATED BY **airborne division**, 150 BTR-D in all Airborne Forces (IISS estimate); per-division count INA R 2024-12 M
air assault regiment, 42 in 247th regiment (2017 table); 26-38 per regiment in a 2000 listing R 2017 L

INDICATES *IISS25 lists Russian BTR-D only under the Airborne Forces, so a Russian one points to VDV or attached units. Ukraine's Air Assault Troops hold 30 and Russia uses some captured ones. 247th regiment's 2017 table shows ATGM, AA, fire-direction variants.*

RECOGNISE **Hull** Turretless tracked hull on the BMD-1 pattern, 5.88 m long against 5.4 m for the BMD-1; small flat superstructure with roof hatch; upper front plate with a dual slope.
Turret None. Flat roof with hatches; firing ports in the sides and rear.
Armament Two bow machine guns kept from the BMD-1; no main gun. Pintle AGS-17/30/57 or MG may be fitted; ZU-23-2 may be towed or carried.

CONFUSED WITH **BMD-2 (Oryx bucket BTR-D/BMD-2)** p. 99 Oryx files photos it cannot split as 'Unknown BTR-D/BMD-2'. Hull-down or from above: BMD-2 has a turret with a 30 mm cannon. Full view: five road wheels, not six.



BTR-ZD. Mil.ru, CC BY 4.0



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Amphibious, swims at about 10 km/h. Air-droppable by parachute from medium transport aircraft. Light aluminium armour.

Weight, combat	**8,200 kg**
L × W × H	**5.88 × 2.63 × 2.05 m** Hull length
Road speed	**61 km/h** maximum

Range, 7.62 mm API (bow machine gun)	**1,000 m** maximum effective, Day; 400-500 m on the move
Crew	**3 (driver, commander, bow machine gunner)** WEG spec table '1 ea' treated as a transcription error; WEG text and WEG 2015 give three
Troop capacity	**10 troops** WEG spec table '13 ea' treated as a transcription error; WEG text and WEG 2015 give ten
Armament, bow machine guns	**2 x 7.62 mm** WEG text says PKB, ru Wikipedia says PKT or PKTM
Ammunition, 7.62 mm	**2,000 rounds**

SOURCES ATP FAS8 IISS25 JANESRG NIKIT ORYX1 WEG34 WEG2015 WP-EN22 WP-EN38 WP-EN39 WP-RU38 ZRRU

Updated 2026-10-09

BTR-MDM Rakushka БТР-МДМ «Ракушка»

TR-A+AD

Airborne tracked amphibious APC and carrier chassis for VDV In service 2016

OPERATED BY **airborne division**, Procurement plan, replacing BTR-D; not a holding, Plan (2015) of 2,500 by 2025; not met, IISS estimate 150 in 2024 D 2015 L

Naval Infantry D 2024 L

INDICATES *A BTR-MDM points to an airborne or air assault battalion issued new-generation vehicles, usually alongside BMD-4M. ATP also names naval infantry as a user, but IISS25 lists none there. Ukraine uses captured ones (2023).*

RECOGNISE **Hull** Tracked hull with no gun turret; driver front centre, troop compartment amidships, engine at rear, inclined hatch at the rear of the troop compartment.

Turret Remote machine-gun turret on the left of the roof, with sights and an illuminator; no cannon.

Armament Two 7.62 mm MGs: one in the remote roof turret, one in the bow. Two banks of smoke grenade launchers.

Suspension Close only: five road wheels and four support rollers each side; hydropneumatic suspension, ground clearance adjustable from 130 to 530 mm.

CONFUSED WITH **BTR-D** p. 105 No gun turret on either. Full view: BTR-D has six road wheels each side, not five, and no roof MG turret.



KonanRus, CC BY-SA 4.0

MOBILITY Amphibious on two waterjets; sea trials left a landing ship in 4-5 sea state and returned in 3. Light armour limits use in direct assault.

Weight, combat	**13.2 t** NIKIT gives 13.2 t plus 2%, claim
L × W × H	**6.1 × 3.1 × 2.5 m** Both sources approximate and share one lineage, claim
Speed, road	**70 km/h** maximum, Same figure in RGRU2 (state media), claim

Range, 7.62 mm PKTM	**1,500 m** effective, Ground targets; remote roof MG; WEG BTR-MD sheet
Range, 7.62 mm PKTM	**4,000 m** maximum, Ground targets; remote roof MG; WEG BTR-MD sheet
Range, 23 mm ZU-23-2 ammunition	**2,500 m** claimed, Ground targets; ZU-23-2 fit on BTR-MDM, 2021 exercise, claim

SOURCES AR37 ATP GS13 GS14 IISS25 JANESRG MIL28 NIKIT ORYX1 RGRU1 RGRU22 VPK6 WEG35 WP-RU64 ZRRU

Updated 2026-10-09

BTR-T

heavy armoured personnel carrier legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Kurganets-25 Курганец-25

infantry fighting vehicle trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MT-LB МТ-ЛБ

NATO: M1970 **TR-A**

Light armoured amphibious tractor and APC; base for many armed field conversions In service 1964

OPERATED BY **motor rifle battalion**, motor rifle companies (squad carriers in BTR/MT-LB-based battalions), about 44 BTR-80/BTR-82/MT-LB per BTR- or MT-LB-based battalion D 2016 M
motor rifle brigade, motor rifle battalions, especially in northern (Arctic) brigades D 2024 M
motor rifle brigade, MANPADS battery of the brigade's anti-aircraft missile-artillery battalion (ATP fig. 4-19), 9 per MANPADS battery (27 launchers) D 2024 M
anti-tank battalion, anti-tank gun battery (prime mover for 100 mm MT-12) D 2024 M
motor rifle brigade, battalion tactical group sent to Ukraine; brigade under Navy Coastal Troops (MILU), 36 MT-LB left the brigade's base in May 2022 O 2022-05 L seen with 80th Separate Arctic Motor Rifle Brigade (Alakurtti)
naval infantry brigade, IISS estimate 250 MT-LB in Naval Infantry (6 brigades, 1 regiment) R 2024 M
motor rifle brigade, Arctic brigades (200th at Pechenga first planned to convert): MT-LBV planned, per Ground Forces commander (state claim via RIA) R 2012 L seen with 200th Separate Motor Rifle Brigade (Pechenga)
Newly formed infantry units, newly formed infantry units, per UK Defence Intelligence 9 Jul 2022 (state claim) R 2022-07 L
artillery battalion, towed howitzer batteries (prime mover for 122 mm D-30) R 2000 L

INDICATES *Several MT-LBs carrying infantry suggest an MT-LB-based motor rifle battalion (northern brigades, Naval Infantry). One towing a 100 mm MT-12 suggests a brigade anti-tank battery; towing a 122 mm D-30, a towed artillery battalion.*

RECOGNISE **Hull** Box hull 1.865 m high: crew compartment just behind the glacis, troop compartment to the rear with near-vertical sides, chamfered top and twin rear doors.
Turret Small flat-topped manual MG turret right of the driver at the front. MT-LBVM/VMK: open 12.7 mm mount instead. 6MA/6MB: conical BTR-80-type turret on rear roof.
Armament Basic vehicle: one 7.62 mm PKT only. Since 2022 some field-fitted with ZU-23-2, naval 25 mm or 14.5 mm mounts, S-60 or rocket launchers on the rear deck.
Suspension Close only: six equally spaced ribbed road wheels, drive sprocket front, idler rear, no return rollers; exhaust mid-hull, left. MT-LBV: 565 mm tracks, not 350 mm.

CONFUSED WITH **MT-LBu (command, radar and EW carriers)** Full view: seven road wheels, not six; hull 7.21 m long and 2.035 m high against 6.454 m and 1.865 m; no front MG turret; single rear door.
SNAR-10 (Big Fred) radar vehicle p. 176 Same six-wheel hull, front MG turret and twin rear doors. Full view: Big Fred radar on the rear half of the roof; the antenna folds forward for travel.
BTR-D p. 105 Full view: five track-return rollers above the six road wheels each side; the MT-LB has none and a small flat-topped turret right of the driver. No turret on the BTR-D.
9P149 Shturm-S p. 115 Deployed: one missile container on a launcher raised from the hull roof. Not decisive in travel: the launcher retracts inside the hull.
9K35 Strela-10 (SA-13 Gopher) p. 160 Full view: same hull with a launcher carrying four missile boxes on the roof.
2S1 Gvozdika p. 126 Full view: seven road wheels and a large enclosed turret towards the rear with a 122 mm howitzer.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Fully amphibious, propelled by its tracks. Very low ground pressure; wide-track MT-LBV for snow and swamp. Armour stops only small-arms fire and splinters.

Weight, combat	**11,900 kg** MT-LB *also 9.7 t (12.2 t with load) WP-RU61*
Weight, empty	**9,700 kg** MT-LB
Weight, MT-LBu	**11.5 t plus up to 4 t of mounted equipment** MT-LBu
L × W × H	**6.454 × 2.86 × 1.865 m** MT-LB
Road speed	**61.5 km/h** maximum, MT-LB, 240 hp *also 65 km/h ZR7*
Road range	**500 km** maximum, MT-LB
Swimming speed	**5–6 km/h** maximum, propelled by tracks; 5-6 km/h per WEG 2015, Jane's and Russian Wikipedia, so WEG's 4.5 km/h is taken as a transcription error (kept as 'also') *also 4.5 km/h WEG70*
Fording	**amphibious**
Ground pressure	**0.46 kg/cm²** standard 350 mm track; 0.28 with wide track
Bridge load class	**MLC 14** 11.9 t combat weight x 1.10, rounded up, estimated
Cross-country speed	**30 km/h** maximum, MT-LB
Trench	**2.41 m** *also 2.8 m WP-RU61*
Vertical obstacle	**0.61 m** *also 1.1 m WP-RU61*
Payload / towed load	**2,000 kg / 6,500 kg** MT-LB
Length / height, MT-LBu	**7.21 m / 2.035 m** MT-LBu

Range, 7.62 mm PKT	**1,500 m** effective, 7.62x54R; WEG gives no target or light condition (WEG day-sight range also 1,500 m) *also 1,000 m day; 400-500 m on the move WEG2015*
Range, 7.62 mm PKT	**4,000 m** maximum, 7.62x54R, ground target
Range, 12.7 mm NSVT	**1,500 m** maximum effective, MT-LB fitted with 12.7 mm NSVT ('some MT-LB', RWW); target not stated
Detection range, driver's TVN-2 IR periscope	**about 40 m** approximate, night, with OU-3GK IR searchlight
Crew	**2 + 11 passengers** MT-LB as APC
Armament	**1 x 7.62 mm PKT in turret** basic MT-LB
Ammunition, 7.62 mm	**2,000 rounds** basic MT-LB *also 2,500 rounds WP-EN124*
Armour	**7-14 mm steel** hull 7 mm sides and rear, 14 mm front and turret (WEG table, Russian Wikipedia infobox); printed over the 3-10 mm in WEG's notes and Jane's, editor decision 4 Oct *also 3-10 mm; 14 mm turret front JANESRG WEG70*

SEEN WITH MT-12 Rapira 100 mm anti-tank gun (1 towed per MT-LB; 20 rounds carried in the MT-LB); MTP-LB technical support vehicle; MTO-UB1 maintenance vehicle (Ural-4320)

VARIANTS **MT-LBV** Wide 565 mm tracks instead of 350 mm. Ground pressure 0.28 instead of 0.46 kg/cm²; better on snow and swamp. **MT-LBVM, MT-LBVMK** Open 12.7 mm machine-gun mount in place of the TKB-01-1 turret. 12.7 mm NSVT (VM) or Kord (VMK) instead of 7.62 mm PKT. **MT-LBVM1K** INA. Mountain version: 310 hp YaMZ-238BL-1 engine, new radio and heater. **MT-LBM 6MA** BTR-80-type turret on the hull roof. 14.5 mm KPVT and coaxial 7.62 mm PKT. **MT-LBM 6MB** BTR-80A-type turret with 30 mm cannon on the hull roof. 30 mm 2A72 and 7.62 mm PKTM; ammunition stowed outside the hull; day/night gunner sight. **MT-LBu** Seven road wheels, longer and higher hull, no front MG turret. 300 hp engine; carries up to 4 t of mounted equipment; base for artillery command, radar and EW vehicles. **MT-LB with ZU-23-2** Twin 23 mm ZU-23-2 mounted on the rear deck. 23 mm fire against ground and air targets from a tracked carrier. Oryx lists 53 Russian losses. **MT-LB with 2M-3, MT-LB with 2M-7** Naval 2M-3 twin 25 mm or 2M-7 14.5 mm KPV pedestal mount fitted on the hull. Field conversion seen from 2023 using Navy stocks; fire support.

SOURCES ATP BAR15 FAS17 IISS25 JANESRG MIL87 MIL88 MIL89 MISS15 ORYX1 RWW UKDI WEG34 WEG70 WEG2015 WP-EN124 WP-RU61 WP-RU155 WP-RU156 ZR7 Updated 2026-10-09

PT-76 ПТ-76

light amphibious tank legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Wheeled APCs and armoured cars

BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars WH-AT

Light armoured cars and MRAP-type utility vehicles for security and special units In service 1999

OPERATED BY **Rosgvardia unit**, Z-STS Akhmat: Chechen forces; vehicle also on National Guard list, INA (first 20 delivered July 2022) R 2024-10 M
Army, Vystrel: on Army AUV list; no unit or subunit given R 2024-12 M
naval infantry brigade, Vystrel on Naval Infantry equipment list; no unit named R 2024-12 M
Airborne Forces, Toros: on Airborne Forces AUV list; no unit named R 2024-12 M
FSB Border Guard Service, BPM-97 Vystrel: on FSB Border Guard Service AUV list; no unit named R 2024-11 M
Rosgvardia unit, Patrul: special-purpose police units (SOBR, OMON); Rosgvardia, Zaporizhzhia region, INA (3 to Khanty-Mansi in 2023) R 2023 L

INDICATES *Most members point to Rosgvardia, special-purpose, reconnaissance or airborne users. Vystrel is also on Army, Naval Infantry and Border Guard lists. Z-STS Akhmat points to Chechen forces.*

RECOGNISE **Cab** Engine at front, crew behind (Buran; Patrul is bonnet-type). Vystrel: separate engine and crew compartments. Buran: three doors per side with firing ports.
Axles 4x4 on Vystrel, VPK-Ural, KamAZ-435029 Patrul, Buran and Sarmat-3. Z-STS Akhmat (KamAZ-5350 chassis) is 6x6; Oryx also lists a Patrul 6x6.
Details Kord 12.7 mm in an armoured box (VPK-Ural); roof hatch with Arbalet-DM (Z-STS); 30 mm BM-30D turret on some Vystrel; no turret on Buran; open cargo area on Sarmat-3.
Body Length ranks them: Vystrel 5.3 m, Buran 5.81 m, VPK-Ural 6.0 to 6.5 m, Patrul 7.4 m, Z-STS 8.43 m. Sarmat-3 is the lightest at 3.5 t.
CONFUSED WITH **Tigr (GAZ-233014)** p. 112 Both 4x4; the press compares them. Full view: Buran has three doors each side, each with a firing port in a small window; body on a GAZ-3308 truck chassis.


BPM-97 Vystrel. Vitaly V. Kuzmin, CC BY-SA 4.0


KamAZ Patrul. Kirill Borisenko, CC BY-SA 4.0


Buran. Kirill Borisenko, CC BY-SA 4.0

MOBILITY Wheeled road-and-track vehicles, mostly 4x4; Z-STS and a Patrul version are 6x6. Z-STS fords 1.75 m; VPK-Ural is not amphibious (WEG). Other fording INA.

Weight, Vystrel (BPM-97)	**10.5 t**
Weight, VPK-Ural	**14.5 t** WEG says curb weight; Russian Wikipedia says gross weight
Weight, Z-STS Akhmat	**18 t** ARZSTS says "up to 18,000 kg"
Weight, Patrul (KamAZ-435029)	**12.7 t** Combat weight

Crew and seats, VPK-Ural	**10 seats**
Crew and passengers, Z-STS Akhmat	**2 crew, 8 passengers**
Crew and passengers, Vystrel (BPM-97)	**2 crew, 8 to 12 passengers**
Crew, Sarmat-3	**4 crew; 900 kg cargo**
Armament, Vystrel (BPM-97)	**7.62 or 12.7 mm MG, 14.5 mm KPV, or 30 mm 2A42 turret** Options by fit; BM-30D adds AG-30 grenade launcher
Armament, VPK-Ural	**12.7 mm Kord in armoured box**
Armament, Z-STS Akhmat	**12.7 mm Kord on Arbalet-DM module (optional)**

SOURCES AR70 AR71 DBSAR DEFUA8 IISS25 LEXCN MIL74 ORYX1 WEG65 WP-EN109 WP-EN110 WP-RU139 WP-RU140 Updated 2026-10-09

BRDM-2 БРДМ-2 WH-AT-A

Amphibious 4x4 armoured scout car for reconnaissance and patrol; base for NBC variants In service 1962

OPERATED BY **reconnaissance battalion**, reconnaissance companies of division or brigade D 2016 M
RKhBZ battalion, BRDM-2RKh: divisional chemical defence battalion or company, regimental chemical defence company or platoon, reconnaissance battalion (Soviet structure) D 1999 L
Airborne Forces (VDV) units, Airborne Forces (VDV) units; no formation named R 2023 L

INDICATES *IISS (late 2024) lists only 'some' BRDM-2/-2A with the Army and BRDM-2A with the National Guard. A turreted BRDM-2/-2A/-2MS suggests a reconnaissance subunit or a Rosgvardia unit; one with rear pole racks, NBC reconnaissance.*

RECOGNISE **Body** 4x4 hull 5.75 m long: boat-like bow, vertical lower sides and rear, upper sides sloping inwards, engine deck sloping down to the rear.
Turret Conical flat-topped turret with no hatch on the centre of the roof, the same type as on the BTR-60PB and BTR-70.
Cab Commander and driver side by side at the front behind windscreens with armoured shutters; two circular roof hatches forward of the turret are the only way in.
Axles Close only: two axles, central tyre pressure; two pairs of powered belly wheels between them, raised on roads; trim vane under the nose; one water-jet at the rear.
Upgrades BRDM-2A, -2M and -2MS: belly wheels removed and side door-hatches fitted; -2MS adds armour panels, a sensor head at the turret rear and six cameras.
CONFUSED WITH **BTR-60PB, BTR-70, BTR-80** p. 110 Turret only: not decisive, same turret type. Full view: four axles and 7.54 to 7.65 m long, against two axles and 5.75 m.
9P148 Konkurs p. 305 Same hull. Full view: no turret; five ATGM tubes on a launcher raised from the roof, retracted for travel.
9K31 Strela-1 Same hull. Full view: no turret; a launcher with four missile canisters on the roof.


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Fully amphibious with water-jet, about 10 km/h afloat; belly wheels help cross trenches up to 1.25 m; unarmoured tyres. Crew exits only through roof hatches.

Weight, combat	**7.0 t**
L × W × H	**5.75 × 2.35 × 2.31 m**
Road speed	**90 km/h** maximum
Road range	**750 km** maximum

Range, 14.5 mm API/API-T (KPVT)	**2,000 m** effective, ground target, day
Range, 7.62 mm ball (PKT)	**100–1,500 m** effective (with sight adjustments), ground target, day; FAS calls 1,500 m maximum aimed range
Detection range, TPKU-2B commander's sight	**3,000 m** observation range, day; 5x periscope, target not stated
Detection range, TKN-1S night sight	**250–300 m** observation range, night, with OU-3 infrared illuminator; target not stated
Detection range, BRDM-2MS thermal sight	**5 km day; 3.5 km night** claimed, BRDM-2MS thermal camera in optronic head at turret rear; target not stated, claim
Crew	**4 (commander, driver, gunner, observer)**
Armament	**14.5 mm KPVT and coaxial 7.62 mm PKT in BPU-1 turret**
Ammunition, KPVT	**500 rounds** WEG's 2,000 treated as a transcription error (WEG 2015 gives 500); see alternative
Ammunition, PKT	**2,000 rounds**
Elevation, turret guns	**-5 to +30 deg** manual elevation and traverse, 360 deg

SOURCES D24A D24B FAS7 IISS25 JANESRG ORYX1 RWW WEG28 WEG2015 WP-EN34 WP-RU55 WWW15 Updated 2026-10-09

BTR-80 БТР-80

NATO: M1978 **WH-AT-A**

Wheeled 8x8 amphibious APC; BTR-80A and BTR-82A carry a 30 mm cannon In service 1971

OPERATED BY **motor rifle battalion**, motor rifle companies, about 44 BTR-80/BTR-82/MT-LB per BTR-mounted battalion [D 2016 M]
motor rifle brigade, motor rifle battalions [O 2022-09 H] seen with 27th Separate Guards Motor Rifle Brigade, 15th Separate Guards Motor Rifle (Peacekeeping) Brigade
motor rifle regiment [O 2022-09 M] seen with 254th Motor Rifle Regiment, 752nd Motor Rifle Regiment
motor rifle division [O 2024-10 M] seen with 42nd Guards Motor Rifle Division
motor rifle brigade [O 2022-03 M] seen with 126th Separate Guards Coastal Defence Brigade (Black Sea Fleet)
naval infantry brigade, Naval Infantry branch total 200 BTR-82A, 100 BTR-80 (IISS estimate); IISS lists 6 naval infantry brigades and 1 regiment [R 2024 H]
Rosgvardia unit, INA; IISS gives 1,600 BMP-1/BMP-2/BTR-70M/BTR-80/BTR-82A/AM combined; BTR-80S and BTR-82V are Rosgvardia versions [R 2024 H]
military base, about 100 BTR-82A planned for delivery in 2015 [R 2015 M] seen with 201st Military Base (Tajikistan)
Russian force in Syria, INA; CNA reports BTR-82s guarding artillery with T-90A (2018) [R 2024 M]
Spetsnaz brigade [R 2015-10 L] seen with 45th Separate Guards Spetsnaz Brigade (VDV)
motor rifle division, more than 100 BTR-82AM planned for a Western MD MR division (Voronezh, Belgorod, Bryansk regions) by end-2016; TASS via GlobalSecurity [R 2016-10 L]
military base, INA; first Russian unit to receive the BTR-82A, June 2013 [R 2013-06 L] seen with 7th Military Base (Abkhazia)

NUMBERS **Holdings** 120 BTR-82AM in the Airborne Forces (VDV) (IISS estimate); IISS does not say which VDV units hold them (2024); **Holdings** about 20 BTR-82A with the Russian force in Syria (1 infantry battle group, 3 MP battalions; IISS estimate, late 2024) (2024)

INDICATES *BTR-80/82 mark motor rifle units on wheels: a BTR battalion holds about 44 BTRs or MT-LBs. BTR-82A also serve naval infantry, airborne and Rosgvardia units, so the type alone does not fix the branch.*

RECOGNISE **Body** 8x8 hull, crew at the front, engine at the rear, troops exit by side doors; roof slopes down at the far rear (BTR-70) or rises higher over the rear (BTR-80).
Turret Small turret on the roof in line with the 2nd road wheel. BTR-80: 14.5 mm MG, six smoke dischargers on turret rear. BTR-80A/82A: long 30 mm cannon mounted outside.
Cab Commander and driver side by side; windscreen hatches in the upper glacis, roof hatches above their seats; trim vane folds back onto the glacis (BTR-60PB: under nose).
Details BTR-80 family: two-part side door between 2nd and 3rd wheels, lower half folds down as a step. BTR-70: small low door; exhaust each side.
Axles Close only: four large tyred road wheels each side, slightly larger gap between 2nd and 3rd. Firing ports: three each side (BTR-80), one more on the right (BTR-80A).

CONFUSED WITH **BTR-80A, BTR-82A (Oryx bucket BTR-80/82)** Oryx files photos it cannot split as 'Unknown BTR-80/82'. Turret only: BTR-80A and BTR-82A carry a long 30 mm cannon outside the turret and look alike.
BTR-70 (Oryx bucket BTR-70/80) Oryx keeps 'Unknown BTR-70/80'. Full view: small low door between 2nd and 3rd wheels, hull top sloping down at the far rear; BTR-80: two-part door, higher rear roof.
BTR-60PB Full view: square side door high in the hull above the 2nd and 3rd wheels, not low between them; trim vane folds under the nose; exhaust pipes each side at 45 degrees.
BTR-90 Rostok p. 111 Full view: overall height 2.975 m against 2.46 m for the BTR-80; turret with 30 mm 2A42 cannon and a Konkurs ATGM launcher; side exit doors.
K1Sh1 command, signals and EW vehicles (R-149BMR, Infauna, PU-12M7) p. 228 Side view: same 8x8 hull but a raised middle section and extra hatches; turret unarmed or absent.
2S23 Nona-SVK p. 131 Same BTR-80 hull. Turret only: large central turret with 120 mm ordnance in a sloping front, sides curving to the rear; no firing ports.



BTR-82A. Vitaly V. Kuzmin, CC BY-SA 4.0



BTR-70. Torin, public domain



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Amphibious, waterjet driven; trim vane raised before entering water. Climbs 60%, crosses 2 m trench and 0.5 m step. Central tyre pressure regulation.

Weight, combat (BTR-80)	**13,600 kg**
Weight, combat (BTR-70)	**11,500 kg**
Weight, combat (BTR-82A)	**15,400 kg** BTR-82A; mil.ru figure cited by Russian Wikipedia; Army Recognition text gives the same, claim
L × W × H	**7.65 × 2.90 × 2.46 m**
Road speed (BTR-80)	**80 km/h** maximum
Road speed (BTR-82A)	**80 km/h** maximum, BTR-82A
Road range (BTR-80)	**600 km** maximum
Road range (BTR-70)	**600 km** maximum
Swimming speed (BTR-80)	**9 km/h** maximum
Fording	**amphibious**
Bridge load class (BTR-80)	**13** 13.6 t wheeled x 0.94, rounded up, estimated
Bridge load class (BTR-82A)	**15** 15.4 t wheeled x 0.94, rounded up, estimated
Length (BTR-70)	**7.535 m**
Width (BTR-70)	**2.80 m**
Height (BTR-70)	**2.235 m** top of turret
Trench crossing	**2 m**

Range, KPVT 14.5 mm API/API-T	**2,000 m** maximum effective, ground target, day
Range, KPVT 14.5 mm	**4,000 m** maximum, gun maximum firing range; round and target not named
Range, KPVT 14.5 mm, air target	**1,000 m** sight range, air target; BTR-80 1PZ-2 sight; round not named
Range, PKT 7.62 mm ball	**1,500 m** effective, ground target
Range, 2A72 30 mm, light armour (BTR-80A, BTR-82A)	**2,000 m** maximum, light armoured targets; round not named
Range, 2A72 30 mm, personnel (BTR-80A, BTR-82A)	**4,000 m** maximum (Wikipedia); effective (RWW), personnel (Wikipedia, round not named); RWW: HE-T and AP-T
Range, 2A72 30 mm, helicopters	**1,500 m** maximum, helicopters; round not named
Detection range, TKN-AI commander's sight (BTR-82A)	**3 km** ground targets, with laser rangefinder, claim
Crew (BTR-80, BTR-82A)	**3 + 7** commander, driver, gunner + 7 troops
Crew (BTR-70)	**2 + 9**
Elevation, KPVT (BTR-80)	**-4° to +60°**
Elevation, KPVT (BTR-70)	**-5° to +30°**
Ammunition (BTR-70, BTR-80)	**500 x 14.5 mm; 2,000 x 7.62 mm** 7.62 mm figure per WEG 2015, WEG BTR-70 sheet, JANESRG and Wikipedia; WEG BTR-80 figure kept as "also" (transcription error)
Ammunition, 2A72 (BTR-80A)	**300 x 30 mm**
Gunner sight (BTR-82A)	**TKN-4GA day/night, stabilised** claim

SEEN WITH 2S23 Nona-SVK; 1V152 (Kapustnik-B command and observation post); BREM-K; RKhM-4; R-149BMR Kushetka-B; RB-531B Infauna; Taifun-M

VARIANTS **BTR-70** Small low door between 2nd and 3rd wheels; BTR-60PB/BRDM-2 conical turret; exhaust each side at rear. **BTR-70M** BTR-70 with the rear hull of the BTR-80. **BTR-80** Two-part side door, higher rear roof with near-horizontal exhaust, six smoke dischargers on turret rear. **BTR-80A** New turret with externally mounted 30 mm cannon. **BTR-82** Unified turret module (BPPU) as BTR-82A but with 14.5 mm KPVT. **BTR-82A** Looks very like the BTR-80A. **BTR-82AM** As BTR-82A. **BTR-82AT** Extra screens and slat grilles on the hull.

SOURCES AR38 ATP CNA DIND GS15 GS16 GS17 IISS25 JANESRG KOLESA ORYX1 RWW WEG33 WEG2015 WP-EN21 WP-EN40 WP-RU65 WP-RU66 WP-RU67 WP-RU68 WSPOT20 WSPOT23 WSPOT24 WSPOT25
Updated 2026-10-09

BTR-90 Rostok БТР-90 «Росток»

WH-AT

8x8 amphibious armoured personnel carrier with 30 mm turret In service 2008

OPERATED BY **research institute**, 38th Research Institute, Kubinka (storage) R 2023 L

INDICATES *The BTR-90 was never mass-produced and is not a standard fielded type. One seen near Avdiivka in Oct 2023 reportedly came from storage at the 38th Research Institute, Kubinka. It does not indicate a particular unit type.*

RECOGNISE **Body** 8x8 hull, overall height 3.05 m against 2.46 m for the BTR-80; pointed nose; driver mid-hull just ahead of the turret; troop compartment behind, engine at the rear.
Turret BMP-2 type turret with a 30 mm gun and an ATGM launcher on it; AGS-17 at the rear left of the turret; three smoke grenade launchers each side.
Axles Eight wheels in two groups, two pairs at the front and two at the rear; split side doors between the groups; front four wheels steer.
Details Close only: periscopes in place of windscreens; V-shaped belly. Seen in Ukraine with a white V marking.

CONFUSED WITH **BTR-80, BTR-82A** p. 110 Hull-down: BMP-2 type turret with an ATGM launcher on it. Full view: overall height 3.05 m against 2.46 m (BTR-80); wheels in two groups of two axles.



Msgevans00, CC BY-SA 4.0

MOBILITY 8x8 wheeled, amphibious by two water jets without preparation (WEG); cross-country ability claimed comparable to tracked vehicles.

Weight	**22,000 kg** combat weight
L × W × H	**8.05 × 3.06 × 3.05 m** length as WEG gives it, undefined; 8.2 m is hull length
Road speed	**100 km/h** maximum

Range, 9M113 Konkurs	**4 km** maximum effective, 9M113 Konkurs (WEG15: also AT-5B Konkurs-M, 4,000 m), wire-guided SACLOS, four missiles; WEG15 term; WEG online calls 70 m – 4 km 'operational range'
Minimum range, 9M113 Konkurs	**70 m** 9M113 Konkurs, lower bound of WEG 'operational range'
Range, 30 mm Frag-HE	**4,000 m** maximum effective, 2A42 gun; day (2,500 m night, WEG15); WEG online gives 4,000 m maximum and 2,000 m effective, ammunition not stated

SOURCES AR36 DEFBLOG DEFUA1 DEFUA2 MIL27 WEG32 WEG33 WEG2015 WP-EN37 WP-RU63

Updated 2026-10-09

Rys Рысь

armoured utility vehicle

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

SBA-60K2 Bulat «Булат»

armoured personnel carrier

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Tigr and Vodnik armoured cars ГАЗ-233014 «Тигр», «Водник»

WH-AT

Light 4x4 armoured cars for escort, reconnaissance, patrol and troop carriage In service 2006

OPERATED BY **reconnaissance battalion** D 2016 M
Rosgvardia unit, OMON; police SPM-1 and SPM-2 versions R 2024 M
Reconnaissance and special operations units, force protection for forward air controller detachments, Syria R 2019 L
Naval Infantry, branch; no unit named R 2026 L

INDICATES *Tigr or Tigr-M suggests reconnaissance, airborne, Spetsnaz or National Guard elements; Army lists hold it without counts. Vodnik is rare, reported mainly with special forces.*

RECOGNISE **Cab** Tigr: 4x4 with the bonnet forward, crew cab in the middle, troop section behind. Vodnik 39371: nose pushed forward over the front wheel arches, three-seat cab.
Axles Both 4x4. Tigr is not amphibious; Vodnik is amphibious and swims on its wheels. Width: Vodnik 2.6 m, Tigr 2.2 m.
Details Tigr roof mount: 7.62 or 12.7 mm MG or 30 mm AGL; Tigr-M may carry an Arbalet-DM remote station. Vodnik may have a BTR-80 type turret.
Body Tigr-M: one large square hatch replaces the first Tigr's two-leaf hatch. Vodnik: hermetic hull with a modular rear body.
Details Tigr-M SpN with 2023 quick-mount kit: add-on armour panels over windshield, wheel arches, radiator grille and front doors.

CONFUSED WITH **Vodnik against Tigr** Full view: Vodnik 2.6 m wide and 2.6 m high against 2.2 m and 2.0 m for the Tigr; Vodnik nose pushed forward over the front wheel arches.
BTR-80 p. 110 Shares only the turret: a Vodnik may carry the BTR-80 BPU-1 turret, which misleads when just the turret shows. Full view: two axles, not four.

SEEN WITH Arbalet-DM remote weapon station (1 per vehicle where fitted); Leer-2 EW vehicle on Tigr-M; Gibka-S air defence on Tigr-M

VARIANTS **GAZ-233014 Tigr STS** Armoured army version, two-part roof hatch with rotating cupola for heavy MG or grenade launcher. **GAZ-233114 Tigr-M** Large square hatch (WEG: rear; ru-Wikipedia: roof turntable) replaces two-leaf hatch; new armoured bonnet; 9 rear seats, not 8. **ASN-233115 Tigr-M SpN** Roof weapon platform, 6 seats; shown 2018. The 2023 'Mad Max' kit adds armour panels at windshield, wheel arches, grille, front doors. **SPM-1 and SPM-2** Interior Ministry police versions; SPM-2 has two extra roof glass hatches.


Tigr. Vitaly V. Kuzmin, CC BY-SA 4.0


Tigr-M. Vitaly V. Kuzmin, CC BY-SA 4.0


Tigr-M SpN. Kirill Borisenko, CC BY-SA 4.0


Vodnik. Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Tigr fords 1.2 m and is not amphibious (WEG). Vodnik is amphibious, afloat speed 4 to 5 km/h (Wikipedia).

Weight, combat, Tigr	**6 t** GAZ-2975 baseline in WEG
Weight, Vodnik	**7,500 kg** combat
L × W × H	**5.70 × 2.2 × 2.0 m** WEG 2015 (GAZ-2330/ Tigr-M page) and Wikipedia agree; WEG online 4.61 m kept as 'also' (likely transcription error)
Road speed, Tigr	**140 km/h** maximum
Detection range, Arbalet-DM TV camera	**2.5 km** claimed, target identification; thermal imager 1.5 km, claim
Crew, Tigr	**2 (driver, commander)** WEG 2015 and Wikipedia agree; carries 5 to 10 personnel by variant (WEG 2015); WEG online crew 1 kept as 'also'
Crew, Vodnik	**2**
Armament, Tigr	**7.62 or 12.7 mm MG, or 30 mm AGL, roof mounted** crew-served

SOURCES AR118 AR119 AR120 ATP CNA IISS25 RWW WEG105 WEG2015 WP-EN178 WP-EN179 WP-RU238

Updated 2026-10-09

Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks КамАЗ-63968, КамАЗ-53949, КамАЗ-4386, Урал-63095 «Тайфун»

WH-AT

Mine-protected 4x4 and 6x6 armoured trucks: troop carrier, recon, medical, weapon carrier In service 2014

OPERATED BY **Spetsnaz brigade** O 2018 L seen with 22nd Guards Separate Spetsnaz Brigade (Rostov oblast), troop trials of 4x4 Typhoon-K; identification tentative

engineer-sapper brigade, assault and obstacle-clearing battalion O 2017 L seen with Guards engineer-sapper brigade, Western Military District (Nizhny Novgorod oblast), field exercise Mar 2017

combined arms army, separate special-purpose (deep reconnaissance) company R 2021 L

military district R 2021 L seen with Southern Military District, Central Military District (first recipients of Linza)

motor rifle brigade, INA; first K-53949 built went to this brigade for trials R 2021 L seen with 55th Separate Mountain Motor Rifle Brigade (41st Combined Arms Army, Kyzyl)

Military police units, sent to Syria with KamAZ-63968, early 2017 R 2017 L

Unidentified unit, demining in Syria, 2017 R 2017 L seen with International Mine Action Centre of the Russian Armed Forces

Troop reconnaissance units, a news title reports one in Buryatia (Eastern MD) R 2018 L

Spetsnaz brigade, INA; news titles report deliveries to spetsnaz formations in Novosibirsk and Altai (Central MD), Tambov (Western MD), Kuban (Southern MD) and Zabaikalye (Eastern MD) R 2018 L

INDICATES *Typhoon-K went to spetsnaz, reconnaissance, engineer and military police units; first 4x4s were trialled by a mountain motor rifle brigade. Typhoon-VDV went first to reconnaissance and spetsnaz units. Named units are few: treat as a hint.*

RECOGNISE **Cab** Typhoon-K 4x4: cab-forward, no bonnet; four doors in front part of hull, one in rear plate. Typhoon-VDV: three front doors, one rear. Typhoon-U: bonnet, three-seat cab.

Axles 2 axles: KamAZ-53949, Linza, Typhoon-VDV. 3 axles: KamAZ-63968, Ural-63095. Typhoon-K hydropneumatic suspension, Linza springs. Close only: 16.00R20 run-flat tyres, 6x6.

Body Typhoon-K 6x6: separate armoured troop module behind cab, rear ramp plus side door, roof hatches. VDV: load-bearing hull, no frame. Linza: medical capsule.

Details Typhoon-VDV: remote turret with 30 mm 2A42 gun and 7.62 mm gun, smoke launchers on sides. Typhoon-K: remote machine-gun station, optional on the 6x6; V-shaped underside.

CONFUSED WITH **Typhoon-U (Ural-63095) against Typhoon-K (KamAZ)** Same family name, both armoured trucks. Full view: Typhoon-U has a bonnet ahead of a three-seat armoured cab; the KamAZ-53949 Typhoon-K is cab-forward.

Tigr (GAZ-233014), against Typhoon-VDV p. 112 Both 4x4 airborne armoured cars. Full view: Typhoon-VDV 2.96 m high against 2.0 m for the Tigr; remote turret with a 30 mm 2A42 gun on the roof.

SEEN WITH Linza armoured ambulance (KamAZ-53949); 2S41 Drok 82 mm self-propelled mortar (Typhoon 4x4 chassis); Typhoon-PVO (KamAZ-4386) for man-portable SAM teams

VARIANTS **KamAZ-53949 Typhoon-K 4x4** Short two-axle cab-forward vehicle; four doors in front part of hull, one rear door. Carries 2 crew and 8 troops (10 seats); remote machine-gun station; STANAG 4569 level III mine protection claimed (WEG), 3b (Russian Wikipedia). **KamAZ-63968 Typhoon-K 6x6** Three axles; longer troop module with rear ramp and side door. Carries 14 to 16 troops; heavier (21 t curb). **Ural-63095 Typhoon-U** Bonneted three-axle truck with armoured cab and separate armoured module. 26.5 t; 16 troops plus 3 in cab (design figures). Not in IISS25. **KamAZ-4386 Typhoon-VDV** Frameless 4x4 with remote turret: 30 mm 2A42 gun and 7.62 mm PKTM; smoke launchers on turret sides. Air-droppable design; gun armament; 2 crew plus 6 troops. **KamAZ-53949 Linza** Two-seat cab with medical capsule in place of troop module. Casualty evacuation: 4 lying or 6 seated (Russian Wikipedia). **KamAZ-53949 Feniks** INA. K-53949 built with Russian-made components (import substitution); shown at Army-2023 and the 2025 Victory Day parade. **K-53949 with Kornet-EM** INA. Anti-tank missile carrier version of the K-53949, reported as developed (Izvestia 2021); service status not stated. **KamAZ-63969 Typhoon-K** 6x6 with single-volume armoured body (cab and troop body one structure); remote machine-gun station. APC; 19.7 t curb, 4 t payload; STANAG 4569 level 4 claimed. Not in series production (Russian Wikipedia).



Typhoon-K 6x6. Alexey Vasilenko, CC BY-SA 4.0



Typhoon-K 4x4. Ministry of Defence of the Russian Federation, CC BY 4.0



Nickel nitride, CC0 (credit not required)



Typhoon-U. Boevaya mashina, CC BY-SA 4.0



General Staff of the Armed Forces of Ukraine, CC BY 4.0

MOBILITY Wheeled, all-wheel drive; 4x4 Typhoon-K not amphibious, fords 1.5 m unprepared. Typhoon-VDV designed for parachute delivery (system in development 2021).

Weight, Typhoon-K 4x4 (KamAZ-53949)	**13,700kg** curb weight, claim
Weight, Linza	**13,700kg** WEG curb weight, identical to Typhoon-K 4x4; probably copied, claim
Weight, Typhoon-K 6x6 (KamAZ-63968)	**21 t** curb weight; gross 24 t
Weight, Typhoon-VDV	**not more than 15 t** gross weight, claim
Weight, Typhoon-U	**26.5 t** gross, design figure
Road speed, Typhoon-K 4x4	**100 km/h** claim
Road speed, Typhoon-K 6x6	**105 km/h**
Road speed, Typhoon-VDV	**100 km/h** claim
Road speed, Linza	**100 km/h** maximum, WEG Linza page repeats Typhoon-K 4x4 figures, claim
Road range, Typhoon-K 4x4	**1,000 km** without refuelling, claim
Road range, Typhoon-K 6x6	**1,200 km**
Road range, Typhoon-VDV	**800 km minimum** developer figure, claim
Road range, Linza	**1,000 km** claim
Fording, Typhoon-K 4x4	**1.5 m** unprepared, claim
Fording, Linza	**1.5 m** unprepared; 1.7 m prepared (Russian Wikipedia), claim
Fording, Typhoon-VDV	**1.5 m** unprepared, 'not less than'; 1.75 m prepared; developer figure relayed by state media, claim

Crew and troops, Typhoon-K 4x4	**2 crew, 8 troops** claim
Crew and troops, Typhoon-K 6x6	**3 crew, 14 troops** Russian Wikipedia infobox; English Wikipedia gives up to 16 depending on configuration
Crew and troops, Typhoon-VDV	**2 crew, 6 troops** claim
Capacity, Linza	**up to 10 wounded** claim
Armament, Typhoon-K 4x4	**stabilized RCWS; 7.62mm MMG or 12.7mm/14.5mm HMG** remote weapon station, claim
Armament, Typhoon-VDV	**30 mm 2A42 gun with coaxial 7.62 mm PKTM; 300 rounds and 1,000 rounds** Spitsa BM-30-D (32V01) module; elevation -10 to +60 degrees, claim
Mine protection, Typhoon-K 4x4	**STANAG 4569 level III** claimed: 8 kg TNT under floor, 10 kg under wheels, claim
Mine protection, Typhoon-VDV	**6 kg TNT under wheel, 4 kg under belly** STANAG 4569 level 2a, developer figure, claim
Payload, Typhoon-K 4x4	**2,000 kg** claim

SOURCES BMPD17 IISS25 IZV13 RG213 RT9 WEG105 WEG110 WP-EN190 WP-RU253 WP-RU254 WP-RU255 WP-RU256 WP-RU257 ZR11 Updated 2026-10-09

Ural-432009 Ural-VV Урал-432009

armoured truck

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

VPK-7829 Bumerang Бумеранг

armoured personnel carrier trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

ATGM carrier vehicles

9K114 Shturm-S 9К114 «Штурм-С»

NATO: AT-6 Spiral **TR-A**

Self-propelled radio-command anti-tank missile launcher on MT-LB, 12 missiles In service 1979

OPERATED BY **motor rifle division**, anti-tank battalion: several Shturm ATGM batteries D 2019 M
motor rifle division, Shturm-S being replaced by more than 18 Khrizantema-S (Jan 2021) O 2021-01 M
artillery brigade, 18 per brigade (2000-2009) O 2021-03 M
motor rifle brigade, 12 or 18 per brigade (2009) O 2009 L
Military bases abroad, 12 per base (2009) O 2009 L
tank division, anti-tank battalion: several Shturm ATGM batteries R 2019 M

NUMBERS **Holdings** 30 9P149 in Naval Infantry (IISS estimate); Army holds 9P149 and 9P149M, number not given (2024)

INDICATES *Held by the anti-tank battalions of motor rifle and tank divisions, and delivered to artillery units of the Western and Southern MDs (MoD, 2018-2021). A sighting may indicate a division anti-tank battalion or an artillery brigade nearby.*

RECOGNISE **Hull** MT-LB hull as on the APC: crew cab behind glacis, long rear compartment with near-vertical sides, chamfered top and twin rear doors. Roof height under 1.8 m.
Armament Single launcher arm raised from the hull roof to fire; retracts inside the hull for travel. Spent container thrown aside, next one loaded from a 12-round drum.
Suspension Close only: as MT-LB, six equally spaced road wheels, drive sprocket front, idler rear, no return rollers. Tracks 350 mm, 565 mm on wide-track MT-LBV.

CONFUSED WITH **MT-LB** p. 107 Launcher raised: one missile tube on a launcher arm raised from the hull roof; the APC has no launcher. Not decisive in travel: the launcher retracts into the hull.
9K35 Strela-10 (SA-13 Gopher) p. 160 Same MT-LB chassis: a turret with four ready missile boxes, against a single missile on the 9P149 launcher arm.


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 3.0

MOBILITY Amphibious, swims on its tracks and can fire afloat. Low ground pressure suits desert, mountains and rough ground.

Weight, combat	**12.3 t** 9P149
L × W × H	**6.454 × 2.86 × 1.865 m** hull
Road speed	**65 km/h** maximum
Road range	**500 km** on fuel
Swimming speed	**4.5 km/h** afloat

Range, 9M114 Kokon	**5,000 m** maximum, HEAT or thermobaric 9M114F, ground target
Minimum range, 9M114 Kokon	**400 m** HEAT or thermobaric 9M114F, ground target
Altitude, 9M114 Kokon	**3,000 m** maximum, air target (hovering or slow helicopter), launch at sea level
Range, 9M120 Ataka	**6,000 m** maximum, tandem HEAT or thermobaric 9M120F, ground target, from 9P149/9P149M
Minimum range, 9M120 Ataka	**400 m** tandem HEAT or thermobaric 9M120F, ground target
Detection range, day sight	**1,500 m** day sight range, day only
Crew	**2**
Missiles carried	**12** in automatic loader drum, 1 of them ready to fire
Penetration, 9M114	**560–600 mm RHA** HEAT
Penetration, 9M120	**over 800 mm behind ERA** tandem HEAT
Missile speed, 9M114	**345 m/s** average
Time of flight, 9M114	**17.6 s** to 5,000 m
Missile weight, 9M114	**31.4 kg** at launch; 46.5 kg in container

SEEN WITH MT-LB (1); 9M114 Kokon, 9M114F, 9M120 Ataka, 9M120F missiles (12 per vehicle); Control and test vehicles

SOURCES APA6 AR61 AR109 CNA FAS21 IISS25 IZV233 JANESRG MILIN3 MISS14 MISS15 MISS20 ORYX1 OSN22 SHEP18 WEG92 WEG2015 WP-RU118 WP-RU156 WP-RU219 WWW117
Updated 2026-10-13

9P162 Kornet-T 9П162 «Корнет-Т»

NATO: AT-14 Spriggan, M1995 **TR-A**

Tracked ATGM launcher vehicle on the BMP-3 chassis: two Kornet launchers, 16 missiles In service 1996

OPERATED BY **motor rifle brigade**, anti-tank battalion, two ATGM batteries (9P157-2 Khrizantema-S as the alternative fit), 6 per battery, 12 per brigade D 2024 M
Unidentified unit, several on rail wagons moving into Belarus, January 2022 R 2022-01 L

NUMBERS **Holdings** About 20 in Russian service (Defence24, Feb 2022); IISS lists 9K128-1 Kornet-T in the Army without a count (late 2024) (2022-02); **Losses** 2 destroyed, visually confirmed (Oryx, listed as 9P163M-1 Kornet-T); first loss reported April 2022 (2026-09)

INDICATES *In doctrine (2016 to 2024) a 9P162 belongs to an ATGM battery of a motor rifle brigade's anti-tank battalion: six per battery, two batteries per brigade. Only about 20 were reported in Russian service in 2022.*

RECOGNISE **Hull** BMP-3 hull with the turret removed; both launchers retract inside the hull on the move
Armament Deployed: two launch arms rise above the roof, each holding one Kornet missile container; arms drop into the hull to reload
Turret No turret or gun; armoured sight housing on the hull roof, front left
Suspension Close only: six road wheels, idler front, drive sprocket rear, three return rollers (BMP-3 running gear)

CONFUSED WITH **BMP-3** p. 103 No turret or gun on the 9P162; the BMP-3 has a central round turret with a long-barrelled 100 mm gun and a 30 mm cannon to its right
9P157-2 Khrizantema-S p. 116 Deployed: Khrizantema-S extends a radar antenna and one launcher for two containers; the 9P162 two launch arms, one container each. Stowed, both are turretless BMP-3s.
9P149 Shturm-S p. 115 Full view: MT-LB has six equally spaced road wheels and no return rollers, the 9P162 three. Chassis hidden: Shturm-S raises a single-rail launcher, the 9P162 two arms.



Yevgeny Kel (Mil.ru), CC BY 4.0

MOBILITY Swims at up to 10 km/h on waterjets; air-transportable; same tracked running gear and mobility as the BMP-3

Combat weight	**under 18 t** claim
L × W × H	**6.73 × 3.15 × 1.77 m**
Road speed	**70 km/h** maximum, paved road, claim
Off-road speed	**45 km/h** off-road or dirt road
Road range	**600 km**
Swim speed	**10 km/h** waterjets, claim

Range, 9M133-1	**5,500 m** maximum, day; tandem HEAT; laser beam riding, claim
Minimum range, 9M133-1	**100 m** tandem HEAT, claim
Range, 9M133-1	**3,500 m** maximum, night, thermal sight; tandem HEAT, claim
Range, 9M133	**5,000 m** maximum, tandem HEAT; original 9M133 missile
Minimum range, 9M133	**100 m** tandem HEAT
Range, 9M133F-1	**5,500 m** maximum, day; thermobaric
Minimum range, 9M133F-1	**100 m** thermobaric
Detection range, thermal sight	**4,000 m** acquisition, night
Detection range, day sight	**5,500 m** acquisition, day
Penetration, 9M133-1	**1,000–1,200 mm behind ERA** tandem HEAT, claim
Warhead, 9M133F-1	**thermobaric, 10 kg TNT equivalent** claim
Missile speed, 9M133-1	**250 m/s**
Guidance	**semi-automatic, laser beam riding**

SEEN WITH BMP-3 (1); 9M133 Kornet missiles (16 per vehicle)

SOURCES AR62 ARMYINF4 ATP D245 IISS25 JANESRG MISS15 MISS19 ORYX1 RWW WEG59 WEG60 WEG2015 WP-RU57 WP-RU124 ZR6
Updated 2026-10-20

Bulsae-4 ATGM launcher vehicle (North Korea) WH-AT

Non-line-of-sight ATGM launcher on a 6x6 armoured carrier, eight missiles In service 2018

OPERATED BY **DPRK contingent in Russia (Kursk region)**, Kursk region, winter 2024-25; DPRK footage shows a pickup or SUV mount, not the 6x6 carrier R 2025 M

Unidentified unit, Kharkiv region near the Russian border; one launcher seen by Ukrainian drone, reported 30 Jul 2024, 1 vehicle R 2024-07 L

INDICATES *Reported with Russian forces in Kharkiv region in 2024 and with the DPRK contingent in Kursk region in winter 2024-25; a sighting indicates DPRK-supplied missile fire at targets beyond line of sight, reported at over 10 km.*

RECOGNISE **Body** Wheeled armoured hull with a turret carrying a rotating pack of eight missile containers

Body Hull of the DPRK M-2010 APC, described as a BTR-80 shortened by removing the second set of wheels

Axles 6x6, three axles, with a gap between the first and second axle

Details Close only: bank of three smoke grenade dischargers on each side at the front of the turret

CONFUSED WITH **BTR-80 and BTR-80A APCs** p. 110 Full view: three axles (6x6), gap after the first, not four (8x8). Chassis hidden: pack of eight missile containers, not a turret with MGs or a 30 mm cannon.

MOBILITY Wheeled 6x6 carrier on a shortened BTR-80-type hull. Unofficial figures give 90 km/h on road and 500 km range for the carrier.

Road speed	**about 90 km/h** maximum, M-2010 carrier, unofficial open-source figure, estimated
Road range	**about 500 km** operational, M-2010 carrier, unofficial open-source figure, estimated
Weight	**INA**
Fording	**INA**
Time into action	**INA**

Range, Bulsae-4 missile	**10 to 25 km** estimated, Missile with electro-optical seeker and fibre-optic command guidance, non-line-of-sight; no official DPRK figure, estimated
Missiles ready to fire	**8 in a rotating pack of containers**
Guidance, Bulsae-4 missile	**Electro-optical seeker with command guidance by fibre-optic cable; operator sees live video and can steer or retarget in flight** Open-source analyst assessment; no official DPRK description
Attack profile, Bulsae-4 missile	**Top attack on armoured vehicles** Open-source analyst assessment; helicopters also named as targets
Crew	**2 to 3**
Smoke grenade dischargers	**3 each side, front of turret**

SEEN WITH M-2010 6x6 armoured personnel carrier (1 hull per launcher vehicle)

SOURCES AR39 DEFPOST DEFUA3 IISS25 JANESRG JOONG KYIVP MIL30 MIL31 TWZ7 WP-EN43 WP-EN44 WP-EN45 not in WEG Updated 2026-10-09

Khrizantema-S 9K123 «Хризантема-С» NATO: AT-15 Springer TR-A

Tracked tank destroyer on BMP-3 hull; radar and laser guided supersonic ATGM, 6 km In service 2005

OPERATED BY **anti-tank battalion**, ATGM battery (two per battalion, Khrizantema-S or Kornet), motor rifle brigade, 6 per battery D 2024 M

artillery brigade, anti-tank battery (not yet in all brigades, 2019) O 2021-12 M

Navy coastal troops and Naval Infantry, coastal artillery brigades O 2019-01 M

motor rifle division, anti-tank battalion (to replace Shturm-S), more than 18 planned (MoD, Jan 2021) R 2021-01 M

Southern MD motor rifle units, reinforced with Khrizantema-S crews; exercise at Gvardeisky range, Chechnya, autumn 2021 R 2021 M

INDICATES *Held, by doctrine and reports to 2022, in the anti-tank battalions of motor rifle brigades and divisions and in anti-tank batteries of army and Navy coastal artillery brigades. A sighting suggests one of these anti-tank subunits nearby.*

RECOGNISE **Hull** BMP-3 hull with no turret: box hull, almost horizontal glacis, nose sloping back under the front. Roof almost smooth when stowed.

Armament Twin-round launcher for two missile canisters rises from the roof on an arm; a single 7.62 mm bow MG front left. Loading boom on the right side.

Turret None. A millimetre-wave radar antenna extends beside (left of) the launcher; both retract into the hull for travel.

Suspension Close only: BMP-3 running gear, six road wheels, idler front, drive sprocket rear, three return rollers; upper track behind a light cover.

CONFUSED WITH **9P162 Kornet-T** p. 115 Launcher raised: Khrizantema-S has a radar antenna left of its two containers; Kornet-T a guidance block on each of two arms. Stowed, both are turretless BMP-3s.

VARIANTS **9P157** INA. **9P157-2 Khrizantema-S** INA.

(Picture not available)

MOBILITY BMP-3 mobility; swims at 10 km/h. Fires only from the halt.

Weight	**18,700 kg** combat weight
L × W × H	**7.14 × 3.15 × 2.30 m** hull
Road speed	**70 km/h** maximum
Road range	**600 km** maximum
Swimming	**amphibious, 10 km/h** maximum
Ground pressure	**0.61 kg/cm²**

Range, 9M123-2 (radar)	**6,000 m** maximum, tandem HEAT, radar beam-riding, claim
Minimum range, 9M123-2 (radar)	**400 m** tandem HEAT, radar beam-riding, claim
Range, 9M123 (laser)	**6,000 m** maximum, tandem HEAT, laser beam-riding (SACLOS), claim
Minimum range, 9M123 (laser)	**400 m** tandem HEAT, laser beam-riding, claim
Range, 9M123F/9M123F-2	**6,000 m** maximum, thermobaric, claim
Altitude, 9M123	**3,000 m** maximum, air target
Detection range, EO day sight	**5,500 m** acquisition, day
Detection range, MMW radar	**10,000 m** acquisition, millimetre-wave guidance radar
Penetration, 9M123	**1,100 to 1,250 mm RHA** behind ERA, claim
Missile speed	**about 400 m/s** average cruise, claim
Missile weight	**46 kg** 54 kg in canister, claim
Missile diameter	**150 mm**
Warhead weight, 9M123	**8 kg** tandem HEAT, claim
Missiles carried	**15** basic load

SEEN WITH 9P157-3 platoon commander combat vehicle; 9P157-4 battery commander vehicle; 9V945 test vehicle (9P157 maintenance) and 9V990 missile test vehicle; BMP-3

SOURCES AR61 ARMYINF3 ATP CNA DEF244 IISS25 IZV22 IZV192 JANESRG MISS14 MISS15 RWW UKRINF5 WEG57 WEG2015 WP-RU118 ZR6 Updated 2026-10-13

Recovery and repair

T-54-T

armoured recovery vehicle legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Foreign and captured armoured vehicles

Captured US vehicles in Russian use: M2 Bradley, M113, MaxxPro, M88A1 M113 TR

Captured US IFV, APC, MRAP and recovery vehicle, repaired and reused by Russian units In service 2023

OPERATED BY **motor rifle battalion**, Bradley: taken after the assault on Sokol, restored after mine damage, cage added over turret, 1 vehicle shown O 2024-11 M

INDICATES *A Bradley seen with a Group Center motor rifle battalion (2024) or a naval infantry brigade (2025) is a trophy in ad hoc use, in very small numbers. The other types sit with repair units or are unplaced (2024-25).*

RECOGNISE **Bradley: hull, turret** High hull, sloped glacis, driver's hatch left, flat roof, rear ramp; turret mid-roof, twin TOW launcher on its left side, 25 mm cannon at the front

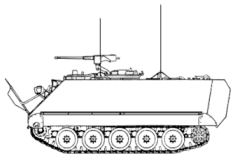
Bradley: suspension Six road wheels, sprocket front, idler rear, two return rollers; M2A2 has hull-side firing ports covered by applique armour (close only)

M113: hull, suspension Box hull, sloped front, flat roof, vertical rear with ramp; central cupola with 12.7 mm MG; five road wheels (six on stretched hulls), no return rollers (close only)

CONFUSED WITH **MT-LB (for M113)** p. 107 Full view: M113 five road wheels, MT-LB six; not decisive, stretched M113s have six. Chassis hidden: M113 cupola mid-roof, MT-LB turret right of driver



Kirill Borisenko, CC0



US Army, public domain

MOBILITY Bradley, M113 and M88A1 are tracked; MaxxPro is a 4x4 wheeled truck. Rostec's chief says the Bradley bogs in black soil and cannot cross rivers unaided (claim, not a trial).

Weight, combat, M2A2 ODS Bradley	**30,120 kg** Combat loaded
Weight, combat, M113A1	**11.2 t** M113A1; varies by variant
Weight, MaxxPro	**18,650 kg** Basic M1224

Range, 2A72 30 mm	**1.5 km** maximum effective, Light armoured vehicles
Range, 2A72 30 mm, ground targets	**2 km** maximum effective, Ground targets
Range, 12.7 mm M2HB	**2,000 m** maximum effective, Day
Crew, M2A2 ODS Bradley	**3 crew, 7 dismounts**
Armament, M2A2 ODS Bradley	**25 mm M242 cannon, coaxial 7.62 mm M240C MG, two TOW 2 launchers, 2x4 smoke dischargers**
Rate of fire, 25 mm M242	**200 rpm** Bushmaster cannon of the Bradley

SOURCES AR41 AR42 DEFMAG FAS9 FIVETV JANESRG LENTA2 LIFERU MEDUZA NTVRU RGRU5 TANKENC TWZ8 VPK7 WEG24 WEG2015 WP-EN46 WP-EN47 WP-EN48 WP-EN49 not in WEG

Updated 2026-10-09

ZFB-05 or Tiger 4x4 armoured personnel carrier (China) WH-LT

Light 4x4 armoured personnel carrier, Chinese-built; used by Rosgvardia's Akhmat unit In service 2023

OPERATED BY **Rosgvardia unit**, Akhmat special rapid response unit, Chechnya, 8 shown in a video, Jun 2023 O 2023-06 M

Unidentified unit, Russian troops somewhere in Ukraine; photos posted Sep 2024, 1 vehicle seen R 2024-09 L

INDICATES *Eight 'Tiger 4x4' were shown with Rosgvardia's Akhmat unit in 2023; the IISS lists a Tiger 4×4 only under the National Guard. A Sep 2024 front-line photo, read as a ZFB-05, names no unit. Identification unsettled: Tiger and ZFB-05 may be different models.*

RECOGNISE **Cab** ZFB-05: small-truck layout, engine at the front; two large rectangular front windows, a smaller one each side; a door each side at the front with a small armoured window

Body ZFB-05: troop compartment at the rear, rear door opening right with a small window; open-topped gun mount, armoured all round, front centre of the crew compartment roof

Axles ZFB-05: two axles, four tyres, set in round cut-outs in the hull sides

Body Tiger (Akhmat, 2023): engine at the front, protected crew cabin in the middle with bulletproof windows and doors, rear troop compartment, circular turret on the hull top



RG72, CC BY-SA 4.0

MOBILITY 4x4 on a light off-road truck chassis.

Weight	**4,500 kg** for the ZFB-05; the Tiger's kerb weight is the same
L × W × H	**5.275 × 2.54 × 2.26 m** for the ZFB-05; Tiger: 5.36 × 2.32 × 2.3 m
Road speed	**100 km/h** maximum, for the ZFB-05; Tiger: 115 km/h

Crew	**2** commander and driver; same for the ZFB-05 and the Tiger
Troops carried	**9** fully equipped; same for the ZFB-05 and the Tiger
Armament	**Roof-mounted 7.62 mm or 12.7 mm machine gun** same for the ZFB-05 and the Tiger; Tiger also 30 mm grenade launcher
Armour protection	**7.62x39 mm standard ammunition** for the ZFB-05: all-metal hull, extra hinged armour optional, manufacturer's claim; Tiger: front against 7.62 mm armour-piercing rounds, claim

SOURCES AR136 AR137 AR138 AR139 CHNEWS IISS25 KP242 KYIVP1 MIL145 MIL146 STRAT2 SVOB3 TELEG WP-EN208 not in WEG

Updated 2026-10-16

3 Fires

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
MRLS AND HEAVY FLAMETHROWERS						
9K59 Prima	–	9К59 «Прима»	122 mm multiple rocket launcher system · legacy	–	–	*121*
BM-13 Katyusha	–	БМ-13	132 mm multiple rocket launcher · stored	–	–	*121*
BM-21 Grad 122 mm MRL	M1964	БМ-21 «Град»	Truck-mounted 40-tube 122 mm area-fire rocket launcher · 1963	**20.4–45 km** 9M22U to new rockets, max	**WH-AT**	122
BM-27 Uragan	M1977	9П140 «Ураган»	220 mm 16-tube MRL on ZIL-135LM 8x8 for area fire and remote minelaying at 10-35 km · 1975	**34–35.8 km** 9M27F HE-frag, max	**WH-AT**	122
BM-30 Smerch	280MM M1983	9А52-2 «Смерч»	Heavy 300 mm 12-tube rocket launcher for deep area fire · 1987	**70–120 km** 9M55K to guided 9M544, max	**WH-AT**	123
M1991 and M-2024 240 mm multiple rocket launchers (North Korea)	–		Heavy 240 mm truck-mounted rocket launcher for area saturation fire · late 1980s	**40–80 km** unguided rockets, approx.	**WH-AT**	124
Tornado-G	–	9К51М «Торнадо-Г»	122 mm 40-tube truck MRL · 2012	**20–40 km** 9M538 to 9M521, max	**WH-AT**	124
TOS-1A Solntsepek	–	ТОС-1А «Солнцепёк»	Tracked 220 mm thermobaric and incendiary rocket launcher of the RKhBZ troops · 1988	**6–6.7 km** thermobaric to incendiary	**TR**	125
Uragan-1M	–	9К512 «Ураган-1М»	Heavy 220/300 mm MRL with swappable rocket pods · 2007	**35–130 km** 9M27F to guided 9M544, max	**WH-AT**	125
SELF-PROPELLED GUNS AND MORTARS						
2S1 Gvozdika	M1974	2С1 «Гвоздика»	122 mm amphibious tracked self-propelled howitzer · 1970	**15.2–15.3 km** HE, max	**TR-A**	126
2S3 Akatsiya	M1973	2С3 «Акация»	152 mm tracked self-propelled howitzer of brigade and division artillery battalions · 1971	**17.05–24 km** HE to RA, max	**TR**	127
2S4 Tyulpan	M-1975	2С4 «Тюльпан»	240 mm self-propelled breech-loading heavy mortar for destroying fortified targets · 1971	**9.65–20 km** HE to RA bombs, max	**TR**	128
2S5 Giatsint-S	M1981	2С5 «Гиацинт-С»	Army-level 152 mm self-propelled gun for long-range counter-battery and deep fire · 1975	**28.4–40 km** HE to RA, max	**TR**	128
2S7 Pion / 2S7M Malka	M-1975	2С7 «Пион»	203 mm heavy self-propelled gun for long-range fire on high-value targets · 1975	**37.5–55 km** HE to RA, max	**TR**	129
2S9 Nona-S	M1981	2С9 «Нона-С»	Airborne 120 mm self-propelled gun-mortar · 1981	**8.8–12.8 km** HE to RA, max	**TR-A+AD**	129
2S12 Sani	M-120	2С12 «Сани»	Truck-borne, towable 120 mm muzzle-loading mortar complex of the battalion mortar battery · 1979	**7–13 km** HE to RA bombs, max	**WH-AT**	130
2S19 Msta-S	M1990 FARM	2С19 «Мста-С»	152 mm tracked self-propelled howitzer of brigade, division and army artillery · 1989	**24.7–36 km** HE to RA, max	**TR**	130
2S23 Nona-SVK	–	2С23 «Нона-СВК»	Battalion-level 120 mm self-propelled gun-mortar on BTR-80 8x8 chassis · 1991	**8.8–12.8 km** HE to RA, max	**WH-AT-A**	131
2S31 Vena	–	2С31 «Вена»	120 mm tracked amphibious gun-mortar for close and direct fire support · Pilot batch 2010; line units from 2023	**8.8–13 km** HE to RA, max	**TR**	131
2S34 Khosta	–	2С34 «Хоста»	120 mm self-propelled gun-mortar on a modernised 2S1 hull · 2012	**8.8–13 km** HE to RA, max	**TR-A**	131
2S35 Koalitsiya-SV	–	2С35 «Коалиция-СВ»	152 mm self-propelled howitzers · 2023	**24.5–80 km** HE to guided or RA, max	**TR**	132
2S40 Floks	–	2С40 «Флокс»	120 mm wheeled self-propelled gun-mortar, indirect and direct fire · 2023	**7–13 km** HE bomb to HE shell, max	**WH-AT**	132
M1989 Koksan (North Korea)	–	«Коксан»	Long-range 170 mm tracked self-propelled gun on an open mount · 1978	**40–60 km** HE-frag to RA, max	**TR**	133
ANTI-TANK GUNS						
2A45M Sprut-B	–		125 mm towed anti-tank gun · legacy	–	–	*134*
MT-12 Rapira	–	МТ-12 «Рапира»	Towed 100 mm smoothbore anti-tank gun, also used for indirect fire · 1970	**1.85–8.2 km** APFSDS to HE-frag	**TW**	134
TOWED ARTILLERY AND MORTARS						
2A36 Giatsint-B 152 mm towed gun	M1976	2А36 «Гиацинт-Б»	152 mm towed gun for long-range and counter-battery fire at army level · 1976	**28.3–44 km** HE to RA, max	**TW**	135
2A65 Msta-B	M1987	2А65 «Мста-Б»	Towed 152 mm howitzer for army-level artillery brigades and regiments · 1986	**24–30 km** HE to base bleed, max	**TW**	135
2B9 Vasilek	–	2Б9 «Василёк»	82 mm automatic gun-mortar, vehicle-carried, battalion-level fire support · 1970	**4.27–5 km** HE bombs, max	**TW**	135
2B14 Podnos	–	2Б14 «Поднос»	82 mm smoothbore muzzle-loading light mortar, man-portable in three packs · 1983	**3.1–4.3 km** HE bombs, max	**MP**	136
B-4	–	Б-4	203 mm towed howitzer · legacy	–	–	*136*
D-20	M1955	Д-20	152 mm towed gun-howitzer, manually loaded · 1955	**17.23–24.4 km** HE OF-32 to OF-96, max	**TW**	137
D-30	M1963	2А18	122 mm towed howitzer for indirect and direct fire support · 1960	**15.3–22 km** HE max to Croatian ERBB RA HE (not standard load)	**TW+AD**	137
M-46	M1954	М-46	130 mm long-range towed field gun for counter-battery and general support fire · 1951	**27.15–38 km** HE to base bleed, max	**TW**	138
M-160	–	М-160	160 mm mortar · stored	–	–	*138*
M-1938	–	ПМ-38	120 mm mortar · stored	–	–	*139*
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns	–	МЛ-20, Д-1, М-30, БС-3, Д-44	Towed 85 to 152 mm WWII-design field guns and howitzers, drawn from storage since 2022 · 1937	**11.72–20.65 km** M-30 HE-frag to BS-3, max	**TW**	139
BALLISTIC MISSILES						
9K52 Luna-M	–	9К52	unguided rocket system · legacy	–	–	*140*

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
9K72 Elbrus	SCUD B	9K72	ballistic missile system · stored	–	–	*140*
9K79-1 Tochka-U	SS-21 SCARAB B	9K79-1 «Точка-У»	Tactical ballistic missile system, one missile per launcher, 120 km · 1976	**70–120 km** 9M79, 9M79-1, max	**WH-AT-A**	141
Fath-360 short-range ballistic missile (Iran)	–	Фатх-360	Iranian short-range ballistic missile on a truck launcher, 120 km claimed range · 2024	**80–120 km** Fath-360, max	**WH-LT**	142
Iskander-M	SS-26 STONE	9K720 «Искандер-М»	Army-level operational-tactical ballistic and cruise missile system for deep strike · 2007	**450–500 km** 9M723, 9M728, max	**WH-AT**	143
KN-23 and KN-24 (Hwasong-11) (North Korea)	–	KH-23	North Korean short-range ballistic missiles fired by Russian forces into Ukraine · 2019	**410–900 km** KN-23 and KN-24, max	**WH-AT**	144
COASTAL MISSILE SYSTEMS						
Bal	SSC-6 SENNIGHT	3K60 «Бал»	Mobile coastal anti-ship missile system firing Kh-35/Kh-35U · 2008	**120–300 km** Kh-35 to Kh-35U, max	**WH-AT**	145
Bastion-P	SSC-5 STOOGE	3K55 «Бастион-П»	Mobile coastal anti-ship missile system firing P-800 Oniks · 2010	**120–600 km** P-800 Oniks, max	**WH-AT**	146
BALLISTIC AND CRUISE MISSILES						
3M14 Kalibr	SS-N-30A SAGARIS	3M14 «Калибр»	Sea-launched subsonic land-attack cruise missile · 2015	**1,400–2,500 km** 3M14 land-attack, max, estimates and claims	**NA**	147
Kh-22 and Kh-32 air-launched missiles	AS-4 KITCHEN	X-22; X-32 «Буря»	Long-range supersonic air-launched anti-ship and land-attack cruise missiles · 1968	**140–1,000 km** Kh-22 to Kh-32, launch range (sources differ)	**NA**	147
Kh-47M2 Kinzhal	AS-24 KILLJOY	X-47M2 «Кинжал»	Air-launched ballistic missile, conventional or nuclear warhead, fired from MiG-31K · 2017	**460–2,000 km** missile: est. after release to claimed incl. carrier	**NA**	147
Kh-59 Ovod family	AS-13 KINGBOLT, AS-18 KAZOO	X-59 «Овод»	Air-launched stand-off missiles for ground and ship targets · 1980	**40–285 km** Kh-59 to Kh-59MK2, max	**NA**	148
Kh-69	–	X-69	Subsonic air-launched cruise missile for fixed targets, 310 kg warhead · 2024	**300–400 km** Kh-69, claimed to reported launch distance	**NA**	148
Kh-101 and Kh-55 air-launched cruise missiles	AS-23A KODIAK, AS-15 KENT	X-101; X-55	Bomber-launched cruise missiles · 1983	**2,500–5,500 km** Kh-55 to Kh-101, max	**NA**	148
Oreshnik	RS-SS-28	«Орешник»	Road-mobile intermediate-range ballistic missile, multiple reentry vehicles, dual-capable · 2025	**3,500–5,470 km** Oreshnik, est. max; 800 km flown	**NA**	149

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	Tracked command, observation and fire direction vehicles, SP howitzer battalion	8 Command and signals	230
PRP-4A Argus / PRP-4M Deytery	Mobile artillery reconnaissance post on BMP-1 chassis	8 Command and signals	234
1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	Artillery battery and battalion command, observation and fire direction vehicles	8 Command and signals	231
Zoopark-1 / Zoopark-1M	Tracked radar that locates enemy guns, mortars, rockets and missile launchers	5 Radars	177
ARK-1M Rys	Artillery weapon-locating and fire-control radar	5 Radars	175
SNAR-10 / SNAR-10M1 Leopard	Tracked battlefield surveillance and artillery-adjustment radar	5 Radars	176
1B75 Penicillin	Passive acoustic-thermal gun locator	5 Radars	174
Orlan-10	Catapult-launched recon UAV for artillery spotting and EW	10 Uncrewed systems	268
Lancet	Loitering munition for precision strikes on artillery, air defence and armour	10 Uncrewed systems	277

MRLs and heavy flamethrowers

9K59 Prima 9K59 «Прима»

122 mm multiple rocket launcher system legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BM-13 Katyusha БМ-13

132 mm multiple rocket launcher stored

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BM-21 Grad 122 mm MRL 6M-21 «Град»

NATO: M1964 WH-AT

Truck-mounted 40-tube 122 mm area-fire rocket launcher (divisional and brigade MRL) In service 1963

OPERATED BY **motor rifle brigade**, MRL battalion; 6 launchers per battery, 18 per battalion D 2016 M
artillery regiment, one Grad MRL battalion in division field artillery regiment, being replaced by Tornado-G D 2019 M
motor rifle regiment, BTG, attached MRL element, 3 in one BTG O 2022-04 M
motor rifle brigade, BTG, attached BM-21 battery, 1 battery O 2022-04 M
motor rifle brigade, BTG; three BM-21 lost near Kurakhove on 22 April 2022, 3 (lost) O 2022-04 M
Airborne Forces, Airborne Forces, holding unit not stated R 2024 M
Naval Infantry, Naval Infantry, holding unit not stated R 2024 M
NUMBERS **Holdings** 36 in Airborne Forces (IISS estimate) (2024)
INDICATES *A group of about 18 launchers points to a brigade MRL battalion; 6 launchers to one battery. A few launchers inside a battalion tactical group suggest an attached MRL element.*
RECOGNISE **Body** Pack of 40 tubes, four rows of ten, each 3 m long, at the rear; elevates 0 to +55 deg, traverses 102 deg left and 70 deg right.
Axles Three axles, 6x6 truck chassis.
Cab Unarmoured Ural 6x6 truck cab (Ural-375D; Ural-4320 on BM-21-1). The 40-tube pack can be turned away from the cab.
Details Stabilizing jacks at the rear, lowered for firing. Reload rockets travel on separate resupply trucks.
CONFUSED WITH **9K51M Tornado-G (2B17M)** p. 124 RViA handbook: visually hard to tell from the BM-21. Same 40-tube pack on a Ural-4320; the changes are inside the cab.
2B26 Full view: same 40-tube Grad pack on a KamAZ-5350 truck instead of a Ural.
RM-70 (Czechoslovak) Full view: four axles (Tatra 813 8x8) and an armoured cab. Chassis hidden: 40 reload rockets carried between the cab and the launcher.


Vitaly V. Kuzmin, CC BY-SA 4.0


Robert Wray, CC BY-SA 3.0


Mil.ru (Ministry of Defence of the Russian Federation), CC BY 4.0

MOBILITY Unarmoured truck chassis on wheels with central tyre inflation. Fords 1.5 m without preparation. Not amphibious.

Weight, combat	**13.7 t** BM-21 on Ural-375D, loaded with crew
L × W × H	**7.35 × 2.4 × 3.09 m** travelling
Road speed	**75 km/h** maximum, hard road, loaded
Road range	**750 km**

Range, 9M22U HE-frag	**20.4 km** maximum, 9M22U (M-21OF) HE-fragmentation rocket
Minimum range, 9M22U HE-frag	**5 km** 9M22U (M-21OF) HE-fragmentation rocket
Range, 9M28F HE-frag	**15 km** maximum, 9M28F HE-fragmentation rocket
Minimum range, 9M28F HE-frag	**1.5 km** minimum effective, 9M28F HE-fragmentation rocket
Range, 9M521 HE-frag	**40 km** maximum, 9M521 HE-frag, export round for 9K51M Tornado-G; in 9K51 only with a manual electronic-fuze setter (RUWP); not adopted by the Russian Army (MISSIL), claim

SOURCES ATP CNA IISS25 MISS7 RUSIPL RVIA RWW WEG48 WEG2015 WP-EN69 WP-RU93 Updated 2026-10-06

BM-27 Uragan 9П140 «Ураган»

NATO: M1977 WH-AT

220 mm 16-tube MRL on ZIL-135LM 8x8 for area fire and remote minelaying at 10-35 km In service 1975

OPERATED BY **rocket artillery regiment**, three rocket launcher battalions, 54 per regiment (3 battalions of 18) D 1991 M
rocket artillery brigade, rocket launcher battalions, 54 per brigade (3 battalions of 18) D 1991 M
self-propelled artillery regiment, Uragan rocket artillery battalion, 8 per battalion R 2017-12 M
artillery brigade, rocket artillery battalion R 2019 L
artillery brigade, BAZ-69092 variant R 2026-02 L
INDICATES *A 9P140 points to army-level rocket or artillery brigade fires, or to a Uragan battalion (8 launchers) in a division artillery regiment; the MoD also planned such battalions for combined arms brigades. In the Airborne Forces it indicates the artillery brigade.*
RECOGNISE **Body** 16 tubes in three banks at the rear: two lower rows of six, upper row of four. In travel the pack faces rearward; muzzles covered by a sheet-metal cover when loaded.
Axles Four axles, 8x8 (ZIL-135LM); only the front and rear axles steer.
Cab ZIL-135LM cab with a blast shield that is raised during firing.
Details Two manually emplaced hydraulic jacks at the rear of the chassis are lowered for firing. Newer launchers sit on a 6x6 BAZ-69092 chassis.
CONFUSED WITH **9T452 transloader** Same ZIL-135 chassis but a flatbed with 16 rockets in two stacks either side and a loading device between them; no tube pack.
9K57-1 Uragan-1 (BAZ-69092) Full view: same launcher on a three-axle BAZ-69092 6x6, not the four-axle ZIL-135; some carry net screens over cab and tubes.
9K512 Uragan-1M p. 125 Chassis hidden: two separate exchangeable pods (15 x 220 mm or 6 x 300 mm) instead of one fixed 16-tube pack.
9A52 Smerch Chassis hidden: 12 tubes in 3 rows of 4, against 16 in rows of 6, 6 and 4. Full view: MAZ-543 chassis, not ZIL-135.
BM-21 Grad p. 122 Chassis hidden: 40 tubes against 16. Full view: Ural-375 truck, not an 8x8 ZIL-135.


Unknown author, CC BY 4.0

MOBILITY Unarmoured 8x8 petrol truck; rear jacks must be lowered to fire; fords 1.2 m unprepared; 60% gradient.

Weight, combat	**20 t**
L × W × H	**9.63 × 2.8 × 3.23 m** travel position
Road speed	**65 km/h** maximum
Road range	**500 km** cruising

Range, 9M27F HE-frag	**35 km** maximum, 9M27F HE-frag rocket
Minimum range, 9M27F HE-frag	**10 km** 9M27F HE-frag rocket
Range, 9M27K cluster	**35 km** maximum, 9M27K rocket, 30 9N210 HE-frag submunitions
Minimum range, 9M27K cluster	**10 km** 9M27K rocket, 30 9N210 HE-frag submunitions
Range, 9M27K2 AT mines	**35 km** maximum, 9M27K2 rocket, 24 PTM-1 anti-tank mines
Minimum range, 9M27K2 AT mines	**10 km** 9M27K2 rocket, 24 PTM-1 anti-tank mines
Range, 9M27K3 AP mines	**35 km** maximum, 9M27K3 rocket, PFM-1 anti-personnel mines
Minimum range, 9M27K3 AP mines	**10 km** 9M27K3 rocket, PFM-1 anti-personnel mines
Range, 9M51 thermobaric	**13 km** maximum, 9M51 thermobaric rocket
Minimum range, 9M51 thermobaric	**5 km** 9M51 thermobaric rocket
Employment range, observed	**35-70 km** practical, 9K57 and 9K58 Smerch together, Donbas, May-June 2022; RUSI does not separate the two, observed
Distance from front line, observed	**25 km** practical, one launcher hit by FPV drone, reported c. 2024-07, observed

SEEN WITH 9T452 transloader; ZIL-135LM (1); Kapustnik-B; Zoopark (1 per battalion (single source))

SOURCES CNA D248 FAS18 GS28 IISS25 IZ17 MIL131 MIL132 MIL152 MPER3 ORYX1 RUSIPL RWW W1R WEG85 WEG2015 WP-EN196 WP-EN197 WP-RU183 Updated 2026-10-01

BM-30 Smerch 9A52-2 «Смерч»

NATO: 280mm M1983 WH-AT

Heavy 300 mm 12-tube rocket launcher for deep area fire; Tornado-S adds guided rockets In service 1987

OPERATED BY **rocket artillery brigade**, three groups of 4 x 9A52-2 in ATP fig. 5-16; whether each group is a battalion or a battery is not readable from the text, 12 x 9A52-2 shown in ATP fig. 5-16 (3 groups of 4) D 2024 M

rocket artillery brigade, 7 delivered April 2017, 5 more announced O 2017-04 M seen with rocket artillery brigade, Tver Oblast, Western MD (named as the 79th Guards Rocket Artillery Brigade by Wikipedia only)

rocket artillery brigade O 2026-09 M seen with 79th Guards Rocket Artillery Brigade (Zapad group), Tornado-S, 2026-09, 232nd Guards Rocket Artillery Brigade (Tsentr group), Tornado-S, 2026-08 and 2026-09

INDICATES *Smerch or Tornado-S points to an army-level rocket artillery brigade, not a manoeuvre brigade, whose MRL battalion holds BM-21. Expect deep fires out to 70-120 km and ammunition resupply by MAZ-543 transloaders.*

RECOGNISE **Body** Single package of 12 long 300 mm tubes over the rear deck, 3 rows of 4 (two banks of four with four more on top); traverses 30 deg each side, elevates to 55 deg.

Axles Four axles, 8x8; hydraulic jacks between the wheels of the 3rd and 4th axles are lowered to steady the rear of the launcher when firing.

Cab MAZ-543M 8x8 truck: driver cab front left, right-hand cab removed; a closed, glazed fire-control cabin for the crew sits behind the engine compartment.

Details Tornado-S (9A54): satellite navigation antenna on the roof of the fire control cab; otherwise laid out like the 9A52-2.

CONFUSED WITH **9A54 Tornado-S** RViA handbook calls it visually similar to Smerch: same 12-tube pack on a MAZ-543M. Tornado-S has a satellite antenna on the fire-control cab roof.

BM-27 Uragan (9P140) p. 122 Chassis hidden: 16 tubes in rows of 6, 6 and 4, against 12 in 3 rows of 4. Full view: ZIL-135 chassis, not MAZ-543.

9A53 Uragan-1M p. 125 Chassis hidden: two separate six-tube pods, not one fixed 12-tube package. Full view: MZKT-7930 8x8.

9A52-4 Tornado Chassis hidden: one six-tube pod, not a 12-tube package. Full view: KamAZ-63501 8x8 truck.

9T234-2 and 9T255 transloaders No tube package: 12 rockets and a crane on the deck. Full view: transloaders ride on the MAZ-543A; the launcher's MAZ-543M has its right cab removed.

VARIANTS **9A54 Tornado-S** Satellite antenna on the fire control cab roof; same MAZ-543M chassis and 12-tube package. GLONASS, automated laying and fire control; fires 9M544 and 9M549 guided rockets to 120 km; crew 3.

9A52-4 Tornado KamAZ-63501 8x8 truck with one six-tube 300 mm pod. Half the load; pod replaced after firing; lighter and more mobile. IISS25 lists none in Russian service.



Vitaly V. Kuzmin, CC BY-SA 4.0



Boevaya mashina, CC BY-SA 3.0

MOBILITY Heavy 43.7 t 8x8; fords 1.1 m unprepared; not amphibious; rear jacks must be lowered to fire.

Weight, combat, 9A52-2	**43.7 t** loaded
Weight, empty	**33.7 t** 9A52-2 (WEG) and 9A54 (MISSTS)
L × W × H	**12.1 × 3.05 × 3.05 m** travelling
Road speed	**60 km/h** maximum *also 80 km/h MISS24*
Road range	**850 km** 9A52-2; also 850 km on the WEG Tornado-S page *also 650 km WEG86*
Fording	**1.1 m** unprepared
Time into action	**3 min** from march to ready to fire *also 1.5-3 min MISS23*
Time out of action	**3 min** *also 1 min MISS23*
Ground pressure	**INA**

Range, 9M55K cluster	**70 km** maximum, unguided, range-corrected rocket with fragmentation submunitions *also 90 km WEG2015*
Minimum range, 9M55K cluster	**20 km** unguided, range-corrected rocket with fragmentation submunitions
Range, 9M55F HE-frag	**70 km** maximum, unguided, separable HE-frag warhead *also 90 km WEG2015*
Minimum range, 9M55F HE-frag	**20 km** unguided, separable HE-frag warhead
Range, 9M528 HE-frag	**90 km** maximum, unguided extended-range rocket, separable HE-frag warhead, claim
Range, 9M544 and 9M549 guided	**120 km** maximum, Tornado-S guided cluster rockets, inertial and GLONASS, claim
Minimum range, 9M544 and 9M549 guided	**20-40 km** Tornado-S guided rockets; crew statement, claim *also 40 km WP-RU220*
Employment range, Smerch	**35-70 km** practical, unguided rockets, Ukraine 2022, used at or near maximum range, observed
Employment range, Tornado-S	**about 100 km** practical, guided rockets against a command post (2026-08) and a fortified strongpoint (2026-09); MoD figures via state media, claim
Crew, 9A52-2	**4** *also 3 WP-RU220*
Crew, 9A54 Tornado-S	**3**
Tubes	**12 x 300 mm** 9A52-2 and 9A54
CEP, 9M55K cluster	**150 m** inertial range and attitude correction, no terminal guidance; also given for 9M528 *also 0.21% of range, about 150 m MISS23*
CEP, 9M544 and 9M549 guided	**5-10 m** inertial and GLONASS; official claim, claim *also 7-10 m at maximum range WP-RU220*
Rocket weight	**800 kg** 9M55 series *also 828-830 kg MISS24 WP-RU220*
Full salvo time, 9A52-2	**38 s** 12 rockets
Full salvo time, 9A54 Tornado-S	**under 30 s** 12 rockets *also 40 s MISS24*
Reload time, 9A52-2	**36 min** by 9T234-2 transloader crane *also 16-20 min MISS23*
Reload time, 9A54 Tornado-S	**20 min** by 9T255 transloader, claim
Area covered by one salvo	**67.2 ha** one launcher, 12 rockets, claim
Elevation and traverse	**0 to +55 deg; 30 deg left and right**
Response time from target data	**120 s** BM-30 with ASUNO-S automated fire control *also about 8 min MK2*

SEEN WITH MAZ-543M 8x8 chassis (1 per launcher); 9T234-2 transloader (TZM) (INA; carries 12 rockets); 9T255 transloader (Tornado-S) (INA; carries 12 rockets); 1K123 Vivary automated fire control system (up to 3 battalion and 18 battery vehicles per brigade system); 9S936 command and staff vehicle (Tornado-S); 1V168 ASUNO-S fire control; 1T12-2M survey vehicle; 1B44 meteorological complex; Zoopark counter-battery radar (INA; reported cueing Smerch fire 2024-03)

SOURCES AIF13 ATP IISS25 IZ9 JANES4 KOLESA4 MAILRU4 MISS23 MISS24 MK2 ORYX1 RGRU13 RUSIPL RVIA RWW STOL WEG86 WEG2015 WP-EN160 WP-EN170 WP-RU220 WP-RU221
Updated 2026-10-06

M1991 and M-2024 240 mm multiple rocket launchers (North Korea) WH-AT

Heavy 240 mm truck-mounted rocket launcher for area saturation fire In service late 1980s

OPERATED BY **Unidentified unit**, one launcher destroyed in the Novopavlivka direction, 25 Jun 2025 R 2025-06 M

Sever Group of Forces units (Leningrad Military District) R 2025-05 L seen with Sever Group of Forces

Unidentified unit, one launcher destroyed near Pervomaiskyi, Kursk region, 6 May 2025 R 2025-05 L

Unidentified unit, one launcher firing from a road, cab marking reportedly used near Mariupol, May 2025 R 2025-05 L

Unidentified unit, one launcher destroyed in the rear, tens of km behind the front line, Feb 2026 R 2026-02 L

NUMBERS **Holdings** About 20 updated 240 mm launchers delivered in the weeks to mid-Nov 2024 (FT, citing Ukrainian intelligence) (2024-11); **Holdings** About 120 M-1991 delivered to Russia by Jan 2025, a similar number expected (Ukrainian HUR claim) (2025-01); **Losses** 1 M-1991 (Jun 2025) and 1 M-2024 (Nov 2025) destroyed, photo-confirmed (2026-10)

INDICATES *Destroyed in 2025 in the hands of an unidentified unit in the Novopavlivka direction; reported destroyed in Kursk region and reported with Sever Group of Forces units (Leningrad MD) in 2025. A 2026 Ukrainian military claim: used far from the front.*

RECOGNISE **Body** 22 tubes of 240 mm in three rows of 8, 8 and 6

Axles Three axles, 6x6 truck; Chinese CQ25290 chassis reported

Cab Cab over the engine, at the front, on 1990s North Korean vehicles; the 12-tube M-1985 has its cab behind the engine

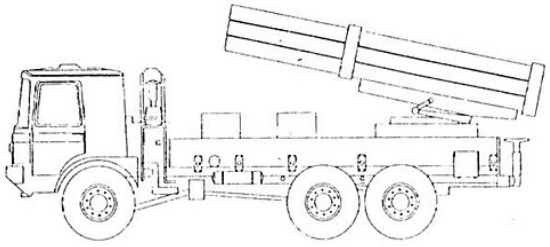
Details Russian field fit since 2025: metal anti-drone cage over the cab, extra armour plates around the tube pack

CONFUSED WITH **9P140 Uragan** p. 122 Full view: three axles (6x6) against four (ZIL-135LM 8x8). Chassis hidden: 22 tubes in rows of 8, 8, 6 against 16 tubes in rows of 6, 6, 4

ISDM Zemledeliye p. 217 Full view: three axles against four (KamAZ-6560 8x8). Launcher: 22 tubes of 240 mm against 50 tubes of 122 mm in two blocks

BM-21 Grad / 9K51M Tornado-G p. 124 Chassis hidden: 22 tubes of 240 mm in three rows (8, 8, 6) against 40 tubes of 122 mm on both.

VARIANTS **M-2024** INA. INA.



Marine Corps Intelligence Activity, public domain

MOBILITY 6x6 militarised commercial truck; the launch pack can be fitted to any suitable heavy cross-country truck

Chassis **6x6 truck**

Range, 240 mm unguided rocket	**40–60 km** approximately, unguided spin-stabilised rocket; varies with munition
Range, 240 mm guided rocket	**67 km** maximum, guided rocket of the North Korean 2024 tests, claim
Employment distance behind the line of contact	**tens of km** practical, one launcher found and destroyed in the Russian rear, 2026, claim
Calibre	**240 mm**
Launch tubes	**22**
Full salvo	**22 rockets in 45 s**
Reload time	**about 10 min**
Rocket length	**about 5.2 m** unguided rocket; data largely inferred from the Iranian Fajr-3
Rocket weight	**407 kg** standard unguided rocket
Warhead weight	**about 90 kg** HE warhead, unguided rocket
Warheads	**HE-frag, smoke, incendiary; chemical possible** unguided rockets
Area covered by one salvo	**up to 0.5 km²** unguided rockets
Crew	**4 (2 crew, driver, commander)**
Launchers per battery	**5; 3 batteries per battalion** North Korean organisation

SEEN WITH CQ25290 6x6 truck (1)

SOURCES AR72 ARMYINF6 CSIS14 DE1 DE2 DE3 DE4 DE5 DPOST FAS15 IISS25 KP12 KP23 LIGA5 MIL75 MIL210 MISS7 NKN2 ORYX1 RVIA U249 WEG2015 not in WEG Updated 2026-10-09

Tornado-G 9K51M «Торнадо-Г» WH-AT

122 mm 40-tube truck MRL; automated Grad upgrade for brigade and division artillery In service 2012

OPERATED BY **motor rifle division**, artillery regiment, MRL battalion (replacing Grad battalion) D 2019 H

tank division, artillery regiment, MRL battalion D 2019 H

motor rifle brigade, brigade artillery, MRL battalion, INA for Tornado-G; it replaces the BM-21, 18 per brigade MRL battalion (RWW p.100); 18 delivered to one brigade 2012 (RBASE) D 2019 M

motor rifle brigade, 18 O 2012-04 M

motor rifle division, more than 20 across Taman and Kantemirovskaya divisions O 2015-07 M

tank division, more than 20 across Taman and Kantemirovskaya divisions O 2015-07 M

self-propelled artillery regiment, 18 x 2B17M O 2016 L

INDICATES *Tornado-G replaces the Grad in the MRL battalion of motor rifle and tank brigades and of division artillery regiments. A group of them suggests a manoeuvre brigade or division artillery group nearby.*

RECOGNISE **Body** Single pack of 40 122 mm tubes, 10 x 4, on the rear body; traverses 102 deg left and 70 deg right, elevates 0 to 55 deg.

Axles Three axles, Ural-4320 6x6 truck.

Cab Ural-4320 cab; the launcher is laid and returned to travel position from inside it, without the crew going to the pack.

Details Rebuilt BM-21 (about 20 rebuilt in 2019): GLONASS navigation, ballistic computer and video monitor sit inside the cab, so the outside looks like a Grad.

CONFUSED WITH **BM-21 Grad family (BM-21, BM-21-1)** p. 122 RViA handbook: visually hard to tell from the BM-21; same pack and truck. Laying from the cab does not settle it: the 2B17-1 BM-21-1 also aims from the cab.

2B26 Full view: 40-tube pack on a KamAZ-5350, not a Ural-4320; 2B26s paraded in May 2012 in place of an announced Tornado-G. Not decisive: some sources put Tornado-G on KamAZ.

9A51 Prima Count the tubes: 50 against 40, on the same Ural-4320 chassis.



Vitaly V. Kuzmin, CC BY-SA 4.0



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY 6x6 truck; WEG claims small-arms protection, WEG 2015 BM-21 page gives none. Fords about 1.5 to 1.75 m. Can fire from an unsurveyed position and leave straight after firing.

Weight, combat	**14 t**
L × W × H	**7.35 × 2.5 × 3.1 m** travelling
Road speed	**85 km/h** maximum
Road range	**650 km** cruising range

Range, 9M521 HE-frag	**40 km** maximum, 9M521 extended-range HE-frag rocket; attribution to 9M521 from RUWIKI (Karpenko), WEG, ZR and WWW1 give 40 km as system maximum
Range, 9M522 HE-frag	**37.5 km** maximum, 9M522 rocket, separable HE-frag warhead
Range, 9M538 HE-frag	**20 km** maximum, 9M538 rocket, enhanced monobloc HE-frag warhead, claim
Range, 9M539 HE-frag	**20 km** maximum, 9M539 rocket, separable HE-frag warhead; Tecmash statement at IDEX 2019, claim
Minimum range, 9M539 HE-frag	**5 km** 9M539 rocket; Tecmash statement at IDEX 2019, claim
Range, 9M541 cluster	**20 km** maximum, 9M541 rocket, cluster warhead with HEAT-frag submunitions
Range, 9M22U HE-frag	**20.4 km** maximum effective, legacy Grad 9M22U HE-frag rocket
Minimum range, 9M22U HE-frag	**5 km** minimum effective, legacy Grad 9M22U HE-frag rocket
Range, 9M28F HE-frag	**15 km** maximum effective, legacy Grad 9M28F HE-frag rocket
Minimum range, 9M28F HE-frag	**1.5 km** minimum effective, legacy Grad 9M28F HE-frag rocket
Crew	**2** launcher vehicle
Tubes	**40 x 122 mm**

SEEN WITH 1V126M Kapustnik-BM automated fire control vehicles (1V152M, 1V153M); Ural-4320-10 truck (1 per launcher); Orlan UAV

SOURCES CNA D247 EDR5 GS38 IISS25 JF18 MAILRU5 MISS7 ORYX1 RBASE2 RDP8 RVIA RWW TASS30 WEG106 WEG2015 WMC47 WP-RU247 WWW122 ZR10 Updated 2026-10-06

TOS-1A Solntsepek ТОС-1А «Солнцепёк» TR

Tracked 220 mm thermobaric and incendiary rocket launcher of the RKhBZ troops In service 1988

OPERATED BY **RKhBZ brigade**, flamethrower battalion of 3 batteries, each 6 BM-1 and 6 TZM-T; RWW places these battalions in NBC defence brigades and regiments and does not state the echelon, 18 per battalion (6 per battery) D 2016 M
RKhBZ brigade, TOS battalion of 3 companies of 6 launchers (ATP para 5-146), 18 per battalion D 2024 M
heavy flamethrower battalion, 9-launcher battalion at military district level; parent unit not named (ATP para I-16), 9 per battalion D 2024 M
RKhBZ regiment, RKhBZ company in the RKhBZ regiment of combined arms and tank armies (ATP para I-16), 3 per company D 2024 M
tank brigade, TOS-1/1A battalion allocated as a fire subunit for a penetration; not organic (ATP para 5-145), INA (allocated battalion) D 2024 M

INDICATES *TOS launchers belong to army or district RKhBZ units, not manoeuvre brigades. Seeing one suggests an attached flamethrower company or battalion supporting an attack or breach, since it must close to within about 6 km of the target.*

RECOGNISE **Launcher** No gun turret: a box of 24 tubes, 220 mm, sits on a rotating platform on the hull roof and elevates to fire.
Hull Tracked T-72 tank hull and running gear, with big rubber-tyred road wheels.
Armour Tubes in a heavy armoured housing. Launchers shipped from Nov 2025 add a shell over the tubes that lifts open as they elevate; field-made anti-drone covers came first.
Complex Moves with TZM-T reload vehicles on the same T-72 hull, each with a crane between two rocket racks.

CONFUSED WITH **TOS-1 Buratino** RViA handbook calls the two visually similar. Chassis hidden: 30 tubes against 24, and the TOS-1A tubes sit in a heavy armoured housing.
TZM-T reload vehicle Same T-72 hull, but a crane between two rocket racks under removable armour covers; no launcher box that elevates.


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Tracked T-72 chassis, not amphibious; fords 1.2 m; must close to within 6 km of the target to fire the longest-range thermobaric rocket.

Weight, combat	**44.3 t**
L × W × H	**6.86 × 3.46 × 2.60 m**
Road speed, maximum	**60 km/h**
Off-road speed, maximum	**45 km/h**

Range, thermobaric rocket	**6,000 m** maximum, MO.1.01.04M thermobaric rocket, 3.7 m, 217 kg
Range, incendiary rocket	**6,000 m** maximum effective, MO.1.01.04M.OP incendiary rocket, 3.7 m, 204 kg
Range, original short rocket	**2,700 m** maximum, MO.1.01.04 thermobaric rocket, 3.3 m, 173 kg, fired from TOS-1A
Range, minimum	**600 m** MO.1.01.04M rocket
Launch tubes	**24 x 220 mm**
Full salvo duration	**12 s single launches; 6 s paired launches** 24 rockets
Area affected by one salvo	**up to 40,000 m²** personnel in the open or in open trenches, firing at maximum range
Reload time	**24 min** reload of launcher by TZM-T
Fire control sight	**1D14 laser rangefinder, 10 m accuracy**
Crew	**3 (commander, gunner, driver)**
TZM-T weight with rockets	**39 t**

SEEN WITH TZM-T transporter-loader (T-72 chassis, crane, rocket racks) (2 per launcher (ATP, MISS); RWW gives 1 per launcher); T-72A tank chassis (modified) (1 per launcher); Orlan-10 UAV reconnaissance over the Strelets C2 network

SOURCES AR122 AR123 ATP CNA EMP3 GS39 MIL111 MIL128 MIL129 MISS25 RVIA RWW TASS31 TASS32 TASS33 TASS34 WEG107 WMC48 WP-EN161 WP-EN162 WP-EN184 Updated 2026-10-06

Uragan-1M 9K512 «Ураган-1М» WH-AT

Heavy 220/300 mm MRL with swappable rocket pods; successor to 9K57 Uragan In service 2007

OPERATED BY **self-propelled artillery regiment**, rocket artillery battalion (planned replacement for 9K57 Uragan, MoD statement; no holding confirmed) R 2017-12 L
artillery brigade, MRL battalion (Uragan 'being succeeded' by Uragan-M1; no holding confirmed) R 2019-10 L

INDICATES *Planned for divisional artillery regiments and army artillery brigades as the Uragan successor. Few were built and front-line use is unconfirmed, so a sighting is notable and should be checked against the 6x6 9K57-1.*

RECOGNISE **Body** Launcher on a turntable at the rear carrying two launcher pods instead of a fixed tube rack.
Details 300 mm pods hold 6 tubes each in two layers of three; 220 mm pods hold 15 tubes each. Pods can be mixed, one of each calibre.
Axles Four axles (8x8), the same MZKT-7930 chassis family as the 9T249 transporter-loader.
Cab Forward-control cab on the MZKT-7930 8x8 chassis, seating the driver and two passengers.

CONFUSED WITH **9K57-1 Uragan-1** Full view: three axles (BAZ-69092 6x6), not four (MZKT-7930), and an armoured cab. Russian press also calls it Uragan-1M, so the name alone does not settle it.
9P140 Uragan p. 122 Chassis hidden: one fixed rack of 16 tubes, not two detachable pods. Full view: ZIL-135 8x8.
9A52-2 Smerch p. 123 Fixed 12-tube block in 3 rows of 4 on a MAZ-543M 8x8; Uragan-1M has two separate 6-tube pods.
9A52-4 Tornado p. 123 Chassis hidden: one six-tube module, not two pods. Full view: KamAZ-63501 8x8 truck.

SEEN WITH 9T249; MZKT-7930 (1); Kapustnik-B


Ministerstwo Obrony Rossijskoj Federazii (Министерство обороны Российской Федерации / Ministry of Defence of the Russian Federation), CC BY 4.0

MOBILITY Heavy 8x8 truck; fords 1.4 m, climbs 45% gradient, crosses 2.0 m trench.

Weight, combat	**40 t**
L × W × H	**13.0 × 3.0 × 3.29 m** travelling
Road speed	**70 km/h** maximum, maximum, road
Road range	**1,000 km** maximum, road

Range, 9M27F HE-frag 220 mm	**35 km** maximum effective, 9M27F unguided HE-frag rocket
Minimum range, 9M27F HE-frag 220 mm	**10 km** minimum effective, 9M27F unguided HE-frag rocket
Range, 9M27K cluster 220 mm	**35 km** maximum effective, 9M27K rocket, 30 9N210 fragmentation submunitions
Range, 9M55F HE-frag 300 mm	**70 km** maximum, 9M55F HE-frag rocket with trajectory correction
Minimum range, 9M55F HE-frag 300 mm	**20 km** 9M55F HE-frag rocket
Range, 9M544 guided 300 mm	**120 km** claimed, 9M544 guided rocket; claim in Russian press (ZR gives 120 km as the system maximum without naming the rocket)
Crew	**3**
Tubes, 220 mm	**30 (2 pods of 15)** 220 mm pods fitted
Tubes, 300 mm	**12 (2 pods of 6)** 300 mm pods fitted
Tubes, mixed load	**21 (15 x 220 mm + 6 x 300 mm)** one pod of each calibre

SOURCES AR125 CNA D24A2 D24B2 IISS25 IZ17 ORYX1 RAND RWW U2419 W1A4 W1C3 W1E2 WEG113 WEG2015 WP-EN159 WP-RU261 ZR10 Updated 2026-10-01

Self-propelled guns and mortars

2S1 Gvozdika 2C1 «Гвоздика»

NATO: M1974 TR-A

122 mm amphibious tracked self-propelled howitzer In service 1970

OPERATED BY **self-propelled artillery battalion**, self-propelled howitzer battery (3 per battalion), 6 per battery, 18 per battalion D 2016 M
naval infantry brigade, brigade artillery O 2024-04 H
motor rifle brigade, self-propelled howitzer artillery battalion O 2025 L
military base, motor rifle brigade of the base, 12 R 2024 M

NUMBERS **Holdings** 400 2S1 in Army service, 1,000 in store (IISS estimates) (2024); **Holdings** 16 2S1 with Naval Infantry (IISS estimate), 16 with Airborne Forces (IISS) (2024); **Losses** 189 2S1 lost since Feb 2022, visually confirmed (Oryx) (2026-10)

INDICATES *Six 2S1 together suggest one howitzer battery of an 18-gun SP artillery battalion. Since 2022 named with Naval Infantry and motor rifle formations. Ukraine also fields the 2S1: a sighting alone does not show a Russian unit.*

RECOGNISE **Hull** Hull on MT-LB-derived running gear with the turret at the rear; driver front left, engine front right; amphibious, propelled in water by its tracks.
Turret Fully enclosed turret towards the rear of the hull, 360° traverse; commander's rotating cupola on turret roof.
Armament 122 mm howitzer with double-baffle muzzle brake and fume extractor; barrel does not overhang hull front when trained forward.
Suspension Close only: seven road wheels each side, drive sprocket front, idler rear, no track-return rollers.

CONFUSED WITH **2S34 Khosta** p. 131 Same hull. Chassis hidden: 2S34 gun has a large square muzzle brake and a PKTM on the turret roof; 2S1 has a double-baffle brake and fume extractor.
2S3 Akatsiya p. 127 Full view: six road wheels with gaps after the first and second, four return rollers. From above: 2S3 barrel overhangs the hull front; 2S1 barrel does not.
UR-77 p. 216 Chassis hidden: same chassis, but the turret carries two launch ramps for line-charge rockets and no howitzer barrel.



Srđan Popović, CC BY-SA 4.0

MOBILITY Amphibious with little preparation, swims at 4.5 km/h; 670 mm wide tracks can be fitted for snow or swamp.

Weight, combat	**15.7 t**
L × W × H	**7.26 × 2.85 × 2.725 m**
Road speed	**60 km/h** maximum
Road range	**500 km** maximum

Range, HE	**15.2 km** maximum, HE-frag (OF-462, 3OF56 etc.), full charge
Minimum range, HE	**4.2 km** HE-frag
Range, HEAT	**2 km** maximum, HEAT 3BK6, 3BP1, direct fire at armour; day or night not stated
Range, Kitolov-2M	**12 km** maximum effective (claimed), laser-guided 122 mm shell Kitolov-2M, needs laser designation, claim
Range, HE rocket-assisted	**21.9 km** maximum, Croatian ERBB 122 HB rocket-assisted HE shell; not in the 2S1's standard load
Crew	**4**
Main gun	**122 mm 2A31 howitzer**
Rate of fire	**4–5 rpm**
Ammunition carried	**40 rounds**
Unit of fire	**80 rounds**
Shell weight	**14.1–21.8 kg** by projectile type
Muzzle velocity	**690 m/s** HE-frag, full charge

SEEN WITH 1V14(M) (1 per battery); 1V13; 1V15(M) (1 per battalion); 1V16(M)

SOURCES AR1 ATP CNA IISS25 IZV JANESRG MIL2 NEWSRU ORYX1 RAMB RWW SPUT WP-EN9 WP-RU6 WSN3 ZR not in WEG

Updated 2026-10-19

2S3 Akatsiya 2C3 «Акация»

NATO: M1973 TR

152 mm tracked self-propelled howitzer of brigade and division artillery battalions In service 1971

OPERATED BY **motor rifle brigade**, two self-propelled artillery (howitzer) battalions, 18–24 per battalion (18 typical), 2 battalions per brigade D 2024 M

artillery regiment, self-propelled artillery battalion, 18 per battalion (3 batteries of 6), 24 in some with 4 batteries (Soviet standard) D 2019 M

motor rifle brigade, Kharkiv oblast, captured 2022-09-10 O 2022-09 L seen with 27th Separate Guards Motor Rifle Brigade

motor rifle division, Kharkiv oblast, captured Sep 2022 O 2022-09 L seen with 69th Guards Motor Rifle Division (ex-138th Brigade), 18th Guards Motor Rifle Division

motor rifle brigade, 36 2S3M in most brigades, 18 in the 20th, 18–36 in the 200th (2009) O 2009 L seen with 8th Gds (Mountain), 9th, 17th Gds

tank brigade, 18 2S3M each (2009) O 2009 L seen with 5th Separate Guards Tank Brigade, 6th Separate Tank Brigade, 7th Separate Guards Tank Brigade

motor rifle division, 18 2S3M (2018) O 2018-03 L seen with 150th Motor Rifle Division (Southern MD)

motor rifle division, one gun battalion re-equipped with 2S3M2 O 2006 L seen with 2nd Guards Taman Motor Rifle Division

military base, 18 to 36 per base (2009) R 2009 L seen with 4th Guards Military Base, 7th Military Base, 201st Military Base

NUMBERS **Holdings** 600 2S3/2S3M in Army service, 500+ 2S3 in store (IISS estimate) (2024); **Holdings** 16 2S3 with Naval Infantry (IISS estimate) (2024); **Losses** 197 2S3(M) lost since Feb 2022 (Oryx, visually confirmed) (2026-09)

INDICATES *A group of up to 18, or 24 where a battalion has four batteries of six, indicates a howitzer battalion of a motor rifle brigade or of a division artillery regiment. Captured examples in 2022 were attributed to motor rifle brigades and divisions.*

RECOGNISE **Hull** Driver and engine at front; fully enclosed turret at far rear of hull. Two circular ammunition hatches in hull rear on the 2S3; fewer, relocated rear hatches on the 2S3M.

Turret Turret with curved front; commander's cupola offset to left. 2S3M2 adds 902B smoke grenade dischargers.

Armament 152 mm barrel overhangs chassis, with double-baffle muzzle brake and fume extractor. 7.62 mm MG on commander's cupola.

Suspension Close only: six road wheels with gaps between 1st/2nd and 2nd/3rd; four return rollers; drive sprocket front, idler rear.

CONFUSED WITH **2S19 Msta-S** p. 130 Full view: 2S19 turret in hull centre, powerpack at rear, skirt over upper suspension. Chassis hidden: 2S19 turret front vertical, 2S3's curved.

2S1 Gvozdika p. 126 Full view: seven road wheels, no return rollers. From above: 2S3 barrel overhangs the hull front; 2S1 barrel does not.

2S5 Giatsint-S p. 128 Chassis hidden: no turret; long 152 mm gun on an open mount at the rear with a multi-baffle brake. Full view: front dozer blade, rear spade.



Zimin.V.G., CC BY-SA 4.0



Kitaev Aleksey, CC BY 4.0



Vladislav Falshivomonetchik (Владислав Фальшивомонетчик), CC BY-SA 3.0



Mil.ru, CC BY 4.0

MOBILITY Not amphibious; fords up to 1 m.

Weight, combat	**27.5 t**
L × W × H	**7.765 × 3.25 × 3.05 m** gun forward per RUWIKI; hull 6.97 m
Road speed	**60 km/h** maximum *also 63 km/h WP-EN12*
Road range	**500 km** maximum
Fording	**1 m** unprepared *also 1.05 m WP-EN12*
Time into action	**0.5 min** *also 5 min ATP*
Ground pressure	**0.6 kg/cm²**
Bridge load class	**31** 27.5 t tracked x 1.10, rounded up, estimated
Time out of action	**INA**

Range, HE-frag	**17.4 km** maximum, 3OF25 HE-frag *also 17.05 km WP-RU12*
Range, HE-frag rocket-assisted	**20.5 km** maximum, 3OF22 rocket-assisted HE-frag *also 24 km JANESRG WP-EN12*
Range, Krasnopol guided	**20 km** maximum, 3OF39 Krasnopol laser-guided *also 18 km (Krasnopol), 20 km (Krasnopol-M2) WWW1B*
CEP, Krasnopol guided	**1 m or less** claimed, laser-guided, target designated from Orlan-30 UAV; commentator claim
Range, HEAT	**4 km** maximum, 53-BP-540 HEAT, direct fire
Crew	**4** *also 6 (4 + 2 ammunition handlers at hull rear) JANESRG WP-EN12*
Main gun	**152.4 mm 2A33 howitzer, L/28** *also L/27 (D-22 factory designation) WP-EN12*
Elevation, traverse	**-4 to +60 deg, 360 deg**
Rate of fire	**3–4 rpm** *also 1.9–3.5 rpm WP-RU12*
Projectile weight, HE-frag	**43.56 kg** OF-540 / 3OF25
Ammunition carried	**46 rounds** 2S3M and later *also 40 rounds WP-RU12 AR8*
Unit of fire	**60 rounds**
Secondary armament	**7.62 mm PKT, 1,500 rounds**

SEEN WITH Object 123 chassis (2K11 Krug); 1V514-1 Mechanizator-M (1 per gun (2S3M2)); Senior battery officer vehicle (MSOB); Krasnopol guided projectile

VARIANTS **2S3M** Fewer, reconfigured hatches in hull and turret rear; radio antenna moved to turret roof. Single drum-type mechanised stowage: 46 rounds instead of 40; mechanised feed of rounds from the ground. **2S3M1** No external difference stated in sources. 1P5 panoramic sight, R-173 radio, 1V519 receiver for fire data from the battery command vehicle. **2S3M2** 902B smoke grenade dischargers. 1V514-1 Mechanizator-M automated laying and fire control system; produced from 2006.

SOURCES AR8 AR9 ATP CNA FAS3 IISS25 JANESRG ORYX1 RWW WP-EN12 WP-RU12 WSPOT4 WSPOT5 WSPOT6 WWW1A WWW1B ZR not in WEG

2S4 Tyulpan 2C4 «Тюльпан»

NATO: M-1975 **TR**

240 mm self-propelled breech-loading heavy mortar for destroying fortified targets In service 1971

OPERATED BY **high-power artillery brigade**, 2S4 battalion, Groups of 6 and 4; 8 reported in 45th brigade (2017) D 2024 H
high-power artillery brigade, heavy mortar battalion (240-mm); brigade allocated to a front (Soviet RVGK) D 1991 M
high-power artillery brigade O 2026-02 M seen with 45th Svir High-Power Artillery Brigade, 46th High-Power Artillery Brigade
artillery brigade, heavy (high-power) battalion, 1 battalion per brigade (CNA: batteries); vehicle count INA R 2017 M seen with 305th Artillery Brigade, 385th Artillery Brigade (to receive 2S4 by end 2017, planned)
high-power artillery brigade R 2023 L seen with 17th Artillery Brigade (high-power, 3rd Army Corps; reported forming with 2S4)
artillery brigade, 2S4 battalion, 12 per battalion (RUWIKI) R 2019 L seen with 9th Guards Artillery Brigade, 30th Guards Artillery Brigade, 120th Guards Artillery Brigade

INDICATES *Held by high-power artillery brigades and by heavy battalions of army-level artillery brigades. A 2S4 sighting points to army-level heavy artillery tasked against fortified positions or built-up areas.*

RECOGNISE **Hull** Turretless tracked hull; driver front left, engine front right; open, externally mounted mortar at the rear.
Turret No turret. Commander's rotating cupola behind the driver with an external 7.62 mm PKT and a searchlight.
Armament 240 mm breech-loading mortar, barrel about 5 m, travels muzzle forward on the roof, muzzle level with the first road wheel, baseplate folded above; swings back to fire.
Suspension Close only: six rubber-tyred road wheels, wider gaps after the first and second; four return rollers; drive sprocket front, idler rear.

CONFUSED WITH **2S5 Giatsint-S** p. 128 Same chassis family. Full view: 2S5 gun reaches past the hull front (8.95 m overall against an 8.33 m hull); the 2S4 mortar muzzle reaches only the first road wheel.
2S7 Pion / 2S7M Malka p. 129 Shares the name M-1975. Full view: 203 mm gun with no muzzle brake; seven road wheels a side against six.


Boevaya mashina, CC BY-SA 3.0

MOBILITY Tracked; heavy. Fords about 1 m unprepared. Mortar must be lowered onto a ground baseplate to fire.

Weight, combat	**27.5 t**
L × W × H	**7.94 × 3.25 × 3.225 m** travelling
Road speed	**60 km/h** maximum
Road range	**500 km**

Range, 53-F-864 HE bomb	**9.65 km** maximum, HE bomb 130.7 kg, full charge
Minimum range, 53-F-864 HE bomb	**0.8 km** HE bomb, smallest charge
Range, 3F2 rocket-assisted HE bomb	**18 km** maximum, 228 kg rocket-assisted HE bomb; WEG and GS do not name the round, 3F2 per RUWIKI
Minimum range, 3F2 rocket-assisted HE bomb	**0.8 km** rocket-assisted HE bomb
Range, 3F5 Smel'chak laser-guided bomb	**9.2 km** maximum, laser-guided bomb, target designated by 1D15 from 0.2-5 km
Minimum range, 3F5 Smel'chak laser-guided bomb	**3.6 km** laser-guided bomb
Hit probability, 3F5 Smel'chak laser-guided bomb	**80-90% within a 2-3 m circle** claimed, semi-active laser homing, target lit in final 400-800 m of flight, claim
Range, Smel'chak-M laser-guided bomb	**9.5 km** maximum, laser-guided bomb, 134 kg
Minimum range, Smel'chak-M laser-guided bomb	**0.9 km** laser-guided bomb

SEEN WITH 6x6 truck or MT-LB carrying the rest of the crew

SOURCES AG3 ATP CNA CULT DB17 FM100 GS3 IISS25 IZ17 IZ232 JANESRG MK26 ORYX1 PRIME26 RG17 RG22 WEG5 WEG6 WP-EN16 WP-RU18 WP-RU19 WP-RU20 ZV22 Updated 2026-10-01

2S5 Giatsint-S 2C5 «Гиацинт-С»

NATO: M1981 **TR**

Army-level 152 mm self-propelled gun for long-range counter-battery and deep fire In service 1975

OPERATED BY **artillery brigade**, gun battalion (152 mm), 18 per battalion (24 in forward armies); 2S5 or 2A36 or M-46 D 1991 M
Airborne Forces (VDV), Airborne Forces artillery; unit not named R 2024 M
artillery brigade, gun battalions (self-propelled), 24 to 72 per brigade (1990) R 1990 L
artillery regiment, 24 per regiment (1990) R 1990 L
artillery brigade, self-propelled gun battalion, batteries of 6 R 2016 L
motor rifle brigade, artillery subunit R 2026-09 L

NUMBERS **Holdings** 18 2S5 with Airborne Forces (VDV) (IISS 2024 figures) (2024)

INDICATES *In Soviet doctrine the 2S5 marked the gun battalion of an army artillery brigade. Russian MoD reporting (2026) also places it with motor rifle brigade artillery, so alone it no longer points to army-level artillery.*

RECOGNISE **Hull** Tracked hull with engine and driver at front, front dozer blade, and a spade at the rear that is lowered to the ground before firing.
Turret No turret: gun on an open mount at the rear of the hull roof; 15 deg traverse each side. Commander's cupola carries a 7.62 mm PKT and a searchlight.
Armament 152 mm barrel with five-part multi-baffle muzzle brake, held by a travel lock; with gun forward, length 8.95 m against a hull of 8.33 m.
Suspension Close only: six rubber-tyred double road wheels and four return rollers per side; drive sprocket front, idler rear; track shoes 484 mm wide.

CONFUSED WITH **2S7 Pion / 2S7M Malka** p. 129 Chassis hidden: 2S7 barrel has no muzzle brake; 2S5 has a five-part multi-baffle brake. Full view: seven road wheels a side against six.
2S3 Akatsiya p. 127 Chassis hidden: enclosed turret at the hull rear, double-baffle muzzle brake and fume extractor; 2S5 has an open mount and a multi-baffle brake.


One half 3544, Public domain

MOBILITY Tracked; fords about 1 m; rear spade must be lowered to fire; gun traverse only 15 deg each side, so the hull is laid on the target line.

Weight, combat	**28.2 t**
L × W × H	**8.33 × 3.25 × 2.76 m**
Road speed	**63 km/h** maximum, road
Road range	**500 km** maximum, road

Range, HE-frag 3OF29	**28.4 km** maximum, HE-frag 3OF29, full charge
Range, HE-frag 3OF29 reduced charge	**21.5 km** maximum, HE-frag 3OF29 with reduced charge 4Zh48
Range, HE-frag 3OF59	**30.5 km** maximum, HE-frag 3OF59, improved aerodynamic shape, full charge
Range, rocket-assisted HE-frag 3OF30	**33 km** maximum, rocket-assisted HE-frag
Range, Krasnopol guided 3OF39	**20 km** maximum, laser-guided HE-frag Krasnopol
Minimum range, HE-frag 3OF29	**8,600 m** HE-frag, indirect fire
Range, HEAT BP-540	**1,000 m** direct fire, HEAT BP-540, direct fire
Nuclear projectiles	**0.1-2 kt claimed** claimed, special 152 mm rounds
Muzzle velocity, HE-frag 3OF29	**942 m/s** full charge
Projectile weight, HE-frag 3OF29	**46 kg**
Rate of fire, maximum	**5-6 rpm** semi-automatic chain rammer
Rate of fire, sustained	**1-2 rpm**

SEEN WITH 2A37 152 mm gun (1); Ammunition resupply vehicle (type INA) (INA; carries the other 30 of the 60-round unit of fire and 2 of the 7-man section); Object 123 tracked chassis (2S3, 2S4, SA-4 family) (1)

SOURCES BMPD3 FAS3 FM3 GS4 IISS25 IZ26 IZ233 JANESRG MF1 RIA22 RUSIPL RWW WEG6 WEG8 WP-EN4 WP-RU19 WP-RU20 Updated 2026-10-06

2S7 Pion / 2S7M Malka 2C7 «Пион»

NATO: M-1975 TR

203 mm heavy self-propelled gun for long-range fire on high-value targets In service 1975

OPERATED BY **high-power artillery brigade**, 2S7 battalions (45th bde: two battalions of eight, 2017), ATP fig. 5-18: 24 x 2S7 per brigade, 8 x 2S7 battalion block (OCR uncertain); 16 reported in 45th bde, 2017 D 2024-02 H

high-power artillery brigade, 16 x 2S7 Pion (with 8 x 2S4 Tyulpan) O 2017-12 M

INDICATES *A 203 mm tracked gun points to army-level artillery: a high-power artillery brigade or an army artillery brigade's heavy battalion, not a manoeuvre brigade's guns. Used on high-value targets, in urban fighting and, since 2022, for counter-battery fire.*

RECOGNISE **Hull** Tracked hull with no turret and a front dozer blade, built from T-72/T-80 automotive parts.

Turret No turret: gun on an open mount at the hull rear; recoil spade at the rear, lowered to the ground when firing.

Armament 203 mm 2A44 gun (about 12 m) on an open mount; length with gun forward 13.12 m against a hull of 10.5 m. No muzzle brake, no fume extractor.

CONFUSED WITH **2S5 Giatsint-S** p. 128 Chassis hidden: 2S5 barrel ends in a five-part multi-baffle muzzle brake; the 2S7 has none. Full view: six road wheels a side against seven.



Boevaya mashina, CC BY-SA 3.0 de

MOBILITY Not amphibious. Needs firm ground to emplace; recoil spade and dozer blade used to dig in.

Weight, combat	**46,500 kg**
L × W × H	**10.5 × 3.38 × 3.0 m**
Road speed	**51 km/h** maximum

Range, HE-frag	**37.5 km** maximum, Conventional HE-frag, 110 kg projectile
Range, HE rocket-assisted	**47.5 km** maximum, RAP projectile, 103 kg
Rate of fire	**1.5 rpm (2S7); 2.5 rpm (2S7M)** maximum
Ammunition carried	**4 (2S7); 8 (2S7M)** On the vehicle
Crew	**7 (2S7); 6 (2S7M)** on the vehicle; 2S7 crew is 14 with the auxiliary vehicle crew (WIKI)
Elevation	**0 to +60 deg; traverse 30 deg**

SOURCES ATP CNA CNA21 DEF24 FAS5 FM100 GS4 IISS25 IZ17 IZ23B IZ232 LENTA16 LENTA23 MILN RDP1 TASS1 TWZ2 WEG6 WP-EN18 WP-RU20 WWW12 Updated 2026-10-01

2S9 Nona-S 2C9 «Нона-С»

NATO: M1981 TR-A+AD

Airborne 120 mm self-propelled gun-mortar; towed 2B16 version for ground units In service 1981

OPERATED BY **motor rifle battalion**, in place of the 2S12 Sani mortar (some battalions) D 2016 M

airborne division, artillery regiment, self-propelled artillery battalion (3 batteries of 6 in the 1982 establishment; no later establishment found), 18 per battalion (6 per battery) D 2000 L

air assault regiment, self-propelled artillery battalion (3 batteries of 6 in the 1982 establishment, replacing the regimental mortars), 18 per battalion (6 per battery) D 2000 L

airborne division, 2S9 artillery subunits near Klishchiivka (date from MILKL losses, Apr 2023) O 2023 L

naval infantry brigade, 6 to 12 per brigade (336th: 12 in 2009; 810th: 6, undated) R 2009 M

INDICATES *A 2S9 usually indicates Airborne Forces (VDV) artillery: its battalions sit in VDV artillery and airborne/air assault regiments. Naval Infantry, FSB Border Guards and Ukraine also hold it. The towed 2B16 points to Ground Forces or Naval Infantry units.*

RECOGNISE **Hull** BMD-1/BTR-D type aluminium hull: sloped glacis, flat hull top with driver's hatch centre front and a second hatch to his left; vertical sides and rear.

Turret Turret in hull centre with sloped front, sides curving round to the rear; gun traverses only 35 degrees each side.

Armament 120 mm barrel, muzzle roughly level with hull front; no muzzle brake; no machine gun; bore cleared by compressed air after each round.

Suspension Close only: six road wheels and five return rollers each side, idler front, drive sprocket rear; hydropneumatic, clearance 0.1-0.45 m; twin waterjets at rear.

CONFUSED WITH **Nona/Vena 120 mm gun-mortar family (2S23, 2S31, 2S34)** p. 131 Chassis hidden: 2S9 turret has no machine gun or cupola; 2S23, 2S31 and 2S34 carry a roof MG; 2S34 gun has a square muzzle brake.

2S23 Nona-SVK p. 131 Full view: wheeled 8x8 BTR-80 hull. Chassis hidden: 2S23 turret has a commander's cupola with a machine gun.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Fully amphibious (waterjets); air-droppable by parachute from An-12, Il-76; light aluminium armour against small arms and splinters only

Combat weight	**8.0–8.7 t** 2S9: 8.0 t in Russian sources (ru.wikipedia, ATP), 8.7 t in Jane's and WEG; 2S9-1 8.5 t, 2S9-1M 8.8 t
L × W × H	**6.02 × 2.63 × 2.3 m**
Road speed	**60 km/h** maximum
Road range	**500 km** maximum

Range, HE-frag shell 3OF49	**8.8 km** maximum, rifled HE-frag shell 3OF49 (round 3VOF54); the 3OF51 shell (rounds 3VOF49, 3VOF75) has the same figure
Range, HE-frag rocket-assisted shell 3OF50	**12.8 km** maximum, rocket-assisted HE-frag shell 3OF50 (round 3VOF55)
Range, 120 mm HE mortar bomb	**7.1 km** maximum, smoothbore HE-frag mortar bomb 53-OF-843B (round 3VOF79)
Range, HEAT shell 3BK19	**1.0 km** maximum effective, HEAT shell 3BK19 (round 3VBK14), direct fire; 500 m practical maximum without modern fire control (WEG, 2S31 row)
Range, Kitolov-2 laser-guided shell	**9 km** maximum, 3VOF112 Kitolov-2 laser-guided shell, target lit by laser designator
Crew	**4**

SOURCES ACADEM AIF1 AR1 ARMINF ATP FAS4 FM100 FOCUS2 IISS25 JANESRG MIL5 ORYX1 RG RWW TENC WEG9 WEG10 WEG11 WEG2015 WP-RU11 WP-RU13 WP-RU21 WP-RU22 WSN3 ZR2
Updated 2026-10-21

2S12 Sani 2С12 «Сани»

NATO: M-120 **WH-AT**

Truck-borne, towable 120 mm muzzle-loading mortar complex of the battalion mortar battery In service 1979

OPERATED BY **motor rifle battalion**, mortar battery, 8 per battery D 2016 M

airborne division, mortar battery of airborne regiments, towed 2B11 (Soviet era), 6 or 8 per battery D 1991 M

NUMBERS **Holdings** 675 2S12 in Army service, 500 more in store (IISS) (2024); **Losses** 13 2F510 transport vehicles for 2S12 destroyed (Oryx, photo-confirmed) (2026-09)

INDICATES *A group of 6 to 8 trucks unloading 120 mm mortars marks a battalion mortar battery, doctrinally of a motor rifle battalion; since 2022 the carriers have been lost by motor rifle brigades, regiments and divisions. Also in Ukrainian service.*

RECOGNISE **Chassis** Two-axle 4x4 army truck: GAZ-66 for 2S12 (transport vehicle 2F510), Ural-43206 for 2S12A (2F510A).

Body Cargo bed carries the 2B11 mortar on its wheeled carriage 2L81; under canvas it can only be told from a cargo truck on close examination.

In action Smoothbore tube, bipod and baseplate in a triangle on the ground, wheeled carriage detached; double-loading safety device on the muzzle.

Details Close only: winch and ramps in the truck bed to roll the mortar in and out.

CONFUSED WITH **GAZ-66 or Ural-4320 cargo truck** p. 246 Under canvas: told from a cargo truck only on close examination. The transport vehicle carries a winch, loading ramps and mortar mountings in its bed.

2B9 Vasilek in its GAZ-66 carrier p. 135 In transit: also a GAZ-66 carrying a mortar. In action the 2B9 fires from its wheeled split-trail carriage, wheels lifted; the 2B11 stands on bipod and baseplate.

2B16 Nona-K p. 129 Towed: split-trail carriage with the tube laid back over the trails; the 2B11 travels on a detachable wheeled carriage with no trails.

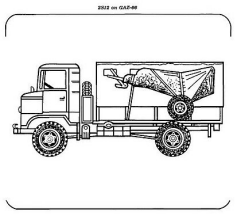
VARIANTS **2S12A** Carried on a Ural-43206 (Motovoz family) diesel truck in place of the GAZ-66; loaded by electric winch.



Vitaly V. Kuzmin, CC BY-SA 4.0



Mil.ru, CC BY 4.0



Drawing: US Army, FM 100-2-3, public domain

MOBILITY Truck-borne; towed on its own wheels only short distances, at most 20 km/h off road and 60 km/h on paved road. Fords 0.8 m (GAZ-66).

Weight, complex	**11,020 kg** 2S12A with 2F510A on Ural-43206, with ammunition
Weight, vehicle	**3.64 t** 2S12 on GAZ-66; figure matches truck without load, see open questions
L × W × H	**5.66 × 2.34 × 2.44 m** 2S12 on GAZ-66
Road speed	**87 km/h** maximum, 2S12 on GAZ-66

Range, 120 mm HE-frag	**7,100 m** maximum, standard bomb; RWW, AR18 and TI do not name the munition (WEG15: 7,000 m for 3OF843B)
Minimum range, 120 mm HE-frag	**480 m** Rosoboronexport catalogue figure, claim
Range, 120 mm HE-frag rocket-assisted	**9,100 m** maximum, Frag-HE-RA
Range, 120 mm smoke	**6,800 m** maximum, smoke bomb
Minimum range, 120 mm smoke	**1,000 m** smoke bomb
Range, 120 mm illumination	**5,300 m** maximum, illumination bomb S-843
Minimum range, 120 mm illumination	**1,000 m** illumination bomb S-843

SOURCES AR2 AR3 AR4 FM3 FM100 IISS25 ORYX1 OSN2 RWW TI VS WEG2015 WP-EN10 WP-RU7 WSPOT1 WSPOT2 WSPOT3 not in WEG

Updated 2026-10-19

2S19 Msta-S 2С19 «Мста-С»

NATO: M1990 Farm **TR**

152 mm tracked self-propelled howitzer of brigade, division and army artillery In service 1989

OPERATED BY **motor rifle brigade**, two self-propelled artillery battalions, each of three batteries of 6 howitzers; ATP notes 2S3 may be held instead, 18 per battalion (6 per battery), 36 per brigade; ATP: some battalions up to 24 systems D 2024 M

tank brigade, two howitzer (self-propelled artillery) battalions, three batteries of 6, 18 per battalion, 36 per brigade D 2016 M

motor rifle division, artillery regiment, self-propelled howitzer battalions; 2S19 or 2S3, INA; ATP: division artillery regiment of 3-4 battalions D 2019 M

tank division, artillery regiment, self-propelled howitzer battalions; 2S19 or 2S3 D 2019 M

artillery brigade, howitzer battalions (2S19 or towed 2A65); CNA reports gradual replacement by 2S35 D 2019 M

INDICATES *A battery of 6 or battalion of 18 Msta-S points to a self-propelled artillery battalion of a motor rifle or tank brigade, a division artillery regiment or an army artillery brigade. Wartime batteries may be smaller.*

RECOGNISE **Hull** Tank-type tracked hull on T-80 running gear: turret in hull centre, powerpack at rear, built-in dozer blade, barrel travel lock on the glacis. 11.9 m long, gun forward.

Turret Turret with vertical front, sides and rear, upper part curving in to a flat roof; about 3 m high. Six 81 mm smoke launchers. 2S19M2: two boxes on right turret side.

Armament 152 mm L/47 barrel with double-baffle muzzle brake and a bore evacuator. 12.7 mm NSVT machine gun on the commander's cupola.

Suspension Close only: six road wheels and five return rollers per side (T-80 type), 580 mm tracks; upper part of the suspension covered by a skirt.

CONFUSED WITH **2S35 Koalitsiya-SV (152 mm SP howitzer)** p. 132 Full view: crew sit under hatches in the hull front. Chassis hidden: turret roof has a remote Kord MG, not the 2S19's crewed cupola with NSVT.



Mil.ru, CC BY 4.0

MOBILITY Heavy tracked vehicle, not amphibious. Fords 1.2 m unprepared; WEG gives 5 m with preparation. About 42 t, needs heavy bridging.

Weight, combat	**42 t** 2S19 and 2S19M1
Weight, combat, 2S19M2	**43.24 t** 2S19M2
L × W × H	**11.917 × 3.584 m overall; 3.38 m without skirts × 2.985 m**
Road speed, maximum	**60 km/h**

Range, HE-frag	**24.7 km** maximum, 3OF45 (OF-45) HE-frag, full charge
Range, HE-frag base bleed	**29 km** maximum, 3OF61 HE-frag base bleed (round 3VOF91)
Range, rocket-assisted	**36 km** HE rocket-assisted projectile (HERA/RAP), type not named
Range, guided	**20 km** maximum, Krasnopol laser-guided projectile; laser designation by an observer required
Range, jammer round	**22 km** 3RB30 radio jamming projectile; jamming radius 700 m, claim
Range, secondary MG	**2,000 m ground; 1,500 m air** effective, 12.7x108 mm, ground and air targets
Main gun	**152 mm 2A64 howitzer, L/47** 2S19, 2S19M1, 2S19M2
Rate of fire, maximum	**8 rpm** 2S19, 2S19M1, rounds from onboard stowage
Rate of fire, sustained	**3-4 rpm** 2S19, 2S19M1
Rate of fire, maximum, 2S19M2	**10 rpm** 2S19M2, claim
Rate of fire, sustained, 2S19M2	**4-5 rpm** 2S19M2

SEEN WITH 1V14M fire direction (battery command) vehicle (per battery in RWW battalion chart; number not legible); 1V15M and 1V16M fire direction vehicles (shown in RWW battalion chart; number and placement not legible in OCR)

SOURCES AG8 ARMYT ATP CNA GS4 GS5 IISS25 JANESRG MIL86 ORYX1 RWW TASS9 TASS14 WEG69 WP-EN12 WP-EN14 WP-EN121 WP-RU17

Updated 2026-10-06

2S23 Nona-SVK 2C23 «Нона-СВК» WH-AT-A

Battalion-level 120 mm self-propelled gun-mortar on BTR-80 8x8 chassis Introduced 1991

OPERATED BY **naval infantry brigade**, battalion mortar battery D 2024 H

motor rifle brigade, mortar battery attached to each motor rifle battalion, 6 per battery; 18 per brigade D 2018 M

INDICATES *A 2S23 battery points to a motor rifle brigade or regiment, or a naval infantry brigade, as the vehicle is the battalion mortar battery, six per battery. Named users are the 55th Brigade and 752nd Regiment.*

RECOGNISE **Body** Turret centred on hull roof, 120 mm gun in a sloping front, sides curving to the rear. Commander's cupola with 7.62 mm machine gun.

Axles Four road wheels each side (8x8) with a larger gap between the second and third wheels.

Cab BTR-80 hull front: driver's compartment with two armoured windscreens and shutters. BTR-80 firing ports and upper side-door sections removed.

CONFUSED WITH **Nona/Vena 120 mm gun-mortar family (2S9, 2S31, 2S34)** p. 131 Chassis hidden: 2S9 turret has no MG or commander's cupola; 2S31 has 6 smoke dischargers a side against 3; 2S34 gun has a square muzzle brake.



Smell U Later, CC BY-SA 3.0

MOBILITY Amphibious; trim vane raised before entering water. Only front two axles steer. Fires over the front arc (35 deg each side); crews avoid side fire on rough ground.

Weight, combat	**14.5 t**
L × W × H	**7.5 × 2.90 × 2.75 m** Overall length; sources differ
Speed, road	**80 km/h** maximum

Range, HE-frag 3OF49 (rifled)	**8.8 km** maximum, 3OF49 HE-frag (round 3VOF54), indirect fire; the 3OF51 shell has the same figure
Range, rocket-assisted 3OF50	**12.8 km** maximum, 3OF50 rocket-assisted HE-frag (round 3VOF55), indirect fire
Range, mortar bomb OF-843B	**7.1 km** maximum, OF-843B smoothbore mortar bomb (round 3VOF79)

SOURCES AR1 AR5 AR6 AR7 FAS2 IISS25 JANESRG ORYX1 RGRU RWW TENC WEG1 WEG2015 WP-EN11 WP-RU8 WP-RU9 WP-RU10 WP-RU11 WSN3 ZR2 Updated 2026-10-21

2S31 Vena 2C31 «Вена» TR

120 mm tracked amphibious gun-mortar for close and direct fire support Pilot batch 2010; line units from 2023

OPERATED BY **artillery regiment**, Artillery regiment of 98th Airborne Division O 2023-09 L

Airborne Forces, Listed under Airborne Forces equipment; holding unit not stated R 2024 L

INDICATES *Seen in Russian service, Vena points to an airborne artillery unit; the only unit named is the 1065th Artillery Regiment, 98th Airborne Division. Very few vehicles are reported.*

RECOGNISE **Hull** BMP-3-derived tracked hull, 6.86 m long; driver at front, turret in centre, engine at rear.

Turret Closed all-round turret, commander's cupola on the right with remote 7.62 mm PKTM; six smoke grenade launchers each side of the turret front.

Armament Single 120 mm 2A80 gun-mortar. Hatch in the right hull side for loading from the ground.

Suspension Close only: six road wheels and three return rollers per side, drive sprocket rear, idler front; 380 mm track; water jets at the hull rear.

CONFUSED WITH **Nona/Vena 120 mm gun-mortar family (2S9, 2S23, 2S34)** p. 131 Chassis hidden: 2S9 turret has no machine gun; 2S23 and 2S34 have 3 smoke dischargers a side against 6 on 2S31; 2S34 gun has a square muzzle brake.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Amphibious on two water jets, about 10 km/h afloat; no ground-clearance adjustment (fixed 450 mm). Air-droppability not shown.

Combat weight	**19.1 t**
L × W × H	**7.511 × 3.366 × 3.439 m** gun forward; hull 6.856 m
Road speed	**70 km/h**

Range, HE-frag 3OF49 (rifled)	**8.8 km** maximum, older rifled HE-frag shell 3OF49 (round 3VOF54), the same shell as from the 2A51
Range, HE-frag 3VOF110 (rifled)	**13 km** maximum, rifled HE-frag shell
Range, rocket-assisted HE-frag shell	**13 km** maximum, rocket-assisted HE-frag shell (3VOF55 in the ru.wikipedia table); the same round reaches 12.8 km from the shorter 2A51

SOURCES AIFRU AR1 AR6 BMPD1 FAS4 IISS25 JANESRG MIL3 ORYX2 RGRU2 VPK1 VPK2 VS WEG2 WEG2015 WP-EN13 WP-RU11 WSN3 WSN4 ZR2 Updated 2026-10-21

2S34 Khosta 2C34 «Хоста» TR-A

120 mm self-propelled gun-mortar on a modernised 2S1 hull In service 2012

OPERATED BY **motor rifle division**, 1 destroyed near Yasynuvata, Donetsk, 6 Dec 2023 O 2023-12 L

INDICATES *Few held (40, IISS). Reported users: 20th and 21st MR Brigades; a 2023 loss is credited to the 27th MR Division (ex-21st Brigade). A sighting suggests one of these. MoD (Feb 2023): used singly or in pairs with UAV spotting.*

RECOGNISE **Hull** 2S1 hull: driver front left, engine front right, turret at the rear. Same overall dimensions as the 2S1.

Turret All-welded turret not overhanging the hull sides; commander's cupola left, 7.62 mm PKTM on roof, three smoke dischargers each side at front. Rear hull door.

Armament 120 mm 2A80-1 gun-mortar with a large square muzzle brake.

Suspension Close only: seven road wheels per side, drive sprocket front, idler rear, no track-return rollers (as the 2S1). Track 350 mm wide.

CONFUSED WITH **Nona/Vena 120 mm gun-mortar family (2S9, 2S23, 2S31)** p. 131 Chassis hidden: 2S34 gun has a square muzzle brake; 2S9 turret has no machine gun; 2S31 has 6 smoke dischargers a side against 3.



Smell U Later, CC BY-SA 3.0

MOBILITY Tracked and amphibious on its tracks; needs preparation before entering water. Armour is thin: protects against small arms and shell splinters only.

Weight, combat	**16 t**
L × W × H	**7.57 × 2.85 × 2.83 m** Hull length 7.26 m
Road speed, maximum	**60 km/h**

Range, standard 120 mm mortar bomb	**7.1 km** maximum, smoothbore HE mortar bomb 53-OF-843B (round 3VOF79), the same bomb as from the 2A51 and the 2S31
Range, HE-frag 3OF49 (rifled)	**8.8 km** maximum, older rifled HE-frag shell 3OF49 (round 3VOF54), the same shell as from the 2A51 and the 2S31
Range, HE-frag 3VOF110 (rifled)	**13 km** maximum, rifled HE-frag shell 3VOF110, not rocket-assisted

SOURCES AR1 AR6 AR10 ARMEDC FAS4 IISS25 JANESRG MIL4 RAMBLER RWW VPK2 VPK3 WEG3 WEG2015 WP-RU8 WP-RU11 WP-RU13 WP-RU14 WSN3 WSPOT7 ZR2 Updated 2026-10-21

2S35 Koalitsiya-SV 2C35 «Коалиция-СВ» TR

152 mm self-propelled howitzers: tracked autoloaded 2S35 and wheeled 8x8 2S43 Introduced 2023

OPERATED BY **self-propelled artillery battalion**, self-propelled howitzer battery, 6 per battery, 18 per battalion D 2016 M
self-propelled artillery regiment, 8 2S35 on troop trials R 2020-05 M
artillery brigade, self-propelled artillery battalions, INA; planned replacement of the brigade's 2S19 by 2S35, reported 2017, not carried out by late 2024 R 2019 L
artillery brigade, artillery battalion R 2026 L

INDICATES *2S35 or 2S43 suggests new-build guns above manoeuvre-brigade level: 2S35 was planned for army artillery brigades and trialled in a division SP artillery regiment; 2S43 is reported with the 273rd Artillery Brigade, 34th Artillery Division. Rare (IISS: 8, 20).*

RECOGNISE **Hull** 2S35: T-90-type tracked hull with reshaped front; driver, commander and gunner sit side by side in the front, three hatches across the hull front; engine at rear.
Turret 2S35: unmanned turret mid-hull; 902 smoke dischargers on both sides and roof; laser warning sensors at front and rear of roof. From 2021 two boxes on turret front.
Armament 2S35: 152 mm 2A88 barrel (52 calibres) with muzzle brake, held by a travel lock on the glacis; Kord 12.7 mm remote weapon station on turret roof.
Suspension 2S35, close only: six road wheels each side, idler front, drive sprocket rear; upper track covered by a skirt.
Wheeled 2S43 2S43: four-axle 8x8 BAZ truck; two-row armoured cab at front, ammunition and equipment mid-body, open unturreted gun at rear; heavy spade lowered at rear to fire.

CONFUSED WITH **2S19 Msta-S / 2S19M2 Msta-SM2** p. 130 Full view: 2S35 has three crew hatches across the hull front; the 2S19 gun crew sit in the turret. 2S19 barrel 47 calibres against 52.
2S44 Giatsint-K Same BAZ 8x8 chassis as the 2S43, but the 2A36's 50-calibre barrel with a multi-slot muzzle brake against the 47-calibre 2A64.


Kirill Borisenko, CC BY-SA 4.0

MOBILITY 2S35 tracked, 48–55 t, not amphibious. 2S43 wheeled 32 t, for road and off-road use, fits Il-76; fords 1.4 m.

Weight, 2S35	**48–55 t** combat
Weight, 2S43	**32 t** combat
L × W × H	**9.63 × 3.78 × 2.2 m**
Road speed, 2S35	**65 km/h** maximum

Range, 2S35 standard HE-frag	**40 km** maximum, standard (unassisted) rounds
Range, 2S35 guided or extended-range shell	**80 km** maximum, precision-guided or rocket-assisted projectile; munition not named, claim
Range, 2S43 HE-frag	**24.5 km** maximum, 2A64 gun; munition not stated by WEG or WPMALRU (Rostec: HE-frag more than 24 km)
Rate of fire, 2S35	**16 rpm** maximum, claim
Rate of fire, 2S43	**7 rpm** maximum, claim
Crew, 2S35	**3**
Crew, 2S43	**5**
Gun, 2S35	**152 mm 2A88, 52 calibres**
Gun, 2S43	**152 mm 2A64, 47 calibres**
Ammunition carried, 2S35	**65 rounds**
Ammunition carried, 2S43	**30 rounds**
Elevation limits, 2S35	**-7° to +70°**

SEEN WITH 2F66-1 transport-loader vehicle (KamAZ-6560), 92 rounds, loads 2S35 in 15 min; T-90-based tracked chassis (2S35) (1); BAZ-6910-027 Voshchina 8x8 chassis (2S43) (1)

SOURCES AG2 AR11 ATP BMPD2 BMPD3 CNA IISS25 IZ23 IZMAL KZ1 KZ2 ORYX1 REDSTAR RG24 RGMAL RGMAL2 RGPAR RWW SHEP VMUS WEG4 WP-EN14 WP-EN15 WP-RU15 WP-RU16 WP-RU17 WSN5 Updated 2026-10-01

2S40 Floks 2C40 «Флокс» WH-AT

120 mm wheeled self-propelled gun-mortar, indirect and direct fire In service 2023

OPERATED BY **Ground Forces artillery batteries**, artillery batteries (Rostec, state claim: first batch for equipping artillery batteries) R 2023-10 L
Unidentified unit, Kherson region, Ukraine; drone strike video published Oct 2023, damage unconfirmed, 1 R 2023-10 L

INDICATES *Rostec said the first batch was for artillery batteries; IISS lists it in Army SP gun/mortar holdings. No source names the parent unit type; do not infer echelon from the vehicle alone.*

RECOGNISE **Body** 120 mm gun at the rear of the chassis behind the cab; armoured ammunition compartments, one ammunition box on the right side of the chassis.
Axles Three axles, 6x6 Ural-4320 truck chassis.
Cab Armoured Ural-4320 6x6 truck cab at the front; roof carries a remote weapon station and banks of smoke grenade dischargers on each side.
Details Close only: two cab doors per side, bulletproof windows with firing ports; a Shtora-type optical jammer is reported.

CONFUSED WITH **2S23 Nona-SVK** p. 131 Full view: four axles and a 120 mm gun in a turret on a BTR-80 hull; 2S40 has three axles, a truck cab and the gun at the rear.


Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Wheeled 6x6 cross-country truck chassis; fording, gradient and ground pressure not confirmed by two sources.

Weight, combat	**20 t** claim
L × W × H	**8.0 × 2.5 × 3.0 m**
Road speed, maximum	**85 km/h** WEG figure kept; Army Recognition gives 75 km/h

Range, HE-frag projectile (OFS)	**8.5 km** declared, HE-frag projectile OFS, 17.3 kg per Defense Express; declared Russian figure, claim
Range, guided projectile	**10 km** declared, Guided projectile (Kitolov-2M per Defense Express), claim
Range, HE mortar bomb (OFM)	**7 km** declared, HE mortar bomb, claim
Rate of fire	**up to 10 rpm** maximum, claim

SOURCES AR5 AR7 AR12 DEFUA FOCUS IISS25 LIGA OVERCL RGMAL RGRU3 WEG4 WEG7 WP-EN17 WP-RU9 WP-RU16 WWW1 Updated 2026-10-19

M1989 Koksan (North Korea) «Коксан» TR

Long-range 170 mm tracked self-propelled gun on an open mount In service 1978

NUMBERS **Holdings** About 120 delivered by Jan 2025, more expected (Ukrainian HUR claim) (2025-01); **Holdings** Up to 200 delivered (ZDF report, unverified) (2025-04); **Losses** 2 destroyed, visually confirmed (Oryx): 13 Apr 2025 and 26 Sep 2025 (2026-10)

INDICATES *Reported in 2025 with artillery brigades of the 25th Combined Arms Army and of the Leningrad Military District. A sighting suggests such a brigade, supplied with DPRK 170 mm rounds, a calibre not in Russian stocks.*

RECOGNISE **Hull** No turret: tracked hull with a forward crew cab and a second cab at centre; open gun platform on the roof

Armament 170 mm barrel over 8 m (50 calibres) with multi-slotted muzzle brake; 15 m long overall against an 8.7 m hull with spades

Turret Open mount on a sliding platform: gun centred for travel, slid to the rear to fire; folding barrel travel lock behind the front cab

Hull Two large hydraulic spades at the hull rear, lowered to the ground to fire

Hull In Russian use: anti-drone slat armour (grilles) added on some vehicles

Suspension Five road wheels per side, the front two more widely spaced than on the M1978 (close only)

CONFUSED WITH **M1978 Koksan** Full view: barrel travel lock on the glacis, not behind a front cab; hull 7.6 m against 8.7 m with spades.

2S7 / 2S7M Pion / Malka Full view: five road wheels per side, seven on the 2S7; two rear spades, one base plate on the 2S7. Chassis hidden: multi-slotted muzzle brake; the 2S7 has none.

2S5 Giatsint-S p. 128 Full view: five road wheels per side, six on the 2S5; two rear spades, one base plate on the 2S5. Length with gun 15 m on an 8.7 m hull; 2S5 8.95 m on 8.33 m.

VARIANTS **M1978 Koksan** T-54/Type 59 tank chassis; hull 7.6 m with spades against 8.7 m; barrel travel lock on the glacis.



Stefan Krasowski, CC BY 2.0

MOBILITY Only four of the eight crew ride on the vehicle; the rest and extra rounds follow by truck. Spades must be lowered to fire.

Weight	**about 40 t** M1989
Road speed	**30–40 km/h** estimate
Road range	**300–400 km** estimate
Length	**15 m** hull and gun, estimate
Length, hull	**8.7 m** with spades, estimate
Width	**3.27 m** estimate
Fording	**INA**
Time into action	**INA**

Range, HE-frag	**40 km** HE-frag shell
Range, HE-frag rocket-assisted	**60 km** maximum (up to), rocket-assisted HE-frag shell
Calibre	**170 mm**
Rate of fire	**1–2 rounds per 5 min**
Ammunition carried	**12 rounds** M1989; M1978 carries none
Ammunition types	**HE-frag, rocket-assisted HE-frag; separate loading**
Barrel length	**50 calibres (over 8 m)**
Crew	**8, of whom 4 ride on the vehicle**
Self-defence	**1 MANPADS (9K34 or 9K310) carried by a crew member** seen in DPRK parades

SEEN WITH Ammunition and support truck carrying the rest of the crew (20-30 light and medium trucks in a possible 12-gun DPRK battalion (estimate))

SOURCES CSIS13 D244 DEXP ENG ESP3 GS4 IISS25 KP3 KP12 KP22 KPAJ1 KPAJ2 MIL64 MIL65 MIL150 MILN ORYX1 ORYXL1 ORYXL2 TWZ17 TWZ18 UKRINF6 WEG6 WEG2015 WP-EN98 WP-RU19 WP-RU20 WWW18 not in WEG

Updated 2026-10-09

Anti-tank guns

2A45M Sprut-B

125 mm towed anti-tank gun legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MT-12 Rapira MT-12 «Рапира»

TW

Towed 100 mm smoothbore anti-tank gun, also used for indirect fire In service 1970

OPERATED BY **motor rifle brigade**, antitank artillery battalion, antitank gun battery (towed by MT-LB), 6 per brigade (one battery); two further batteries hold ATGM launchers D 2024 M

Naval Infantry, IISS lists 100mm T-12 (original carriage) in Naval Infantry equipment; count not given R 2024 M

Unidentified unit, MT-12 crews in Russian MoD video (state claim): Zapad Group 27 Aug 2024, Vostok Group Dec 2023 in southern Donetsk R 2024-08 L

Unidentified unit, T-12 (2A19) seen towed by truck in Crimea, early 2023; one destroyed in Belgorod Oblast attack (Glotovo), May 2023 R 2023-05 L

NUMBERS **Holdings** 500 MT-12 in Army service, 800 T-12/MT-12 in store (IISS) (2024)

INDICATES *A battery of six towed 100 mm guns fits the antitank battalion of a motor rifle brigade (doctrine); IISS also lists the T-12 with Naval Infantry. The gun is also used for indirect fire, so a gun position alone does not show an antitank role.*

RECOGNISE **Barrel** Smoothbore barrel of 63 calibres (6.3 m), same width up to the perforated muzzle brake (about 80 holes). Clamped to the trails when towed.

Shield Gun shield 1.6 m to its top edge, with three hinged panels that fold away to open the sight apertures.

Equilibrator Coil-spring equilibrator tube above the right side of the barrel is the MT-12 mark; towed by MT-LB, Ural-375D or Ural-4320.

Carriage Two-trail carriage, track 1.91 m; a castering wheel folds out on the left trail. Close only: ZiL-150 wheels with eight bolts.

CONFUSED WITH **T-12 (2A19)** Narrower carriage (track 1.465 m against 1.91 m), six-bolt wheels; two short tubes over the barrel and no third tube on the right.

D-48 85 mm anti-tank gun Same carriage as the T-12; muzzle brake widens towards the muzzle, while T-12 and MT-12 brakes have the same width throughout.



55th "Zaporozhian Sich" Artillery Brigade, CC BY 4.0

MOBILITY Towed by MT-LB, Ural-375D or Ural-4320. Castering wheel on left trail lets the crew move it by hand over short distances. Can be fitted with ski gear for snow or swamp.

Weight	**3,100 kg** Combat and travel position, MT-12 (RUWIKI); ARMEDM gives 3.1 t in a table labelled for the T-12
L × W × H	**9.65 × 2.32 × 1.6 m** Travel position, MT-12
Road speed, towed	**up to 60 km/h** maximum, Towed by MT-LB
Time into action	**2 min** Emplacement time (WEG 2015 sheet; older WEG edition)

Range, APFSDS	**3,000 m** maximum, APFSDS (3BM-2 per ENWT12; RUWIKI rounds 3UBM1, 3UBM2, 3UBM10, 3UBM15)
Range, APFSDS	**1,880–2,130 m** effective, APFSDS, direct fire; RUWIKI lists rounds 3UBM1, 3UBM2, 3UBM10, 3UBM15 but does not tie the figure to one
Range, HEAT	**5,955 m** maximum, HEAT (RUWIKI rounds 3UBK2, 3UBK8); RUWIKI gives no fire mode, ARMYREC says direct fire
Range, HEAT	**1,020–1,150 m** effective, HEAT (RUWIKI rounds 3UBK2, 3UBK8), direct fire
Range, HE-frag	**8,200 m** maximum, HE-frag (RUWIKI rounds 3UOF3, 3UOF12), indirect fire, at maximum elevation of +20 degrees
Range, 9M117 Kastet	**100–5,000 m** Gun-launched laser beam-riding missile, 3UBK10 round (RUWIKI) (MT-12K, 9K116)
Muzzle velocity, APFSDS	**1,575 m/s** APFSDS
Rate of fire	**6–14 rpm** RUWIKI: practical about 10 rpm
Elevation	**−6 to +20 degrees** Traverse 27 degrees left or right (ENWIKI)

SEEN WITH MT-LB tracked tractor

SOURCES AR85 ARMEDM ATP IISS25 ORYX1 RWW WEG2015 WP-EN122 WP-EN123 WP-RU154 not in WEG

Updated 2026-10-13

Towed artillery and mortars

2A36 Giatsint-B 152 mm towed gun 2A36 «Гиацинт-Б»

NATO: M1976 TW

152 mm towed gun for long-range and counter-battery fire at army level In service 1976

OPERATED BY **artillery brigade**, gun battalion (152 mm) of the army artillery brigade; 2A36 or 2S5 or M-46, 36 per brigade (two 18-tube gun battalions) or 48 (four 24-tube battalions) D 1991 M
artillery brigade, gun brigade of the front artillery division; 2A36 or 2S7, 72 per brigade D 1991 M

INDICATES *ATP: towed artillery remains in some units. The 2A36 went to the gun battalions of artillery brigades and divisions at army and front level (FM 100-2-3, Victory Museum), so it indicates an artillery formation rather than a manoeuvre unit.*

RECOGNISE **Wheels** Four rubber-tyred wheels, two each side on two axles; FM 100-2-3 calls the four-wheeled carriage distinctive.
Barrel 152 mm barrel of 49 calibres, 8197 mm with a multi-slot muzzle brake; recoil brake and recuperator sit above the barrel.
Carriage Split box-section welded trails; for firing the gun is lowered onto a base plate and the wheels are raised by a hydraulic jack.

CONFUSED WITH **2A65 Msta-B** p. 135 Full view: two wheels, one each side, against four on the 2A36; the 2A65 shield slopes back over the wheels and each trail has a caster wheel.


Ministry of Defense of Ukraine, CC BY-SA 2.0

MOBILITY Towed by truck or tracked tractor; fired from a base plate with wheels raised, so needs a prepared firing position. Ground pressure and fording not found.

Weight, firing position	**9,760 kg**
L × W × H	**12.92 × 2.788 × 2.76 m** travel position
Road speed, towed	**80 km/h** maximum, on road

Range, HE-frag 3VOF39	**28.5 km** maximum, HE-frag 3OF29, full charge
Range, rocket-assisted 3VOF41	**33.5 km** maximum, active-rocket projectile 3OF30
Minimum range, HE-frag 3VOF39	**8.6 km** ammunition not stated; listed with HE-frag maximum
Range, direct fire	**1,530 m** ammunition and target not stated in source
Rate of fire	**6 rpm** maximum
Crew	**8**

SOURCES ATP FM3 GS1 IISS25 ORYX1 RUSARMY RUSIPL RWW VMUS WP-EN1 WP-EN2 WP-EN3 WP-EN4 WP-RU2 WSN1 not in WEG

Updated 2026-10-06

2A65 Msta-B 2A65 «Мста-Б»

NATO: M1987 TW

Towed 152 mm howitzer for army-level artillery brigades and regiments In service 1986

OPERATED BY **artillery brigade**, artillery battalions (several per brigade; 2S19 or 2A65) D 2019 M
Naval Infantry (Coastal Troops of the Navy), Naval Infantry artillery; brigade not named R 2024 M

INDICATES *A towed 152 mm howitzer points to an army-level artillery brigade or a division artillery regiment. CNA says replaced 2S19s and 2A65s move to division regiments and brigade battalions.*

RECOGNISE **Running gear** Two wheels, one each side, with an armoured shield that slopes to the rear and extends over the wheels.
Gun 152 mm barrel of 47 calibres with a three-chamber muzzle brake and no bore evacuator; recoil brake and recuperator above the barrel.
Carriage Box-section split trails, each with a caster wheel that swings up over the trail when firing; circular hydraulic firing jack under the front.
Towing In travel the base plate is raised and clamped to barrel and cradle; towed by Ural-4320 6x6 or KamAZ-63501AT 8x8.

CONFUSED WITH **2A36 Giatsint-B** p. 135 Full view: four-wheeled carriage, against two wheels on the 2A65.


One half 3544, public domain

MOBILITY Towed. Emplaced with hydraulic jack and spades. Towing speed 80 km/h on highway, 60 km/h on dirt roads, 20 km/h cross-country.

Weight, travel position	**7,000 kg** claim
L × W × H	**12.7 × 2.5 × 2.95 m** claim
Towing speed, road	**80 km/h** 20 km/h cross-country, 60 km/h dirt road, claim

Range, OF45 HE-frag	**24.7 km** maximum, OF45 (3OF45) HE-frag projectile, claim
Minimum range, OF45 HE-frag	**6.5 km** OF45 HE-frag projectile, claim
Range, OF61 HE-frag base bleed	**29 km** maximum, OF61 (3OF61) HE-frag with base-bleed gas generator, round 3VOF91, claim
Rate of fire	**up to 7 rpm** maximum, claim

SOURCES ATP CNA FM3 GS2 IISS25 JANESRG ORYX1 RWW WP-EN2 WP-EN5 WP-EN6 WP-RU3 not in WEG

Updated 2026-10-06

2B9 Vasilek 2B9 «Василёк»

TW

82 mm automatic gun-mortar, vehicle-carried, battalion-level fire support In service 1970

OPERATED BY **motor rifle battalion**, mortar battery; chart gives 2S12 Sani, 2B14 Podnos or 2B9 Vasilek as the battery's mortar, 8 per battalion, 120 mm mortars or 2B9 (FM 100-2-3, 1991) D 2016 L

INDICATES *Reported mainly with airborne and air assault battalions: Soviet use in Afghanistan, a VDV mortar battery in 2023 (Russian MoD claim). Suggests battalion-level mortar fire support. Evidence is thin.*

RECOGNISE **Carriage** Wheeled carriage like a light field gun: two trails and a central base plate; wheels lifted clear of the ground when emplaced.
Barrel 82 mm smoothbore, breech-loading. 2B9M has no water jacket: thick, finned barrel wall mid-length. Elevation -1 to +85 degrees.
Transport Normally carried in the body of a 2F54 truck, rolled in over a ramp with block and tackle; towing only over short distances.

CONFUSED WITH **2B14 Podnos 82 mm mortar** p. 136 In action: tube, bipod and round baseplate on the ground; the 2B9 fires from a wheeled two-trail carriage, wheels lifted.


ShinePhantom, CC BY-SA 3.0

MOBILITY Carried on a 2F54 truck (60 km/h road, 20 km/h cross-country) or rolled by crew; towing over short distances only.

Weight, firing position	**632 kg** 2B9M
Weight, 2F54 transport vehicle	**3,930 kg**
Weight, complex travelling, with ammunition and crew	**6,060 kg** 2K21

Range, O-832DU HE-frag	**4,270 m** maximum, 82 mm HE-frag, sea level, standard conditions
Minimum range, O-832DU HE-frag	**800 m** 82 mm HE-frag, high-angle fire
Rate of fire, practical	**40–60 rpm, max 100–120 rpm**
Rate of fire, technical maximum	**170 rpm** maximum technical

SOURCES FM3 IISS25 MIL1 ORYX1 OSN RWW VS WEG2015 WP-EN8 WP-RU4 WP-RU5 not in WEG

Updated 2026-10-20

2B14 Podnos 2Б14 «Поднос» MP

82 mm smoothbore muzzle-loading light mortar, man-portable in three packs In service 1983

OPERATED BY **motor rifle battalion**, mortar battery (artillery branch); RWW chart lists 2S12/2B14/2B9 as alternative types, INA (battery of 6, 8 or 9 mortars, types not split) D 2016 M
motor rifle brigade, exercise, Roshchinsky training ground, 2020-10-06; Commons video filed under 2B14, video not watched O 2020-10 L

INDICATES *A 2B14 points to the mortar battery of a motor rifle battalion (RWW) or to an airborne unit (IISS, MILPER). RWW lists it as an alternative to the 2S12 and 2B9 in that battery, so its presence alone gives no count.*

RECOGNISE **Layout** Tube, bipod and baseplate set out as a triangle.
Baseplate Round stamped baseplate with ground-grip spades welded underneath.
Bipod and sight Bipod with two shock absorbers and a clamp ring to the tube; MPM-44M optical sight.
Tube Close only: smooth-bore tube with a screwed-on breech.
CONFUSED WITH **2B9 Vasilek** p. 135 In action: the 2B9 fires from a wheeled split-trail carriage with its wheels lifted; the 2B14 stands on bipod and baseplate.


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Carried by crew in three packs; also carried on GAZ-66 (RWW) or UAZ-469 based 2I27 (WPRU), or towed on optional 2F510 two-wheel carriage (WSYS). No fording data.

Weight, firing position	**42 kg** 2B14-1 per ZONWAR; Russian Wikipedia infobox says 42 kg (2B14) and 48 kg (2B14-1)
Weight, barrel pack	**16.2 kg**
Weight, baseplate pack	**17 kg**

Range, 82 mm bomb	**4,270 m** maximum, bomb type not stated by RWW; WSYS: with newer ammunition
Minimum range, 82 mm bomb	**87 m** bomb type not stated by RWW
Rate of fire	**24 rpm** RWW table; WSYS gives maximum 24 to 30
Calibre	**82 mm**

SOURCES ATP FM3 IISS25 MILPER RWW VS WMC1 WMC2 WP-EN7 WP-RU4 WSN2 ZONWAR not in WEG Updated 2026-10-13

B-4 Б-4

203 mm towed howitzer legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

D-20 Д-20

NATO: M1955 TW

152 mm towed gun-howitzer, manually loaded; Soviet army-level artillery In service 1955

OPERATED BY **artillery brigade**, gun-howitzer battalion, 18 per battalion (D-20, ML-20 or M1987); most army brigades had three such battalions D 1991 M
artillery brigade, gun-howitzer brigade of the front artillery division (Soviet); D-20, ML-20, M1987 or 2S3, 144 per artillery division (152 mm gun-howitzers) D 1991 M
artillery regiment, 18-24 per regiment; 36-48 per brigade (WEG, undated organisation text) D 2025 L
Airborne Forces (VDV), howitzer crews (subunit not named), near Chasiv Yar R 2025-09 L

NUMBERS **Holdings** 50 in Russian Army service, 700 in store (IISS estimate, late 2024) (2024)

INDICATES *Soviet doctrine placed the D-20 in gun-howitzer battalions of army-level artillery brigades. Russia now holds far more in store than in service (IISS estimate), and guns just taken from storage were reported moving toward the Zaporizhzhia front in 2023.*

RECOGNISE **Carriage** Two-wheeled split-trail carriage, box-girder trails with large hinged spades near the ends; a caster wheel at each trail end, folded up for travel.
Barrel Stepped tube of about 29 calibres with a large double-baffle muzzle brake; vertical sliding-wedge breech (close only).
Firing base Circular base plate (pivot jack) under the front of the carriage, folded up in travel; the gun fires standing on its wheels.
Shield Scalloped, winged shield with a central section that slides to clear the barrel, plus a folding piece below the cradle.
Recoil Two-cylinder recoil mechanism above the tube on a long ring cradle; trunnions just forward of the breech.

CONFUSED WITH **D-74 122 mm field gun** Full view: same carriage and shield, but the D-74 tube is 47 calibres long against 29 on the D-20.
2A65 Msta-B p. 135 Full view: 47-calibre tube with a three-chamber brake against 29 calibres and a double-baffle brake; 2A65 shield slopes back over the wheels.


U.S. Embassy Chisinau, public domain

MOBILITY Towed by 6x6 truck or tracked tractor. 60 km/h on roads, 30 km/h off road. Fords 0.5 m. Caster wheels allow the gun to be swung through 360 deg in position.

Weight, combat	**5.56 t**
L × W × H	**8.10 × 2.40 × 2.52 m**
Towing speed, road	**60 km/h** maximum
Towing speed, off road	**30 km/h** maximum
Fording	**0.5 m**

Range, HE-frag OF-32	**17.4 km** maximum, HE-frag OF-32 as WEG names it
Minimum range, HE-frag OF-32	**4.6 km** HE-frag OF-32 as WEG names it
Range, HE-frag OF-96	**24.4 km** maximum, HE-frag OF-96 as WEG names it; WEG does not say rocket-assisted
Range, HEAT BP-540	**1,000 m** maximum, HEAT BP-540, direct fire; day or night not stated
Calibre	**152 mm**
Crew	**8**
Muzzle velocity	**655 m/s** HE-frag OF-32 as WEG names it
Projectile weight, HE-frag	**43.56 kg** OF-32 per WEG; FAS gives the weight for OF-25
Rate of fire, burst	**5-6 rpm**
Rate of fire, sustained	**1 rpm**
Elevation	**-5 to +45 deg**
Traverse	**58 deg total**

SEEN WITH Ural-375D or Ural-4320 6x6 truck (1 per gun); AT-L, AT-S or MT-LB tracked tractor (1 per gun)

SOURCES AR44 FAS10 FM3 FM23 FM100 FOCUS3 IISS25 IZV3 ORYX1 RUBR2 WEG41 WP-EN2 WP-EN50 WP-EN51 WP-RU3 WP-RU72 Updated 2026-10-10

D-30 2A18

NATO: M1963 TW+AD

122 mm towed howitzer for indirect and direct fire support In service 1960

OPERATED BY **airborne division**, artillery regiment: howitzer battalion (18) and composite battalion (12 with 6 BM-21V), 30 per artillery regiment D 1991 M
motor rifle regiment, howitzer battalion of BTR-equipped regiments (Soviet era), 2-3 batteries of 6 D 1991 M
motor rifle division, artillery regiment, one howitzer battalion in some divisions (Soviet era), 18 per battalion D 1991 M
tank regiment, howitzer battalion in some tank regiments of MRD and TD (Soviet era), 2-3 batteries of 6 D 1991 M
tank division, artillery regiment, one or more howitzer battalions in divisions not yet at standard (Soviet era), 18 per battalion D 1991 M
tank regiment, howitzer battalion O 2025 M
artillery brigade, battery (Syria, Deir ez-Zor) O 2018-05 L

NUMBERS **Holdings** 200 D-30 in Army service; 1,000+ in store (IISS) (2024); **Holdings** 100 in Airborne Forces, 30 in Naval Infantry, 20 in National Guard (IISS) (2024)

INDICATES *A D-30 points to Airborne Forces, Naval Infantry or National Guard artillery, or to one of about 200 in Army service (late 2024); in 2025 the howitzer battalion of 80th Tank Regiment, 90th Guards Tank Division used it.*

RECOGNISE **Carriage** Three-trail carriage: in action a central jack lifts the wheels and the two outer trails swing out 120° each side, giving 360° traverse.
Travel Towed muzzle-first by a large lunette under the muzzle brake, trails folded under the barrel; two road wheels.
Barrel Box-like recoil-recuperator housing above the barrel; multi-baffle muzzle brake on early guns, two-chamber brake on D-30A.
Shield Small shield between the wheels; trunnions near the ground at the rear of the breech. D-30A has rectangular light clusters above the shield.

CONFUSED WITH **M-30 (122 mm) and D-1 (152 mm), WWII-era** Full view: two split trails, against three on the D-30, which is towed muzzle-first. M-30 has no muzzle brake; D-1 a large double-baffle brake.


US Marine Corps / DoD, public domain

MOBILITY Towed by truck or MT-LB; Airborne Forces drop it by parachute and Mi-8 can lift it. Full 360° traverse only at -5° to +18° elevation.

Weight	**3,200 kg** firing position
L × W × H	**5.4 × 1.9 × 1.6 m** travelling position
Towing speed, road	**60 km/h** maximum
Towing speed, off-road	**25 km/h** maximum

Range, HE-frag	**15.3 km** maximum, HE-frag (OF-81 in FAS)
Minimum range, HE-frag	**1,000 m** HE-frag, indirect fire
Range, HE-frag rocket-assisted	**21.9 km** maximum, rocket-assisted HE-frag
Range, Kitolov-2M	**12 km** declared maximum effective, Kitolov-2M laser-guided shell, target laser-designated, claim
Direct fire range, HEAT-FS	**1,000 m** maximum, HEAT-FS, direct fire; day or night not stated
Practical range, HE-frag	**about 8 km** two-gun fire mission, Dnipropetrovsk direction, 2025, claim
Calibre	**122 mm**
Armour penetration, HEAT-FS	**460 mm** HEAT-FS, 0° obliquity
Elevation	**-7° to +70°**
Traverse	**360°** at -5° to +18° elevation; above +18° only between trails (RUWIKI)
Rate of fire	**6–8 rpm** maximum
Muzzle velocity, HE-frag	**680 m/s** HE-frag

SEEN WITH Ural-375/Ural-4320 truck; ZIL-131 truck; MT-LB tracked tractor; Kitolov-2M laser-guided shell

SOURCES AMIC AR45 ATP CNA FAS11 FM100 IISS25 IZV4 MAILRU MIL2 ORYX1 RG2 RWW VM2 WEG42 WP-EN52 WP-EN53 WP-RU73 WP-RU74 Updated 2026-10-10

M-46 M-46

NATO: M1954 TW

130 mm long-range towed field gun for counter-battery and general support fire In service 1951

OPERATED BY **artillery brigade**, gun battalion (alternative to 2A36 or 2S5), 18 per battalion, 36 per brigade D 1991 M
tank regiment, M-46 gun crews (regimental artillery) O 2026-04 L
Unidentified unit, Northern group of forces, counter-battery fire, Jul 2024 R 2024-07 L
Unidentified unit, Kursk region, Aug 2024 (regiment not named) R 2024-08 L

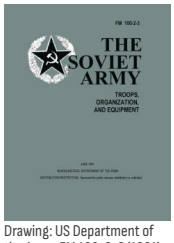
NUMBERS **Holdings** 50 M-46 in Russian Army service, 300 in store (IISS, late 2024) (2024); **Holdings** 665 in storage early 2022; about half sent from storage by mid-2024 (Highmarsed OSINT count, via Agentstvo) (2024-08)

INDICATES *A Russian M-46 at the front is reactivated storage stock, back in use from January 2024, reportedly after artillery losses. MoD reports place it in a tank regiment (2026), so it need not mean an army artillery brigade. Ukraine also holds 15 (IISS).*

RECOGNISE **Barrel** Very long, thin barrel (52-55 calibres) with cylindrical perforated pepperpot muzzle brake; recuperator above, recoil buffer below the barrel.
Carriage Two-wheeled split-trail carriage; single large wheels with sponge-filled tyres; long deep box-section trails with a detachable spade on each.
Travel order For travel the barrel is pulled back between the closed trails, hiding the recuperator behind the shield; trail ends rest on a two-wheeled limber.
Shield Small V-shaped, rearward-angled winged shield (about 7 mm) that covers little more than the sights.

CONFUSED WITH **M-47 152 mm field gun** Not separable by shape: externally virtually identical, only the calibre differs. Built in small numbers 1954-57.
Type 59-1 130 mm gun Same 130 mm barrel on the lighter D-74-type carriage (6.3 t).
D-74 122 mm field gun Full view: 47-calibre tube on the D-20 carriage, with trail caster wheels and a central jack; both recoil cylinders sit above the tube.


Satunnainen2020, CC0



Drawing: US Department of the Army, FM 100-2-3 (1991), public domain

MOBILITY Towed by tracked tractor or 6x6 truck; manual emplacement with spades; slow off road (20 km/h, 10 km/h cross-country).

Weight, travelling	**8.45 t** travel position
Weight, firing	**7.7 t** firing position
L × W × H	**11.73 × 2.45 × 2.55 m** travel position
Towing speed, road	**50 km/h** maximum, maximum, on road

Range, HE-frag OF-33 (full charge 3VOF43)	**27,490 m** maximum, HE-frag 3OF33 or OF-482M, full charge
Range, HE-frag OF-33 (reduced charge 3VOF44)	**22,500 m** maximum, HE-frag 3OF33, reduced charge
Range, HE-frag ERFB-BB	**38,000 m** maximum, Chinese-designed extended-range base-bleed round (also North Korean); not a Soviet round
Range, HE rocket-assisted	**37,000 m** claimed, rocket-assisted HE-frag (Iranian HE BB per RUWIKI)
Range, guided shell Firn-1	**24,000 m** maximum, Firn-1 guided shell, 33.4 kg; Russian service status not stated
Range, APC-T BR-482B	**1,140 m** direct fire, direct fire, armour-piercing tracer
Practical range, HE-frag	**about 20 km** targets located by UAV, Dnipropetrovsk area, Apr 2026, claim
Crew	**8**
Muzzle velocity	**930 m/s** HE-frag OF-33, full charge
Rate of fire	**8 rpm burst; 6 normal; 5 sustained**
Elevation	**-2.5° to +45°**

SEEN WITH AT-S tracked artillery tractor (ATS-59); KrAZ-255 6x6 truck

SOURCES CMH DEX FAS16 FM3 FM100 IISS25 IZ4 KP13 KP27 LB NEWSRU3 ORYX1 WP-EN2 WP-EN51 WP-EN111 WP-RU141 ZERK not in WEG

Updated 2026-10-10

M-160 M-160

160 mm mortar stored

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

M-1938 ПМ-38

120 mm mortar stored

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns МЛ-20, Д-1, М-30, БС-3, Д-44

TW

Towed 85 to 152 mm WWII-design field guns and howitzers, drawn from storage since 2022 In service 1937

OPERATED BY **motor rifle brigade**, D-1 howitzer shelling near Avdiivka, Oct 2023, at least 1 O 2023-10 L

Unidentified unit, M-30 damaged by FPV drones in video released by Russian serviceman, Aug 2024; unit and place not named R 2024-08 L

INDICATES *One of these guns in action points to reserve stock drawn from storage to replace gun losses, not to a modern artillery unit. The type alone does not place the unit; only a named-unit report does.*

RECOGNISE **Shared layout** M-30, D-1, ML-20: split-trail towed guns on steel wheels with rubber tyres; D-1 and ML-20 have a gun shield.

M-30 122 mm Short barrel (about 2.8 m, 22.7 calibres) with no muzzle brake; usually towed by vehicle without a limber.

D-1 152 mm M-30 carriage carrying a 152 mm barrel with a massive double-baffle muzzle brake (DT-3); late production has caster wheels for manhandling.

CONFUSED WITH **M-30 (122 mm)** Same carriage as D-1; M-30 has a short 122 mm barrel without muzzle brake, D-1 a 152 mm barrel with double-baffle brake.



Lyubo Klimentov (Любо Климентов), CC BY 4.0

MOBILITY Towed by truck or tractor; D-1 and M-30 have no limber. ML-20 is towed with barrel retracted at about 20 km/h.

Weight, combat, M-30	**2,450 kg**
Weight, combat, D-1	**3,600 kg**
Weight, combat, ML-20	**7,270 kg**

Range, HE-frag OF-462, M-30	**11.72 km** maximum, OF-462 HE-frag, full charge
Range, HE-frag OF-530, D-1	**12.4 km** maximum, OF-530 HE-frag, 508 m/s muzzle velocity
Range, HE-frag OF-540, ML-20	**17.23 km** maximum, OF-540 HE-frag; WEG gives 17,230 m for OF-540
Range, BS-3	**20 km** maximum, ammunition not stated by WEG or Wikipedia
Range, HE O-365K, D-44	**15.65 km** maximum, O-365K HE; WEG's 15.65 m is a transcription error (its ammunition tab gives 15,650 m)

SOURCES AR133 DEF246 DEFML20 DEFUA19 FAS10 FAS11 IISS25 MILM30 WEG120 WEG2015 WP-EN51 WP-EN53 WP-EN203 WP-EN204 WP-EN205 WP-RU269 WP-RU270 Updated 2026-10-13

Ballistic missiles

9K52 Luna-M 9K52

unguided rocket system legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

9K72 Elbrus 9K72

NATO: Scud B

ballistic missile system stored

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

9K79-1 Tochka-U 9K79-1 «Точка-У»

NATO: SS-21 Scarab B **WH-AT-A**

Tactical ballistic missile system, one missile per launcher, 120 km; army-level strike In service 1976

OPERATED BY **motor rifle division**, SSM battalion, firing battery (Soviet structure; moved to army brigades from late 1980s), 2 per firing battery D 1991 H

tank division, SSM battalion, firing battery (Soviet structure; moved to army brigades from late 1980s), 2 per firing battery D 1991 H

missile brigade, missile battalion (2–3 per brigade), launch battery (2–3 per battalion), 2–3 launchers per battery; 18 per brigade reported (Soviet-era brigades per weaponsystems.net; Jane's 2003 via enwiki) D 2019 M

missile brigade O 2008 M seen with 26th Missile Brigade (Luga), 92nd Missile Brigade (Kamenka, Penza), 103rd Missile Brigade (Ulan-Ude)

missile brigade O 2008 M seen with 152nd Guards Missile Brigade (Chernyakhovsk, Kaliningrad oblast)

missile brigade, launchers and transloaders at garrison open day and parade O 2021-05 M seen with 47th Missile Brigade (8th Combined Arms Army): garrison open day Feb 2021, Krasnodar Victory Day parade May 2021

Unidentified unit, launchers and loaders with V marks, by rail Gomel (Belarus) to Belgorod, late Mar 2022; convoy with V marks in Belarus, 29 Mar 2022 R 2022-03 M

Unidentified unit, convoy of six launchers and loaders marked V, Lutuhyne, Luhansk oblast, 2022 R 2022 L

NUMBERS **Holdings** 50 9K79-1 Tochka-U launchers in Army service (IISS) (2024)

INDICATES *An army-level missile brigade weapon, not a manoeuvre-unit one. Russia's MoD said in Nov 2019 that all missile brigades had Iskander, so a Russian Tochka-U since 2022 points to legacy stock returned to use, firing at targets within 120 km.*

RECOGNISE **Chassis** BAZ-5921 6x6 amphibious chassis, like the SA-8 Osa's; long closed armoured body in travel; first and third axles steer; water jets.

Launcher Single 6.4 m missile with lattice tail fins lies flat on the centreline under two roof doors; doors open and the rail rises to 78 degrees for launch.

Complex 9T218 transloader on near-identical BAZ-5922 6x6 with crane, two missiles; ZIL-131 test and maintenance vans; missile trailers.

CONFUSED WITH **9K33 Osa (SA-8 Gecko)** p. 160 Same BAZ 6x6 family, but Osa has a rotating turret with 4 or 6 missiles and radar dishes; Tochka has a closed body with two top doors, no turret.

9K79 Tochka (9P129) RViA handbook: the Tochka-U launcher looks like the Tochka's. Close only, missile exposed: 9M79 main wings sit further from the centre than on 9M79-1.

9T218 transloader Near-identical 6x6 chassis; carries two missiles and a hydraulic crane instead of a single erecting launch rail.

9K720 Iskander-M p. 143 Full view: four axles, not three. Two missiles on lift arms; Tochka-U carries one, under two roof doors.

Ukrainian and Belarusian 9K79-1 Same vehicles. Russian launchers seen in 2022 carried V tactical marks, not seen on Belarusian vehicles.



Vladislav Falshivomonetchik, CC BY-SA 3.0



Vladislav Falshivomonetchik, CC BY-SA 3.0



US Department of Defense, public domain



Vitaly V. Kuzmin, CC BY-SA 3.0

MOBILITY Amphibious 6x6, swims at 8 km/h by water jets; 400 mm clearance; central tyre inflation; fires from unprepared sites; reload needs room alongside.

Weight	**18,145 kg** 9P129M-1 launcher with missile and crew, claim
L × W × H	**9.486 × 2.89 × 2.375 m** 9P129 launcher
Road speed	**60 km/h** launcher with missile, paved road *also 70 km/h MISS28*
Road range	**650 km** launcher, full load, claim *also 500 km FM23*
Swimming speed	**8 km/h** water-jet propulsion
Time into action	**16 min** from march to launch, claim *also 16–20 min MISS28 WSN12*
Time out of action	**1.5 min** launcher can leave 1.5 min after launch, claim
Ground pressure	**1.0–4.0 kg/cm²** adjustable by central tyre pressure
Ground clearance	**400 mm** BAZ-5921 launcher chassis, claim *also 0.36 m WSN12*

Range, 9M79-1	**120 km** maximum, 9M79-1 missile, Tochka-U, claim
Minimum range, 9M79-1	**15–20 km** 9M79-1 missile, Tochka-U, claim
CEP, 9M79-1	**165–235 m** claimed, inertial; source's term is deviation from target at 35–70 km, 9N123F or 9N123K warhead, incl. target location error up to 100 m and launch point error up to 80 m, claim *also 95 m CSIS6*
Range, 9M79	**70 km** maximum, 9M79 missile, Tochka (Scarab A), claim
Minimum range, 9M79	**15 km** 9M79 missile, Tochka (Scarab A), claim
CEP, 9M79	**250 m** claimed, inertial, claim *also 150 m CSIS6*
Warhead	**482 kg** 9M79-1; HE-frag 9N123F, cluster 9N123K (50 9N24 bomblets), nuclear; not separating
Cluster warhead opening height	**2,250 m** 9N123K, 50 submunitions over about 7 ha, claim
Flight time	**163 s** 9M79-1 at maximum range, claim *also 136 s WP-RU245*
Trajectory altitude	**6–26 km** 9M79-1, varies with range, claim
Missile launch weight	**2,010 kg** 9M79-1, claim
Missile length and diameter	**6.41 m x 0.65 m** 9M79-1, claim
Launch preparation	**2 min** from readiness No. 1, claim
Reload time	**about 19 min** from 9T218-1 transloader, claim *also 20 min CSIS6*
Firing sector	**+/-15 deg** from launcher axis, claim
Crew	**3** launcher; can launch from cab

SEEN WITH 9M79-1 missile (1 per launcher); 9T218-1 transloader (INA (2 missiles each)); 9T238 or 9T222 transport vehicle (INA (2 missiles or 4 warheads each)); 9V819-1 automated test vehicle; 9V844M maintenance vehicle; R-145BM command vehicle; BAZ-5921 (1 per launcher)

VARIANTS **9K79 Tochka** Launcher 9P129; 9M79 main wings further from the missile's centre than on 9M79-1. 70 km maximum, 15 km minimum; CEP 250 m claimed (150 m per Jane's). **9M79M missile** INA. Improved Tochka production missile from 1983; adds 9N64 nuclear and 9N123F-R radar-homing warheads. A 9M79M motor was found in Chernihiv oblast, Mar 2022. **9K79-1 Tochka-U** Launcher 9P129M-1; 9M79-1 main wings moved closer to the missile's centre. 120 km maximum with more powerful propellant; better accuracy. **9M79FR Tochka-R** INA. HE-frag warhead 9N123F-R with passive radar seeker against emitting radars and radios; acquisition at 15 km or more.

SOURCES ATP BCAT10 CNA CSIS6 FM23 GICHD2 IISS25 LENTA14 MDB MILNYI MISS28 RUSIPL RVIA RWW VPK4 WP-EN186 WP-RU245 WSN12 not in WEG

Updated 2026-10-10

Fath-360 short-range ballistic missile (Iran) Фатх-360

WH-LT

Iranian short-range ballistic missile on a truck launcher, 120 km claimed range In service 2024

NUMBERS **Holdings** Over 350 missiles delivered to Russia (Ukrainian HUR, Jan 2026); at least 220 in the first batch (reports of Sep 2024) (2026-01); **Holdings** No launchers delivered with the first missiles (Reuters, Sep 2024); delivery reported imminent in May 2025 (2025-05)

INDICATES *A Fath-360 in Russian hands shows Iranian-supplied missiles in service: delivery is confirmed (US, Sep 2024), but no holding unit is identified and use against Ukraine is unconfirmed (HUR, Jan 2026).*

RECOGNISE **Launcher** Trainable launcher on the truck rear with six single-missile canisters, square or round in section; two- and four-canister versions reported. Sliding covers can hide it

Chassis Commercial-type 6x6 truck of tipper or mixer type: IVECO Trakker in one analysis, a Saipa Diesel copy of the Dongfeng KC in another (Iranian launcher)

Missile Close only, out of canister: calibre 368 mm, fixed fins in two cruciform sets at the tail and four control fins behind the nose, offset 45 degrees from the tail fins

CONFUSED WITH **Fateh-110 (Iran)** Full view: Fateh-110 is rail-launched; the current Fath-360 launcher carries six canisters (early ones had none). Size alone is hard to judge in photographs

SEEN WITH Launch canister, one missile each (6 per launcher (4 or 2 on smaller versions)); Commercial 6x6 truck chassis (Iranian launcher) (1 per launcher)



M. Sadegh Nikgostar / Fars News Agency, CC BY 4.0

MOBILITY Commercial-type 6x6 truck chassis with limited off-road ability. Reloading is by whole canisters and probably needs a crane (analyst assessment).

L × W × H	**10.0 × 2.5 × 3.20 m** Iranian launcher truck
Chassis, launcher truck	**Commercial-type 6x6 truck** Iranian launcher; limited off-road ability; chassis make disputed

Range, Fath-360 150 kg HE warhead	**120 km** maximum, claimed, 150 kg high-explosive warhead; Iranian figure, judged plausible by an independent trajectory simulation, claim
Minimum range, Fath-360 150 kg HE warhead	**30 km** minimum, reported, 150 kg high-explosive warhead; low end of the reported 30-120 km band
Maximum speed, Fath-360	**Mach 4** maximum, claimed, Iranian claim; an independent simulation reaches Mach 4 at motor burnout on a maximum-range path, claim
CEP, Fath-360 150 kg HE warhead	**30 m** inertial and satellite guidance; Iranian claim; one analyst expects a larger error where satellite navigation is jammed, claim
Warhead, Fath-360	**150 kg high explosive** Iranian figure, claim
Guidance, Fath-360	**Inertial plus satellite navigation (GNSS)** Iranian figure, claim
Missiles per launcher	**6** Iranian launcher truck; four- and two-canister versions also reported

SOURCES AR51 ASIA BRKDEF CURTIME DX2 DXLAUN IISS25 KI4 KI5 KI6 MIL39 not in WEG

Updated 2026-10-09

Iskander-M 9K720 «Искандер-М»

NATO: SS-26 Stone WH-AT

Army-level operational-tactical ballistic and cruise missile system for deep strike In service 2007

OPERATED BY **missile brigade**, 3 missile battalions of 2 batteries each; 2 launchers per battery, 12 launchers and 12 transloaders per brigade; 4 of each per battalion D 2021 H
combined arms army, army missile brigade, 1 missile brigade (12 launchers) per army D 2024 H
tank army, army missile brigade, 1 missile brigade (12 launchers) O 2021 M seen with 112th Missile Brigade, Shuya, supporting 1st Guards Tank Army (Iskander from 2016)
army corps, corps missile brigade, 1 missile brigade (12 launchers) O 2021 M seen with 152nd Missile Brigade, Chernyakhovsk, Kaliningrad (Iskander from 2018)
combined arms army, army missile brigade, 12 launchers per brigade O 2023 M seen with 26th Missile Brigade, Luga, 6th Combined Arms Army (first to convert to Iskander, 2011), 448th Missile Brigade, 20th Combined Arms Army (fired Iskander-M at Ukraine, Apr 2022, per Truth Hounds)
missile battalion, 4 launchers O 2008 M seen with 630th Training Missile Battalion, 60th Combat Training Center, Kapustin Yar (formed 1 Jan 2007)
combined arms army, army missile brigade O 2018-07 L seen with 1st Missile Brigade, 49th Combined Arms Army, Krasnodar: Iskander-M electronic launch drills against notional ships, Black Sea (MoD reports)
military district, SRBM/GLCM brigade, 13 brigades: Moscow MD 2, Leningrad MD 2, Central MD 2, Southern MD 3, Eastern MD 4; 162 launchers in all R 2024 M
missile brigade R 2023-08 L seen with 26th Missile Brigade, 6th Combined Arms Army: attributed by Truth Hounds, by elimination of other Western group brigades, to the Iskander-K strike on Chernihiv, 19 Aug 2023, launched from Bryansk or Kursk oblast
missile brigade R 2025-04 L seen with 112th Missile Brigade and 448th Missile Brigade: Iskander-M strike on Sumy, 13 Apr 2025, per Ukrainian intelligence; Militarnyi says the missile may have been a North Korean KN-23

INDICATES *Iskander vehicles indicate an army-level missile brigade of 12 launchers. The army commander holds it as a reserve for priority strikes; it is not part of brigade artillery groups, so it does not by itself mark a manoeuvre brigade.*

RECOGNISE **Chassis** MZKT-7930 8x8 heavy truck, about 13 m long and 3 m wide, first two axles steer. Four hydraulic jacks lower to level the vehicle before launch.
Launcher Iskander-M: two ballistic missiles lie in the rear body on separate lift arms, raised to 85 deg to fire. Iskander-K: 2 x 9M728 or 4 x 9M729 in canisters.
Complex Launchers move with 9T250 transloaders on the same 8x8 chassis, which carry a crane. Command, data preparation, maintenance and living vehicles are KamAZ trucks.

CONFUSED WITH **9T250 transporter-loader (same complex)** Same MZKT-7930 chassis and two missiles, but has a loading crane and no launch equipment.
K-300P Bastion-P coastal launcher p. 146 Same chassis, two missiles, but Oniks rides in sealed transport-launch containers; Iskander-M missiles are held by bands on separate lift arms. Iskander-K uses canisters.
9A53 Uragan-1M MRL (MZKT-7930) p. 125 Rear carries two rocket pods of six tubes each instead of two missiles.
9K79-1 Tochka-U launcher p. 141 Carries one missile, not two, on an amphibious launcher.

VARIANTS **9K720 Iskander-M with 9M723** Baseline: two ballistic missiles about 7.3 m long and 0.92 m wide on lift arms. Quasi-ballistic missile, up to about 500 km; reported to release decoys during flight.
Iskander-K with 9M728 (R-500) Same 9P78-1 launcher, loaded with two cruise missile canisters instead of two ballistic missiles. Low-flying subsonic cruise missile; official range up to 500 km. Used against Chernihiv in Aug 2023. **Iskander launcher with 9M729** Special launcher configuration with four cruise missile canisters; the missile is 530 mm longer than 9M728. Range disputed: US assessed over 500 km in breach of the INF Treaty; Russia said it was within limits.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Heavy 8x8 truck: 70 km/h on roads, about 40 km/h on dirt roads. Must halt and level on jacks to fire. Fords 1.4 m. A battery has been airlifted by An-124.

Weight, launcher loaded	**42.85 t** *also 42 t MISS10*
Weight, 9T250 transloader loaded	**40 t**
L × W × H	**13.07 × 3.07 × 3.55 m**
Road speed	**70 km/h**
Road range	**1,000 km** *also 1,100 km MDB CSIS4*
Fording	**1.4 m** *also amphibious MDB CSIS4*
Time into action	**16 min to first launch from the march; 4 min from highest readiness** claim *also 5 to 16 min reaction time MDB*
Military load class	**41** Derived: 42.85 t wheeled x 0.94, rounded up, estimated
Levelling and erecting	**30 to 80 s to level on jacks; about 20 s to raise missiles**
Time out of action	**INA**
Ground pressure	**INA**

Range, 9M723 ballistic missile	**up to 500 km** maximum, 9M723, domestic Iskander-M *also 280 (400) km MISS10*
Minimum range, 9M723	**50 km** From the MIS Iskander-E (export) data table, max 280 km; domestic 9M723 minimum not confirmed
Range, 9M728 (R-500) cruise missile	**500 km** official maximum, 9M728 cruise missile, Iskander-K, claim *also 1,000 to 2,500 km MDB*
Accuracy (CEP), 9M723	**10 to 30 m** reported, With electro-optical terminal seeker *also 10 to 20 m with optical seeker; 50 m with GLONASS; 200 m inertial only at 300 km CSIS4*
Warhead mass, 9M723	**480 to 700 kg** Depends on warhead type *also 480 kg MISS10*
Warhead types, 9M723	**Cluster, unitary HE, penetrator, fuel-air and others; nuclear capable**
Launch weight, 9M723	**3,800 to 4,020 kg** Depends on payload *also 3,800 kg MISS10*
Missile length and diameter, 9M723	**7.3 m; 0.92 m** *also 7.2 m; 0.92 m (0.95 m at clamps) MISS10*
Missiles per launcher	**2 ballistic (9M723) or 2 cruise (9M728); 4 x 9M729 in special configuration** claim *also Six R-500 in place of two ballistic missiles MDB*
Interval between launches	**about 1 min** Two missiles from one launcher
Crew	**Launcher 3; transloader 2**
Brigade vehicle set	**51 vehicles** 12 launchers, 12 transloaders, 11 command, 14 life support, 1 maintenance, 1 information preparation
Range, 9M729 cruise missile	**INA** maximum, 9M729 cruise missile *also 480 km ESD*

SEEN WITH 9P78-1 self-propelled launcher, MZKT-7930 8x8 (2 per battery, 4 per battalion, 12 per brigade); 9T250 transporter-loader, MZKT-7930 8x8 with crane, 2 missiles (2 per battery, 4 per battalion, 12 per brigade); 9S552 command and staff vehicle, KamAZ truck (1 per battery; 11 per brigade); 9S920 information preparation point (mission planning), KamAZ truck (1 per brigade); Maintenance vehicle (MRTO), KamAZ truck (1 per brigade in the 51-vehicle brigade set); Life support vehicle, KamAZ truck, living space for up to 8 (14 per brigade); 9M723 ballistic missile (2 per launcher, 2 per transloader; 48 per brigade); 9M728 (R-500) and 9M729 cruise missiles (2 x 9M728 or 4 x 9M729 per launcher); MZKT-7930 8x8 chassis; Strelets reconnaissance, control and communications set

SOURCES AR57 ATP CNA CNA21 CSIS4 CSIS5 CSIS6 ESD IISS25 KI8 MDB MIL55 MISS10 RDP5 RUSI4 RUSIPL RWW TASS7 TE TH VPK4 WEG2015 WP-EN24 WP-EN25 WP-EN74 not in WEG
Updated 2026-10-01

KN-23 and KN-24 (Hwasong-11) (North Korea) KH-23

WH-AT

North Korean short-range ballistic missiles fired by Russian forces into Ukraine In service 2019

OPERATED BY **missile brigade**, attached North Korean missile unit of about 90 personnel, arriving from Aug 2026, up to 6 launchers and 120 KN-23/KN-24 planned (Ukrainian intelligence claim) R 2026-08 L

NUMBERS **Holdings** About 150 KN-23/KN-24 supplied by North Korea, late 2023 to Aug 2025 (Ukrainian intelligence claim) (2025-08)

INDICATES *Debris or a launch since Dec 2023 indicates Russian Army short-range ballistic missile fire with North Korean-supplied missiles. From 2026 reported with a Russian missile brigade that has a North Korean unit attached.*

RECOGNISE **Launcher** In North Korea: four-axle (8x8) wheeled or tracked TEL with two missiles; KN-24 tracked TEL carries two rectangular canisters

Missile, KN-23 Iskander-like single-stage missile, body 110 cm across at rear tapering to 90 cm forward; elongated cable raceway along body; smooth base

Missile, KN-24 ATACMS-like missile about 100 cm across with fixed tail fins, carried in rectangular launch canisters

Debris Rocket motor and tail section with four jet vane actuators; investigators could not tell KN-23 from KN-24 in debris

Debris, close only Close only: 20 bolts evenly spaced around central disc at motor front; '112' (2023) or '113' (2024) stamped on jet vane actuators

CONFUSED WITH **9M723 missile (Iskander-M)** p. 143 Debris: tail section 110 cm across against 95 cm on the 9M723; jet vane actuators differ in size, shape and build. Intact: elongated cable raceway, smooth base

VARIANTS **KN-23 Hwasong-11A** Iskander-like body 110 cm across at rear, tapering to 90 cm; elongated cable raceway along body. **KN-24 Hwasong-11B** ATACMS-like body about 100 cm across with fixed fins; two rectangular canisters on tracked launcher; 8x8 truck launcher also exists.



Geoarchive, CC BY-SA 4.0

MOBILITY In North Korea fired from four-axle wheeled or tracked TELs carrying two missiles; rail and silo launchers also exist

Range, KN-23	**450 km** estimated, 500 kg warhead, estimated
Range, KN-23	**690 km** maximum, warhead lighter than 500 kg, estimated
Range, KN-24	**410 km** demonstrated, test flight, 21 Mar 2020
CEP, KN-23	**35–200 m** inertial and satellite (35 m) to inertial only (200 m); pre-war analyst estimate, estimated
CEP, KN-24	**35–200 m** inertial and satellite (35 m) to inertial only (200 m); pre-war analyst estimate, estimated
Warhead, KN-23	**500 kg** unitary, cluster or nuclear options, estimated
Warhead, KN-24	**400–500 kg** unitary or submunition, estimated
Diameter, KN-23	**1.10 m at rear, 0.90 m at front** Ukrainian MoD debris analysis; 1.10 m tail also measured on Kharkiv debris by independent investigators, Jan 2024, claim
Diameter, KN-24	**about 1.0 m** Ukrainian MoD lab analysis, claim
Length, KN-23	**7.5 m** estimated
Length, KN-24	**4.57–5.55 m** estimated
Launch weight, KN-23	**3,415 kg** estimated
Propulsion	**single-stage solid-propellant motor** both types
Apogee, KN-23	**50–60 km** believed maximum flight altitude; 37 to 60 km in 2019 tests, estimated

SEEN WITH Transporter-erector-launcher, four-axle (8x8) wheeled or tracked (2 missiles per launcher; 6 launchers planned for the North Korean unit (Ukrainian claim))

SOURCES AI AP AT BAB CAR1 CAR2 CSIS11 CSIS12 DP IISS25 MIL63 NGE2 SNG UAMOD WP-EN95 WP-EN96 WP-EN97 WP-RU121 not in WEG

Updated 2026-10-09

Coastal missile systems

Bal 3K60 «Бал»

NATO: SSC-6 Sennight **WH-AT**

Mobile coastal anti-ship missile system firing Kh-35/Kh-35U; also used on land targets In service 2008

OPERATED BY **coastal missile brigade**, coastal missile battalion (дивизион), 4 launchers per battalion (ESP24); RWW: four systems per battery D 2016 H
coastal missile brigade, Bal battalion on Kunashir, Kuril Islands O 2016-11 M
coastal missile brigade, Bal battalion reported moved to Bryansk region (Ukrainian NRC claim) O 2023-06 L
Unidentified unit, Black Sea coast, April 2022: four missiles at land targets (Russian MoD) R 2022-04 H
coastal missile brigade, 4 launchers each (end 2020) R 2020 L
coastal missile brigade, 4 launchers each (Wikipedia) R 2021 L
missile battalion, Caspian Flotilla coastal missile battalions, 4 launchers each (Wikipedia) R 2020 L
Unidentified unit, Northern Fleet, Franz Josef Land: first Arctic systems on combat duty, 2021 (Izvestia) R 2021 L
NUMBERS **Holdings** 40 3K60 Bal in Navy Coastal Missile and Artillery Forces (IISS) (2024)
INDICATES *Bal launchers indicate a Navy coastal missile brigade battalion, about four launchers with eight missiles each. Since 2022 such battalions have fired at land targets, and one was reported moved inland to Bryansk region in 2023.*
RECOGNISE **Launcher** Self-propelled launcher carries eight Kh-35 missiles in transport-launch containers.
Chassis All vehicles of the complex, launcher, command post and reloader, are on the MZKT-7930 8x8 cross-country chassis.
Radar Target-detection radar, with active and passive channels, is on the SKPUS command vehicles.
Complex Up to 2 command vehicles, 4 launchers and 4 reloaders; dispersed up to 3 km in firing position, up to 10 km inland from the shore.
CONFUSED WITH **K-300P Bastion-P (SSC-5 Stooge)** p. 146 Same MZKT-7930 chassis. Count the containers: Bastion carries two Oniks, Bal eight Kh-35.



Mil.ru, CC BY 4.0

MOBILITY 8x8 wheeled; 20 km/h off road (maker). Launch possible over obstacles up to 1,000 m high; launchers may sit up to 10 km inland.

L × W × H	**12.7 × 3.0 × 3.29 m** launch vehicle
Road speed	**70 km/h** maximum, road, launch vehicle
Road range	**1,000 km** maximum, launch vehicle
Fording	**1.4 m** launch vehicle

Range, Kh-35	**130 km** approximately (RWW); range (KTRV), Kh-35 missile, sea target, claim
Range, Kh-35U	**260 km** maximum, Kh-35U missile (KNIISE director); AIF22 gives 260 km for export Kh-35UE, claim
Minimum range, Kh-35U	**7 km** Kh-35U missile, claim
Detection range, ARGS-35 seeker	**20 km** maximum, Kh-35 active radar seeker, 8-12 GHz; target size not stated, claim
Detection range, Kh-35U seeker	**50 km** seeker range, Kh-35U active/passive radar seeker; target size not stated, claim
Guidance, Kh-35U	**inertial with satellite correction; radar homing on final stage** Kh-35U; KNIISE director (UNN23); terminal radar homing per Defense Express (ESP24), claim
Missiles per launcher	**8** claim
Missiles per salvo, complex	**32** 4 launchers, claim
Missiles per complex	**up to 64** launchers plus reloaders, claim

SOURCES AIF16 AIF22 AR18 AR19 DFRLAB ESP23 ESP24 IISS25 JREW02 NAVNEWS RUSIPL RWW TWZ4 UNN23 WEG14 WP-EN23 WP-RU31 Updated 2026-10-10

Bastion-P 3K55 «Бастион-П»

NATO: SSC-5 Stooge **WH-AT**

Mobile coastal anti-ship missile system firing P-800 Oniks; also used against land targets In service 2010

OPERATED BY **coastal missile brigade**, coastal missile battalion (дивизион): 4 launchers, 1-2 command vehicles, 1 duty-support vehicle, 4 reloaders, 4 launchers per battalion D 2024 M
coastal missile brigade, missile battalion, 12 launchers per brigade (Wikipedia) R 2026-02 M seen with 15th Separate Coastal Missile Brigade, Black Sea Fleet (Crimea)
Unidentified unit, AShM battery in Syria, 1 battery (IISS); 4 launchers sent Oct 2016 (Wikipedia) R 2024 M
Unidentified unit, Pacific Fleet unit on combat duty on Paramushir Island (Kurils), Dec 2022 R 2022-12 M
coastal missile brigade, 12 launchers per brigade (Wikipedia) R 2022 L seen with 75th missile brigade, Pacific Fleet (Iturup, Matua), 520th Separate Coastal Brigade, Pacific Fleet (Kamchatka), 11th Coastal Troops Brigade, Black Sea Fleet (Utash)
coastal defence brigade R 2022-03 L seen with 126th Coastal Defence Brigade, Black Sea Fleet
Baltic Fleet 25th Coastal Missile Regiment, one battalion (presumed), 4 launchers (Wikipedia) R 2021 L seen with 25th Coastal Missile Regiment, Baltic Fleet (Donskoye)
missile battalion, Northern Fleet, Novaya Zemlya, 4 launchers R 2022 L

NUMBERS **Holdings** 56 3K55 Bastion in Coastal Missile and Artillery Forces (5 AShM brigades, 1 AShM regiment) (2024); **Losses** 1 K-340P launcher destroyed, photo-confirmed (Oryx) (2026); **Losses** 1 launcher and 2 Zircon missiles destroyed, 1 launcher damaged near Furmanovka, Crimea (HUR claim) (2026-03)

INDICATES *Bastion launchers indicate a Navy coastal missile brigade or regiment (battalions of 4 launchers). In Crimea since 2022 they mark launch sites for Oniks and reportedly Zircon strikes on land targets.*

RECOGNISE **Launcher** K-340P self-propelled launcher carrying two missiles in sealed transport-launch containers; missiles launched vertically.
Chassis MZKT-7930 four-axle 8x8 chassis with three-seat cab; same chassis as Bal and Iskander launchers.
Complex Battalion: 4 launchers, 1-2 command vehicles (KamAZ-43101 or MZKT-65273), 1 duty-support vehicle, 4 K-342P reload vehicles.
Radar Radar is a separate, optional Monolit-B over-the-horizon vehicle; target data can also come from a helicopter targeting complex.

CONFUSED WITH **3K60 Bal** p. 145 Chassis hidden: eight Kh-35 containers against two Oniks containers. Full view: same MZKT-7930 chassis.
9K720 Iskander-M p. 143 Same chassis, two missiles, but Iskander-M missiles are held by bands on separate lift arms; Oniks rides in sealed transport-launch containers. Iskander-K uses canisters.


Mil.ru, CC BY 4.0


Anastasiya Lvova, CC BY-SA 4.0


Sergey Shmidt, CC BY-SA 4.0

MOBILITY Heavy 8x8 wheeled launcher, not amphibious; fords 1.4 m (WEG). Can deploy up to 200 km inland and 25 km from command vehicle.

Weight, combat	**41 t** launcher *also 20.5 t empty chassis, 24 t payload VALKA2 WP-EN25*
L × W × H	**12.7 × 3.0 × 3.29 m** MZKT-7930 chassis
Road speed	**70 km/h** maximum
Off-road speed	**35 km/h** maximum
Road range	**1,000 km** maximum
Fording	**1.4 m**
Time into action	**5 min** claimed, from march to ready to fire, claim
Time out of action	**INA**
Ground pressure	**INA**

Range, P-800 Oniks	**300 km** maximum, high-low flight profile; RWW calls 300 km the export Yakhont figure, domestic Oniks about 600 km, claim *also about 600 km RWW*
Range, P-800 Oniks	**120 km** maximum, low-altitude (sea-skimming) profile, claim
Range, 3M22 Tsirkon	**about 1,000 km** reported, open-source figures; Zircon fired from Bastion-M per Ukrainian claims *also 400-1,000 km KP2*
Speed, P-800 Oniks	**Mach 2.6** maximum *also Mach 2.2 (750 m/s) at altitude, Mach 2 low CSIS1 TWZ4*
Cruise altitude, P-800 Oniks	**14,000 m** maximum *also up to 20,000 m RWW*
Coastline covered	**over 600 km** claimed, against amphibious landings, claim
Missiles per launcher	**2**
Salvo interval	**2.5 s** between missiles from one launcher, claim *also 2-5 s WP-EN24*
Terminal altitude, P-800 Oniks	**5-10 m** final approach to ship target *also 10-15 m CSIS1*
Warhead, P-800 Oniks	**200-250 kg** 200 kg HE or 250 kg semi-armour-piercing
Missile weight, P-800 Oniks	**3,100 kg** *also 3,000 kg CSIS1*
Missile length, P-800 Oniks	**8.9 m** *also 8.6 m CSIS1*
Guidance, P-800 Oniks	**inertial with satellite update, dual-mode active/passive radar terminal homing**
Standby endurance	**72-120 h** launcher in firing position, depends on fuel, claim *also 24 h autonomous; 30 days with duty-support vehicle WP-RU34*
Crew, launcher	**3**
Crew, command vehicle	**4-5** Wikipedia gives 4 and 5 in different lists

SEEN WITH K-380P command vehicle (MBU) (1-2 per battalion); K-342P transporter-loader (TZM) (4 per battalion); Combat duty support vehicle (MOBD) (1 per battalion); Monolit-B radar (INA (optional)); Helicopter targeting complex (VKTs) (INA (part of the complex)); Predel-E over-the-horizon radar (INA (designed to support Bastion)); Maintenance set (KSTO) (INA (part of the complex)); MZKT-7930 (1 per launcher); P-800 Oniks (3M55) (2 per launcher); 3M22 Tsirkon (2 per launcher (TASS source 2022 for the Zircon coastal launcher; HUR 2026 claim))

VARIANTS **K-300P Bastion-P** Baseline mobile version on MZKT-7930. Baseline: two P-800 Oniks per launcher. **Bastion-M** Four-axle launcher carrying two missiles, as on Bastion-P. Fires 3M22 Zircon per Ukrainian HUR claims, 2026. **K-300S Bastion-S** Fixed silo installation, no vehicles. Silo version; reported plans for Crimea, deployment not confirmed.

SOURCES AIF16 AR20 CNA21 CSIS1 HVY IISS25 KI1 KP1 KP2 MDB ORYX1 RAMB2 RUSIPL RWW SVOB TWZ4 VALKA2 VPK4 WEG16 WP-EN24 WP-EN25 WP-RU34 Updated 2026-10-10

Ballistic and cruise missiles

3M14 Kalibr 3M14 «Калибр»

NATO: SS-N-30A Sagaris **NA**

Sea-launched subsonic land-attack cruise missile (surface ships, submarines) In service 2015

OPERATED BY **fleet**, Ships with 3S14 (UKSK) 8-cell VLS (Projects 22350, 11356, 20385, 21631, 22800, 11661K, modernised 1155); submarines with 3M14K (Projects 06363, 885/08851), 8 cells per UKSK module, 1 to 2 modules per ship; 6 tubes per Project 06363 boat D 2024 M

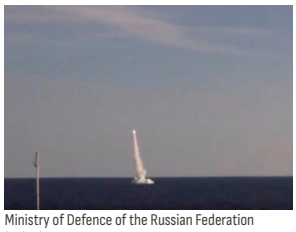
INDICATES *A launch or a hit by this missile points to a Navy surface ship or submarine as the launcher; no ground launcher is listed in Russian service. Black Sea Fleet ships fired it at Ukraine from 2022; Caspian Flotilla ships fired it at Syria in 2015.*

RECOGNISE **Missile** Winged cruise missile, round body 533 mm across; export 3M-14E is 6.2 m long with 3.08 m wingspan

Ship round 3M14T for surface ships is 8.9 m long with a thrust-vectoring booster; fired from 3S14 (UKSK) vertical cells below deck, in 8-cell modules

Submarine round 3M14K, 6.2 m long, is fired from a standard 533 mm torpedo tube like a torpedo; the torpedo section drops away and the missile then flies on

CONFUSED WITH **3M54 Kalibr (anti-ship)** Same 533 mm body. Length on export sheets: 3M-54E 8.22 m against 3M-14E 6.20 m, but 3M-54E1 is also 6.20 m, so length alone does not settle it.



Ministry of Defence of the Russian Federation (mil.ru), CC BY 4.0

MOBILITY Not applicable: a missile, fired from ship VLS cells or submarine 533 mm torpedo tubes. Flies about Mach 0.8, 20 m over sea and 50 to 150 m over land.

Detection range, ARGS-14E seeker	**20 km** maximum, Ground targets, seeker sector azimuth +/-45 degrees; export sheet, claim
Range, 3M14 land-attack	**1,500–2,500 km** estimated maximum, Domestic 3M14 from ship or submarine, subsonic, conventional warhead; Western estimate, estimated
Range, 3M-14E export	**300 km** export limit, Export version (Club-N, Club-S); not the domestic figure, claim

SOURCES BCAT2 CSIS7 FAKTY2 IISS25 RUSIPL T24TV TWZ13 UKRINF3 WP-EN80 WP-EN81 WP-RU105 not in WEG

Updated 2026-10-21

Kh-22 and Kh-32 air-launched missiles X-22; X-32 «Буря»

NATO: AS-4 Kitchen **NA**

Long-range supersonic air-launched anti-ship and land-attack cruise missiles In service 1968

OPERATED BY **aviation regiment**, Tu-22M3 bombers; eight Kh-22 released on 24 Aug 2022, 8 missiles in one day (2022) O 2022-08 M

INDICATES *A launch or hit by these missiles points to a Tu-22M3 bomber of Long-Range Aviation. In 2022 launches were reported from a named heavy bomber aviation regiment, often over Belarus or the Sea of Azov.*

RECOGNISE **Missile** Round-section body 11.65 m long and 0.92 m across, with a radome at the nose; hung under a bomber's wing or in its bomb bay

Wing and tail Triangular forward wing, leading edge swept 75.5 degrees, span about 3.0 m; cruciform tail with a folding ventral keel, height 1.81 m folded

Carriage Tu-22M3 carries it on wing pylons (BD-45K) or a bomb-bay mount (BD-45F); normally one missile, two or three possible with less fuel

CONFUSED WITH **Kh-47M2 Kinzhal** p. 147 Carrier in view: Kinzhal under a MiG-31K, one per aircraft; Kh-22/Kh-32 under a Tu-22M3. Missile in view: Kh-22/Kh-32 11.65 m long, Kinzhal 8.0 m.



George Chernilevsky, CC BY 4.0

Range, Kh-22	**460–500 km** maximum, Air launch from a Tu-22M3 or earlier carrier
Range, Kh-32	**600–1,000 km** claimed, Air launch from a Tu-22M3 or Tu-22M3M; analyst and press figures
Practical range, Kh-22/Kh-32 in Ukraine	**150–250 km (93–155 miles)** Distance from launch point to target in 2022 strikes, launched over Belarus or from the Sea of Azov, observed
CEP, Kh-22	**up to 5 km** Passive-seeker version firing at area targets
Launch weight, Kh-22	**5,780–6,000 kg**
Length, Kh-22 and Kh-32	**11.65 m** Kh-32 stated to have the same dimensions as Kh-22

SOURCES AIF5 AVIAT3 CSIS10 FAS13 IISS25 RUSIPL TESTP TWZ14 WP-EN88 WP-EN89 WP-RU113 WP-RU114 not in WEG

Updated 2026-10-21

Kh-47M2 Kinzhal X-47M2 «Кинжал»

NATO: AS-24 Killjoy **NA**

Air-launched ballistic missile, conventional or nuclear warhead, fired from MiG-31K In service 2017

OPERATED BY **aviation regiment**, MiG-31K carrier aircraft; separate regiment announced Dec 2021, 1 missile per MiG-31K; 1 regiment with MiG-31K (IISS 2025) R 2025 M

Unidentified unit, one Su-34 crew; launch in Ukraine reported 4 Sep 2023, time and place not disclosed R 2023-09 L

INDICATES *Kinzhal is launched from MiG-31K aircraft, one missile each; IISS lists one Aerospace Forces regiment with MiG-31K (2025). In 2022-23 each MiG-31K take-off in Belarus set off air-raid alerts across Ukraine. Bomber carriage is reported only.*

RECOGNISE **Carrier** One missile carried by the MiG-31K; four on the Tu-22M3M are reported but not confirmed in use.

Body Missile of 9M723 Iskander-M size: 8.0 m long, 1.0 m diameter in one report; 7.2 m and 1.2 m (estimated) in another.

Tail Boat-tailed rear with short-chord fins, reduced rudders and a stub at the tail covering the nozzles; the Iskander has no boat tail.

CONFUSED WITH **9M723 Iskander-M missile (entry iskander)** p. 143 Debris or rear section: Kinzhal has a boat tail and two short-chord fins, absent on the Iskander; warhead and other parts alone do not settle it.



kremlin.ru, CC BY-SA 4.0

MOBILITY Air-launched; no mobility of its own on the ground.

Range, Kh-47M2	**more than 2,000 km** claimed, Launched from MiG-31K; Russian military figure; sources disagree whether it includes the carrier's flight before release, claim
CEP, Kh-47M2	**1 m** claimed, Russian state claim; guidance inertial, with satellite correction and optical seeker claimed, claim
Speed, Kh-47M2	**Mach 10** claimed, Maximum, Russian claim, claim
Launch weight, Kh-47M2	**4,300 kg** Approximate; one reported figure
Warhead mass, Kh-47M2	**480 kg** Listed as payload; conventional high-explosive or nuclear
Warhead type, Kh-47M2	**Single unitary warhead, conventional or nuclear**
Guidance, Kh-47M2	**Inertial with mid-course update**

SEEN WITH MiG-31K (1 missile per aircraft)

SOURCES AVIAT22 CSIS10 DEFUA6 ESDEF FAS13 IISS25 INTERFAX KI10 KYIVPOST MEDUZA3 RGRU9 UKRINF4 WP-EN90 WP-RU115 not in WEG

Updated 2026-10-21

Kh-59 Ovod family X-59 «Овод»

NATO: AS-13 Kingbolt, AS-18 Kazoo **NA**

Air-launched stand-off missiles for ground and ship targets In service 1980

OPERATED BY **aviation regiment**, ground-attack regiments with Su-34 and Su-24M R 2024 M

naval aviation regiment, anti-surface warfare regiments with Su-24M and Su-30SM R 2024 M

INDICATES *A Kh-59 launch points to Aerospace Forces or Naval Aviation strike aircraft; Kh-59 and Kh-59M need a guidance pod on the carrier. Maximum ranges 40 to 285 km by member. Ukrainian statements name Su-34 as launcher in 2024.*

RECOGNISE **Missile** Tailless air-launched missile 5.37 m (Kh-59) to 5.7 m (Kh-59M, MK) long, 0.38 m body; X-shaped wings at the rear, four folding destabiliser vanes at the nose

Nose Kh-59 and Kh-59M: TV seeker window behind a protective cone, dropped after launch; Kh-59MK nose section 0.42 m across against 0.38 m body

Kh-59 tail Kh-59: jettisonable booster block in the tail and a two-nozzle sustainer with side nozzles; no engine under the body

CONFUSED WITH **Kh-69 (entry kh-69)** p. 148 Full view: Kh-69 has a box trapezoidal body about 0.4 x 0.4 m and 4.2 m long, against a round 0.38 m body 5.37-5.7 m long on the Kh-59 family.



Xchgall, CC0

Range, Kh-59	**40 km** maximum, Carrier-launched, TV-command guidance; target must be visible to the operator in clear weather, claim
Range, Kh-59M	**120 km** maximum, TV-command guidance, 140 km command link; launch altitude 200–5,000 m, claim
Minimum range, Kh-59M	**10–15 km** TV-command guidance, claim
Range, Kh-59ME	**200 km** maximum, Export version of Kh-59M, offered 1999; not the Russian figure, claim
Range, Kh-59MK	**285 km** maximum, Against destroyer or cruiser-type ship; active radar seeker, INS and satellite correction; launch altitude 0.2–11 km; export brochure figure (ARGS-59E seeker), claim

SOURCES ESPR FAKTY3 IISS25 LIGA4 MIL60 MISS11 MISS12 MISS13 UKRIN1 UKRIN2 WP-EN91 WP-RU116 not in WEG

Updated 2026-10-21

Kh-69 X-69

NA

Subsonic air-launched cruise missile for fixed targets, 310 kg warhead In service 2024

OPERATED BY **aviation regiment**, regiments flying Su-34 or Su-35S, the reported carriers R 2024 L

INDICATES *A Kh-69 launch or wreckage points to Aerospace Forces tactical aviation, reported with Su-34 and Su-35, striking a fixed target with known coordinates, as at the Trypillia power plant on 11 April 2024.*

RECOGNISE **Size** Winged subsonic missile about 13 ft 9 in (4.2 m) long, carried under Su-34 and Su-35 wings or in the Su-57 internal bays.

Body Trapezoidal-section body with the turbofan engine inside it and no external engine nacelle.

Wings and tail One pair of pop-out wings on top of the body and four fins at the rear; wings and fins deploy in flight after launch.

Nose Simplified nose profile, without the flanges and the nose window of the reworked (2015) Kh-59MK2.

CONFUSED WITH **Kh-59MK2 (entry kh-59)** p. 148 Full view: external engine nacelle and round 0.38-0.42 m body on the Kh-59MK2; Kh-69 body square-section, 0.4 x 0.4 m, engine inside. Reports may say 'Kh-59 or Kh-69'.



Mike1979 Russia, CC BY-SA 4.0

MOBILITY Not applicable: carried and launched by aircraft.

Range, Kh-69	**at least 300 km** claimed, Air-launched, subsonic cruise, fixed target with known coordinates, claim
Cruise speed, Kh-69	**up to 1,000 km/h** maximum, Subsonic
Launch weight, Kh-69	**about 1,700 lb (770 kg)** Published characteristics
Warhead mass, Kh-69	**310 kg** Manufacturer figure for the warhead delivered at the range above, claim
Warhead type, Kh-69	**penetrating high-explosive; cluster** Penetrating type reported in use Feb 2024; cluster type first reported 19 Oct 2024
Guidance, Kh-69	**inertial with GLONASS and GPS** Fixed targets with known coordinates; targets loaded before flight, reportedly also updated from the airborne aircraft
Length, Kh-69	**about 13 ft 9 in (4.2 m)**

SOURCES DEFUA7 FAKTY4 IISS25 KI11 MIL61 RGRU10 TSN2 TWZ16 WP-EN92 WP-RU116 WP-RU117 not in WEG

Updated 2026-10-21

Kh-101 and Kh-55 air-launched cruise missiles X-101; X-55

NATO: AS-23A Kodiak, AS-15 Kent **NA**

Bomber-launched cruise missiles: Kh-101 conventional, Kh-55 series nuclear In service 1983

OPERATED BY **aviation regiment**, Tu-95MS and Tu-160 heavy bomber regiments, Long-Range Aviation; missiles carried by the aircraft, 8 per Tu-95MS on wing pylons; 12 per Tu-160 in two drums R 2022 H

INDICATES *A Kh-101 or Kh-55 launch means a Tu-95MS or Tu-160 sortie of Long-Range Aviation, flown in 2022 from over Russia, Belarus or the Caspian Sea. Some Kh-55 fired at Ukraine since 2022 carried dummy warheads.*

RECOGNISE **Silhouette** Long subsonic cruise missile; wings, tail and engine folded away until launch; Kh-101 7.45 m long, Kh-55 6.04 m.

Fuselage Kh-55: cylindrical body 0.514 m across. Kh-101: non-circular section, nose and forward fuselage shaped to give lift. Kh-55SM: side fuel tanks, body 0.77 m.

Engine Kh-101: turbofan stowed inside the rear body, lowered below it after launch. Kh-55: turbofan on a pylon lowered under the tail at launch.

CONFUSED WITH **Kh-555 (AS-22 Kluge)** Full view: Kh-555 is a conventional Kh-55 conversion with conformal side tanks on the round Kh-55 body; the Kh-101 body is non-circular in section.



George Chernilevsky, public domain

Range, Kh-101	**2,500–2,800 km** maximum, Launched from a bomber, subsonic cruise at 30–70 m above terrain
Range, Kh-55	**2,500 km** maximum, Launched from a bomber; Kh-55 base missile
Range, Kh-55SM	**3,000 km** maximum, With conformal fuel tanks
Range, Kh-555	**3,500 km** maximum, Launched from a bomber, with conformal fuel tanks
Length, Kh-101	**7.45 m**
Length, Kh-55	**6.04 m**
Body diameter, Kh-101	**0.742 m**

SEEN WITH Tu-95MS Bear-H (8 Kh-101 on wing pylons; 6 Kh-55 on rotary launcher, 16 on the Tu-95MS16)

SOURCES AIN CSIS8 CSIS9 FAS12 IISS25 KYIVPST TWZ14 TWZ15 WP-EN86 WP-EN87 WP-RU105 WP-RU111 WP-RU112 not in WEG

Updated 2026-10-21

Oreshnik «Орешник»

NATO: RS-SS-28 NA

Road-mobile intermediate-range ballistic missile, multiple reentry vehicles, dual-capable In service 2025

OPERATED BY **missile brigade**, Strategic Rocket Forces brigade formed in 2025 (Chief of the General Staff, state claim) R 2025-12 M

INDICATES *Reported in 2025 with a Strategic Rocket Forces brigade (state claim) and a unit on combat duty in Belarus from Dec 2025. A sighting in 2025–2026 points to a Strategic Rocket Forces unit; combat launches came from a reported test range in Astrakhan region.*

RECOGNISE **Launcher** Wheeled transporter-erector-launcher carrying a launch canister, known only from a scale model; Russia had shown neither missile nor launcher by 2026.

Chassis Six-axle wheeled MZKT-79291 (Belarus-built), identified from the scale model's axle count, wheel spacing and cab layout; not confirmed by official imagery.

Complex Support vehicles filmed at the Belarus deployment site are identical to those of Yars (RS-24) road-mobile ICBM units.

CONFUSED WITH **RS-24 Yars launcher** Full view: six axles on the launcher (known from a scale model) against eight, 16 wheels, on the Yars MZKT-79221. Support vehicles are the same type: no cue.

Range, Oreshnik	**3,500–5,470 km** estimated, US government estimates; payload not specified, estimated
Range, Oreshnik	**about 800 km** practical, Flown in combat to Dnipro, 21 Nov 2024, from a test range in Astrakhan region (launch site reported, not announced), observed
Speed, Oreshnik	**Mach 10 (2.5–3 km/s)** stated claim, Putin's statement on the 21 Nov 2024 strike, claim
Warhead, Oreshnik	**Multiple reentry vehicles: six, each releasing sub-munitions (open-source estimate)** estimated, Conventional strikes 2024 and 2026: footage showed 36 glowing objects in six clusters; Ukrainian officials said the warheads carried no explosives. Dual-capable: nuclear or conventional, estimated
Propulsion, Oreshnik	**Solid-fuelled; two stages believed** estimated, Likely derived from RS-26 Rubezh, itself said to derive from Yars, estimated
Launcher, Oreshnik	**Road-mobile transporter-erector-launcher on a Belarus-built MZKT wheeled chassis** reconstruction, Chassis supply stated by Lukashenko (Belarus); model identified as MZKT-79291 by one analyst from a scale model, estimated
Guidance, Oreshnik	**gyro-stabilised platform in a sealed instrumentation compartment** Recovered from strike wreckage by Ukrainian investigators (reported 2026), observed
Calibre, Oreshnik	**INA**

SEEN WITH MZKT-79291 wheeled chassis (launcher carrier) (1 per launcher); Support vehicles of Yars type

SOURCES ACW CNN CSIS15 IISS25 INTFAX JAMES2 KREM KYIVP5 LUFT RUSF RUSI9 TWZ27 WP-EN130 WP-RU164 ZR8 not in WEG

Updated 2026-10-21

4 Air defence

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
LONG AND MEDIUM-RANGE SAMS						
Buk-M1 / Buk-M2 / Buk-M3	SA-11 GADFLY, SA-17 GRIZZLY, SA-27	9K37M1; 9K317; 9K317M «Бук-М1»; «Бук-М2»; «Бук-М3»	Tracked medium-range SAM complex · 1983	**2.5–70 km** engagement	**TR**	152
S-300PM / S-300PS	SA-20 GARGOYLE	С-300ПМ	Long-range SAM system of the Aerospace Forces for area defence of fixed objects · 1982	**3–200 km** engagement	**WH-AT**	153
S-300V4	SA-23	С-300В4	Tracked long-range SAM and theatre anti-ballistic-missile system of Army air defence · 1988	**6–400 km** engagement	**TR**	154
S-350 Vityaz	SA-28	С-350 «Витязь»	Wheeled medium-range SAM against aircraft, cruise missiles, UAVs and ballistic missiles · 2019	**1–121 km** engagement	**WH-AT**	154
S-400 Triumf	SA-21 GROWLER	40Р6 «Триумф»	Long-range SAM system against aircraft, cruise missiles and ballistic missiles · 2007	**40–400 km** engagement	**WH-AT**	155
S-500	–	С-500 «Прометей»	long-range SAM and missile defence system · trial	–	–	*156*
SHORT-RANGE SAMS AND GUNS						
2S38 Derivatsiya-PVO	–	2С38 «Деривация-ПВО»	Self-propelled 57 mm anti-aircraft gun on BMP-3 chassis · 2017	**0.2–8 km** engagement	**TR-A**	157
Gibka-S	–	9К334 «Гибка-С»	Armoured-car launcher for Igla-S or Verba MANPADS, with a command and radar vehicle · 2022	**6–6.5 km** engagement	**WH-AT**	157
Pantsir-S1	SA-22 GREYHOUND	96К6 «Панцирь-С1»	Short-range gun and missile air defence of S-400/S-300 battalions and key sites · 2012	**0.2–20 km** engagement	**WH-AT**	158
Pantsir-SMD-E	–	Панцирь-СМД-Е	short-range SAM system	–	–	*159*
S-60	–	С-60	Towed 57 mm anti-aircraft gun, used in Ukraine for ground fire · 1950	**4–6 km** engagement	**TW**	159
Sosna	–	«Сосна»	Short-range SAM, tracked chassis · 2019	**10 km** engagement	**TR**	159
Strela-10 and Osa short-range SAM	SA-13 GOPHER	9К35, 9К33 «Стрела-10», «Оса»	Short-range SAM · 1971	**0.8–15 km** engagement	**TR**	160
Tor	SA-15 GAUNTLET	9К330 «Тор»	Short-range tracked SAM with own radars · 1986	**1–16 km** engagement	**TR**	161
Tunguska	SA-19 GRISON	2К22 «Тунгуска»	Tracked short-range gun and missile air defence vehicle, 30 mm guns and SAMs · 1982	**0.2–10 km** engagement	**TR**	162
ZSU-23-4 Shilka	–	3СУ-23-4 «Шилка»	Radar-directed self-propelled quad 23 mm AA gun · 1962	**0.2–2.5 km** engagement	**TR**	162
ZU-23-2	–	2А13	Twin 23 mm towed AA gun, often truck- or MT-LB-mounted · 1960	**1.7–2.5 km** engagement	**TW+AD**	163
MAN-PORTABLE SAMS						
9K32 Strela-2	GRAIL	9К32	MANPADS · legacy	–	–	*164*
9K34 Strela-3	GREMLIN	9К34	MANPADS	–	–	*164*
Igla / Igla-1 / Igla-S	SA-18 GROUSE	9К38 «Игла»	Shoulder-fired IR-homing SAMs against low-flying aircraft, helicopters and cruise missiles · 1981	**0.5–6 km** engagement	**MP+AD**	165
Verba	SA-29 GIZMO	9К333 «Верба»	Man-portable infrared-homing SAM against aircraft, helicopters, UAVs and cruise missiles · 2014	**0.5–6.5 km** engagement	**MP**	165

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
Polyana-D4	Automated command post of an Army air defence missile brigade	8 Command and signals	233
PU-12M7	Air defence battery command post	8 Command and signals	234
Barnaul-T	Automated command and control set for tactical short-range air defence, battery to brigade	8 Command and signals	233
Nebo-M	Mobile multiband air surveillance radar complex	5 Radars	170
96L6 all-altitude acquisition radar	3D C-band acquisition and target designation radar for S-300PM/PMU2 and S-400 SAM units	5 Radars	168

Long and medium-range SAMs

Buk-M1 / Buk-M2 / Buk-M3 9K37M1; 9K317; 9K317M «Бук-М1»; «Бук-М2»; «Бук-М3»

NATO: SA-11 Gadfly, SA-17 Grizzly, SA-27 **TR**

Tracked medium-range SAM complex; army-level air defence of ground forces In service 1983

OPERATED BY **air defence missile brigade**, 4 air defence missile battalions, each 3 batteries; brigade command post Polyana-D4, Buk-M1: 6 TELARs, 3 loader-launchers, 1 CP, 1 search radar per battalion; 24 TELARs per 4-battalion brigade (JIT: 53rd Bde had 3 operational battalions in 2014) D 2016 H

air defence missile brigade, battalion TELAR, INA per battalion; brigade had 3 operational battalions in 2014 (JIT) O 2014-07 M

air defence missile brigade, air defence missile battalion (brigade set of Buk-M3), Buk-M3: up to 6 TELARs or 9S36M radars and up to 12 launchers per battalion R 2019 M

aerospace forces air defence regiment, 4 Aerospace Forces regiments with Buk-M1-2, Buk-M2 and S-300V; about 80 Buk-M1-2/Buk-M2 in Aerospace Forces holdings R 2024 M

air defence missile brigade, air defence missile battalion R 2018 L

air defence missile regiment, INA; CNA p.22 says only that the regiment's Tor and Osa-AKM are being retired in favour of Buk-M2 (2019); holdings not stated R 2019 L

INDICATES *Buk vehicles usually indicate an army-level air defence missile brigade, nominally of four battalions (the 53rd had three in 2014). The army may detach Buk subunits to its divisions, so a battery alone does not fix the brigade's position.*

RECOGNISE **Launcher** M1/M1-2 TELAR: turret with radar at the front, four bare missiles on a launcher on top. M2: four bare missiles too. M3 9A317M: six missiles in cylindrical containers.

Chassis All combat vehicles tracked, about 8-9.6 m long, 3.3 m wide, 30-38 t. M1/M2 on GM-567M, 569, 577, 579; M3 on GM-5969.

Radar M1 TELAR carries the 9S35 radar, not a phased array. M2 and M3 TELARs carry a flat phased-array panel. Tell M2 from M3 by missiles: 4 bare vs 6 in tubes.

Launcher Loader-launcher has no radar. M1/M2: 8 missiles (4 on rails, 4 on cradles) and a crane. M3 9A316M: 12 containers on two arms. TELAR: 4 missiles (M3: 6).

Radar 9S18M1 search radar: flat array on a tracked hull, 8 m high when raised, turns 360 deg. M2/M3 9S36: array on a telescopic mast up to 21-22 m, no missiles.

Complex Battalion: command post, search radar, TELARs each paired with loader-launchers. A Buk-M1 TELAR seen in 2025 had improvised add-ons over the rails, likely anti-drone.

CONFUSED WITH **Other Buk versions (Buk-M1-2, M2, M3)** Oryx logs some TELARs only as 'Unknown Buk M1-2/M2/M3'. Six containers: M3. Four bare missiles: M1-2 or M2; M2 has a phased-array radar, unlike earlier versions.

S-300V / S-300V4 TELARs (SA-12, SA-23) p. 154 Chassis hidden: S-300V TELARs hold four (9A83) or two (9A82) missiles in tubes fired straight up; Buk shows four bare missiles on its launcher (M3: six containers).

9K330 Tor (SA-15) p. 161 Chassis hidden: Tor missiles stand upright in boxes inside the turret, with a rotating search antenna at the turret rear; Buk missiles lie on top of its launcher.

2K12 Kub (SA-6) Chassis hidden: Kub 2P25 launcher has three missiles and no radar (radar on a separate 1S91); Buk TELAR has four (M3: six) and its own radar.

VARIANTS **9K37M1 Buk-M1** TELAR 9A310M1 with 9S35 radar and four bare 9M38M1 missiles; loader-launcher 9A39M1 with 8 missiles. Baseline: 1 target per TELAR, 6 per battalion; 9M38M1 to about 35 km. **9K37M1-2 Buk-M1-2** Looks like Buk-M1: TELAR 9A310M1-2 with 9S35M1-2 radar and bare missiles. Fires the 9M317 missile of Buk-M2 (up to 45-50 km). **9K317 Buk-M2** TELAR 9A317 with flat phased-array radar, four bare missiles; adds 9S36 radar on a 21-22 m mast. Up to 4 targets per TELAR, 24 per complex; 9M317 missile to about 50 km; mast radar extends low-level coverage. **9K317M Buk-M3** Missiles in containers: 6 on TELAR 9A317M, 12 on launcher 9A316M. All vehicles on GM-5969 chassis. Up to 6 targets per TELAR, 36 per battalion; 9M317M to 70 km and 35 km altitude.



Buk-M3 TELAR. Ministry of Defence of the Russian Federation, CC BY 4.0



Buk-M2 TELAR. Boevaya mashina, CC BY-SA 3.0

MOBILITY Heavy tracked, not amphibious; fords 1 m. TELAR section ready 5 min from march; 9S36 mast-radar section needs 10-15 min.

Weight, combat	**34 t** Buk-M1; WEG does not say which vehicle (MISM1 gives 35 t for the 9S18M1 radar)
L × W × H	**9.3 × 3.25 × 3.8 m** Buk-M1; WEG does not say which vehicle (MISM1 gives 9.59 m for the 9S18M1 radar)
Road speed	**65 km/h** maximum
Road range	**500 km** maximum
Fording	**1 m**
Time into action	**5 min** TELAR/battery from march
Time out of action	**5 min**
Ground pressure	**0.8 kg/cm²**
Survivability move	**20 s** reposition 100-200 m with equipment running

Range, 9M38M1 (Buk-M1)	**3.25-34 km** maximum, air target
Altitude, 9M38M1 (Buk-M1)	**30 m-22 km** intercept altitude, air target
Range, 9M317 (Buk-M2)	**3-50 km** engagement zone, aircraft
Range, 9M317 vs ballistic and cruise missiles	**20 km** maximum, ALCM-type cruise missile at 30 m (MISM2; ROE gives 100 m, unchecked); Lance-type tactical ballistic missile 15-20 km (MISM2), claim
Altitude, 9M317 (Buk-M2)	**15 m-25 km** intercept altitude, air target
Range, 9M317M (Buk-M3)	**2.5-70 km** maximum effective, air target
Altitude, 9M317M (Buk-M3)	**35 km** maximum, air target
Detection range, 9S18M1 search radar (M1)	**100-150 km** target size and altitude not stated
Detection range, 9S18M1-3 / 9S18M3 search radar (M2/M3)	**160 km** RCS 1-2 m²; Buk-M2 9S18M1-3
Detection range, 9S35 TELAR radar (M1)	**80 km** RCS 2 m²; 100 km vs RCS 3 m²
Detection range, 9A317 / 9A317M TELAR radar (M2/M3)	**120 km** RCS 1-2 m² at 3 km altitude and 18-20 km vs same target at 10-15 m (M2); M3: RCS 1-2 m², altitude not stated
Detection range, 9S36 mast radar (M2)	**120 km** RCS 1-2 m² at 3 km altitude; 30-35 km vs same target at 10-15 m
Detection range, 9S36M mast radar (M3)	**70 km** cruise missile flying at 5 m
Crew, TELAR	**4**
Missiles carried, Buk-M1/M2	**4 on TELAR; 8 on loader-launcher**
Missiles carried, Buk-M3	**6 on TELAR; 12 on launcher 9A316M**
Targets engaged at once	**24 (Buk-M2 complex); 36 (Buk-M3 battalion)**
Target channels per TELAR	**1 (M1); 4 (M2); 6 (M3)**
Mast height, 9S36/9S36M	**21 m**
Reaction time	**22 s** Buk-M1
Reload time	**12 min** Buk-M1 TELAR from loader-launcher

SEEN WITH 9S52 Polyana-D4 brigade command post (1 per brigade); 9S470M1 command post (Buk-M1) (1 per battalion); 9S18M1 Kupol-M1 target acquisition radar (Buk-M1) (1 per battalion); 9A310M1 TELAR (Buk-M1) (2 per battery, 6 per battalion); 9A39M1 loader-launcher (Buk-M1) (1 per battery, 3 per battalion); 9S510 command post (Buk-M2) (1 per battalion; controls up to 6 fire sections); 9S18M1-3 target acquisition radar (Buk-M2) (1 per battalion); 9A317 TELAR (Buk-M2) (Up to 4 per battalion, each with 1 loader-launcher); 9S36 mast-mounted illumination and guidance radar (Buk-M2) (Up to 2 per battalion, each with 2 loader-launchers); 9A316 loader-launcher (Buk-M2) (Up to 8 per battalion); 9S510M command post (Buk-M3) (1 per battalion); 9S18M3 target acquisition radar (Buk-M3) (1 per battalion); 9A317M TELAR or 9S36M mast radar (Buk-M3) (Up to 6 per battalion in any mix); 9A316M launcher (Buk-M3) (1 per 9A317M, 2 per 9S36M; up to 12 per battalion); 9T229 missile transporter on KrAZ-255B (Buk-M1), 9T243M transloader (Buk-M3)

SOURCES ATP BMPD5 BMPD6 CNA IISS25 JIT MIL29 MISS1 MISS2 MISS3 MISS4 MISS5 ORYX1 ROE RWW TWZ6 WEG36 WEG37 WEG38 WEG39 WP-EN41 WP-EN42 WP-RU69 Updated 2026-10-06

S-300PM / S-300PS С-300ПМ

NATO: SA-20 Gargoyle WH-AT

Long-range SAM system of the Aerospace Forces for area defence of fixed objects In service 1982

OPERATED BY **aerospace forces air defence regiment**, SAM battalions D 2024-11 H

air defence missile battalion, launcher battery; radio-technical battery with mobile command post, 12 launchers (4 5P85S + 8 5P85D, S-300PS); 3 battalions per regiment D 2000 M

aerospace forces air defence regiment, Aerospace Defence Cmd (Moscow) 4 regts PM1/PM2; Moscow MD 2 PM1/PM2; Northern Fleet 4 mixed (PS, PM1, S-400) and 1 PM1/PM2; Central MD 1 PS, 1 PM2; Southern MD 1 PM1; Eastern MD 4 PS with S-400 and Pantsir-S1 R 2024-11 M

air defence missile brigade R 2024-11 M seen with AD missile brigade near Krasnoyarsk, Central MD, formed 1 Dec 2016 (S-300PS or S-300PM2)

aerospace forces air defence regiment R 2021-07 M seen with 1534th SAM Regiment, 41st AD Division, Irkutsk oblast (re-equipping with S-300PM2; Izvestia citing MoD sources, state claim), 41st AD Division regiments at Angarsk, Abakan and Krasnoyarsk krai (S-300PM2 planned; same source)

aerospace forces air defence regiment, S-300 Favorit crews, live firing at Ashuluk in an exercise with the 4th Air Force and Air Defence Army (MoD claim) R 2019 M seen with Southern MD SAM regiment of the 4th Air Force and Air Defence Army (S-300PM1 per IISS; 'Favorit' per MoD, 2019)

military base, 1 SAM battalion, 8 S-300PS R 2024-11 M seen with 201st Military Base, Tajikistan

military base, 1 SAM regiment R 2024-11 M seen with Russian military base in Abkhazia (Georgia)

Unidentified unit, two S-300 battalions (variant not stated) near Chornomorske and Yevpatoriia, Crimea, struck 9-10 Jun 2024 (Ukrainian General Staff claim) R 2024-06 L

Unidentified unit, S-300PM2 crew on combat duty in the war zone, Russian MoD video, Jun 2022 R 2022-06 L

NUMBERS **Holdings** 206 S-300PM1/PM2 and 200 S-300PS in Aerospace Forces; 90 S-300PM1/PM2 in Aerospace Defence Command (IISS) (2024-11); **Losses** 3 5P85SD/SM launchers, 3 5N63S radars and 1 40V6M mast destroyed; 3 36D6 radars damaged; 1 'S-300 or S-400' launcher damaged (Oryx, photo-confirmed) (2026-10)

INDICATES *S-300PS/PM sites point to an Aerospace Forces SAM regiment or brigade covering fixed objects such as cities, industry or bases, not to a ground manoeuvre unit. Ukraine also operates S-300PS/PT, so the system alone does not show the side.*

RECOGNISE **Launcher** Four sealed missile tubes carried horizontal on the TEL, raised to vertical at the rear for launch.

Chassis MAZ-7910 (MAZ-543M family) 8x8, single cab on the left, four hydraulic jacks; towed PM launcher 5P85T is a semi-trailer behind a KrAZ-260 6x6, much longer than 8x8 TELs.

Launcher PS: 5P85S master TEL has an accessory cabin behind the cab, 5P85D slave has none. PM TELs (5P85SM/SE) have no such cabin.

Radar 30N6/5N63S engagement radar: flat 2.75 m² array, flat for travel, tilted up about 60 degrees deployed; can go on the 23.8 m 40V6M or about 38 m 40V6MD mast.

Radar 64N6 acquisition radar: two-faced phased array on a semi-trailer behind an 8x8 tractor, feed horn on a boom; array folds flat on the trailer to travel.

Complex Fire unit: one engagement radar with 8-12 TELs, optional low-level radar on a mast; command post and 64N6 can stand 30-40 km away.

CONFUSED WITH **S-400 (SA-21 Growler)** p. 155 8x8 TELs alone do not settle it: Oryx logs one only as 'S-300 or S-400'. Towed TEL: S-400 behind a BAZ-64022, PM a KrAZ-260. 91N6 radar tractor MZKT-7930, 64N6 MAZ-74106.

S-300PT (SA-10A), Ukrainian service Full view: PT engagement radar on a towed trailer; PS radar on the MAZ-7910 8x8. Towed TELs alone do not settle it: PT and PM ones are semi-trailers behind KrAZ-260.

S-350 Vityaz (SA-28) launcher p. 154 Chassis hidden: S-350 50P6 carries 12 missiles in one pack raised upright to fire; S-300PM TELs four tubes.

S-300V/S-300V4 (SA-12/SA-23) p. 154 Full view: tracked, not wheeled. Chassis hidden: S-300V TELARs carry their own radar antenna, on a mast at the front of the launcher (9A83) or over the cab (9A82).



Vitaly V. Kuzmin, CC BY-SA 4.0



Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Self-propelled 8x8 elements are cross-country; the towed 5P85T is road-mobile only. Mast-mounted radars need 1-2 h to erect.

Time into action	**5 min** fire unit from the march *also 1-2 h JREW02 APA2*
Time out of action	**5 min** fire unit
Weight	**INA**
Road speed	**INA**
Road range	**INA**
Length	**INA**
Width	**INA**
Height	**INA**

Range, 48N6	**150 km** maximum, aerodynamic target; S-300PM/PMU1 (48N6E export), claim
Minimum range, 48N6	**3-5 km** aerodynamic target; S-300PM/PMU1, claim *also 5 km WP-RU209*
Range, 48N6 vs ballistic missile	**40 km** maximum, ballistic target; S-300PM/PMU1, claim
Range, 48N6E2	**200 km** maximum, aerodynamic target; S-300PM2 (export S-300PMU2 figure), claim *also 195 km WP-RU209*
Minimum range, 48N6E2	**3 km** aerodynamic target; S-300PMU2, claim
Range, 5V55R	**5-75 km** engagement zone, aerodynamic target; S-300PS/PMU, claim *also 90 km maximum FAS19 KOLESA4*
Detection range, 64N6E	**260 km** MiG-21 sized target; export 64N6E, claim *also about 260-280 km (140-150 nm) APA2*
Detection range, 30N6E	**200 km** tracking range, target tracking; export 30N6E/E1, claim
Detection range, 76N6	**90 km** 0.02 m² target at 500 m altitude, claim *also 120 km JREW02*
Detection range, 36D6	**120 km** 1 m² target at 1,000 m altitude, claim *also 165 km JREW02*
Detection range, 96L6E	**300 km** max, target size not stated; export 96L6E, claim
Altitude, 48N6	**10 m-27 km** aerodynamic target; S-300PMU1, claim *also minimum 6-9 m (20-30 ft) APA2*
Altitude, 48N6E2	**10 m-27 km** aerodynamic target; S-300PMU2, claim
Altitude, 5V55R	**25 m-27 km** aerodynamic target; S-300PS/PMU, claim *also 25 m-25 km (82-82,000 ft) APA2*
Maximum target speed	**2,800 m/s** S-300PMU1 (30N6E radar), claim *also 1,300 m/s WP-RU209 KOLESA4*
Targets engaged simultaneously	**6** per fire unit, 2 missiles per target, claim *also 36 targets, 72 missiles WP-RU209*
Missiles per launcher	**4**
Interval between launches	**3 s** S-300PM/PMU1, claim
Mast height, 40V6M / 40V6MD	**23.8 m / 38.8 m** Jane's names the masts 40V6M and 40V6M2, claim *also 24.4 m FAS19*
Crew, 64N6E radar	**4** claim
Crew, launcher	**INA**

SEEN WITH 30N6 / 5N63S engagement radar (Flap Lid) (1 per fire unit); 5P85S master and 5P85D slave TELs (S-300PS) (4 5P85S + 8 5P85D per fire unit); 5P85SM/5P85SE or towed 5P85T TELs (S-300PM) (8-12 per fire unit); 54K6 command post (83M6 control system) (1 per system of up to 6 fire units); 64N6 acquisition radar (1 per system command post); 76N6 low-altitude radar (1 optional per fire unit); 36D6 Tin Shield surveillance radar (1, shared by one or more fire units in earlier variants); 96L6 all-altitude radar (1 optional per fire unit (S-300PMU2 and later)); 40V6M / 40V6MD radar mast (2 per S-300PS system); 22T6 transloader and 5T58 missile transporter; KrAZ-260 tractor (for 5P85T) (1 per towed TEL); 1T12 survey vehicle; 96K6 Pantsir-S1

VARIANTS **S-300PS** 5N63S radar and 5P85S TEL with tall equipment cabin plus cabin-less 5P85D slaves. 5V55 missiles: about 5-75 km, targets up to 1,300 m/s; 6 targets per fire unit. **S-300PM1** 30N6 radar with revised array; TELs without the large cabin; 64N6 radar; towed 5P85T option. Upgraded S-300PM (all PM to PM1 by 2014); 48N6 missile: 150 km against aircraft, 40 km against ballistic targets. **S-300PM2 Favorit** Looks like S-300PM1; differences are internal. 48N6E2 missile to 200 km; up to 36 targets and 72 missiles per system.

SOURCES APA2 APA12 AR102 AR103 AR104 ATP CSIS17 FAS19 IISS25 IZV21 IZV224 JREW02 KOLESA4 KYIVPOS2 ORYX1 OSN4 RUSIPL RWW TRUCKENC VALKA7 VM4 WEG88 WP-RU209 not in WEG

Updated 2026-10-20

S-300V4 C-300B4

NATO: SA-23 TR

Tracked long-range SAM and theatre anti-ballistic-missile system of Army air defence In service 1988

OPERATED BY **air defence missile brigade**, air defence missile battalion (up to 4 per brigade, under Polyana-D4M1 brigade CP); battalion CP 9S457M controls up to 4 batteries; WEG: an upper-level 9S52 Polyana-D4 command post may integrate S-300V with Buk into one brigade, S-300V battery: 1 9S32, 4 9A83, 2 9A82, 1 9A84, 2 9A85; S-300V4 battery counts INA D 2017 M

air defence missile brigade, INA. IISS lists S-300V and S-300V4 in Army holdings without a count and counts 16 SAM brigades, but does not say which hold them; Izvestia reports S-300V4 brigades under the OSK R 2024 M

air defence missile brigade, air defence missile battalion (reported deployed to Crimea Nov 2016) R 2016 M

air defence missile battalion, 1 battalion (Izvestia) R 2016 M

INDICATES *S-300V4 vehicles point to an Army air defence missile brigade: a front-level asset directly under a district (OSK) or front commander, covering main troop groupings. Older S-300V also serves in Aerospace Forces SAM regiments and at the Armenia base (IISS).*

RECOGNISE **Launcher** 9A83 TELAR: four tubes carried flat, raised vertical to fire; illuminator radar at the front on a folding mast. 9A82: two tubes, radar fixed over the cab.

Chassis All combat vehicles on one tracked chassis family (Object 830 series), engine at rear, based on 2S7 Pion.

Launcher Loader-launchers (9A84, 9A85) look like TELARs but carry a hydraulic crane in place of the radar. In S-300V4 heavy missiles ride only on 9A84-2 loader-launchers.

Radar 9S32 guidance station: phased array raised hydraulically on its own tracked vehicle. S-300VM/V4 9S32M: space-fed array of High Screen type.

CONFUSED WITH **S-300V (SA-12), older version** A two-tube 9A82 TELAR, radar fixed over the cab, points to an older S-300V version, not S-300V4: V4 batteries carry heavy missiles only on 9A84-2 loader-launchers.



TELAR. Alexey Ivanov, CC BY 4.0

MOBILITY Heavy tracked vehicles, not amphibious; ford 1.2 m. Deploy from march and fire from unprepared sites in about 5 min; ready to move about 5 min after shutdown.

Weight, 9A83 TELAR	**50 t** combat weight
L × W × H	**9.30 × 4.50 × 3.40 m** WEG 'hull length'
Road speed	**53 km/h** maximum
Road range	**250 km** cruising range

Range, 9M83	**75 km** maximum, aircraft targets; S-300V
Minimum range, 9M83	**6 km** aircraft targets; S-300V
Altitude, 9M83	**250 m–25 km** maximum and minimum, aircraft targets; S-300V
Range, 9M82	**100 km** maximum, aircraft and jammer targets; S-300V
Minimum range, 9M82	**13 km** aircraft targets; S-300V, claim
Altitude, 9M82	**1–30 km** maximum and minimum, aircraft targets; S-300V
Range, 9M83/9M82 vs ballistic missile	**40 km** maximum, ballistic targets; S-300V and S-300VM
Altitude, 9M83/9M82 vs ballistic missile	**1–25 km** maximum and minimum, ballistic targets; S-300V (S-300VM: 1-30 km), claim
Range, 9M82M	**200 km** maximum, aircraft targets; S-300VM, claim
Altitude, 9M82M	**25 m–30 km** maximum and minimum, aircraft targets; S-300VM, claim

SEEN WITH 9S457M command post (1 per battalion); 9S15M/9S15MV Obzor-3 all-round surveillance radar (Bill Board) (1 per battalion)

SOURCES APA2 APA13 AR104 ATP BMPD12 CSIS17 IISS25 IZV10 JREW02 MISS2 MISS3 MISS26 RUSIAD RWW TASS22 VKS VKS2 VKS3 WEG38 WEG89 WEG90 WP-EN163 WP-RU210 WP-RU211 WSPOT34 WSPOT35 Updated 2026-10-06

S-350 Vityaz C-350 «Витязь»

NATO: SA-28 WH-AT

Wheeled medium-range SAM against aircraft, cruise missiles, UAVs and ballistic missiles In service 2019

OPERATED BY **air defence missile battalion**, Battalion set: 1 command post 50K6A, 2-3 multifunction radars 50N6A, 12 launchers 50P6A, 12 launchers (12 missiles each) per battalion, per Russian MoD statement R 2020 M

training centre, training centre of the Anti-aircraft Missile Forces, Zhukov Military Academy of Aerospace Defence, first S-350 set (crews and instructors training) R 2020-02 M

air defence missile regiment, INA; planned to receive S-350 about three years after the Krasnoyarsk brigade (RG), by 2025 (Army Recognition); delivery not confirmed R 2020 L

Navy units, INA; MoD (2020) says S-350 deliveries are planned to Aerospace Forces and Navy units; no Navy unit named R 2020-04 L

INDICATES *An S-350 battalion covers important sites or groups of forces against cruise missiles and aircraft. Russian statements tie deliveries to VKS air defence regiments and brigades and to Navy units; units seen near the front in 2022-25 are unidentified.*

RECOGNISE **Launcher** 50P6 launcher carries 12 missiles in vertical-launch containers; the container pack is raised upright to fire ('cold' vertical launch).

Chassis Launcher on 8x8 BAZ-6909; radar on 6x6 BAZ-69092. One Russian report puts all modules, launcher included, on BAZ-69092-012.

Radar 50N6A multifunction radar: rotating phased-array antenna, 360° cover, circular and sector modes; unmanned, remote-controlled from the command post.

Launcher From photograph: forward-control cab; container pack in two horizontal tiers behind a machinery box; four axles, two front, gap, two rear (8x8).

CONFUSED WITH **S-300PS/PM and S-400 launchers** p. 153 Chassis hidden: S-300P and S-400 TELs carry up to four canisters; the 50P6 carries 12 missiles in one pack raised upright to fire.

VARIANTS **S-350E** Export version with E-suffixed vehicles 50P6E, 50N6E, 50K6E; no visible difference described.



TELAR. Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Not amphibious; fords about 1.2 m (WEG). Wheeled 8x8 launcher; into and out of action about 5 minutes. Cannot fire on the move.

Weight, launcher vehicle empty	**22 t** BAZ-6909 launcher vehicle
L × W × H	**11.3 × 2.75 × 2.85 m** BAZ-6909 launcher vehicle
Road speed	**70 km/h** maximum
Road range	**1,000 km** maximum

Range, 9M96E2	**120 km** maximum, aerodynamic target; export missile, claim
Minimum range, 9M96E2	**1 km** export missile, claim
Altitude, 9M96E2	**5 m to 30 km** maximum, aerodynamic target; export missile, claim
Range, 9M96E	**40 km** maximum, aerodynamic target; export missile, claim
Minimum range, 9M96E	**1 km** export missile, claim
Altitude, 9M96E	**5 m to 20 km** maximum, aerodynamic target; export missile, claim
Range, 9M96	**about 29 km (18 miles)** basic domestic 9M96; target type not stated by TWZ
Range, 9M96D	**about 121 km (75 miles)** extended-range domestic 9M96D; target type not stated by TWZ
Range, 9M100	**10 km** maximum, IR-homing short-range missile; fielding unconfirmed, claim
Range, S-350E system	**1.5 to 60 km** maximum, aerodynamic targets; export exhibit figure, also given by Russian MoD for the domestic S-350 (state claim), claim

SEEN WITH 50K6A command post (1 per battalion); 50N6A multifunction radar (2-3 per battalion (MoD); 1-2 per system (WEG))

SOURCES AIF12 AINF4 APA1 AR105 ATO GS29 GS30 GS31 IISS25 IZ21 IZ202 MISS3 RG10 RUSIAD TWZ30 WEG88 WMC43 WMC44 WP-EN164 WP-EN165 WP-RU212 Updated 2026-10-06

S-400 Triumf 40P6 «Триумф»

NATO: SA-21 Growler WH-AT

Long-range SAM system against aircraft, cruise missiles and ballistic missiles In service 2007

OPERATED BY **military district**, SAM regiments of the district's Air Force and Air Defence Army, IISS late 2024, SAM regiments listed with S-400 in each district's Air Force and Air Defence Army: 45th (Leningrad MD) 5, plus 4 listed with S-300PS, S-300PM1 and S-400; 14th (Central MD) 4; 4th (Southern MD) 3; 11th (Eastern MD) 4 listed with S-300PS and S-400, plus 1 with S-300V and S-400; 6th (Moscow MD) none (Moscow area: 5 regiments under Aerospace Defence Command). Launchers per district INA D 2024 H

air defence missile regiment, about 12 launchers reported at the unit site; 4 launchers and 96L6 and 92N6 radars reported destroyed O 2025-11 M seen with 1537th Anti-Aircraft Missile Regiment (Kuban), Novorossiysk

air defence missile regiment, air defence missile battalion (divizion), usually 2 battalions of 8 launchers each (16 per regiment); 2012 press report relaying MoD press service R 2012 M

aerospace forces air defence regiment, IISS: 13 Aerospace Forces regts with S-400 and Pantsir-S1, plus 2 mixed with S-300 R 2024 M

air defence missile regiment, Navy: regiments under fleet air defence divisions, IISS: 64 S-400 in Navy; 3 SAM regts: 2 Baltic Fleet, 1 Pacific Fleet (naval aviation) R 2024 M

air defence missile battalion, IISS: 2 SAM bn in Belarus; 1 SAM bty in Syria R 2024 M

air defence missile regiment, 1st and 2nd battalions, 8 launchers per battalion (Wikipedia order of battle, undated) R 2025 L seen with 12th AA Missile Regiment, Sevastopol, 18th Guards AA Missile Regiment, Feodosia, 1537th AA Missile Regiment, Novorossiysk

INDICATES *S-400 belongs to Aerospace Forces or Navy SAM regiments, not ground-force brigades. A regiment usually has two battalions of eight launchers; launchers imply a 92N6 engagement radar nearby, and often Pantsir-S1 in the same regiment.*

RECOGNISE **Launcher** Four missile canisters on an erector, raised vertical to fire. One canister can hold four small 9M96 missiles instead of one 48N6.

Chassis Launchers self-propelled on an 8x8 chassis (5P85SM2-01 on MAZ-543M), or on a semitrailer towed by a BAZ-6402-series 6x6 tractor (5P85T2; export 5P85TE2 on BAZ-64022).

Radar 92N6 Grave Stone engagement radar: phased array on MZKT-7930 8x8. 91N6 acquisition radar: back-to-back phased array, MZKT-7930 tractor. 96L6 may sit on a 40V6M mast.

Complex 92N6 and 96L6 radars on MZKT-7930 8x8; 55K6 command post on Ural 8x8 truck. A battalion site holds about eight launchers around one 92N6.

CONFUSED WITH **S-300PM/PS launchers (SA-20, SA-10)** p. 153 8x8 TELs alone do not settle it: Oryx logs one only as 'S-300 or S-400'. Towed TELs: S-400 behind a BAZ-64022 6x6, S-300PM behind a KrAZ-260.

S-300PM radars: 30N6 Tomb Stone, 64N6 Big Bird p. 153 91N6 keeps the 64N6 general layout; 92N6 evolved from the 30N6 but is a major redesign. Vehicle: 92N6, 91N6 on MZKT-7930; 64N6 behind a MAZ-74106; PS 5N63S on MAZ-7910.

S-350 Vityaz (SA-28) launcher p. 154 Chassis hidden: S-350 50P6 carries 12 missiles in one pack raised upright; S-400 TEL four canisters (one may hold four small 9M96).

S-300V4 (SA-23) p. 154 Full view: S-300V4 tracked, S-400 TELs 8x8 or towed. Chassis hidden: 9A83 TELAR carries its own engagement radar at the front of the launcher.

SEEN WITH 55K6E command post (30K6E control system) (1 per 30K6E system of up to 6 fire units (export composition)); 91N6E Big Bird acquisition radar (1 per 30K6E system (export composition)); 92N6E Grave Stone engagement radar (domestic 92N6A) (1 per 98Zh6E fire unit); 96L6E all-altitude radar (domestic 96L6-TsP); 5P85SM2-01 / 5P85T2 launcher (APA export list: 5P85SE2 / 5P85TE2) (8 per battalion (Russian regiments, 2012); up to 12 per fire unit (export composition)); BAZ-64022 6x6 tractor (1 per 5P85TE2 semitrailer launcher); 40V6M/MD mast (INA (optional)); 5T58-2 missile transporter and 22T6-2 loading crane; 96K6 Pantsir-S1 (INA; listed in the same regiments)

VARIANTS **5P85SM2-01** Self-propelled launcher on MAZ-543M 8x8; no separate tractor. INA. **5P85T2** Launcher on a semitrailer towed by a BAZ-6402-series 6x6 tractor. INA. **5P90S** Self-propelled TEL on BAZ-6909-022; new gantry, folding mast with directional antenna, satnav antennas on a longer baseline. Intended to carry a heavier missile payload than the MAZ-79100-series TELs (APA). **51P6** Launcher on MZKT-7930 chassis (RU Wikipedia only); Oryx lists 51P6 TELs among S-400 losses. INA. **S-400E** INA. Suspected export variant (WEG): changed communications, radar frequencies, ECM protection and missiles; reduced characteristics.



Vitaly V. Kuzmin, CC BY-SA 4.0



Vitaly V. Kuzmin, CC BY-SA 4.0



radar. vitaly kuzmin, CC BY-SA 4.0

MOBILITY Wheeled 8x8 vehicles and tractor-semitrailer launchers; WEG estimates 30 km/h on dirt roads for the semitrailer launcher.

Road speed, 5P85TE2 launcher	**60 km/h** road; dirt road 30 km/h, estimated *also 60 km/h road, up to 25 km/h off road WP-RU213*
Cruising range, 5P85TE2 launcher	**800 km** estimated
Time into action	**5-10 min** from travelling position; 3 min to ready from deployed position *also <7 min start-up JREW02*
Weight, launcher	**INA**
Fording	**INA**
Time out of action	**INA**
Ground pressure	**INA**
Length, launcher	**INA**
Width, launcher	**INA**
Height, launcher	**INA**

Range, 40N6	**400 km** maximum, aerodynamic targets (STRASAM); APA brochure figure is for export 40N6E, 215 nmi, claim *also 380 km TASS23*
Altitude, 40N6	**30-35 km** maximum, 40N6; the 27 km often quoted is reported for the 48N6DM missile specifically, claim *also 27 km WEG90*
Range, 48N6DM (48N6E3)	**250 km** maximum, aerodynamic targets; RUSIAD names export 48N6E3 (Army Technology lineage); TASS 2018 state claim: 48N6DM up to 250 km, claim *also 130 nmi APA1*
Altitude, S-400 (missile not stated)	**0.1-27 km** reported, reported engagement altitude band
Range, 48N6 (ballistic targets)	**60 km** ballistic missile targets, 48N6 series
Range, 9M96E2	**120 km** export 9M96E2; aerodynamic targets; APA gives 64.8 nmi, claim
Altitude, 9M96E2	**0.005-30 km** range, export 9M96E2; APA gives 15 ft to 100 kft, claim
Range, 9M96E	**40 km** export 9M96E; aerodynamic targets; APA gives 21.6 nmi, claim
Altitude, 9M96E	**0.005-20 km** range, export 9M96E; APA gives 15 ft to 66 kft, claim
Detection range, 91N6E	**580-600 km** detection/tracking, target RCS >10 m² (strategic bomber) *also 340 km STRASAM*
Detection range, 96L6E	**300 km** max, export 96L6E in S-300PMU family, target not stated; JREW-p1877, PDF p. 1877, claim
Fire unit distance from command post	**up to 100 km** maximum, 98Zh6E fire unit from 55K6E, export composition, claim
Warhead, 48N6	**143 kg HE-frag**
Missiles per launcher, 48N6 family	**4** or up to 16 9M96E/E2, or mixes such as 3 x 48N6 + 4 x 9M96 *also 2 x 40N6 WP-EN166*
Targets tracked, 92N6E	**100 track-while-scan; 6 engaged** export 92N6E, claim
Crew, 55K6E command post	**5**
Crew, 96L6E radar	**2** export 96L6E; JREW-p1877, PDF p. 1877, claim

SOURCES APA1 APA2 AR104 ATP CSIS18 IISS25 JREW02 LENTA12 MIL116 MIL117 ORYX1 RUSIAD STRASAM TASS23 WEG88 WEG90 WP-EN166 WP-RU213 WP-RU214 Updated 2026-10-01

S-500 С-500 «Прометей»

long-range SAM and missile defence system trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Short-range SAMs and guns

2S38 Derivatsiya-PVO 2С38 «Деривация-ПВО» TR-A

Self-propelled 57 mm anti-aircraft gun on BMP-3 chassis In service 2017

OPERATED BY **Motor rifle and tank regiments**, planned for air defence battalions D 2017 L

INDICATES *Reported in 2019 as an addition to the air defence battalions of combined arms regiments, but no mass deliveries by 2026. A sighting from 2023 on may indicate a trial or first-issue unit.*

RECOGNISE **Launcher** Remote, unmanned gun module (AU220M Baikal) with one 57 mm gun and a coaxial 7.62 mm PKTM, in place of the BMP-3 manned turret.

Radar No radar antenna: passive optical-electronic sight (Peleng) with 360-degree panoramic and sector search.

Chassis BMP-3 tracked amphibious hull with a near-horizontal glacis. Close only: six road wheels each side, idler front, sprocket rear.

Complex Transporter-loader 9T260 on Ural-4320-30 and maintenance vehicle 9V9005 on Ural-4320-1812-31 support the combat vehicle.

CONFUSED WITH **BMP-3** p. 103 Chassis hidden: BMP-3 has a two-man circular turret with a 100 mm gun and a 30 mm cannon beside it; 2S38 has a remote module with one 57 mm gun.

MOBILITY Amphibious; swims.

Weight	**21.5 t** Combat vehicle, claim
Road speed	**70 km/h** maximum, Maximum, forward, claim
Road range	**600 km** Road, claim
Cross-country speed	**over 50 km/h** claim
Reverse speed	**11 km/h** maximum

Range, 57 mm gun	**6 km (200 to 6,000 m)** maximum engagement range, Air targets, claim
Minimum range, 57 mm gun	**200 m** Air targets, claim
Altitude, 57 mm gun	**4.5 km (0 to 4,500 m)** maximum, Air targets moving up to 500 m/s, claim
Range, 57 mm gun, ground targets	**3,000 m** engagement range, Ground targets, claim
Detection range, optical-electronic sight	**10,000 m** Thermal channel, 2.3 x 2.3 m target, 80 % probability, claim
Recognition range, optical-electronic sight	**4,000 m** Thermal channel, 2.3 x 2.3 m target, claim
Rate of fire	**120 rpm** maximum, claim
Gun	**57 mm 2A90**
Ammunition carried	**148 rounds** claim

SEEN WITH 9T260 transporter-loader (Ural-4320-30) (INA; each can reload two combat vehicles at once); Transport vehicle for the transporter-loader (TZM), Ural-4320-30

SOURCES AR46 BMPD7 CNA EDR19 IISS25 JANESRG OVERT REDSTAR2 RGRU6 SPAGE TADV VZRU WP-RU76 WP-RU77 WWW1A3 not in WEG Updated 2026-10-13

Gibka-S 9К334 «Гибка-С» WH-AT

Armoured-car launcher for Igla-S or Verba MANPADS, with a command and radar vehicle In service 2022

OPERATED BY **Army air defence units, MANPADS sections**, MANPADS section vehicle (9A332); platoon commander vehicle (9S937) controls up to 6 of them, up to 6 9A332 per 9S937 R 2022-12 M

Spetsnaz brigades and separate Spetsnaz companies, first deliveries planned for 2024 (MoD sources) R 2024-01 L

INDICATES *A Tigr with a folding roof launcher for MANPADS containers indicates a MANPADS section of Army air defence (2022); a Tigr with a roof radar indicates its platoon commander, who controls up to six launcher vehicles. Rarely seen in Ukraine.*

RECOGNISE **Launcher** Turret-type roof launcher with missile containers and an electro-optical sighting station; folds down onto the roof when travelling. 4 ready missiles, 4 more inside.

Radar Command vehicle 9S937 carries the 1L122 Garmon radar on its roof; a separate Tigr, not a fitting on the launcher vehicle.

Chassis Tigr-M 4x4 armoured car (VPK-233116 or 233114) for both the launcher vehicle and the radar vehicle.

CONFUSED WITH **9K35 Strela-10** p. 160 Tracked MT-LB, not a 4x4 Tigr-M. Chassis hidden: range radar between two pairs of containers for 2.19 m, 120 mm missiles; Igla-S is 1.64 m, 72 mm.



Nickel nitride, CC0

MOBILITY Wheeled 4x4, not amphibious; fords 1.2 m. Fires on the move at up to 30 km/h (MoD trial claim, 2019).

Weight, empty	**7,200 kg** 9A332 combat vehicle
L × W × H	**5.6 × 2.4 × 2.4 m**
Road speed	**110 km/h**

Range, 9K338 Igla-S	**6 km** engagement range, Air targets, head-on and tail-chase, claim
Altitude, 9K338 Igla-S	**10 m to 3.5 km** engagement altitude, Air targets, claim
Range, 9M336 Verba	**6 km** engagement range, Air targets, claim
Altitude, 9M336 Verba	**10 m to 4.5 km** engagement altitude, Air targets, claim
Detection range, 1L122 Garmon	**40 km** up to, Air targets up to 10 km altitude and 700 m/s, claim

SOURCES APA6 AR54 BMPD8 DEFBLOG2 DEFM IISS25 IZ24 MISS6 MODI ORYX1 RGAZ VALKA4 VPK9 WEG46 WEG47 WP-RU90 WP-RU91 ZVEZDA Updated 2026-10-13

Pantsir-S1 96K6 «Панцирь-С1»

NATO: SA-22 Greyhound **WH-AT**

Short-range gun and missile air defence of S-400/S-300 battalions and key sites In service 2012

OPERATED BY **aerospace forces air defence regiment**, Pantsir vehicles deployed with each S-400 battalion (Armada); Lenta: batteries attached to S-400 regiments, 3 per S-400 battalion (Armada, 2024) D 2024 H

aerospace forces air defence regiment, Pantsir-S battery, 6 Pantsir-S delivered to Eastern MD air defence units on Kamchatka, Dec 2015; the regiment was reported due one battery O 2015-12 M seen with 1532nd SAM regiment (Kamchatka, Eastern MD)

aerospace forces air defence regiment, Pantsir-S1 gun-missile battalion; each battery covers one S-400 battalion O 2020-02 M seen with SAM regiment (Col. S. Starkov), Air Force and AD Army of Central MD, West Siberia

air defence missile regiment, 30 held by the Navy (IISS p. 187) R 2024 M seen with Baltic Fleet: 2 SAM regiments with S-400 and Pantsir-S1

aerospace forces air defence regiment, INA per regiment; IISS lists 9 SAM regts with Pantsir-S1 in the 45th, 4 in the 14th, 3 in the 4th and 4 in the 11th AF&AD Army R 2024 M seen with 45th AF&AD Army (Northern Fleet): 4 SAM regt with S-300PS/PM1, S-400, Pantsir-S1; 5 SAM regt with S-400, Pantsir-S1 (IISS p. 191), 14th AF&AD Army: 4 regt with S-400, Pantsir-S1 (IISS p. 192), 4th AF&AD Army: 3 SAM regt with S-400, Pantsir-S1 (IISS p. 193)

air defence missile regiment, INA (1 SAM regt with S-400 and Pantsir-S1) R 2024 M seen with Pacific Fleet: 1 SAM regt with S-400 and Pantsir-S1 (IISS p. 194)

Unidentified unit, SAM battery with Pantsir-S1/S2, Russian forces in Syria (Latakia air base), 1 battery (IISS p. 196) R 2024 M seen with Russian forces in Syria: 1 SAM bty with Pantsir-S1/S2 (IISS p. 196)

Unidentified unit, Pantsir-SM-SV tracked variant; imagery reported March 2025 R 2025-03 L

INDICATES *Usually marks a nearby S-400 (or S-300) battalion or a defended strategic site: VKS regiments deploy Pantsir with their long-range SAM battalions (three per S-400 battalion, Armada). IISS lists none in Ground Forces holdings.*

RECOGNISE **Chassis** Russian systems on an 8x8 KAMAZ-6560 truck; four hydraulic jacks level the vehicle to fire. Some later ones on MZKT-7930 with armoured two-piece-windshield cab.

Launcher Turret with two blocks of six missile tubes, one each side, and a twin-barrel 30 mm 2A38M gun beside each block; 12 missiles ready.

Radar Flat rectangular search array, about 1.8 x 0.9 m, rotating on the turret roof; folds forward flat on the roof when stowed.

Radar Tracking radar on the turret front face; small electro-optical post on a pedestal on the turret top, ahead of the search radar.

Complex Battery of up to six combat vehicles linked by data link, with one transloader truck per two combat vehicles.

CONFUSED WITH **Pantsir-SM-SV and Pantsir-SA** Tracks alone do not mean Tunguska: SM-SV puts the Pantsir turret family on a tracked GM-5970-series chassis; Pantsir-SA rides a two-unit DT-30 carrier, no guns.

2K22M1 Tunguska-M1 (SA-19 Grison) p. 162 FMSO calls the pair similar in appearance. Full view: Tunguska tracked, Pantsir-S1 an 8x8 truck. Chassis hidden: Tunguska 8 missiles, Pantsir 12 in two blocks of six.

9K330 Tor (SA-15) p. 161 Chassis hidden: Tor has no guns and no missile tubes on the turret sides (its missiles stand inside the turret); Pantsir has two six-tube blocks and two guns.

VARIANTS **Pantsir-S2** INA. Modernised Pantsir for Russian forces, in service 2015; IISS lists VKS holdings as Pantsir-S1/S2. Details INA.

Pantsir-SM New multifunction radar with active phased array; reported on a new 8x8 KAMAZ with armoured cab. KBP claim: engagement range 40 km and detection 75 km, against 20 km and 40 km for Pantsir-S1.

Pantsir-SM-SV Tracked GM-5970-series chassis instead of a truck. For Ground and Airborne Forces; 1RS2-3 radar; 57E6M and TKB-1055 missiles; imagery with army units reported March 2025 (likely taken 2024). **Pantsir-S1 (MZKT-7930)** MZKT-7930 8x8 chassis with armoured cab and two-piece windshield; one destroyed near Mariupol Feb 2026. Same 72V6 combat module as the KAMAZ version; chassis ordered from Belarus in 2024. **Pantsir-S1M** INA. Export version of Pantsir-SM; new missile with 30 km range (claim). Oryx records one destroyed in Ukraine. **Pantsir-SA** Articulated two-unit tracked DT-30 carrier; no guns. Arctic version; 18 missiles instead of 12.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY 8x8 truck, fast on roads. KAMAZ chassis has limited off-road mobility and tends to roll over (high centre of gravity, narrow track). Jacked level to fire guns accurately.

Weight	**14.85 t** WEG 'curb weight'; basis unclear *also up to 30 t depending on chassis WP-RU169*
L × W × H	**10.3 × 2.5 × 3.27 m**
Road speed	**90 km/h** maximum
Road range	**1,000 km** maximum *also 500 km WP-RU169*
Fording	**1.8 m**
Time into action	**3 min** WEG 'time in action'; WEG also gives deployment time 5 min; which is time into action is not stated *also about 15 min WP-RU169*
Time out of action	**INA**
Ground pressure	**INA**

Range, 57E6 missile	**20 km** maximum, aircraft-type targets; KBP figures for export 57E6-E, claim *also 12 km CSIS16*
Minimum range, 57E6 missile	**1.2 km** KBP figures for export 57E6-E, claim *also 1.5 km CSIS16*
Altitude, 57E6 missile	**5 m to 15 km** maximum, KBP figures for export 57E6-E; 5 m only in optical mode over water, claim *also 10 km CSIS16*
Range, 30 mm 2A38M gun	**4 km** maximum, air and ground targets, claim
Minimum range, 30 mm 2A38M gun	**200 m** air targets, claim
Altitude, 30 mm 2A38M gun	**0 to 3 km** maximum, air targets, claim
Detection range, 1RS1 search radar	**36 km** maximum, 2 m² target; S-band; up to 20 targets tracked, claim *also 47 km APA10*
Detection range, 1RS2-1 tracking radar	**28 km** maximum, target size not stated; WEG and Armada, claim *also 24 km MISS21 APA10*
Detection range, optical post	**17-26 km** auto-tracking, F-16 autotracking, 10 km visibility; 13-15 km for HARM missile, claim
Missile speed, 57E6	**1,300 m/s** maximum, claim
Target speed	**1,000 m/s** maximum, claim
Range, Pantsir-SM missile	**40 km** claimed, Pantsir-SM with new missile; KBP chief designer, 2016, claim
Detection range, Pantsir-SM radar	**75 km** claimed, target size not stated, claim
Range, Pantsir-S1M missile	**30 km** claimed, export Pantsir-S1M; new missile, designation not given by source; High Precision Systems, 2019, claim
Range, TKB-1055 small missile	**7 km** claimed, anti-drone round, up to 48 per vehicle in cannon-less versions, claim *also 0.5-7 km WP-RU169*
Rate of fire, 2A38M	**1,950-2,500 rpm per gun** claim
Ready missiles	**12**
Gun ammunition	**1,400 rounds**
Targets engaged at once	**4** within a +/-45 degree sector, claim
Reaction time	**4-6 s** claim
Crew	**3**
Warhead, 57E6	**20 kg rod warhead** KBP figure for export 57E6-E; WEG gives 16 kg for the domestic 57E6, claim

SEEN WITH S-400 (SA-21 Growler) battalion (one Pantsir battery per S-400 battalion (Red Star); 3 Pantsir per battalion (Armada)); Transloader vehicle (designation not confirmed) (1 per 2 combat vehicles); Maintenance, repair, alignment and spares vehicles; KAMAZ-6560 8x8 truck (1 per combat vehicle); 1L122 Garmon radar (INA; reported ringing Pantsir positions in Ukraine)

SOURCES APA10 AR88 AR89 ARMADA8 CSIS16 IISS25 LENTA10 MIL98 MISS21 ORYX1 RSTAR RUSIAD RWW TASS17 TASS18 WEG39 WEG74 WP-EN135 WP-RU169 Updated 2026-10-06

Pantsir-SMD-E Панцирь-СМД-Е

short-range SAM system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

S-60 С-60

TW

Towed 57 mm anti-aircraft gun, used in Ukraine for ground fire In service 1950

OPERATED BY **Soviet-era divisional and PVO AA regiments (legacy)**, Four firing batteries of six guns plus fire control, 6 guns per battery; 24 per regiment (FAS; ENWIKI: 12 in divisional regiments)
D 1999 M

INDICATES *Cited reports place truck- or MT-LB-mounted S-60s with naval infantry, a mobilised unit and other units, firing at ground targets. The towed AA regiments in the doctrinal sources are Soviet-era.*

RECOGNISE **Launcher** One 57 mm barrel with a multi-perforated muzzle brake; gun shield that folds down. Close only: horizontal feed tray for four-round clips, ready rack left of the breech.

Chassis Towed four-wheel carriage, wheels raised and levelled on jacks to fire; Ural-375 the usual tractor. In Ukraine also on Ural-4320 or KamAZ 6x6 beds and on MT-LB hulls.

Radar None on the gun, which has optical sights. Fire-control radar is off-carriage on a separate van, plus a director.

CONFUSED WITH **ZU-23-2 (23 mm)** p. 163 Any mount: one barrel and a gun shield; ZU-23-2 has two barrels side by side, an ammunition box outside each. Towed: four-wheel carriage, ZU-23-2 two-wheel.



Arest128, CC BY 4.0



АрміяInform, CC BY 4.0

MOBILITY Four-wheel carriage; needs 3 to 5 min to deploy; truck and MT-LB mounts improve shoot-and-move but add load to the vehicle.

Weight, combat	**4,660 kg**
L × W × H	**8.5 × 2.054 × 2.37 m**
Road speed	**75 km/h** maximum, Ural-375 prime mover, maximum road speed

Range, 57 mm anti-aircraft	**6,000 m** tactical, Air target, radar-guided (FAS); RUWIKI gives 6,000 m firing zone
Altitude, 57 mm anti-aircraft	**5,000 m** firing zone height, Air target
Range, 57 mm HE against ground targets	**6 km** up to, Ground targets, S-60 on MT-LB, Pacific Fleet naval infantry unit report, claim
Rate of fire	**105 to 120 rpm cyclic; 70 rpm sustained** practical 70
Penetration, UBR-281 APCBC-HE-T	**96 mm RHA at 1,000 m** stated, Armour-piercing round, one source
Calibre	**57 mm**

SOURCES AR106 ARMOUR FAS20 FM100 IISS25 JREW02 ORYX1 ORYX2 TASS WP-EN167 WP-RU215 WSPOT36 ZVEZDA3 not in WEG

Updated 2026-10-13

Sosna «Сосна»

TR

Short-range SAM, tracked chassis; successor to Strela-10M In service 2019

INDICATES *No unit is named as a holder; the system is announced as the Strela-10M replacement in Ground Forces air defence. Check any identification: a claimed sighting in Ukraine was disputed as a Strela-10.*

RECOGNISE **Launcher** Unmanned rotating combat module: 12 missiles in canisters in two clusters of 3x2, with the electro-optical sensors on the same gyro-stabilised platform.

Radar No radar. Passive electro-optical sight: TV, thermal channel, laser rangefinder and beam emitter; cued by a remote command post.

Chassis MT-LB tracked chassis on pre-series vehicles, including Army-2018; BMP-3 on the production version at Army-2019; BTR-82A wheeled version at Army-2021.

Complex Battery works under a command post, preferably Sborka-M1-2 (9S80M1-2). Vehicle crew of two: operator and driver.

CONFUSED WITH **9K35 Strela-10 family (Strela-10M, -M3, -M4)** p. 160 Chassis hidden: 12 canisters in two 3x2 clusters, no radar; Strela-10: four canisters in two pairs, range radar between. A Sosna claim in Ukraine was disputed as one.

MOBILITY Carrier-dependent. Module is made for 3.5 t or more payload; fire on the move was tested at 25-30 km/h.

Required carrier payload	**3.5 t or more** claim
Fire-on-the-move speed	**25-30 km/h** trials, per chief designer, claim
Weight	**INA**
Road speed	**INA**
Time into action	**INA**

Range, 9M340 Sosna-R	**10 km** maximum, air targets, day and night, claim
Altitude, 9M340 Sosna-R	**5 km** maximum, air targets, day and night, claim
Missile speed, 9M340	**900 m/s** maximum, claim
Detection range, optical system	**16-30 km aircraft; 10-14 km helicopters** auto-track range, auto-track acquisition, 15 km meteorological visibility, probability 0.8, claim
Missiles ready	**12** per combat vehicle, in canisters, claim
Warhead mass	**7.2 kg** per chief designer, claim
Elevation	**-5 to +82 degrees** claim
Crew	**2** operator and driver

SEEN WITH Sborka-M1-2 (9S80M1-2) battery command post; MT-LB; BMP-3; BTR-82A

VARIANTS **Sosna on MT-LB** Module on MT-LB hull; used for prototype and pre-series vehicles, including the one shown at Army-2018. INA. **Sosna on BMP-3** Module on BMP-3 hull; shown as the production version at Army-2019. INA.

SOURCES APA6 ATP BMPD14 EDR4 FOCUS14 IISS25 RWW SHEP21 SHEPHRD TASS25 WEG47 WP-RU223 not in WEG

Updated 2026-10-13

Strela-10 and Osa short-range SAM 9K35, 9K33 «Стрела-10», «Оса»

NATO: SA-13 Gopher **TR**

Short-range SAM: tracked Strela-10 (optical/IR) and wheeled Osa (radar command guidance) In service 1971

OPERATED BY **motor rifle brigade**, air defence missile-artillery battalion, missile battery (SA-13), 6 launchers per battery D 2024 M
tank brigade, air defence missile-artillery battalion, missile battery (SA-13), 6 launchers per battery D 2024 L

INDICATES *SA-13 in a brigade fits the missile battery of its air defence missile-artillery battalion, six launchers in doctrine; two platoons cover the artillery group. Osa-AKM fits a division air defence regiment, being withdrawn in 2019; it covers troops on the march.*

RECOGNISE **Launcher** Strela-10: turret with four missile canisters in two pairs, range radar between them. Osa-AK/AKM: six ribbed missile containers; first Osa had four exposed missiles.
Chassis Strela-10: modified MT-LB, tracked, six equally spaced road wheels, no return rollers. Osa: BAZ-5937, 6x6 wheeled, amphibious; 4.20 m high with mast stowed.
Radar Strela-10 9A35 adds Flat Box-B passive antennas on hull and turret; 9A34 has none. Osa: surveillance array folds back 90 degrees at rear, tracking group at front.

CONFUSED WITH **Sosna** p. 159 Chassis hidden: Sosna module has 12 canisters in two 3x2 clusters, no radar; Strela-10 four in two pairs. An OSINT tracker called a claimed Sosna-R loss a Strela-10.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Strela-10 is tracked and floats only with fitted buoys (M2). Osa is a wheeled amphibious 6x6 (WH-AT-A class); it fires from short stops, not on the move.

Weight, combat	**12.1 t** Strela-10
Weight, combat	**18.68 t** Osa-AKM, APA8 comparative table
L × W × H	**6.45 × 2.85 × 2.22 m** Strela-10

Range, 9M37M/9M333	**0.8 to 5 km** engagement envelope, Strela-10 engagement zone, all variants; target closing at up to 415 m/s or receding at 310 m/s
Altitude, 9M37M/9M333	**25 m to 3.5 km** engagement envelope, Strela-10; 9M333 minimum 10 m
Range, 9M33M3	**15 km** operational range, Osa-AKM missile
Altitude, 9M33M3	**4 km** maximum flight altitude, Osa-AKM missile; WEG figure

SOURCES APA6 APA14 ATP CNA EDR4 FOCUS14 IISS25 JANESRG JREW02 MISS27 RWW WEG39 WEG47 WEG2015 WP-EN172 WP-EN173 Updated 2026-10-06

Tor 9K330 «Top»

NATO: SA-15 Gauntlet **TR**

Short-range tracked SAM with own radars; defends troops against aircraft, PGMs and UAVs In service 1986

OPERATED BY **motor rifle division**, air defence missile regiment, 16 per regiment (4 batteries of 4, bmpd); ATP: two battalions; ru.wikipedia: Tor-M2 'divisional' set of 3 batteries, 12 vehicles D 2024 H
motor rifle brigade, air defence missile battalion, three batteries, 12 launcher vehicles per battalion (4 per battery) D 2024 M
tank brigade, air defence missile battalion, three batteries, 12 launcher vehicles per battalion (4 per battery) D 2024 M
motor rifle division, air defence missile regiment, one regimental set of Tor-M2 (16 combat vehicles) O 2017-11 M seen with 933rd Air Defence Missile Regiment, 150th Motor Rifle Division (Millerovo)
tank division, air defence missile regiment, one regimental set of Tor-M2 (16 combat vehicles) O 2017-03 M seen with 538th Guards Air Defence Missile Regiment, 4th Guards Tank Division
motor rifle brigade, air defence missile battalion (Tor-M2DT); brigade link by location and retraining report only R 2019-11 L seen with Tor-M2DT battalion of Northern Fleet ground and coastal troops, on duty in Pechenga district where a motor rifle brigade is based (number not given)
Unidentified unit, battery R 2024-09 L seen with Southern Group of Forces, Tor-M2 battery (Donetsk), Group of Forces North, Tor-M2 crews (Kursk border), Group of Forces Vostok, Tor crew (Vuhledar direction, 2024-03)

INDICATES *Four Tor vehicles together suggest a battery of a brigade air defence missile battalion (12 vehicles) or of a division's air defence missile regiment (16). Doctrine sites Tor-M1 5-10 km behind the forward edge.*

RECOGNISE **Radar** Rotating search antenna at turret rear, lowered behind turret when stowed. Phased-array tracking radar on turret front folds down; dome antenna and TV sight nearby.
Chassis Tracked GM-355 chassis (Tor-M2: GM-5955): three crew in front, turret amidships, engine at rear. Not amphibious.
Launcher Missiles stand vertically inside the central unmanned turret. Tor/Tor-M1: two boxes of four (8). Tor-M2: 16 missiles.
Complex Battery: command post, four combat vehicles, two transloaders on Ural-4320 trucks. Tor-M2DT rides a two-section articulated tracked DT-30 Vityaz carrier.

CONFUSED WITH **Other Tor versions (Tor, Tor-M1, Tor-M2)** Oryx logs some losses only as 'Unknown Tor TLAR'. Tor-M2DT is plain: two-section articulated tracked carrier, weapon module on the rear section.
9K33 Osa (SA-8 Gecko) p. 160 Chassis hidden: Osa guidance group has two small dishes flanking a central tracker; Tor has one flat phased-array tracking antenna.
96K6 Pantsir-S1 (SA-22 Greyhound) p. 158 Full view: Pantsir-S1 is usually wheeled, Tor tracked. Chassis hidden: Pantsir has guns beside its 12 missiles; Tor has no guns and its missiles sit inside the turret.
2K22 Tunguska (SA-19 Grison) p. 162 Both tracked. Turret: Tunguska carries two 30 mm cannon; Tor has no guns and its missiles sit inside the turret.
9K35 Strela-10 (SA-13) and Sosna p. 160 Chassis hidden: Strela-10 has four missile boxes on the turret, in two pairs; Sosna 12 missiles in two 3x2 clusters. Tor missiles stand inside its turret.

SEEN WITH 9S737M Ranzhir-M battery command post (9S737MK with Tor-M2E) (1 per battery); 9T244 transloader (2 per battery); 9T245 transport vehicle; 9V887M2U / 9V887-1M2U maintenance vehicles (9V887M2K / -1M2K in the Tor-M2E export set); GM-355 / GM-5955 tracked chassis (1 per combat vehicle); DT-30 Vityaz articulated tracked carrier (Tor-M2DT; DT-30PM per Army Recognition) (1 per combat vehicle)

VARIANTS **9K331 Tor-M1** Missiles in two four-round containers (9Ya281) in the turret; some vehicles on GM-5955 chassis (9A331-1). Second target channel: 2 targets at once; crew 3. **9K331MU Tor-M1-2U** INA. Interim upgrade from 2012: 4 targets at once, ceiling 10 km. **9K332 / 9K331M Tor-M2** New surveillance antenna; GM-5955 chassis; 2025 build adds armour and EW fit. 16 9M338K missiles, 4 targets at once, fires on the move; claimed 32 km detection and 16 km range. **9K331MDT Tor-M2DT** Two-section articulated tracked DT-30 carrier; weapon module on rear section. Arctic mobility; seen in Ukraine from December 2022.


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Tracked, not amphibious; fords 1.0 m. Tor-M1 halts to fire; Tor-M2 claimed to fire on the move. Tor-M2DT for snow and bog.

Weight	**32 t** combat; WEG figure for the 9K330 page, variant not stated
L × W × H	**8.0 × 3.2 × 4.0 m**
Road speed	**65 km/h** maximum
Road range	**580 km** cruising range
Fording	**1.0 m**
Swimming	**not amphibious**
Time into action	**less than 3 min**
Time out of action	**less than 5 min**
Bridge load class	**36** derived from 32 t tracked x 1.10, estimated
Ground pressure	**INA**

Range, 9M330/9M331	**12 km** maximum, aircraft and PGM targets, Tor/Tor-M1
Minimum range, 9M330/9M331	**1.5 km** Tor/Tor-M1
Altitude, 9M330/9M331	**10 m to 6 km** maximum, Tor/Tor-M1
Range, 9M338K	**16 km** maximum, Tor-M2 domestic, air targets, claim
Altitude, 9M338K	**10 m to 10 km** maximum, Tor-M2 domestic, claim
Range, 9M331 (Tor-M2E)	**1 to 12 km** maximum, Tor-M2E export; target 300 m/s, claim
Altitude, 9M331 (Tor-M2E)	**10 m to 10 km** maximum, Tor-M2E export; target 300 m/s (10 m to 6 km at 600 m/s), claim
Detection range, surveillance radar (Tor/Tor-M1)	**25-27 km** maximum, aircraft; WEG does not state the variant
Detection range, surveillance radar (Tor/Tor-M1), helicopter	**12 km** maximum, helicopters
Detection range, surveillance radar (Tor/Tor-M1), UAV	**9-15 km** maximum, UAVs
Detection range, surveillance radar (Tor-M2)	**32 km** air targets, size not stated, claim
Detection range, tracking radar (Tor/Tor-M1)	**15 km** maximum, 60-degree sector; target and variant not stated
Detection range, TV sight	**20 km** maximum, target not stated
Deployment distance, Tor-M1 in defence	**5-10 km behind forward edge** practical, first defensive position; 5-10 km between vehicles
Band, surveillance radar	**G/H-band**
Band, tracking radar	**J/K-band**
Targets tracked by surveillance radar	**48**
Targets engaged at once	**2 (Tor-M1); 4 (Tor-M2)**
Missiles on vehicle	**8 (Tor, Tor-M1); 16 9M338K (Tor-M2)**
Crew	**3**
Reaction time	**8-12 s** target detection to launch
Maximum target speed	**3,060 km/h**
Missile weight, 9M330	**165 kg**
Warhead, 9M330	**14.8 kg HE-frag** RF proximity fuze
Full reload time	**18 min**

SOURCES APA6 AR121 ATP BMPD16 CNA CSIS19 EDR4 IISS25 IZV12 JREW02 MISS29 ORYX1 RG175 RG192 RG233 RG245 RG252 RWW WEG39 WEG47 WP-RU246 Updated 2026-10-01

Tunguska 2K22 «Тунгуска»

NATO: SA-19 Grison **TR**

Tracked short-range gun and missile air defence vehicle, 30 mm guns and SAMs In service 1982

OPERATED BY **motor rifle brigade**, air defence missile-artillery battalion, Tunguska battery, 6 launcher vehicles per battery D 2016 M

INDICATES *A Tunguska battery in a forward position points to a manoeuvre brigade's air defence missile-artillery battalion covering its first-echelon battalions; doctrine places it in brigade air defence, not in area air defence units.*

RECOGNISE **Launcher** Central turret; on each side a twin 30 mm gun and missile tubes, four tubes a side on 2S6M and 2S6M1, two a side on the original 2S6.

Radar Search antenna at the turret rear, a cylindrical parabolic section, folded over the rear in travel; tracking dish on the turret front.

Chassis Tracked, driver front left, engine at rear; GM-352 chassis, GM-5975 on 2S6M1. Close only: six road wheels per side, three return rollers, rear sprocket.

CONFUSED WITH **Pantsir-SM-SV (tracked)** Hulls alike. 12 tubes in two packs of six, not 8 in fours; two-window sensor turret on the roof; front radar octagonal on a square base, not a disc (from photograph).



Boevaya mashina, CC BY-SA 3.0 de

MOBILITY Fires guns on the move but must be stationary to fire missiles. Not amphibious (WEG); fords 1.0 m (WEG 2S6M asset, RUWIKI).

Weight, combat	**34 t**
L × W × H	**7.93 × 3.24 × 4.02 m radar up; 3.36 m radar down m**
Speed, maximum road	**65 km/h**

Range, 9M311-M1 missile	**10 km** maximum, Tunguska-M1, air target
Minimum range, 9M311-M1 missile	**2.5 km** Tunguska-M1, air target; APA gives 2.5 km for 2K22 and 2K22M too
Altitude, 9M311-M1 missile	**3.5 km** maximum, air target; ceiling for 9M311 family
Range, 30 mm 2A38M guns	**4 km** maximum, air target
Minimum range, 30 mm 2A38M guns	**200 m** air target
Altitude, 30 mm 2A38M guns	**3 km** maximum, air target

SOURCES APA10 ATP FM100 IISS25 JREW02 MIL130 MISS21 ROE2 RWW USER8OCT WEG39 WEG109 WP-EN189 WP-RU252

Updated 2026-10-06

ZSU-23-4 Shilka ЗСУ-23-4 «Шилка»

TR

Radar-directed self-propelled quad 23 mm AA gun; also fires at ground targets In service 1962

OPERATED BY **motor rifle regiment**, air defence missile and artillery battery, SPAA gun platoon (with a platoon of four Strela SAMs), 4 per regiment D 1991 H

tank regiment, air defence missile and artillery battery, SPAA gun platoon (with a platoon of four Strela SAMs), 4 per regiment D 1991 H

Soviet Naval Infantry regiments, regimental air defence battery, 4 per regiment D 1991 M

assault detachment, assault group (urban assault), 1 ZSU (Shilka or Tunguska) per assault group D 2024 M

Naval Infantry, air defence subunits R 2024 H

INDICATES *Soviet regiments held a platoon of four beside four Strela SAMs. In late 2024 Army stocks were stored and about 60 served with the Naval Infantry, so a sighting since 2022 suggests Naval Infantry or an urban assault group, where doctrine allots one.*

RECOGNISE **Launcher** Four liquid-cooled 23 mm cannon, in an upper and a lower pair, mounted on the front of a flat armoured turret.

Radar GUN DISH fire-control dish, about 1 m across, on the turret rear; folds down flat for travel.

Chassis Tracked GM-575 hull, driver front left, engine at rear; not amphibious. Close only: six road wheels and no track return rollers, as on PT-76 and ASU-85.

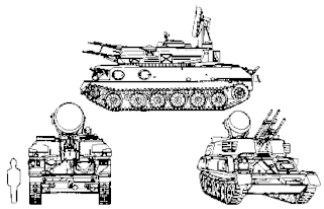
Complex Operates in platoons of four beside Strela SAM vehicles. Upgraded M4 adds MANPADS launchers on the turret and 81 mm smoke grenade launchers.

CONFUSED WITH **2K22 Tunguska** p. 162 Two 30 mm guns and four SAM tubes on each turret side, radars on turret front and rear; Shilka has four guns at the turret front, one rear dish.

ZU-23-2 p. 163 Two 23 mm barrels side by side between ring trunnions, ammunition boxes outside each trunnion; open mount on wheels, truck or armoured vehicle, no turret or radar.



Mil.ru (Russian MoD), CC BY 4.0



US Army, public domain

MOBILITY Tracked, not amphibious; fords about 1 m. Can be airlifted by An-22, Il-76 or Mi-26.

Weight, combat	**20.5 t**
L × W × H	**6.54 × 3.3 × 2.60 m radar down, 3.75 m radar up m**
Road speed	**50 km/h** maximum
Road range	**450 km** maximum

Range, 23 mm HEI-T/API-T	**2.5 km** maximum effective, air target, slant range, 23x152 mm OFZT and BZT
Minimum range, 23 mm HEI-T/API-T	**200 m** air target, slant range, 23x152 mm OFZT and BZT
Altitude, 23 mm HEI-T/API-T	**1,500 m** maximum effective, air target up to 450 m/s, 23x152 mm OFZT and BZT
Range, 23 mm (ground target)	**2 km** maximum effective, ground or surface target, 23x152 mm
Range, 23 mm (ZSU-23-4M4)	**2.5 km** claimed, air target up to 500 m/s, ZSU-23-4M4 upgrade, manufacturer figure, claim
Altitude, 23 mm (ZSU-23-4M4)	**25 to 1,500 m** claimed, air target up to 500 m/s, ZSU-23-4M4 upgrade, manufacturer figure, claim
Detection range, RPK-2 (1RL33) radar	**20 km** maximum, air target; may refer to the Sborka command post
Tracking range, RPK-2 (1RL33) radar	**13 km** maximum, air target; may refer to the Sborka command post
Kill probability, one pass (ZSU-23-4M4)	**0.6 (from 0.3)** ZSU-23-4M4 upgrade, Ulyanovsk Mechanical Plant package of 1996, claim
Rate of fire, cyclic	**850 to 1,000 rpm per barrel**

SEEN WITH 9K31 Strela-1 or 9K35 Strela-10 (4 per battery); PPRU-1 Ovod-M-SV (MT-LBu)

SOURCES AINF5 ATP FM100 IISS25 JREW02 MIL119 MIL120 ORYX1 UKRINF13 W1RU3 WEG91 WP-EN169 WP-RU217 ZVEZDA4

Updated 2026-10-13

ZU-23-2 2A13

TW+AD

Twin 23 mm towed AA gun, often truck- or MT-LB-mounted; fires on drones and ground targets In service 1960

OPERATED BY **airborne division**, anti-aircraft artillery battalion (Soviet structure), 18 per division D 1991 M
air assault brigade, anti-aircraft battery (Soviet structure), 6 per brigade D 1991 M
Soviet airborne regiments, anti-aircraft battery, 6 per regiment D 1991 M
motor rifle regiment, air defence battery, in regiments not yet converted to ZSU-23-4 and SA-9 (Soviet structure) D 1991 L
air defence missile brigade, close-in defence of SA-4 launchers (Soviet structure) D 1991 L
VDV air defence subunits, Dnepr group of forces, air defence subunit; ZU-23-2 crews (Kherson region, Russian MoD claim) R 2024-05 L

INDICATES *Says little about unit type alone: Army and, as BTR-ZD, Airborne Forces hold it (2024); army anti-drone groups were reported forming with it in 2024; Ukraine fields it too. Marks close-in air or drone defence.*

RECOGNISE **Chassis** Small two-wheel towed carriage. To fire, wheels are raised or moved aside and the mount is levelled on jacks on a three-point base.
Armament Two 23 mm barrels side by side between large ring-type trunnions, with prominent muzzle flash suppressors.
Ammunition boxes One 50-round box on the outside of each trunnion, set at right angles to the gun carriage.
Radar None. Aimed by hand with the ZAP-23 optical-mechanical sight; T-3 straight-tube telescope for ground targets.
Carriers Often fixed on the cargo bed of Ural-4320, KamAZ 6x6 or ZiL-130 trucks, on the roof of an MT-LB, or on a BTR-D (BTR-ZD).
CONFUSED WITH **ZPU-2 (14.5 mm)** Similar towed twin mount; ZU-23-2 has its ammunition boxes at right angles to the carriage and prominent muzzle flash suppressors.
ZSU-23-4 Shilka p. 162 Four 23 mm guns on the front of a large, flat armoured turret, radar at the turret rear (folds down in travel); ZU-23-2 has two open-mounted guns.



US Army, public domain

MOBILITY Towed two-wheel mount; unlimbered and levelled on jacks to fire, can fire from travel position in emergencies. Moves at the pace of its tow or carrier vehicle.

Weight	**0.95 t** firing position
L × W × H	**4.57 × 1.83 × 1.87 m** travel position
Time into action	**15-20 min** from travel to firing position
Time out of action	**35-40 min**
Towed speed	**70 km/h** maximum, on road

Range, 23 mm AA fire	**2,500 m** effective, air targets, up to 1,500 m altitude
Altitude, 23 mm AA fire	**1,500 m** effective, air targets
Range, 23 mm ground fire	**2,000 m** effective, light armoured ground targets
Armour penetration, 23 mm API-T	**19 mm at 1,000 m** 0 degrees obliquity
Rate of fire, cyclic	**1,600-2,000 rpm** both barrels
Rate of fire, practical	**400 rpm** 10-30 round bursts
Ready rounds	**2 x 50 rounds** one belt box per gun
Unit of fire	**1,200 rounds**
Muzzle velocity	**970 m/s**
Elevation	**-10 to +90 deg**
Traverse	**360 deg**
Self-destruct time, HE rounds	**11 s** maximum, fuze V-19UK
Ammunition	**23x152 mm HEI, HEI-T, API-T**
Crew	**5**

SEEN WITH GAZ-66 truck; UAZ-69 (GAZ-69) light vehicle; Ural-4320 truck; KamAZ 6x6 truck; MT-LB; BTR-D (as BTR-ZD)

SOURCES AIF19 ATP DMNTV FAS27 FM100 IISS25 IZV15 JANESRG ORYX1 RG248 WEG123 WP-EN209 WP-RU273 Updated 2026-10-13

Man-portable SAMs

9K32 Strela-2 9K32

NATO: Grail

MANPADS legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

9K34 Strela-3 9K34

NATO: Gremlin

MANPADS

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Igla / Igla-1 / Igla-S 9K38 «Игла»

NATO: SA-18 Grouse **MP+AD**

Shoulder-fired IR-homing SAMs against low-flying aircraft, helicopters and cruise missiles In service 1981

OPERATED BY **motor rifle brigade**, MANPADS battery of the air defence missile-artillery battalion, 27 MANPADS launchers per brigade (Igla, Igla-S or Verba) D 2024 M
tank brigade, MANPADS battery of the air defence missile-artillery battalion, 27 MANPADS launchers per brigade (Igla, Igla-S or Verba) D 2024 M
Unidentified unit, Igla team, Group of Forces West, near Lozova (Kupiansk direction), 2023-05 R 2023-05 L

INDICATES *In 2024 doctrine, Igla-family teams point to the MANPADS battery of a manoeuvre brigade's air defence missile-artillery battalion; Airborne and Naval Infantry units also held them in late 2024. Ukraine also fields Igla, so the type does not show the side.*

RECOGNISE **Launcher** Igla-1: blunted conical front cap on the tube; power unit and spherical gas bottle set at an angle to the tube axis. Igla: front of tube flares out in a cone.
Launcher Missile nose: Igla-1 (9M313) has a small cone on a three-rod tripod; Igla (9M39) and Igla-S (9M342) a needle-like spike on the seeker dome.
Radar No radar. The gripstock carries the 1L14 IFF interrogator; the squad leader's portable electronic tablet takes air picture data from AD command posts.
Chassis Carried by one gunner. Also fired from the twin Dzhigit mount, Strelets remote modules and the Gibka-S launcher on Tigr-M armoured cars.
Complex Teams of gunners under a squad leader; MANPADS battery of 27 launchers in a brigade AD missile-artillery battalion. Igla-S takes a clip-on Maugli night sight.

CONFUSED WITH **9K34 Strela-3 (SA-14 Gremlin)** Close only: Igla-1 has a blunted conical tube cap and power unit and spherical gas bottle angled to the tube axis; Igla's tube front flares out in a cone.
9K333 Verba (SA-29 Gizmo) p. 165 Outwardly alike: laid out like Igla-S, with tube, grip stock and sight; only the markings tell them apart.



US Navy EOD Technology Division, public domain

MOBILITY Carried and fired by one gunner from any open spot, trench or moving vehicle; night firing needs a night sight.

Weight, combat, Igla-1	**13.9 kg** full system
Weight, combat, Igla	**17.9 kg** full system
Weight, combat, Igla-S	**19 kg** full system, claim
Time into action	**13 s** travel to firing position, Igla and Igla-S, claim
Time out of action	**30 s** Igla-S, claim

Range, 9M313 (Igla-1)	**5,000 m** maximum, receding target
Minimum range, 9M313 (Igla-1)	**500 m** target engagement range
Altitude, 9M313 (Igla-1)	**100–3,500 m** engagement, target altitude
Range, 9M39 (Igla)	**5,200 m** maximum effective, receding target
Minimum range, 9M39 (Igla)	**1,000 m receding, 500 m approaching** engagement zone
Altitude, 9M39 (Igla)	**10–3,500 m** minimum / maximum, target altitude
Range, 9M342 (Igla-S)	**6,000 m** maximum effective, air target, claim
Altitude, 9M342 (Igla-S)	**10–3,500 m** minimum / maximum, target altitude, claim
Max target speed, Igla-1	**310 m/s approaching, 260 m/s receding**
Max target speed, Igla	**360–400 m/s approaching, 320 m/s receding**
Max target speed, Igla-S	**400 m/s approaching, 320 m/s receding**
Missile speed, Igla-1	**570 m/s**
Missile speed, Igla	**600 m/s**

SEEN WITH 9B238 ground power source (1 per missile tube); 9P516 (Igla), 9P519 (Igla-1), 9P522 (Igla-S) gripstock launch mechanism (1 per gunner); 1L15-1 / 1L110 portable electronic tablet (1 per squad leader); 9S520 night firing kit; 9S935 Barnaul (from 2009)

SOURCES AR55 ATP IISS25 IZK IZV232 MIL54 MISS6 MISS8 MISS9 NI360 RG224 RGGIB RTGIB RUSIAD RWW SAS WEG50 WP-EN72 WP-RU97 Updated 2026-10-13

Verba 9K333 «Верба»

NATO: SA-29 Gizmo **MP**

Man-portable infrared-homing SAM against aircraft, helicopters, UAVs and cruise missiles In service 2014

OPERATED BY **motor rifle brigade**, MANPADS battery of the air defence missile-artillery battalion, 27 per brigade (doctrinal figure given for Igla, which Verba replaces) D 2024 M
motor rifle brigade, air defence subunit; delivered as a full brigade set O 2017-12 H
airborne division, air defence missile regiment O 2024-01 H
air assault brigade, brigade air defence; MANPADS spread among march columns O 2025-07 M
air assault division, all air assault divisions re-armed with Verba (VDV commander, Jul 2017) R 2017-07 M
tank brigade, began to receive Verba in 2015 (with motor rifle and airborne brigades) R 2015 L

INDICATES *Verba is held in the organic air defence subunits of motor rifle brigades, airborne and air assault divisions and air assault brigades. A Verba team seen in 2024-2025 indicates a nearby motor rifle or airborne unit covering its own positions and columns.*

RECOGNISE **Launcher** Single launch tube about 1.5 m long, carried on a shoulder strap, with grip stock and compact sight; layout like Igla-S.
Launcher Optional Maugli-2M thermal sight on the left of the tube; separate IFF interrogator 1L229V. Close only: launch container stencilled 9P333 with year of manufacture.
Radar 1L122 Garmon portable radar: flat phased-array antenna 1200 x 800 mm, turned mechanically in azimuth; part of the MANPADS platoon.
Chassis None: man-portable. Teams ride ordinary APCs or trucks; Gibka-S puts launchers on Tigr armoured cars.
Complex Barnaul-T automation: platoon commander's fire control module in a backpack (9S933); operator kit worn on vest and helmet (9S935).

CONFUSED WITH **9K338 Igla-S / 9K38 Igla (Igla family)** p. 165 Outwardly alike: laid out like Igla-S, with tube, grip stock and sight; only the markings tell them apart.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Carried and fired by one soldier from the shoulder; teams move on APCs, trucks or armoured cars. Operates from -50 to +50 C.

Weight, missile with launcher	**18 kg** missile with launcher
Weight, missile	**12 kg**
Time into action	**12 s or less** travel to firing position, claim
Length, missile	**1.64 m**
Diameter, missile	**0.07 m**

Range, 9M336	**6 km** maximum, air targets, claim
Minimum range, 9M336	**500 m** air targets, claim
Altitude, 9M336	**3.5–4.5 km** maximum, maximum target altitude, claim
Minimum altitude, 9M336	**10 m** minimum target altitude, claim
Detection range, 1L122 Garmon radar	**40 km** maximum, air targets at altitudes up to 10 km, claim
Target speed, 9M336	**400 m/s head-on; 320 m/s tail-chase** maximum target speed, claim
Seeker, 9M336	**Passive three-band optical (UV, near IR, mid IR)** claim
Warhead, 9M336	**1.5 kg HE fragmentation, proximity and contact fuze**
Night sight	**1PN97M Maugli-2M thermal sight, optional** claim
Crew	**1**

SEEN WITH 1L122 Garmon portable radar (INA (in MANPADS platoon)); 1L229V ground IFF interrogator; 9S933 portable fire control module (brigade set); 9S933-1 kit (division set); 9S935 operator automation kit; 1PN97M Maugli-2M thermal sight (optional); 9V861 mobile control point

SOURCES AR55 ATP AVIAT6 IISS25 IZ212 IZ243 MIL54 MISS30 RG176 RG247 RG253 RIA17 RIA17B RUSIAD RWW VPK25 WEG116 WMC50 WP-EN198 WP-RU264 Updated 2026-10-13

5 Radars

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
AIR SURVEILLANCE RADARS						
59N6 Protivnik-G	–	Противник-ГЕ	3-D air surveillance radar	–	–	*168*
96L6 all-altitude acquisition radar	CHEESE BOARD	96Л6 «Всевысотный обнаружитель»	3D C-band acquisition and target designation radar for S-300PM/PMU2 and S-400 SAM units · 2008	**300–400 km** air target, detect, C band 5.25–5.925 GHz	**WH-AT**	168
Garmon	–	1Л122 «Гармонь»	Portable L-band 3D air surveillance radar for short- and medium-range air defence · 2012	**40–80 km** air target, detect, L band	**MP+AD**	169
Kasta 35N6 / 39N6	SQUAT EYE E, FLAT FACE E	35Н6; 39Н6 «Каста»; «Каста-2-2»	Low-altitude UHF air surveillance radar on KamAZ trucks · 1989	**32–140 km** aircraft, detect, UHF (decimetre)	**WH-AT**	169
Nebo-M	TALL RACK	55Ж6М «Небо-М»	Mobile multiband air surveillance radar complex · 2012	**400–700 km** air target, detect, VHF, L and S/C bands	**WH-AT**	170
Nebo-SVU	–	1Л119 «Небо-СВУ»	Mobile VHF air surveillance radar for army air defence · 1986	**60–380 km** fighter, detect, VHF (metric)	**TW**	170
Nebo-U	TALL RACK	55Ж6У «Небо-У»	Transportable VHF 3-D air surveillance radar for medium and high altitude, long range · 1995	**65–400 km** fighter, detect, VHF 30–300 MHz	**TW**	171
Niobiy	–	1Л125 «Ниобий»	Mobile metre-band air surveillance radar, successor to the Nebo family · 2016	**53–230 km** 1 m² target, detect, 180–220 MHz, metre band	**WH-AT**	171
Oborona-14	TALL KING C	5Н84А «Оборона-14»	Mobile metric-band 2D early-warning radar · 1974	**280–300 km** fighter, detect, metric band	**TW**	171
P-18 Terek	SPOON REST D	П-18 «Терек»	Mobile 2D VHF early-warning radar · 1970	**60–260 km** MiG-21, detect, VHF (metre band)	**WH-AT**	172
P-19 Dunai	FLAT FACE B	П-19 «Дунай»	air surveillance radar	–	–	*172*
P-35 Saturn	BAR LOCK	П-35 «Сатурн»	early warning radar · legacy	–	–	*172*
Rezonans-N	–		early warning radar	–	–	*173*
Sopka-2	–		air surveillance radar	–	–	*173*
COUNTER-BATTERY AND GROUND SURVEILLANCE RADARS						
1B75 Penicillin	–	1Б75 «Пенициллин»	Passive acoustic-thermal gun locator · 2020	**17–25 km** artillery, detect	**WH-AT**	174
1K148 Yastreb-AV	–	1К148 «Ястреб-АВ»	Counter-battery radar · 2019	–	**WH-AT**	174
ARK-1M Rys	SMALL FRED	1РЛ239 «Рысь»	Artillery weapon-locating and fire-control radar · 1977	**7–9 km** artillery, detect, NATO H band 6–8 GHz	**TR**	175
AZK-7	–		acoustic artillery reconnaissance system	–	–	*175*
Irbis	–		counter-battery radar	–	–	*175*
PRP-3 Val	SMALL FRED	ПРП-3 «Вал»	artillery reconnaissance vehicle	–	–	*176*
SNAR-10 / SNAR-10M1 Leopard	BIG FRED	СНАР-10М1 «Леопард»	Tracked battlefield surveillance and artillery-adjustment radar · 1975	**10–40 km** vehicles, detect, K band 34.55–35.25 GHz	**TR**	176
Sobolyatnik	–	1Л277 «Соболятник»	Portable ground surveillance and fire-correction radar · 2021	**17–20 km** vehicles, detect, J band (catalogue)	**MP**	176
Zavarukha	–		portable acoustic reconnaissance system	–	–	*177*
Zoopark-1 / Zoopark-1M	–	1Л219, 1Л219М; 1Л260 «Зоопарк-1», «Зоопарк-1М»	Tracked radar that locates enemy guns, mortars, rockets and missile launchers · 2007	**10–27 km** artillery, detect, C band (5 cm)	**TR**	177
STRATEGIC EARLY-WARNING RADARS						
Voronezh-DM	–	77Я6-ДМ «Воронеж-ДМ»	Fixed UHF early-warning radar for missile attack warning and space surveillance · 2009	**4,200–10,000 km** early warning, detect, UHF, decimetre wave	**FX**	178
OTHER						
Predel-E	–		coastal defence radar	–	–	*179*
RPMK-1 Ulybka	–		meteorological station	–	–	*179*
Syuzhet-MF	–		meteorological station · trial	–	–	*179*

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
PRP-4A Argus / PRP-4M Deytery	Mobile artillery reconnaissance post on BMP-1 chassis	8 Command and signals	234
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	Tracked command, observation and fire direction vehicles, SP howitzer battalion	8 Command and signals	230

Air surveillance radars

59N6 Protivnik-G Противник-ГЕ

3-D air surveillance radar

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

96L6 all-altitude acquisition radar 96Л6 «Всевысотный обнаружитель»

NATO: Cheese Board **WH-AT**

3D C-band acquisition and target designation radar for S-300PM/PMU2 and S-400 SAM units In service 2008

OPERATED BY **aerospace forces air defence regiment**, 3rd SAM battalion, INA (photographed deployed and stowed) O 2010-02 M
aerospace forces air defence regiment, S-400 'battery' in Armada's usage; APA export diagram lists it as a battery component, 1 per S-400 battery (Armada, term undefined; APA lists 96L6E as a battery component without a count); S-300PMU2 count INA R 2014 M
aerospace forces air defence regiment, S-400 air defence regiment, INA (APA lists 96L6E as an S-400 battery component; brigade holdings not given) R 2012-04 L
radio-technical regiment, 5 radars delivered to Moscow-area radio-technical regiments, early 2014 R 2014-05 L
aerospace forces air defence regiment, S-400 fire unit R 2026-07 L

INDICATES *A 96L6 usually marks a nearby long-range SAM fire unit (S-300PM/PMU2 or S-400) of the Aerospace Forces, which are district-level assets. The maker also offers it to radio-technical units, so on its own it does not confirm a SAM site.*

RECOGNISE **Antenna** Deployed: one planar phased array, turned mechanically in azimuth at 5 or 10 rpm; an IFF array is mounted with it.
Mast Normally none. The antenna post can be lifted onto a 23.8 m 40V6M or a 40V6MD lattice mast for low-level cover.
Antenna, stowed Large rectangular array, folded above the cab when moving (from photograph).
Body Array pedestal behind the cab, surrounded by ground jacks; equipment container at the rear with clear overhang (from photograph).

CONFUSED WITH **48Ya6-K1 Podlet-K1** p. 170 Full view: KamAZ-6350 8x8, not MZKT-7930. Deployed: two small back-to-back IFF arrays under the main array and small anti-jam antennas beside it.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Self-propelled 8x8. Single-vehicle version ready 5 min from march. Two-trailer and mast versions are semi-mobile; maker figures of 30 min to about 2 h not verified. Not amphibious.

L × W × H	**11.7 × 3.07 × 2.92 m** WEG figure for MAZ-543 chassis; radar vehicle is MZKT-7930
Road speed	**65 km/h** maximum, WEG figure for MAZ-543 chassis
Road range	**650 km** cruising, WEG figure for MAZ-543 chassis
Fording	**1.3 m** WEG figure for MAZ-543 chassis

Detection range	**300 km** instrumented, Range band 5 to 300 km for detected targets; target size and altitude not stated, claim
Maximum target altitude	**100 km** All-altitude mode, aerodynamic targets, claim
Band	**C-band** claim
Frequency	**5.25 to 5.925 GHz**
Elevation cover, all-altitude mode	**-1.5° to +20°** 360° azimuth
Elevation cover, low-altitude mode	**-3° to +1.5°** 360° azimuth
Sector search mode	**Up to 120° azimuth, 0° to 60° elevation** Sector scanned in up to 8 s; full cycle 13.5 s, claim
Antenna rotation	**5 to 10 rpm**
Tracks	**100** Automatic tracks, claim

SEEN WITH MZKT-7930 8x8 carrier (TM966E transport vehicle) (1 per radar (single-vehicle version))

SOURCES APA1 APA2 APA3 ARMADA1 ATP ESP GS6 JREW02 MIL6 MILRU ORYX1 PVO RS RT RUSI1 RUSIAD RWW TWZ3 U241 WEG12 WMC3 WP-RU25 Updated 2026-10-20

Garmon 1Л122 «Гармонь» MP+AD

Portable L-band 3D air surveillance radar for short- and medium-range air defence In service 2012

OPERATED BY **Central MD formations (MoD claim)**, Air defence subunits; five Central MD formations (Chelyabinsk, Samara, Kemerovo, Tuva, Tajikistan) R 2018-08 M

Unidentified unit, Air defence subunit of mountain motor rifle formation, 41st CAA, Tuva (MoD, Jul 2020) R 2020-07 L

INDICATES *A Garmon suggests an air defence subunit of a Ground Forces or Airborne formation passing an air picture to short- and medium-range SAM batteries. Ukrainian reports (2026) say it is also used against UAVs.*

RECOGNISE **Antenna** Rectangular array on a rotating mount: 1200 x 800 mm on the portable 1L122E-1; 1900 x 1800 mm reported for the E-2.

Mast Portable: antenna on a tripod; head can sit up to 300 m from the carrier. Tracked: boom raised at the halt; retracted, the radar works on the move.

Chassis Portable version: several containers of up to 30 kg, carried by the crew. 1L122E-2 is on an MT-LBu tracked chassis.

CONFUSED WITH **9S932-1 Barnaul-T battery command post** p. 233 Same MT-LBu hull and 1L122 radar. On the 9S932-1 the array sits on the top rear of the hull, folded down in transit; the 1L122E-2 raises it on a boom.



Ministry of Defence of the Russian Federation, CC BY 4.0



Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Portable set carried in 30 kg containers; tracked 1L122E-2 variant on MT-LBu. Air-dropping stated for components (RT).

Weight, 1L122E-1	**150 kg** Export designation; whole set; each container up to 30 kg, claim
Weight, 1L122E-2	**900 kg** Export designation; radar equipment only, not the MT-LBu chassis, claim
Time into action	**5 min** 1L122E-1, crew of three, claim

Detection range, 1L122E-1	**1-40 km** maximum, Air targets (aircraft, helicopters, cruise missiles, UAVs) up to 10 km altitude, up to 700 m/s; RCS not given. Export designation; MoD gives same for 1L122, claim
Detection range, 1L122E-2	**1-80 km** Export designation; air targets up to 20 km altitude, up to 700 m/s; target RCS not given, claim
Frequency band	**L-band** E-1 and E-2 per TOPWAR and GSEC, claim
Crew	**3** 1L122E-1 portable set, claim

SOURCES AINF1 AINF24 DEFUA22 DTALK GS7 INDRA LIGA3 RADTUT RGRU7 RTRU SDN2 TOPWAR3 TWZ1 WP-RU85 not in WEG Updated 2026-10-10

Kasta 35N6 / 39N6 35H6; 39H6 «Каста»; «Каста-2-2»

NATO: Squat Eye E, Flat Face E WH-AT

Low-altitude UHF air surveillance radar on KamAZ trucks In service 1989

OPERATED BY **Radio-technical troops (RTV) of the air defence**, Low-altitude radar company in border cruise-missile warning belts; mobile low-altitude radar platoon D 2015 M

Unidentified unit, 51U6 Kasta-2E1 seen by OSCE drone near Rozivka, 37 km NE of Donetsk, 2021, 1 R 2021 L

INDICATES *A Kasta suggests a radio-technical (radar) unit of the Aerospace Forces or a fleet air defence army filling the low-altitude picture: border warning belts, a mobile platoon in a threat period, or a damaged radar field. It may also cue short-range SAMs.*

RECOGNISE **Antenna** Kasta-2E1 (export): two stacked oval mesh reflectors, each 5.5 x 2.0 m, in five sections folding for transport. 35N6 also has two; 39N6 has one.

Mast Antenna on the truck platform at 7.0 m phase centre (2E1 export; 14 m on 39N6E). Optional 50 m mast. Turns 6 or 12 rpm.

Chassis KamAZ-4310 trucks: closed-van hardware vehicle and open-platform antenna vehicle.

CONFUSED WITH **Kasta family (35N6, 39N6, 51U6 Kasta-2E1, 39N6E Kasta-2E2)** Deployed: two stacked oval reflectors on 35N6 and Kasta-2E1, one on 39N6 and Kasta-2E2, but Vietnamese 39N6E sets have two per mast. If unclear, record as Kasta.



Vitaly V. Kuzmin, CC BY-SA 4.0



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Needs a level site about 10 x 15 m bearing 15 t; slope under 2 deg (35N6 lecture). Export sheet: 30 km/h cross-country, ford 1.2 m.

Weight, hardware vehicle	**12,500 kg** 35N6 machine No. 1 only
Road speed	**60 km/h** maximum, 51U6 Kasta-2E1 export sheet and 35N6 lecture, highway, claim
Road range	**1,000 km** WEG figure, 2E1

Detection range, 35N6	**at least 44 km** not less than, MiG-23-type fighter at 100 m altitude, standard antenna
Detection range, 35N6 (1,000 m)	**at least 115 km** not less than, MiG-23-type fighter at 1,000 m altitude, standard antenna
Detection range, 35N6 (500 m)	**60 km** 2 m² target at 500 m altitude, standard antenna, detection probability 0.5 (35N6 lecture)
Detection range, 39N6	**55 km** aircraft at 100 m altitude, antenna raised to 50 m, probability 0.8

SOURCES APA7 JREW02 MIL58 MIL59 PATR PPTO RBC18 RUSARMY3 U246 VPK10 WEG56 WP-EN84 WP-EN85 WP-RU109 WP-RU110 Updated 2026-10-10

Nebo-M 55Ж6М «Небо-М»

NATO: Tall Rack **WH-AT**

Mobile multiband air surveillance radar complex; paired low-altitude radar Podlet-K1 In service 2012

OPERATED BY **Unidentified unit**, air defence and radio-technical crews with a division-level command post (MoD release; unit not named) R 2017-09 L

NUMBERS **Holdings** 4 Nebo-M and Nebo-UM combined, stations in Transbaikalia, Khabarovsk and Primorye (2015)

INDICATES *Nebo-M or Podlet-K1 indicates an Aerospace Forces radio-technical (radar) unit building the air picture, often near an S-300 or S-400 position that the radars cue. One reported Podlet-K1 site (Kherson, Jul 2022) lay over 100 km behind the front.*

RECOGNISE **Antenna** RLM-M: VHF array of Yagi elements, 24 x 7. RLM-D: flat L-band panel, 38 x 48 elements; outer segments fold flat under clamshell doors for travel.

Antenna Podlet-K1: one large upper phased array, two smaller back-to-back IFF arrays below it, a narrow anti-jam antenna beside it. Antenna lies lowered on the truck in travel.

Mast Nebo-M antennas raised and folded hydraulically on a mast with an equipment cabin at its base; navigation antenna package at the top of each array.

Chassis Nebo-M: each module on a BAZ-6909-015 8x8 truck, the chassis of the S-400 TEL. Podlet-K1: KamAZ-6350 8x8 truck.

Complex Nebo-M: up to three radar trucks and a KU-RLK command truck with a small planar IFF antenna on a turntable offset right. Podlet-K1: antenna, control and generator trucks.

CONFUSED WITH **Nebo family (1L13, 1L119, 55Zh6U, 55Zh6M)** p. 171 Deployed, from afar: all VHF arrays; the carrier decides: Ural truck (1L13), semi-trailer (1L119), three semi-trailers and 43 m mast (55Zh6U), 8x8 (RLM-M).

55Zh6U Nebo-U p. 171 Deployed, from afar: cross-shaped array on a 43 m guyed mast; RLM-M raises a flat 24 x 7 element array from its own 8x8 truck.

1L119 Nebo-SVU p. 170 Full view: towed semi-trailer. Deployed: box-shaped T/R module enclosures on the mast and rear backlobe elements, both absent on RLM-M.



Nebo-M RLM-M. Ministry of Defence of the Russian Federation, CC BY 4.0



RLM-D and KU-RLK control cabin. Ministry of Defence of the Russian Federation, CC BY 4.0



48Ya6-K1 Podlet-K1 radar. Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Self-propelled 8x8 trucks; Nebo-M can also move by rail. Each Nebo-M module has its own 100 kW generator. Hydraulic levelling and antenna deployment.

Road speed, KamAZ-6350	**95 km/h** maximum, base truck, Podlet-K1 carrier
Height, Podlet-K1 antenna deployed	**12 m** Podlet-K1, radar fully deployed
Time into action, Nebo-M	**15 min** Nebo-M, manufacturer cited stow and deploy time, claim
Time into action, Podlet-K1	**20 min** Podlet-K1, deployment or stowage, claim

Detection range, Nebo-M	**600 km** maximum, complex; target type, size and altitude not stated, claim
Altitude coverage, Nebo-M	**600 km** maximum, complex, ballistic targets implied; not stated, claim
Detection range, Podlet-K1	**200 km** maximum, main mode, 10-200 km; target size not stated, claim
Minimum range, Podlet-K1	**10 km** air targets, lower limit of stated 10-200 km detection zone, claim

SOURCES AIF7 ANNA APA1 APA8 APA9 ARMADA7 ESP GS25 JREW02 MRLJ RS RUSIAD TRUCK TWZ3 TWZ25 U2413 VPK13 WEG72 WP-RU160 WP-RU161 ZVEZ2 Updated 2026-10-06

Nebo-SVU 1Л119 «Небо-СВУ»

TW

Mobile VHF air surveillance radar for army air defence (1L119 3-D AESA; 1L13-3 2-D) In service 1986

OPERATED BY **air defence missile brigade**, one unit of the brigade, Kherson area (military unit 54821) R 2024-01 L

Air Force and Air Defence Army, Northern Fleet, subunits attached to the army R 2021-04 L

NUMBERS **Losses** 5 1L119 Nebo-SVU recorded by Oryx as destroyed or damaged (visually confirmed only) (2026-10); **Losses** Ukraine (HUR) claimed 2 Nebo-SVU destroyed on 23-24 Oct 2025; no unit named (2025-10); **Losses** 1 Nebo-SVU reported destroyed Apr 2023, before the Jan 2024 Kherson loss (Militarnyi) (2023-04)

INDICATES *Reported with an army air defence missile brigade and with a fleet air and air defence army. It points to a long-range air-surveillance node for air defence units, not a manoeuvre unit.*

RECOGNISE **Antenna** Flat array of 84 vertically polarised VHF Yagi elements, 14 x 6; box-shaped T/R module enclosures on the mast and backlobe elements at the rear.

Mast Antenna frame with IFF array on a mast on a turntable on the semi-trailer (ChMZAP 9907.2); tilt actuator at the mast joint.

Chassis Semi-trailer towed by a Ural 4320 tractor; generator set on a Ural or KamAZ truck; a 4x4 operator cabin truck.

Complex Two to three vehicles: antenna semi-trailer, diesel generators, optional remote indicator post in a KK6.2 container on a Ural-532361.

CONFUSED WITH **Nebo family (1L13, 1L119, 55Zh6U, 55Zh6M)** p. 171 Deployed, from afar: all VHF arrays; the carrier decides: Ural truck (1L13), semi-trailer (1L119), three semi-trailers and 43 m mast (55Zh6U), 8x8 (RLM-M).

1L13 Nebo-SV (Box Spring) Full view: array on a Ural flatbed truck. Deployed: 72 horizontal Yagis in four rows plus an aft sidelobe array, against 84 vertical ones, 14 x 6, on the 1L119.

RLM-M Nebo-M VHF component p. 170 Full view: self-propelled BAZ-6909 8x8. Deployed: 24 x 7 elements without the box-shaped T/R module enclosures and backlobe elements of the 1L119.

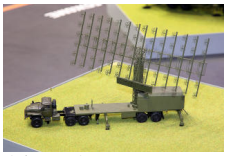
55Zh6U Nebo-U p. 171 Deployed, from afar: cross-shaped array on a 43 m guyed mast, against the flat 14 x 6 grid of the 1L119.

P-18 Spoon Rest D p. 172 Deployed: 16 Yagis on a two-van layout, against 84 in a 14 x 6 grid on the 1L119.

VARIANTS **1L13-3 Nebo-SV** Truck-mounted 72-Yagi array, horizontal polarity, aft sidelobe array (APA, 1L13); JREW02: 18-dipole array 16 x 3.24 m. 3 trucks, IFF trailer.



Vitaly V. Kuzmin, CC BY-SA 4.0



Vitaly V. Kuzmin, CC BY-SA 4.0



Mil.ru, CC BY 4.0

MOBILITY Towed semi-trailer; deploys on an unprepared position; moves by road, rail, air or water per the manufacturer.

Deployment time	**20 min** claim
Time out of action	**20 min** stowing; manufacturer sheet, claim
Vehicles	**2 transport units** claim
Road speed, weight, length, width, height	**INA**

Detection range, 1 m² aircraft or ballistic target at 20 km altitude	**380 km** claimed, RCS 1 m²; target at 20 km altitude; export sheet, claim
Detection range, 1 m² target at 10 km altitude	**270 km** claimed, RCS 1 m²; export sheet, claim
Detection range, 1 m² target at 0.5 km altitude	**65 km** claimed, RCS 1 m²; fighter-type per Almaz-Antey as quoted by WPRU, claim
Detection range, 0.1 m² target	**100 km** claimed, RCS 0.1 m²; altitude not stated, claim

SOURCES APA8 APA9 AR86 DEFUA9 IZV7 JREW02 LJRU MIL91 MRLJ ORYX1 VRF10 WP-EN125 WP-RU157 not in WEG Updated 2026-10-10

Nebo-U 55Ж6У «Небо-У»

NATO: Tall Rack TW

Transportable VHF 3-D air surveillance radar for medium and high altitude, long range In service 1995

OPERATED BY **training centre**, Nebo-U cab and antenna base shown in photographs, 2011 O 2011 L

Unidentified unit, one 55Zh6U reported struck near Yevpatoriia, Crimea, 2026-02-12 (Ukrainian General Staff claim), 1 R 2026-02 L

INDICATES *Radio-technical troops of the Aerospace Forces hold it, not ground-force units. A site with the 43 m guyed antenna mast marks a standing duty-mode air surveillance radar position that takes about a day to set up.*

RECOGNISE **Antenna** Cross-shaped phased array: horizontal arm is the range-finder, vertical arm the height-finder; array rotates. Elements 27 x 6 and 6 x 24.

Mast Antenna-mast device on three semi-trailers; antenna height 43 m, guyed in two tiers.

Chassis Three antenna-mast semi-trailers; six transport units without the remote unit; separate equipment cabin and diesel power station.

CONFUSED WITH **Nebo family (1L13, 1L119, 55Zh6U, 55Zh6M)** p. 170 Deployed, from afar: all VHF arrays; the carrier decides: Ural truck (1L13), semi-trailer (1L119), three semi-trailers and 43 m mast (55Zh6U), 8x8 (RLM-M).



Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Towed semi-trailers; full set-up 22 to 28 hours; strike time INA. Not a quick-move radar. Remote unit can sit up to 1,000 m away.

Time into action	**22 h** deployment, export 55G6-UE (Jane's); another figure 28 h, claim
Transport units	**6** without remote unit, claim
Antenna height	**43 m** guyed in two tiers

Detection range, fighter-type target, 500 m altitude	**70 km** export 55G6-UE; fighter-type target at 500 m, claim
Detection range, fighter-type target, 3,000 m altitude	**170 km** export 55G6-UE; fighter-type target at 3,000 m, claim
Detection range, fighter-type target, 10,000 m altitude	**310 km** export 55G6-UE; fighter-type target at 10,000 m, claim

SOURCES APA9 ARMADA7 DEFUA10 GS25 JREW02 KI13 MRLJ U2412 WP-EN110 WP-EN126 WP-EN127 WP-RU158 WP-RU159 not in WEG

Updated 2026-10-10

Niobiy 1Л125 «Ниобий»

WH-AT

Mobile metre-band air surveillance radar, successor to the Nebo family In service 2016

OPERATED BY **military district**, Air force and air defence army units; Niobiy and Kasta radars R 2022-01 M

military district, Air defence units; first radars for troop trials R 2019-10 L

military district, Units in Crimea and the south; first series batch planned by end of 2019 R 2019-10 L

INDICATES *Niobiy-SV was built for Ground Forces air defence and slated in 2019 for all units with long-range SAMs; reported in 2022 feeding an S-300 group's command vehicle. A sighting may indicate a long-range SAM unit nearby (2019-22 reports).*

RECOGNISE **Antenna** Folding active phased array; one antenna unit holds two arrays, a range-finder and a height-finder (Niobiy line)

Chassis Antenna carried on a four-axle KamAZ cross-country truck (Niobiy-SV)

Complex Niobiy-SV: five transport units reported; antenna and a crew shelter body. Niobiy station described with a folding array, crew cabin and power equipment

CONFUSED WITH **Nebo family (1L13, 1L119, 55Zh6U)** p. 171 Full view: the carrier decides: Ural flatbed truck (1L13), towed semi-trailer (1L119), three semi-trailers and a 43 m mast (55Zh6U); Niobiy-SV: four-axle KamAZ.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Niobiy-SV rides a four-axle KamAZ cross-country truck. A five-hour set-up is reported for the Niobiy family, mounted on semi-trailers and wheeled chassis.

Time into action	**5 h** Whole system; Niobiy family on semi-trailers and wheeled chassis
Weight	**INA**
Road speed	**INA**

Detection range, Niobiy-SV	**400 km** maximum, Export variant of Niobiy-SV; maximum scan range of the radar, claim
Detection range, Niobiy-SV	**At least 250 km** at least, Low-observable target at 4 km altitude; export variant of Niobiy-SV, claim
Detection range, Niobiy-SV	**230 km at 10 km altitude; 53 km at 0.5 km altitude** Target RCS 1 m^2; analyst's figures
Detection range, Niobiy-SV	**120–130 km** Target RCS 0.1 m^2, e.g. ATACMS; analyst's figure

SOURCES AIF8 APA9 IZ6 IZ19 MIL92 MRLJ RT6 SHEP4 TECHI WP-EN125 WP-RU157 WWW113 not in WEG

Updated 2026-10-09

Oborona-14 5H84A «Оборона-14»

NATO: Tall King C TW

Mobile metric-band 2D early-warning radar In service 1974

OPERATED BY **radio-technical battalion**, radar post (RLU) of a radio-technical battalion or centre; Soviet-era ex-service recollection, undated R 1990 L

Unidentified unit, 5N84A Oborona-14 radar post, Yevpatoria, Crimea; reported struck Jan 2024 R 2024-01 L

INDICATES *A deployed Oborona-14 marks a prepared long-range early-warning site: set-up takes about a day and the command post can sit up to 1 km away. Reported at Yevpatoria, Crimea, in 2024 and 2026.*

RECOGNISE **Antenna** Open-frame truncated parabolic reflector about 32 m wide and 11 m high, rotating; folds for transport.

Mast Reflector on a curved lattice truss; whole structure about 25 m high.

Chassis Moves on six semi-trailers: two antenna, two equipment, two power generation.

Complex Trailer command post up to 1 km from the antenna; IFF interrogator optional; power from separate diesel trailers.

CONFUSED WITH **Tall King family: P-14 Lena (1RL113) and Furgon (44Zh6)** Deployed, from afar: same 32 x 11 m reflector, so it does not settle it. Lena stands with radar and generator buildings; Furgon's antenna on a prepared base.



A.R. (Dmalch), public domain

MOBILITY Towed on six semi-trailers; about 24 h to set up (one blog says 54 h); needs a prepared site.

Time into action	**24 h** Jane's 2001 figure (contractors NNIIRT and Nitel), claim
Transportation units	**6** two equipment, two antenna, two power generation semi-trailers
Antenna size	**32 m wide x 11 m high** mirror span and height

Detection range, low-beam mode	**300 km** fighter-type target at 10,000 m, low-beam mode; Jane's 2001, claim
Detection range, high-beam mode	**280 km** fighter-type target at 10,000 m, high-beam mode; Jane's 2001, claim
Detection range, 5N84A (Ukrainian claim)	**up to 400 km** up to, aerial targets at high altitude; Ukrainian military information on the SSO strike, Mar 2026, claim

SOURCES APA7 JREW02 KPOST MIL93 ORYX1 SAFAN STARCOM U2412 U2414 UINF WP-EN128 WP-RU162 not in WEG

Updated 2026-10-10

P-18 Terek П-18 «Терек»

NATO: Spoon Rest D **WH-AT**

Mobile 2D VHF early-warning radar In service 1970

OPERATED BY **Unidentified unit**, One radar struck near Semenivka, Donetsk region, 2026-09-25/26, 1 R 2026-09 L
Unidentified unit, One radar struck near Yakymivka, Zaporizhzhia region, 2026-09-23/24, 1 R 2026-09 L

INDICATES *A P-18 marks a metre-band early-warning post passing the air picture to air defence units; it is a surveillance radar, not a missile fire-control radar. Ukraine's General Staff reported one in Donetsk region in 2026-09.*

RECOGNISE **Antenna** 16 Yagi antennas in two tiers of eight on a horizontal boom, turning at about 10 rpm.
Mast Antenna-mast device on the second truck; antenna height and tilt can be changed in operation.
Chassis Two Ural trucks: Ural-375 (Russian Wikipedia) or Ural-4320 (English Wikipedia). One carries the equipment cabin with operators, one the antenna-mast device.
Complex Two AD-10 generator trailers and a remote indicator. From 1979 the IFF interrogator (1L22 Parol) rides on a separate truck.

CONFUSED WITH **P-18 lineage (P-18-2, P-18T, P-18 Malakhit)** Same 16-Yagi array. P-18-2: four extra anti-jam antennas on two masts or a fixed array; P-18T on KamAZ-43118; Malakhit on one KrAZ with trailer.



Charly Whisky, CC BY-SA 3.0

MOBILITY Two trucks; equipment truck and antenna truck, plus generator trailers. Fording and ground pressure INA.

Time into action	**45 min** Unmodernised P-18; source gives 90 min after modernisation, wording unclear
Weight	**INA**
Road speed	**INA**

Detection range, P-18	**250 km** maximum, Target type, size and altitude not stated; unmodernised P-18
Detection range, P-18 (MiG-21, 10,000 m)	**180 km** MiG-21 target, 10,000 m altitude, no jamming; 90 km in jamming (source figure); unmodernised P-18
Detection range, P-18 (MiG-21, 500 m)	**60 km** MiG-21 target, 500 m altitude, no jamming; 40 km in jamming (source figure); unmodernised P-18

SOURCES APA7 APA9 JREW02 ORYX1 RUSARM RUSIPL U246 U2415 UKRIN4 WEG73 WP-EN134 WP-RU159 WP-RU167

Updated 2026-10-10

5 RADARS

P-19 Dunai П-19 «Дунай»

NATO: Flat Face B

air surveillance radar

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

P-35 Saturn П-35 «Сатурн»

NATO: Bar Lock

early warning radar legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Rezonans-N

early warning radar

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Sopka-2

air surveillance radar

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Counter-battery and ground surveillance radars

1B75 Penicillin 1Б75 «Пенициллин» WH-AT

Passive acoustic-thermal gun locator (1B75); man-portable counter-mortar radar (1L271) Introduced 2020

OPERATED BY **self-propelled artillery battalion**, battalion fire control network, conceptual ATP fig. 5-3 (1L271) D 2024 M
tank division, 1L271 O 2018-01 M
combined arms army, 1L271 in rocket, missile and tube artillery units R 2017 L
Company and battalion level subunits, 1L271 issued to company and battalion level subunits R 2022 L
artillery brigade, 1B75; planned recipients were artillery regiments and brigades R 2020 L
training centre, 1B75; the only complex in the armed forces in 2020, 1 (2020) R 2020 L

INDICATES *A 1B75 points to an artillery regiment or brigade counter-battery element, as deliveries were planned for those units. A 1L271 was issued down to company and battalion level and marks forward mortar or artillery fire control.*

RECOGNISE **Mast** 1B75: stabilised head with six TV and six thermal cameras on a raising mast; the mast folds rearward onto the van roof in transit.
Chassis 1B75: KamAZ 8x8 cross-country truck with a van body and four jacks. 1L271: man-carried or on a UAZ-2966.
Antenna 1L271: transceiver on a hand-turned tripod pedestal; reflector described as single-curvature parabolic or as a phased array with mirror. 1B75 has no radar antenna.
Complex 1B75: two KamAZ vehicles plus remote ground acoustic sensors, up to six vehicles. 1L271: 135 kg set of radar, processor, power unit, console and radio.

CONFUSED WITH **1B33M AZK-7M** Full view: the 1B75 raises a mast with six TV and six thermal cameras; the AZK-7M is a sound-ranging set.
1L277 Sobolyatnik (for 1L271) p. 176 Deployed: Sobolyatnik's antenna is one rectangular block on a folding tripod, 36 kg in all; the 1L271 a single-curvature parabolic antenna on a rotary pedestal.



Allocer, CC BY-SA 3.0; GFDL

MOBILITY 1B75 on KamAZ 8x8 truck; mast raised and ground sensors laid out at site, crew relocates daily. 1L271 man-portable (135 kg in loads) or vehicle-carried.

Weight, 1L271	**135 kg** complete set: radar, processor, power unit, claim
Road speed, 1B75	**90 km/h** maximum, KamAZ chassis, claim
Time into action, 1L271	**5 min** maximum, preparation for work, claim
Weight, 1B75	**INA**

Detection range, 1B75	**up to 25 km** maximum, radius; artillery, mortar and MLRS firing positions, sound and thermal, claim
Target location time, 1B75	**5 s** maximum, single firing target, claim
Radio range, 1B75	**40 km** maximum, to external subscribers, claim
Detection range, 1L271	**20 km** maximum, tank-type moving ground target, claim
Detection range, 1L271 (mortar positions)	**5 km** maximum, mortar firing positions, 81-120 mm, claim
Detection range, 1L271 (fire adjustment)	**15 km** maximum, by shell bursts; by trajectory 5 km, claim
Minimum range, 1L271	**750 m** mortar firing positions; 200 m for moving ground targets, claim
Location error, 1L271	**30 m** median, median; mortar, ascending trajectory; 200 m descending path, claim

SOURCES AIF9 AR90 ATP BMPD10 BMPD11 DEFEX3 GS27 IZV20 IZV222 ORYX1 RADTUT RG152 RG212 RG243 RWW SHEP5 TASS19 TOPWAR3 WP-EN138 WP-EN139 WP-RU85 WP-RU171 WP-RU172 not in WEG Updated 2026-10-06

1K148 Yastreb-AV 1К148 «Ястреб-АВ» WH-AT

Counter-battery radar: locates firing guns, mortars and rocket launchers Introduced 2019

NUMBERS **Losses** 6 lost (4 destroyed, 2 damaged), photo-confirmed by Oryx (2026-09)

INDICATES *A rare, recently fielded artillery reconnaissance radar. The Russian MoD says it serves rocket troops and artillery in Ukraine with Zoopark-1M; seeing one indicates artillery reconnaissance cueing Russian fire in that sector.*

RECOGNISE **Antenna** Large-area phased-array panel on a rotating antenna post.
Antenna post The antenna post takes up the rear part of the chassis.
Chassis Four-axle all-wheel-drive BAZ-6910-025 special wheeled chassis (Bryansk Automobile Plant).

CONFUSED WITH **Zoopark-1 / Zoopark-1M (1L219, 1L260)** p. 177 Full view: tracked (MT-LBu or GM-series), not a four-axle wheeled BAZ. The raised array alone does not settle it: both carry a phased-array antenna.
48Ya6-K1 Podlet-K1 p. 170 Full view: KamAZ-6350 8x8 truck. Deployed: two small back-to-back IFF arrays under the main array and small anti-jam antennas beside it.

(Picture not available)

MOBILITY Four-axle all-wheel-drive truck chassis. Weight, dimensions and deployment times not published.

Weight	**INA**
Road speed	**INA**
Road range	**INA**
Time into action	**INA**
Time out of action	**INA**
Length	**INA**
Width	**INA**
Height	**INA**

Antenna type	**Phased array** Russian statement; Topwar suggests probably active (AESA), claim
Function	**Automatic tracking of shell trajectories to fix firing-position coordinates** claim
Developer	**NPO Strela, Tula**
Detection range, 1K148 radar	**INA** maximum, Firing position; weapon type not stated *also 40 km AR134*
Location accuracy	**INA** *also 5-10 m AR134*
Crew	**INA**

SEEN WITH BAZ-6910-025 (1); 1L260 Zoopark-1M

SOURCES AI26 AR134 ESP FOCUS18 IZV20 MIL137 MIL138 MIL139 MIL140 ORYX1 OSN5 RIA7 TOPWAR2 TWZ3 not in WEG Updated 2026-10-09

ARK-1M Rys 1РЛ239 «Рысь»

NATO: Small Fred TR

Artillery weapon-locating and fire-control radar In service 1977

OPERATED BY **Division reconnaissance battery (Soviet era),** division's reconnaissance battery (WEG wording, identical to Wikipedia; Soviet-era) R 2024 L

INDICATES *A single sighting points to an artillery reconnaissance element supporting a formation's guns. Sources give no current Russian subunit or count, so it says little about formation type.*

RECOGNISE **Antenna** Parabolic antenna; the emitter sits in a radio-transparent housing beside a large receiving antenna.

Antenna fittings Only two emitters and the receiving antenna sit outside the hull; the rest of the equipment is inside it.

Chassis MT-LBu unarmed tracked carrier; electronics mostly inside the armoured hull.

Complex Single self-contained vehicle with its own navigation, survey, communications and generator (ARK-1M). Crew 4.

CONFUSED WITH **1RL232 SNAR-10 / SNAR-10M1** p. 176 Not decisive from afar: same MT-LBu hull and also a parabolic antenna. Chassis hidden: the SNAR-10 antenna rises from a turret with a 7.62 mm PKT machine gun.

Zoopark-1 / Zoopark-1M (1L219, 1L260) p. 177 Deployed: a flat phased-array panel, not a parabolic antenna. The 1L260 rides the GM-5955 tracked chassis, not the MT-LBu.



ShinePhantom, CC BY-SA 3.0

MOBILITY Tracked MT-LBu chassis; WEG says it may not be amphibious given radar weight. Fording depth INA.

Weight	**15.7 t**
L × W × H	**7.61 × 2.85 × 2.72 m** Chassis overall
Road speed	**61 km/h** maximum

Detection range, ARK-1M vs artillery (howitzers)	**8 km** unspecified, Artillery (WEG), howitzers (JREW02); target and mode not stated by WEG
Detection range, ARK-1M vs mortars	**13 km** unspecified, Mortar (WEG); mode not stated
Detection range, ARK-1M vs MRL rockets	**25 km** unspecified, Rocket (WEG); mode not stated
Detection range, ARK-1M vs battlefield missiles	**30 km** unspecified, Missile (WEG)

SOURCES ATP JREW02 MIL7 MIL8 ORYX1 PMUL TOPWAR1 TOPWAR2 WEG13 WEG2015 WP-EN19

Updated 2026-10-06

AZK-7

acoustic artillery reconnaissance system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Irbis

counter-battery radar

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PRP-3 Val ПРП-3 «Вал»

NATO: Small Fred

artillery reconnaissance vehicle

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

SNAR-10 / SNAR-10M1 Leopard СНАР-10М1 «Леопард»

NATO: Big Fred **TR**

Tracked battlefield surveillance and artillery-adjustment radar In service 1975

OPERATED BY **motor rifle brigade**, fire control and artillery reconnaissance battery, radar platoon D 2016 M
tank brigade, fire control and artillery reconnaissance battery, radar platoon D 2016 M
military district, artillery units of the tank formation stationed in the South Urals (MoD wording; formation not named) R 2019-01 M

INDICATES *A SNAR-10M1 points to a maneuver brigade's fire control battery radar platoon, so an artillery-adjustment and ground-surveillance element is working for that formation. Ukraine also holds the SNAR-10, so a sighting alone is not proof of a Russian unit.*

RECOGNISE **Antenna** Rectangular reflector nearly vehicle width, raised electromechanically for use; folds forward when travelling.
Turret SNAR-10: radar built into a roof turret carrying a 7.62 mm PKT machine gun. M1: antenna module on the rear roof.
Chassis MT-LB family tracked hull.
Complex Works as a single vehicle; the M1 has its own diesel generator.

CONFUSED WITH **MT-LBu command vehicle** p. 107 Stowed: canvas cover extending to the rear and extra radios; the SNAR-10 carries its reflector folded forward on the roof.



Mil.ru / Yevgeny Kel, CC BY 4.0

MOBILITY Tracked MT-LB derivative; radar deploys from halt, about 5 min into action from prepared position.

Weight, combat	**12.7 t** SNAR-10M1, developer figure, claim
Road speed	**60 km/h** maximum, SNAR-10 (WEG); SNAR-10M1 'up to 60 km/h' (developer)
Road range	**500 km** cruising, SNAR-10

Detection range, SNAR-10 radar	**16 km** maximum, moving vehicles, without MTI; 10 km with MTI, claim
Detection range, SNAR-10 radar	**30 km** maximum, moving ships, without MTI, claim
Detection range, SNAR-10 radar	**10 km** maximum, shell impact (100 mm), without MTI, claim
Detection range, SNAR-10M1 radar	**up to 40 km** maximum, tanks and vehicles; Russian MoD figure; instrumented range 0.2–40 km, claim
Detection range, SNAR-10M1 radar	**15 km** claimed, moving person; developer figure, claim

SOURCES AR111 ARMYINF12 ATP BMPD13 FOCUS13 JANESRG JREW02 MILUA6 PERISC RWW SHEPH TOPWAR1 UKRIN5 VPK20 VPK21 WEG22 WEG94 WEG2015 WP-RU222 Updated 2026-10-06

Sobolyatnik 1Л277 «Соболятник»

MP

Portable ground surveillance and fire-correction radar In service 2021

OPERATED BY **motor rifle brigade**, Brigade reconnaissance (used at the brigade tactical exercise) O 2019-07 M
military district, Delivery to reconnaissance subunits (with Fara radar sights), March 2021, 20 sets (with Fara) R 2021-03 M
Unidentified unit, Reconnaissance subunit of Group of Forces West with UAV crews, Kupyansk direction, Jan 2024 R 2024-01 L

INDICATES *A Sobolyatnik team points to a reconnaissance or artillery-reconnaissance element watching ground movement and adjusting fire. Reported holders are brigade and district reconnaissance and airborne units.*

RECOGNISE **Antenna** Rectangular block holding the electronics; the antenna is a phased array.
Mast No mast. In working position the antenna sits on a folding tripod stand.
Chassis None. Man-portable: two scouts carry it in parts, total 36 kg; carried disassembled on a scout's back.
Complex Antenna block, portable power source (battery) and operator console with colour display; set up in a few minutes.

CONFUSED WITH **1L271 Aistenok** p. 174 Deployed: single-curvature parabolic antenna on a rotary tripod pedestal; the Sobolyatnik antenna is one rectangular block on a folding tripod.



Ministry of Defense of Russia, CC BY 4.0

MOBILITY Man-portable: carried in parts by two scouts, 36 kg total; works from a folding tripod; battery run time 6 h.

Weight	**36 kg** Complete radar set, as stated for the 1L277, claim
Time into action	**A few minutes (observed as 5 minutes, Jan 2024)** Set up from carried state; 'a few minutes' (Wikipedia), 5 min in MoD report, claim
Time out of action	**A few minutes** From operating to marching state, claim

Detection range, 1L277 radar (tank)	**at least 17 km** stated minimum, Moving tank target; catalogue gives 'not less than', claim
Detection range, 1L277 radar (vehicles)	**>20 km** stated, Vehicles; ATP chart
Detection range, 1L277 radar (personnel)	**at least 7 km** stated minimum, Moving person; catalogue 'not less than', claim

SOURCES AR112 ATP BMPD9 KUBNEWS RADTUT RG162 RG244 TOPWAR3 VESTNIK VRF15 WP-RU85 not in WEG Updated 2026-10-10

Zavarukha

portable acoustic reconnaissance system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Zoopark-1 / Zoopark-1M 1Л219, 1Л219М; 1Л260 «Зоопарк-1», «Зоопарк-1М»

TR

Tracked radar that locates enemy guns, mortars, rockets and missile launchers In service 2007

OPERATED BY **motor rifle brigade**, fire control and artillery reconnaissance battery, radar platoon (with SNAR-10M1) D 2016 M
tank brigade, fire control and artillery reconnaissance battery, radar platoon D 2016 M
motor rifle division D 2024 L
Unidentified unit, deployed to Khmeimim air base, Syria, 2 R 2016-03 M
Unidentified unit, with Central MD artillery and Msta-S crews, Krasny Liman direction R 2023-07 L

NUMBERS **Losses** 25 lost 2022 to Sep 2026 (Oryx): 8 1L259, 17 1L261; 13 destroyed, 10 damaged, 2 captured (2026-09)

INDICATES *Doctrinally held in the radar platoon of a manoeuvre brigade's fire control battery and by artillery formations. Seeing one suggests brigade-level or higher artillery is nearby and set up for counter-battery fire.*

RECOGNISE **Antenna** One foldable phased-array antenna on the roof, standing upright when deployed; a lift-and-rotation mechanism raises and turns it.
Mast No separate mast. For travel the panel folds down flat along the roof.
Chassis 1L219/1L219M: MT-LBu tracked carrier. 1L260: GM-5955 tracked chassis, also used for Tor-M1.
Complex Works alone. Support: 1I30 (1L219M) or 1I38 (1L260) maintenance vehicle and a generator; in the brigade fire control battery with SNAR-10M1 and PRP-4A.

CONFUSED WITH **SNAR-10 / SNAR-10M1 (1RL232) battlefield surveillance radar** p. 176 Chassis hidden: the SNAR-10 reflector rises from a roof turret carrying a 7.62 mm PKT machine gun; Zoopark-1 has an electronically scanned flat panel.
ARK-1 / ARK-1M Rys (1RL239) counter-battery radar p. 175 Deployed: ARK-1M carries a parabolic antenna, Zoopark-1 an electronically scanned flat panel. Both ride the MT-LBu, so the antenna decides.



Boevaya mashina, CC BY-SA 3.0 de

MOBILITY Tracked, cross-country capable. Emplaces or displaces in about 5 min. Swimming ability not documented for either chassis.

Weight, 1L261 (1L260)	**38.1 t**
Road speed, 1L219M	**62 km/h** maximum
Road speed, 1L260	**70 km/h** maximum
Road range	**500 km** Both chassis

Detection range, mortar, 1L219M	**20 km** detection of launch position, Mortar firing position; calibre not stated
Detection range, tube artillery, 1L219M	**15 km** detection of launch position, Field artillery firing position
Detection range, rocket artillery, 1L219M	**30 km** detection of launch position, MLRS firing position
Detection range, tactical missile, 1L219M	**40 km** detection of launch position, Tactical missile launch position
Fire-correction range, 1L219M	**mortar 22, artillery 20, MLRS 35, tactical missile 40 km** fire correction range, Adjusting friendly fire, by weapon type
Detection range, mortar, 1L260	**20 km** range as listed by ATP (no qualifier), Mortar firing position; calibre not stated. ATP lists this figure under '1L219M Zoopark-1M'

SOURCES AR140 AR141 AR142 ARMADA12 ATP BMPD18 DOGS FAS1 FISH GWARA2 IZ11 JREW02 MIL137 MIL148 MIL149 ORYX1 RUMOD RWW SAIDPVO WEG2015 WMC54 WMC55 WP-RU272 not in WEG
Updated 2026-10-06

Strategic early-warning radars

Voronezh-DM 77Я6-ДМ «Воронеж-ДМ» FX

Fixed UHF early-warning radar for missile attack warning and space surveillance In service 2009

OPERATED BY **Aerospace Forces missile attack warning system,** separate radio-technical centre of the missile attack warning system (SPRN), 1 or 2 radars per site (Podvig table) R 2026 M

NUMBERS **Holdings** 5 Voronezh-DM radars in service; a sixth (DM1) under construction (Podvig) (2026)

INDICATES *A Voronezh-DM marks a strategic missile attack warning site run by the Aerospace Forces. It is a fixed installation, not a field unit, and does not indicate a manoeuvre formation.*

RECOGNISE **Antenna** Fixed phased-array antenna (digital antenna array), built from modules and brought into service in stages; works in the UHF (decimetre) band.

Complex Array, a quick-erect building for personnel and several equipment containers. A site can hold two arrays.

Chassis None: fixed site on pre-poured concrete foundations, built from factory-made container modules in 12 to 18 months.

Array One array installation serves both transmit and receive.

CONFUSED WITH **Voronezh family (Voronezh-M, Voronezh-VP)** From above, not decisive: each type has one array installation, a quick-erect building and equipment containers; antenna fields differ within one type (3 or 6 sections).

Daryal and Dnepr (older early-warning radars) From above: capital multi-storey structures; the Voronezh does without them, using a quick-erect building and factory-made containers.

SEEN WITH Quick-erect personnel building (1 per radar); Equipment containers (several per site (number INA))



Vadim Savitsky, Mil.ru, CC BY 4.0

MOBILITY Fixed site; modules arrive in containers and are assembled on concrete foundations. Built in 12 to 18 months (Voronezh family).

Build time	**12-18 months** Voronezh family, container modules on prepared foundations; Interfax 2006: one and a half years, claim
Power consumption	**0.7 MW** Voronezh family (ru Wikipedia); Kommersant 2006 via Podvig, said of the radar then called Voronezh-DM
Weight	**INA**
Time into action	**INA**

Detection range, early warning radar	**6000 km** claimed, Horizontal range; target type and size not stated by source, claim *also 10000 km ARMADA7 WP-EN201*
Detection altitude, early warning radar	**8000 km** claimed, Vertical coverage into near space; target not stated, claim *also 150-4000 km WP-RU268 SVOB2*
Targets tracked	**up to 500 simultaneously** claimed, Objects of any type, source does not say, claim
Frequency band	**UHF, decimetre wave (0.5 m wavelength)**
Elevation coverage, first radar	**2 to 60 degrees** One DM site in ru Wikipedia table; other sites not given
Crew	**about 15 per duty shift; up to 200 staff in all** Voronezh family, Rossiyskaya Gazeta via ru Wikipedia, claim

SOURCES ACA ARMADA7 RF26 RFARM RFKAL RFPOT RFSPRN RUELEC SDELANO SVOB2 WP-EN201 WP-EN202 WP-RU268 not in WEG Updated 2026-10-10

Other

Predel-E

coastal defence radar

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

RPMK-1 Ulybka

meteorological station

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Syuzhet-MF

meteorological station trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

6 Electronic warfare

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
RADAR, SATELLITE AND STRATEGIC JAMMING						
Krasukha-2 / Krasukha-4	–	1Л269; 1РЛ257 «Красуха-2»; «Красуха-4»	Truck radar jammers · 2013	**150–300 km** radar jamming, S-band; 8–18 GHz (X/Ku)	**WH-AT**	183
Moskva-1	–	1Л267 «Москва-1»	Passive ELINT and automated control of counter-air jammers and air defence cueing · 2014	**400 km** airborne emitters, detect, UHF, L, S, C, X and Ku bands	**WH-AT**	184
Murmansk-BN	–	«Мурманск-БН»	Strategic HF · 2014	**3,000–8,000 km** HF radio jamming, HF 3–30 MHz	**WH-AT**	184
Parodist	–		radar and communications jammer · trial	–	–	*185*
SPN-4	HEART ACHE		radar jammer	–	–	*185*
Tirada-2	–	«Тирада-2»	Mobile ground jammer of communications-satellite links · 2019	–	**WH-AT**	186
Tobol	–	14Ц227 «Тобол»	Ground satellite electronic warfare complex · 2012	–	**FX**	186
Volna Kupol Garant	–		satellite communications jammer	–	–	*187*
COMMUNICATIONS JAMMING						
Borisoglebsk-2	–	РБ-301Б «Борисоглебск-2»	Tactical HF/VHF/UHF radio intercept, direction-finding and jamming complex · 2013	**30 km** radio emitters, detect, HF, VHF, UHF	**TR-A**	188
Dzyudoist	–	МКТК-1А «Дзюдоист»	Truck-mounted technical control · 2012	–	**WH-AT**	189
Leer-2	–	85Я6 «Леер-2»	Mobile technical control, radio reconnaissance and jamming vehicle on Tigr-M chassis · 2012	–	**WH-AT**	189
Leer-3	–	РБ-341В «Леер-3»	UAV-borne cellular · 2015	**6 km** GSM jamming, around UAV, GSM 900 and GSM 1800	**WH-AT**	190
Palantin	–	«Палантин»	Operational-tactical HF/VHF comms jamming and SIGINT complex · 2019	**20 km** UAV link jamming, HF 3–30 MHz; VHF 30–300 MHz	**WH-AT**	190
R-330B Mandat-B and R-934BMV	–	Р-330Б; Р-934БМВ «Мандат-Б»	Ground VHF/UHF radio and air-communication jammers, tactical level · 1996	–	**WH-AT**	191
R-330M1P Diabazol	–	Р-330М1П «Диабазол»	Wheeled VHF/UHF, cellular and satellite-navigation jamming complex with direction finding	**20–30 km** ground terminal jamming, 0.1–2.0 GHz	**WH-AT**	191
R-330Zh Zhitel	–	Р-330Ж «Житель»	Truck-and-trailer jammer and direction finder against satcom, GPS and GSM user equipment · 2008	**15–30 km** ground terminal jamming, 100–2,000 MHz	**WH-AT**	192
RP-377L Lorandit	–		communications jammer	–	–	*192*
Zaslon-REB	–		cellular jammer	–	–	*193*
EW COMMAND AND SIGNALS RECONNAISSANCE						
1L222 Avtobaza-M	–	«Автобаза»	ELINT system	–	–	*194*
MKTK-1 Plavsk	–	«Плавск»	radio monitoring station	–	–	*194*
R-381T Taran	–	Р-381Т «Таран»	HF/VHF/UHF radio intercept and direction-finding complex on MT-LBu chassis · 1980	**40–100 km** ground/air radio, detect, 1.5–1,000 MHz	**TR**	194
RB-105B Less	–		SIGINT system	–	–	*195*
RB-108S	–		EW command post	–	–	*195*
RB-109A Bylina	–	РБ-109А «Былина»	Automated command post linking an EW brigade's intercept and jamming systems · 2017	**800 km** radio emitters, detect	**WH-AT**	196
Shipovnik-Aero	–	«Шиповник-АЭРО»	Truck-mounted UAV control-link jammer and radio monitor · 2016	**10–15 km** UAV link, detect, 25–2,500 MHz	**WH-AT**	196
Svet-KU	–	РБ-636 «Свет-КУ»	Mobile radio monitoring and direction-finding · 2012	**30 km** emitters, detect, 30–18,000 MHz	**WH-AT**	197
Torn	–	«Торн»	Mobile HF/VHF/UHF radio reconnaissance and direction-finding system · 2012	**30–70 km** VHF/HF emitters, detect, 1.5 MHz–3 GHz	**WH-AT**	197
GNSS, DRONE AND IED JAMMING						
Alurgit	–		GNSS jammer	–	–	*198*
Argus-Antidron	–		UAV jammer	–	–	*198*
Groza-O4K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	–	Гроза.О4.К / СЕРП-ВС6Д / Силок-01 «Чистюля» / «Стриж-3»	Small man-portable and tripod jammers against FPV and reconnaissance drones · 2018	**1–5 km** UAV link jamming	**MP**	198
Harpya	–		UAV jammer	–	–	*199*
Infauna	–	РБ-531Б «Инфауна»	Vehicle-mounted radio jammer and IED jammer, with smoke self-screening · 2012	**3 km** jamming, target not stated, 20–2,020 MHz	**WH-AT-A**	199
Lesochek	–	РП-377УВМ1Л «Лесочек»	Small jammer vs radio-controlled IEDs and drone links · 2013	–	**MP**	199
Pole-21	–	Р-340РП «Поле-21»	Networked GNSS jamming posts protecting fixed sites from GNSS-guided weapons and UAVs · 2016	**25–80 km** GNSS jamming, 1.176–1.602 GHz	**FX**	200
REBovets Valley	–		UAV jammer · trial	–	–	*200*
Repellent-1	–	Репеллент-1	Wheeled counter-UAV EW complex · 2016	**10–35 km** UAV/GNSS link jamming, 200 MHz–6 GHz	**WH-AT**	200
Rtut-BM	–	1Л262Э «Ртуть-БМ»	Vehicle jammer against radio proximity fuses and VHF radio · 2013	**20–50 ha** fuze jamming, area, 95–420 MHz	**TR**	201
Stupor, Garpun-3 and LPD-801 handheld jammer guns	–	ЛПД-801 «Ступор», «Гарпун-3»	Man-portable directional jammers against small UAV control and navigation links · 2018	**1–3.5 km** UAV link jamming, 433–5,875 MHz	**MP**	201
Tetrazdr	–		UAV jammer · trial	–	–	*201*
Volnorez, Saniya and Sapfir vehicle anti-drone jammers	–	«Волнорез», «Сания», «Сапфир»	Jammers on armour and vehicles, and a mobile set · 2023	**0.6–5 km** UAV link jamming, 300 MHz–6 GHz	**NA**	202

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
Orlan-10	Catapult-launched recon UAV for artillery spotting and EW	10 Uncrewed systems	268
Mi-8MTPR-1	Helicopter jammer against air-defence and aircraft radars	11 Aircraft and helicopters	288

Radar, satellite and strategic jamming

Krasukha-2 / Krasukha-4 1Л269; 1РЛ257 «Красуха-2»; «Красуха-4» WH-AT

Truck radar jammers: Krasukha-2 vs S-band AEW radar; Krasukha-4 vs X/Ku-band radars Introduced 2013

OPERATED BY **EW brigade**, REB-S (counter-air) EW battalion, INA; usually one Krasukha-2 and one Krasukha-4 per brigade (reported 2022) D 2018 H

EW brigade R 2015 M seen with Western Military District EW troops: ICDS names Krasukha-4 'in service with EW troops' in its WMD passage and footnotes a 2015 WMD exercise report; unit not named

Unidentified unit R 2015-10 M seen with Russian air group, Khmeimim air base, Syria (Krasukha-4)

EW brigade, part of 1 Krasukha-4 complex (command-post container found near Makariv); Armada estimates 4 complete Krasukha systems in theatre R 2022-03 M seen with Independent EW brigades deployed to Ukraine theatre (at least five, per Armada 2022); holding unit of captured module not named

EW battalion, independent REB-S battalion of an Air and Air Defence Army (VKS); FOI infers, does not name Krasukha there R 2018 L

Unidentified unit, 1 Krasukha-4 reported hit R 2023-11 L seen with Russian unit not named; strike near Urozhaine and Lankove, Zaporizhzhia oblast, claimed by Ukrainian 14th Separate Regiment (drones)

Unidentified unit, 1 Krasukha-2 reported R 2018-08 L seen with Unit not named; OSCE SMM drone recorded 1L269 near Chornukhyne, Luhansk oblast, in July 2018 (SMM report 2018-08-10)

Strategic Rocket Forces (RVSN) R 2015 L seen with Strategic Rocket Forces (RVSN): reportedly first to order Krasukha-4S, against Lacrosse-type radar satellites; Interfax said in 2015 the RVSN had received a matching EW system

INDICATES *Krasukha jammers belong to EW brigades (REB-S battalions): four under the military districts, the 15th (Tambov) under the General Staff. Manoeuvre brigades have EW companies. A sighting points to an EW brigade element or a protected site such as an air base.*

RECOGNISE **Antenna** Krasukha-2: one large parabolic dish on an antenna post, turning 360° and tilting; from photograph, a solid round dish at the rear of the truck.

Antenna Krasukha-4: large turret on top of the rear shelter with three parabolic antennas, two circular ones on its sides; from photograph, the third at the front.

Mast Krasukha-4: telescopic mast at the rear of the jammer truck; the second vehicle carries a telescopic mast antenna. Krasukha-2: from photograph, no tall mast.

Stowed Krasukha-4: turret stored inside the shelter for travel; in action two hydraulic stabilisers are lowered on each side of the shelter.

Chassis Krasukha-2: BAZ-6910-022 8x8; from photograph, flat-fronted cab, axles in two pairs with a wide gap. Krasukha-4: KamAZ-6350 8x8 truck.

Complex Krasukha-4: two KamAZ-6350 trucks, jammer and command-post container vehicle. Krasukha-2: three vehicles; probably procured together with Moskva-1.

CONFUSED WITH **1L269 Krasukha-2 vs 1RL257 Krasukha-4** Deployed, from afar: one large dish on a post (Krasukha-2) against a turret with three parabolic antennas (Krasukha-4). Full view: BAZ-6910 or KamAZ-6350 cab.

1L267 Moskva-1 ELINT and command complex p. 184 Deployed: no automatically raised antenna block; its box bodies are hard to tell from other trucks, a Russian reporter says. Krasukha-4 raises a dish turret.

Pelena-1 (older S-band counter-AEW jammer) Full view: antenna, power plant and control equipment on three separate towed trailers, not a self-propelled 8x8.

55Zh6M Nebo-M radar modules (BAZ-6909-015) p. 170 Deployed, from afar: flat rectangular planar array or Yagi array on the same heavy BAZ 8x8 family, not a parabolic dish.



Krasukha-4. The Ministry of Defence of the Russian Federation, CC BY 4.0



Krasukha-2. The Ministry of Defence of the Russian Federation, CC BY 4.0



Mike1979 Russia, CC BY-SA 4.0

MOBILITY Heavy 8x8 trucks. Must halt and emplace to jam: Krasukha-4 needs under 20 min to emplace or displace; Krasukha-2 lowers jacks before operating.

Krasukha-4: weight	**39,000 kg** *also 12,450 kg AR66*
Krasukha-2: weight	**40,000 kg** BAZ-6910-022 chassis full mass; kerb mass 18 t
Krasukha-4: road speed	**95 km/h** maximum, KamAZ-6350 truck figure (AR)
Krasukha-2: road speed	**80 km/h** maximum
Krasukha-4: road range	**1,000 km** KamAZ-6350 truck figure (AR)
Krasukha-2: road range	**1,000 km**
Krasukha-4: fording	**1.75 m** KamAZ-6350 truck figure (AR), claim
Krasukha-2: fording	**1.4 m** BAZ-6910-022 chassis figure (REACH)
Krasukha-4: time into action	**less than 20 min**
Krasukha-4: time out of action	**less than 20 min**
Krasukha-4: length	**9.86 m** *also 9.87 m AR66*
Krasukha-4: width	**2.78 m**
Krasukha-4: height	**4 m** antenna retracted *also 3.26 m AR66*
Krasukha-2: length	**12.403 m** BAZ-6910-022 vehicle
Krasukha-2: width	**2.75 m** BAZ-6910-022 vehicle
Krasukha-2: height	**2.845 m** at cab, not antenna

Krasukha-2: jamming range	**up to 250 km** up to, air target: AEW aircraft radar; target altitude not stated
Krasukha-4: jamming range	**150–300 km** maximum, air and ground-based radar targets; target size and altitude not stated, claim
Krasukha-2: target band	**S-band** *also 2.3–2.7 GHz CRFS*
Krasukha-2: main targets	**AEW aircraft radars (E-3 Sentry, E-8 JSTARS)** air targets
Krasukha-4: operating band	**8–18 GHz (X and Ku band)** *also 8.5–10.7 and 13.4–17.7 GHz 3G*
Krasukha-4: main targets	**Fighter and interceptor radars, UAVs, reconnaissance aircraft, LEO satellites** air and space targets
Krasukha-4: coverage	**360° azimuth; 1° to 60° elevation**
Krasukha-4: output power	**24 dBW (8 GHz); 23 dBW (13 GHz); 21 dBW (18 GHz)**
Krasukha-4: power consumption	**30 kW**
Krasukha-4: continuous operation	**24 h**
Krasukha-2: crew	**INA** *also 7 or 3 REACH*
Krasukha-4: crew	**INA** *also 3 AR66*

SEEN WITH Krasukha-4 command-post vehicle (KamAZ-6350 with container) (1 per Krasukha-4 complex); 1L267 Moskva-1 ELINT and command complex (INA; one Moskva-1 can link up to nine Krasukha-type jammers); KamAZ-6350 8x8 truck (2 per Krasukha-4 complex); BAZ-6910-022 8x8 chassis (1 per Krasukha-2 jammer vehicle); RB-109A Bylina EW brigade command system (brigade-level EW C2, not Krasukha-specific)

VARIANTS **1L269 Krasukha-2 (Krasukha-2O)** BAZ-6910-022 8x8 with one large solid circular dish at the rear. S-band jammer aimed mainly at AEW radars such as E-3 and E-8. Analogue equipment per ru.wikipedia. **1RL257 Krasukha-4 (Krasukha-S4)** KamAZ-6350 8x8 van with a three-dish turret, plus a second KamAZ-6350 carrying the command post. X/Ku-band jammer vs fighter fire-control and ISR radars, UAVs and LEO satellites. Digital equipment per ru.wikipedia.

SOURCES 3G APA5 APA8 AR66 ARMADA3 ATP CRFS FOI ICDS MIL67 MIL68 MIL69 REACH ROE2 RWW TOPWAR8 TWZ19 WEG61 WMC12 WMC13 WMC14 WMC15 WP-EN99 WP-RU129
Updated 2026-10-06

Moskva-1 1Л267 «Москва-1»

WH-AT

Passive ELINT and automated control of counter-air jammers and air defence cueing In service 2014

OPERATED BY **EW brigade**, REB-S (counter-air EW) battalion, reported D 2018 H
EW brigade, INA (ARM22 lists one Moskva-1 among five brigade systems) R 2023-09 L
EW brigade R 2018-03 L seen with 16th EW Brigade (Kursk)
Unidentified unit R 2023-12 L seen with Zapad group of forces, Kupiansk axis
Unidentified unit, 1 claimed destroyed R 2022-09 L seen with unnamed unit near Vasylivka, Zaporizhzhia oblast

INDICATES *Moskva-1 is held by Ground Forces EW brigades, four of which answer to the military districts. Seeing it suggests a brigade counter-air EW element and Krasukha-type jammers at other sites, up to nine of which one complex can task.*

RECOGNISE **Antenna** No automatically raised antenna block, unlike Krasukha.
Deployed Control module set down on hydraulic legs on the ground; its truck then drives 30-100 m away.
Chassis KamAZ-6350 8x8 trucks with plain box bodies (kungs); a Russian reporter calls them hard to tell from other trucks.
Complex Three KamAZ vehicles per complex: an ELINT module and control vehicles; one account names a power-station truck as the third.

CONFUSED WITH **1RL257 Krasukha-4** Deployed, from afar: Krasukha raises an antenna block automatically; Moskva-1 box bodies show none.
1L269 Krasukha-2O Full view: Krasukha-2O is on the BAZ-6910 chassis, not KamAZ, and raises an antenna block; Moskva-1 shows none.
Other KamAZ-6350 box-body vehicles p. 247 Stowed: hard to tell apart, a Russian reporter says. Deployed: the control box stands on hydraulic legs on the ground, its truck parked 30-100 m away.

SEEN WITH 1L265 ELINT module vehicle (1 per complex); 1L266 jammer control post vehicle (1 or 2 per complex (sources differ)); Power station vehicle (1 per complex (one account)); KamAZ-6350 (3 per complex); 1L269 Krasukha-2O (up to 9 controlled EW or AD systems in total); 1RL257 Krasukha-4


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Road and track mobile truck complex; manufacturer gives 45 min to deploy. Control module can be set down on legs apart from its truck.

Weight	**12,450 kg** chassis only
L × W × H	**9.3 × 2.5 × 3.25 m** chassis
Road speed	**95 km/h** maximum
Road range	**1,000 km** cruising

Detection range, airborne emitters	**400 km** up to, passive; emitting aircraft and cruise missiles; 360 deg sector, claim
Jamming range, airborne S-band radar	**250 km** up to, air targets; ARM23 says the 1L267 'can engage targets' per unnamed sources; Moskva-1 itself has no jammer (FOI)
Sector of view	**360 deg** claim
Frequency coverage	**UHF, L, S, C, X and Ku bands** ELINT module 1L265
Controlled systems	**9** EW or air defence complexes tasked simultaneously, claim
Crew	**4** combat crew, claim
Operating temperature	**-40 to +50 deg C** claim

SOURCES 3G AEX17 ARMADA4 ARMADA5 ATP CH97 DLG22 FOI ICDS IEEE22 IZ234 RIA15 RWW SDU13 TOPWAR8 VPK12 WEG68 WP-RU107 WP-RU152 WP-RU153 Updated 2026-10-06

Murmansk-BN «Мурманск-БН»

WH-AT

Strategic HF (3-30 MHz) communications intercept and jamming complex, multi-truck In service 2014

OPERATED BY **EW brigade**, Probably a company of the REB-N (anti-ground) battalion (FOI assessment) D 2018 H
Unidentified unit, Radio-jamming node (узел радиопомех); its 1st section named at the 471st (KZ), 2 complexes at the Kamchatka centre (KZ, reported Jan 2016; FOI: delivered 2014) O 2019 H
EW brigade, At least 1 complex per brigade (Armada); 2 antenna groups observed at 16th EW bde, vehicle count at 19th suggests 2 (PAS imagery, 2019) O 2019 M
EW brigade, INA; blog judges it 'highly likely', no system seen R 2019 L
Unidentified unit, station reported struck in Crimea, July 2026 (Ukrainian HUR claim); no unit named R 2026-07 L
Unidentified unit, used against Ukrainian HF traffic in Donbas (Ukrainian General Staff presentation, 2017); no unit named R 2017 L

INDICATES *Seeing Murmansk-BN indicates an Army EW brigade (IISS lists 5; 15th under General Staff) or a fleet EW centre, with long-range HF intercept and jamming in place; it takes about 72 hours to deploy, so a raised complex marks a deliberate, fixed position.*

RECOGNISE **Mast** Four hydraulic telescopic masts up to 32 m, guyed; antenna trucks typically about 35 m apart across a 90-degree arc. Masts lowered for travel.
Antenna Wire HF antennas and guy lines run from the masts to the ground, from afar like a giant spider's web; antenna field about 800 m a side. Stowed on trucks.
Chassis Multi-axle KamAZ (or Ural) trucks of up to 35 t with unified box bodies (kungs); some masts reported on towed trailers.
Complex Seven trucks: four mast vehicles plus generator, stowed-antenna and command post vehicles. Kola site seen with two groups of four antenna vehicles about 350 m apart.

CONFUSED WITH **Palantin** p. 190 Deployed, from afar: Murmansk-BN masts reach 32 m with an antenna web strung to the ground; Palantin masts reach 15 m.
Samarkand Fixed site: stationary coastal jamming complex, probably a fixed version of Murmansk-BN; not on trucks.


Министерство обороны России, CC BY 4.0

MOBILITY Road-mobile truck column; needs a prepared antenna field about 800 m a side, marking and engineer work; 72 hours to deploy. Trucks up to 35 t need category E drivers.

Weight, vehicle	**up to 35 t** Loaded KamAZ trucks of the complex, claim
Time into action	**72 h** Normative deployment time, claim
Number of vehicles	**7** Complex in travel order, claim
Time out of action	**INA**
Length	**INA**

Jamming range, HF communications	**5,000 km** effective (Armada's term), HF (shortwave) radio links, skywave; ship, aircraft and ground emitters, claim
Frequency band	**3-30 MHz (HF)**
Power	**up to 400 kW** In some operating modes (KZ); generator output (Armada), claim
Mast height	**32 m** 4 telescopic masts, fully raised, claim
Deployed position area	**640,000 m²** Antenna field about 800 x 800 m, claim
Crew	**INA**

SEEN WITH Antenna mast vehicle (4 per complex); Command post vehicle (1 per complex); Generator vehicle (1 per complex (Armada); RG16 puts generators, stowed antennas and command post on 3 vehicles); Bylina (Bylina KV KRET) EW command and control system; KamAZ multi-axle truck (7 per complex); Support vehicles (fuel bowsers, troop transport)

SOURCES 3G ARMADA6 BO2 CRFS FOI ICDS IISS25 IZ5 KZ3 MIL90 PAS RG16 RG174 RGPAL RWW UKRINF8 WEG71 Updated 2026-10-06

Parodist

radar and communications jammer trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

SPN-4

NATO: Heart Ache

radar jammer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Tirada-2 «Тирада-2»

WH-AT

Mobile ground jammer of communications-satellite links (uplink jamming) In service 2019

OPERATED BY **EW brigade** R 2020 M seen with separate EW formation, Central MD, Sverdlovsk oblast (2020 exercise)
Unidentified unit, Donetsk direction, 8 Jan 2024 (Ukrainian claim, destroyed), 1 R 2024-01 L seen with unnamed Russian unit, Donetsk direction
Unidentified unit, Kharkiv region, Jan 2026 (Ukrainian claim, two destroyed), 2 R 2026-01 L seen with unnamed Russian unit, Kharkiv region
Northern Fleet EW centre (possible trials), Tirada-2S possibly tested there, 2014 R 2014 L seen with 186th Ind. EW centre, Northern Fleet

NUMBERS **Losses** 1 claimed destroyed, Donetsk direction, 8 Jan 2024 (Ukrainian SSO claim) (2024-01); **Losses** 2 claimed destroyed by FPV drones, Kharkiv region, Jan 2026 (Ukrainian Border Guard claim) (2026-01); **Losses** 1 'Triada' claimed destroyed near Bakhmut, Jul 2023 (SSO claim; read as Tirada) (2023-07)

INDICATES *Indicates an EW brigade asset tasked against satellite communications. Russian MoD said in Dec 2018 Tirada-2 would enter Central MD service in 2019; a Central MD EW formation exercised it in 2020.*

RECOGNISE **Mast** Antenna mast on a prime mover (Russian Volunteer Corps claim, 2025).
Antenna Directional antennas giving a narrow beam (reported).
Chassis Army KamAZ truck. A contract linked to Tirada-2.2 calls for a four-axle KAMAZ-6350 truck and a ChMZAP-8335 trailer.
Complex Command post vehicle, jamming equipment vehicle and electric generator. A MAKS 2013 KAMAZ-6350 model shown as part of Tirada-2S may be its command post.

CONFUSED WITH **R-934BMV jamming station** p. 191 From above: four roof boxes in a pattern DFRLab calls unique to the R-934BMV. DFRLab judged the 2019 OSCE drone 'Tirada-2' most likely this vehicle.

(Picture not available)

MOBILITY Truck-mounted (KamAZ; four-axle KAMAZ-6350 cited for Tirada-2.2). Mobility figures INA.

Weight	**INA**
Road speed	**INA**
Time into action	**INA**

Effect, communications satellite	**suppression up to complete disabling, from the ground** claimed, against satellite communications, claim
Frequency band, Tirada-2S	**up to 14 GHz** factory annual reports on tuning Tirada-2S
Target	**communications satellites (uplink)**
Jamming range, communications satellite	**INA**
Crew	**INA**

SEEN WITH Command post vehicle (possibly KAMAZ-6350) (1 (3G)); Electric generator (1 (3G)); ChMZAP-8335 trailer; RB-109A Bylina

VARIANTS **Tirada-2S** INA. Probably centimetre band ('S' may stand for centimetre); factory reports mention tuning 'up to 14 GHz'. **Tirada-2.3 RB-371A** INA. Automated satellite communications jamming station; contract signed at Army-2018. Transmitter uses travelling-wave tubes. **Tirada-2.2** A contract linked to Tirada-2.2 specifies a KAMAZ-6350 truck and ChMZAP-8335 trailer. INA; contracted Oct 2019 with Tirada-2.4. Versions may cover different bands.

SOURCES 3G AIF15 AINF6 DFR2 FOC2 FOI IFX IISS25 JT21 KP5 MK3 NOVG RG13 RG232 RIA6 SBX TSR TV242 not in WEG

Updated 2026-10-09

Tobol 14Ц227 «Тобол»

FX

Ground satellite electronic warfare complex; role disputed: defensive or jamming In service 2012

OPERATED BY **Satellite tracking stations (NIP), Russian MoD**, Tobol infrastructure (project 8282) being built at or beside the stations R 2020 M
Unnamed Tobol sites nearest Ukraine (US leak), Three sites nearest Ukraine named in a leaked US slide; Tobol-1 tested against Starlink, estimated centre near Bakhmut, from late Sep 2022, 3 sites R 2023-03 L

INDICATES *Tobol sites sit at Russian MoD satellite tracking stations. Reports tie them to interference with Starlink and satellite navigation. Seeing one indicates a strategic space-support site, not a field unit; some reportedly are headquarters for mobile jammers.*

RECOGNISE **Antenna** Several parabolic dishes per site; procurement papers for two sites give dish diameters of 2, 7.3 and 9.1 m.
Complex Radio-technical position (RTP) with the dishes, transformer substations and diesel power plants, built at or beside satellite tracking stations.
Mast Towers stand among the dish array (site drawing for one site).

CONFUSED WITH **Satellite tracking station dishes** Not decisive alone: Tobol sites adjoin satellite tracking facilities; at one site, buildings with dish antennas predate the Tobol array of dishes and towers.

SEEN WITH Fazan and Varan truck-mounted satellite tracking systems (INA; equipment at one site to be deployed with them); Titov Main Test and Space Systems Control Centre, Krasnoznamensk (1; coordinating role per a leaked presentation)

MOBILITY Fixed sites on capital infrastructure; a container version (long deployment) is reportedly possible. Papers for two sites call the hardware mobile; some sites reportedly HQs for mobile jammers.

Weight	**INA**
Time into action	**INA**
Time out of action	**INA**

Sites, fixed complexes	**At least 7** at least, Secure World Foundation analysts, Apr 2023, repeated by SpaceNews 2025; Hendrickx (2020) located six sites plus design-work (OKR) infrastructure
Antenna diameter, fixed site dishes	**2 m, 7.3 m and 9.1 m** From procurement papers for two sites (2015, 2019), as reported by an analyst; dish count not stated
Signal modulation identification accuracy	**90% at 30 dB signal-to-noise ratio** Navigation satellite signal monitoring; from a 2013 thesis review written by Tobol's chief designer at RKS, as reported by Hendrickx, claim
Jamming range, satellite uplink or downlink	**INA** No open source gives a figure; the mode of jamming is analyst inference
Crew	**INA**

SOURCES AINF5 BMPD15 DEFUA15 JREW02 LENTA13 SPREV2 STRIPES TOPWAR15 not in WEG

Updated 2026-10-10

Volna Kupol Garant

satellite communications jammer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Communications jamming

Borisoglebsk-2 РБ-301Б «Борисоглебск-2»

TR-A

Tactical HF/VHF/UHF radio intercept, direction-finding and jamming complex In service 2013

OPERATED BY **motor rifle brigade**, EW company D 2024-02 H
tank brigade, EW company D 2024-02 H
motor rifle division, separate EW battalion O 2022-01 M seen with 3rd Motor Rifle Division (Vislenskaya), separate EW battalion, Belgorod oblast
motor rifle brigade, EW subunit O 2018 M seen with 74th Separate Guards Motor Rifle Brigade
military base, EW units O 2018 M seen with 201st Military Base, Tajikistan (R-934BMV stations)
separate covering brigade O 2022-03 L seen with 69th Separate Covering Brigade (R-330BMV captured, Kyiv oblast, 2022-03)
motor rifle division O 2022-09 L seen with 2nd Guards Motor Rifle Division (R-330BMV captured, Kharkiv oblast, 2022-09)
EW company, at least 1 set R 2014 M
Unidentified unit R 2024-11 M seen with Unit not named; R-934BMV station struck near Serhiivka, Pokrovsk sector, 2024-11 (Militarnyi), Unit not named; R-934BMV station destroyed, 2023-10 (Militarnyi)
Unidentified unit, EW subunit, 1 complex R 2017-04 M seen with Western Military District combined-arms formation, Voronezh oblast (not named)
military district, EW subunits of district formations, first 8 complexes R 2013 L seen with Southern Military District units (not individually named); some sets used at an EW operators' contest, Kalinovsky range, Chechnya, 2014
military district, EW subunits of district formations R 2014 L seen with Eastern Military District formations (not individually named); crews in a live-fire tactical exercise, September 2014
INDICATES *Usually indicates the EW company of a motor rifle or tank brigade or division within reach; since 2022 also division EW battalions. Vehicles of the complex may deploy singly rather than as a full set.*

RECOGNISE **Chassis** MT-LBu tracked amphibious armoured carrier, modified for the EW equipment.
Antenna Jamming antennas on a mast on the station vehicle, as reported for a struck R-934BMV or R-378BMV.
Complex Up to 9 vehicles: R-330KMV command post plus pairs of R-378BMV, R-330BMV, R-934BMV and R-325UMV jammers, with diesel generators. May deploy in part.

CONFUSED WITH **Borisoglebsk-2 stations among themselves (R-934BMV, R-378BMV)** p. 191 Hard to tell apart: both ride MT-LBu, and a Ukrainian report judged a struck station only as 'either R-934BMV or R-378BMV' by appearance.
R-330Zh Zhitel p. 192 Full view: Zhitel is a 6x6 truck towing a two-axle trailer whose four antenna masts are raised in action; Borisoglebsk-2 stations are tracked MT-LBu.
SNAR-10 (Big Fred) p. 176 Full view: turret-mounted radar with a parabolic antenna on the MT-LBu roof; the antenna folds forward on the roof for travel.


Russian Ministry Of Defense, CC BY 4.0


Денис Абрамов (Denis Abramov), CC BY 4.0


Ministry of Defense of Russia, CC BY 4.0


Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Tracked, amphibious MT-LBu chassis. About 15 min to deploy or pack up the complex on arrival.

Weight	**11,000 kg** WEG figure for base MT-LB chassis, not MT-LBu *also 12.6 t WEG2015*
L × W × H	**6.45 × 2.86 × 1.86 m** WEG figure for base MT-LB chassis
Road speed	**60 km/h** maximum, base MT-LB chassis *also 61.5 km/h WEG2015*
Road range	**500 km** cruising, base MT-LB chassis *also 500 km WEG2015*
Swimming speed	**5 km/h** maximum
Fording	**Amphibious**
Time into action	**15 min or less** whole complex, on arrival at site
Time out of action	**15 min or less** whole complex
Ground pressure	**0.46 kg/cm²** standard track; 0.28 kg/cm² wide track

Employment distance from line of contact	**15 to 30 km** practical, Donbas 2014-15, with Leer-3, Zhitel, R-934UM, observed
Crew, R-330KMV command post	**4** 2 of them at automated workstations
Vehicles per complex	**up to 9**
Jammer stations controlled	**up to 4 pairs** per R-330KMV command post
Frequency coverage	**HF, VHF, UHF** intercept and jamming of ground and air radio; also satcom, GPS and cellular terminals *also 3 MHz to 3 GHz 3G*
Frequency-hopping signals	**up to 300 hops/s** VHF, detection and jamming, 'per open sources', claim
Performance vs R-330 Mandat	**2x bandwidth, up to 100x faster** HF and UHF bands; reported, same lineage
Power supply	**own diesel generators or 220/380 V 50 Hz mains**
Jamming range, ground radio	**INA** not published
Detection range, radio emitters	**INA** *also 30 km 3G*
Armament	**INA** no source other than WEG names a weapon on the EW vehicles

SEEN WITH R-330KMV command post (1 per complex); R-378BMV HF jamming station (2 per complex); R-330BMV VHF jamming station (2 per complex); R-934BMV airborne VHF/UHF radio jamming station (2 per complex); R-325UMV jamming station (2 per complex); ATO-40 service and repair vehicle; Diesel generators; MT-LBu (up to 9 per complex)

SOURCES 3G AINF2 AR31 AR32 AR33 ATP CRFS FOI ICDS IZ22 JANESRG JREW02 MIL22 MIL23 MIL24 ORYX1 RG173 RG223 RUSTEAM RWW VRF2 VRF3 WEG27 WEG2015 WMC6 WP-RU54 WP-UK1 WSPOT21 WSPOT22
Updated 2026-10-06

Dzyudoist МКТК-1А «Дзюдоист» WH-AT

Truck-mounted technical control (KTK) system: own-emission and leakage monitoring In service 2012

OPERATED BY **EW brigade**, KTK complexes provided by the REB (EW) brigades D 2024 M
Airborne Forces (VDV) EW units, EW units of the Airborne Forces (VDV) R 2012-07 M
Strategic Rocket Forces, Strategic Rocket Forces R 2013 L
military district, Western Military District, data collection and processing stations R 2016 L
Unidentified unit, Listed among Russian EW systems deployed in the Donbas (ICDS Fig. 6, Sep 2017 report); number and unit not given R 2017 L
NUMBERS **Holdings** 8 complexes received by the Strategic Rocket Forces by 2013 (FOI) (2013)
INDICATES *Seen with a unit, it indicates own-emission and information-security control (detection, direction finding and analysis of radio emissions). Reported with Airborne Forces EW units and the Strategic Rocket Forces; doctrinally provided by EW brigades.*
RECOGNISE **Chassis** Two-axle KamAZ-4350 army truck carrying a modular cab (shelter).
Complex Vehicle 8.2 m long, 2.9 m wide, 3.6 m high (reference site).
Complex The same modular cab is also described on a towed chassis.


Mil.ru, CC BY 4.0


Mil.ru, CC BY 4.0

MOBILITY Two-axle KamAZ-4350 army truck; road and cross-country limits INA. Time into action not reliably read.

L × W × H	**8,215 m × 2,900 m × 3,600 m m** On KamAZ-4350 chassis, claim
Weight	**INA**
Road speed	**INA**

Frequency range, radio and radio-technical monitoring	**0.1 to 18,000 MHz** stated, Receive and monitoring band, claim
Direction-finding error	**2 to 3 degrees maximum** maximum, Source gives 'не более 2-3', claim
Navigation reference accuracy	**50 m maximum** maximum, claim
Frequency range, spurious emission and pick-up monitoring	**0.01 to 20,000 MHz** claim
Frequency range, acoustic and vibro-acoustic monitoring	**10 to 20,000 Hz** claim

SOURCES 3G AIF2 ATP FOI ICDS LENTA3 MIL VRF7 not in WEG

Updated 2026-10-10

Leer-2 85Я6 «Леер-2» WH-AT

Mobile technical control, radio reconnaissance and jamming vehicle on Tigr-M chassis In service 2012

OPERATED BY **airborne division**, EW subunit (FOI: VDV EW companies formed from 2016), INA; MoD announced 10 complexes for VDV EW units, Dec 2012 (title only, state claim) R 2018 M
Ground Forces EW units, 'possibly' in FOI; state media: Southern MD column Mar 2018 R 2018 M
Unidentified unit, Position 17 km behind line of contact, Novoluhanske, Donetsk region, Nov 2023, 1 vehicle R 2023-11 M
INDICATES *A Leer-2 most often indicates an Airborne Troops EW subunit; Navy EW centres, the Strategic Rocket Forces and Ground Forces EW units also hold it. It says nothing about the parent unit type.*
RECOGNISE **Chassis** GAZ Tigr-M 4x4 armoured car with armoured bonnet; no armament fitted.
Antenna All EW antennas sit on a platform on the vehicle roof.
Mast When static, two telescopic antennas can be raised on the vehicle roof.
Complex Single vehicle. An earlier army version of the same equipment is reported on a KamAZ-4350 truck with trailer.
CONFUSED WITH **Leer-3 (RB-341V)** p. 190 Full view: Leer-3's control post is a truck working with Orlan-10 drones; Leer-2 is a single 4x4 Tigr-M armoured car.


Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Fords 1.3 m; not amphibious. Chassis figures are Tigr-M, from WEG.

Weight, combat	**7,800 kg**
L × W × H	**5.7 × 2.3 × 2.3 m**
Speed, maximum road	**140 km/h**

Jamming frequency band	**0.02–2.7 GHz** Radio emitters incl. mobile communications; 3G table copied from an Airbase.ru forum image, 2014
Signal analysis band	**0.1 MHz–18 GHz** Radio reconnaissance; direction finding 0.02–18 GHz
Simultaneous suppression	**12 emission sources** Quasi-simultaneous; VDV EW chief, Nov 2012, via forum, claim
Direction-finding accuracy	**3 deg roof antennas, 2 deg mast antennas**
Crew	**2 (driver, operator)** claim

SOURCES 3G AIRBASE AR69 CNA FOI GAGADG ICDS MIL71 ORYX1 RG2018 VPK11 WEG63 WEG2015 WP-RU134

Updated 2026-10-06

Leer-3 РБ-341В «Леер-3» WH-AT

UAV-borne cellular (GSM) jamming, phone location and fake-SMS system using Orlan-10 drones In service 2015

OPERATED BY **EW brigade**, Leer-3 platoon, platoon operates the complex; number per brigade INA [D 2024 H]
EW battalion, Leer-3 drone/EW company [R 2019 M]
military base [R 2015 M] seen with 4th Military Base, South Ossetia
military district, Leer-3 crews [R 2022-11 M] seen with Western Military District
motor rifle division, separate EW battalion [R 2022-01 M] seen with 3rd Motor Rifle Division (Vislenskaya), separate EW battalion, Belgorod oblast
Unidentified unit [R 2020-11 M] seen with Russian peacekeeping contingent, Nagorno-Karabakh
EW company, 2 systems in one deployed EW company [R 2014 L]
combined arms army, counter-UAV groups (training exercise) [R 2017-06 L] seen with a Western MD combined arms army, army not named

INDICATES *A Leer-3 control truck points to an EW brigade platoon, an army EW battalion company or a division EW battalion. Expect Orlan-10 flights that jam or imitate cell networks, locate phones for artillery and send SMS within about 6 km of the drone.*

RECOGNISE **Chassis** KamAZ-5350 6x6 truck carrying the operator workstations; from photograph, closed box body with chamfered roof edges, side door, spare wheel on rear wall.
Antenna Command-telemetry radio antenna system for the UAVs; from photograph, a drum-shaped radome on a vertical pole at the rear top corner of the box body.
Mast From photograph: no telescopic mast on the 2015 exhibit.
Complex Up to three Orlan-10 fixed-wing UAVs, catapult-launched and recovered by parachute; wingspan over 3 m.

CONFUSED WITH **Leer-2** p. 189 Full view: Leer-2 is a 4x4 Tigr-M armoured car; the Leer-3 control vehicle is a KamAZ-5350 6x6 truck.
Orlan-10 p. 268 In the air: the same airframe flies artillery reconnaissance with UAV companies, so the drone alone does not show the EW role; look for the Leer-3 control truck.

SEEN WITH Orlan-10 (3 per complex); KamAZ-5350 (1 per complex); UAV catapult launcher (1 per complex); Expendable ground jammers


Vitaly V. Kuzmin, CC BY-SA 4.0


Orlan-10 UAV. Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Control vehicle is a KamAZ-5350 6x6 truck; complex deploys in about 30 minutes. Leer-3 vehicle weight, dimensions and fording not found.

Road speed	**100 km/h** maximum, KamAZ-5350 base truck at maximum permitted mass; not a Leer-3 figure, claim
Road range	**1,550 km** minimum at reference consumption, KamAZ-5350 base truck, 420 l tanks, at reference fuel consumption; not a Leer-3 figure, claim
Time into action	**30 min** whole complex, claim
Weight	**INA**

Jamming range, cellular terminals (ground)	**up to 6 km** up to, radius of the zone of blocked GSM terminals around the UAV, claim
Detection range, GSM base stations	**6 km** within, cellular base stations, GSM and possibly 3G/4G, measured from the UAV
Practical range, Orlan-10 from control vehicle	**120 km** up to, radius of UAV employment from the control point, claim
Endurance, Orlan-10	**10 h** maximum, maximum flight time of the Orlan-10 in the Leer set, claim
Altitude, Orlan-10	**up to 5,000 m** up to, operating altitude, claim
Frequency band, jamming and imitation	**890–915, 935–960, 1710–1785, 1805–1880 MHz** GSM 900 and GSM 1800 networks, claim
Frequency band, UAV control channel	**902–922 MHz** claim
Networks attacked	**GSM 900, GSM 1800** 3G and 4G capability claimed after a 2017 upgrade, claim
Cellular subscribers blocked simultaneously	**2,000** claim

SOURCES 3G ATP CNA CRFS DFR FOI ICDS IZ20 IZ22 IZ222 MASH MIL72 ORYX1 RG15 RG223 RWW UNIAN3 UZST VRF9 WEG63 WMC16 WMC17 WP-RU135 not in WEG Updated 2026-10-06

Palantin «Палантин» WH-AT

Operational-tactical HF/VHF comms jamming and SIGINT complex; networks other EW systems In service 2019

OPERATED BY **combined arms army**, EW units of a Western MD combined arms army in Voronezh Oblast (army not named) [R 2019-04 M]
combined arms army, EW troops of a Guards combined arms army, Western MD, Luga range, Leningrad Oblast (Palantin-K, Oct 2019); Feb 2022 exercise in Leningrad Oblast names only the Western MD [R 2022-02 M]
EW subunits of the Eastern Military District, EW subunits of the Eastern MD in Zabaykalsky Krai (planned deliveries by end 2020) [R 2020-07 L]

INDICATES *First delivered to EW units of a combined arms army; no source read names the holding subunit or echelon. A Palantin suggests an EW node that may network Moskva, Zhitel or Dzyudoist; in April 2026 one was reported covering air defence assets in Zaporizhzhia.*

RECOGNISE **Mast** Antenna masts 15 m high, raised within about half an hour from the march. From photograph: masts beside the box body, guyed while raised.
Antenna From photograph: multi-element antenna head at the mast top.
Chassis Four-axle KamAZ truck; from photograph, box-body shelter with a side ladder. Generators are started on deployment.
Complex Reported as 22 mobile stations spread along the front; each starts generators, raises masts and joins a data network.

CONFUSED WITH **Murmansk-BN** p. 184 Deployed, from afar: Palantin masts reach 15 m; Murmansk-BN masts reach 32 m and hold a large HF antenna net between trucks.
R-330Zh Zhitel p. 192 Full view: Zhitel is a 6x6 truck towing a two-axle trailer with four antenna masts; Palantin is a four-axle KamAZ, from photograph with masts beside its box body.

SEEN WITH Palantin mobile station (four-axle KamAZ) (22 per complex (reported, Palantin-K)); Moskva EW complex; R-330Zh Zhitel; MKTK-1A Dzyudoist


Mil.ru, CC BY 4.0


Mil.ru, CC BY 4.0

MOBILITY Truck-mounted on four-axle KamAZ; about 30 min from march to operation including raising 15 m masts.

Time into action	**about 30 min** from the march, including raising 15 m antennas, claim
Chassis	**four-axle KamAZ truck**
Weight	**INA**
Time out of action	**INA**

Jamming range, UAV control links	**up to 20 km** maximum, air target: UAV radio control links, claim *also 20 km MIL97*
Jamming frontage, radio communications	**about 1,000 km wide strip** claimed, ground target: radio communications and radio reconnaissance; battalion tactical group exercise near Voronezh, Sep 2019, claim
Jamming frequency range	**3–30 MHz (HF) and 30–300 MHz (VHF)** ground target: radio communications
Jamming targets	**HF/VHF radio incl. SDR-based, cellular and trunked radio, navigation, UAV control links** claim
Reconnaissance function	**radio-electronic reconnaissance; detects and locates transmitters**
Network function	**links Moskva, Zhitel and Dzyudoist EW systems into one network** claim
Composition	**22 mobile stations** Palantin-K, claim
Antenna mast height	**15 m** claim
Crew	**INA**

SOURCES AIF2 AR33 ATP FOI IISS25 JANES19 JT21 MEZHA2 MIL96 MIL97 ORYX1 RG19 RG22B2 RG202 RGPAL RIAVRN RS19 TASS16 U2416 UKRINF9 WMC26 WP-RU168 not in WEG
Updated 2026-10-06

R-330B Mandat-B and R-934BMV P-330Б; P-934БМВ «Мандат-Б» WH-AT

Ground VHF/UHF radio and air-communication jammers, tactical level In service 1996

OPERATED BY **EW company**, EW company of a motor rifle or tank brigade: R-330B squad in the VHF-band jamming platoon; R-934B squad (VHF aircraft) in the radio-communications jamming platoon D 2016 H

INDICATES *Seen with a brigade or division, it fits the organic EW company. RWW and FOI place these jammers in the EW company of motor rifle and tank brigades. It shows radio and air-link jamming is planned, not the size of the force.*

RECOGNISE **Mast** R-330T and R-330B raise a telescoping mast system when deployed; older R-330U stows its antenna in a rectangular housing.

Chassis R-934B and R-330B: MT-LBu tracked, or Ural-4320-31 6x6 with K1-4320 body (R-934B); R-330T on KamAZ-43101 or Ural-43203-31 (K2-4320).

Complex Wheeled versions tow a generator trailer (16 kW for R-934B, ED-30 for R-330); R-934UM2 has a truck with two generators and a shelter.

CONFUSED WITH **R-378BMV (Borisoglebsk-2 station)** p. 188 Hard to tell apart from R-934BMV: both ride MT-LBu, and a Ukrainian report judged a struck station only as 'either R-934BMV or R-378BMV' by appearance.



Mil.ru, CC BY 4.0



Денис Абрамов (Denis Abramov), CC BY 4.0

MOBILITY Ural-4320 6x6 for R-934B/R-330T/R-934UM2 (truck-class off-road); tracked MT-LBu R-934B/R-330B. Figures below are chassis-class, not station-verified.

Weight, combat	**11,000 kg** R-330B on MT-LBu; WEG figure, unverified
Road speed	**85 km/h** R-934B on Ural-43203; WEG chassis figure
Road speed	**60 km/h** R-330B on MT-LBu; WEG figure, unverified

Frequency range, R-934B	**100-400 MHz** Export sheet; aircraft links 100-150 and 220-400 MHz, claim
Transmitter power, R-934B	**500 W** Export sheet, claim
Jammed links, R-934B	**4 at fixed frequencies; 1 with frequency hopping** Export sheet, claim
RMS direction-finding error, R-934B	**2 deg** Export sheet figure copied by WEG; RWW gives not more than 3 deg, claim
Crew, R-934B	**3** Export sheet, claim

SOURCES 3G APA5 AR33 ATP CRFS DEFBLOG3 FOI ICDS MIL22 MIL23 MIL24 MIL52 MIL53 RWW TOPWAR6 TOPWAR7 UKRINF2 VRF3 WEG49 WP-RU54 Updated 2026-10-06

R-330M1P Diabazol P-330М1П «Диабазол» WH-AT

Wheeled VHF/UHF, cellular and satellite-navigation jamming complex with direction finding

OPERATED BY **EW company**, Manoeuvre-brigade EW company: R-330Zh component on doctrinal charts (ATP fig. 4-22; RWW p.290); full complex not placed D 2024 L

EW brigade, REB-S battalion holds Zhitel and Altaets components (FOI); FOI does not place the full complex, probably seldom procured R 2018 L

Unidentified unit, One R-330M1P control post, Kharkiv region, claimed destroyed by Ukrainian State Border Guard Service, May 2025 (state claim); Russian unit not named, 1 R 2025-05 L

NUMBERS **Losses** 1 R-330M1P Diabazol listed as destroyed (Oryx visually confirmed list) (2026-10); **Losses** 25 R-330Zh Zhitel (20 destroyed, 5 damaged) and 1 R-934UM destroyed, listed by Oryx as separate stations (visually confirmed) (2026-09)

INDICATES *Presence suggests an EW unit working against VHF/UHF radio, cellular, satellite and GPS signals. Zhitel sits in EW-brigade REB-S battalions (FOI) and in manoeuvre-brigade EW companies (ATP, RWW), so a Zhitel alone does not point to an EW brigade.*

RECOGNISE **Mast** Zhitel station: antenna masts raised by hand with mechanical winches.

Antenna Zhitel station: jamming emitters and antennas on a trailer, separate from the truck that holds the operator station.

Chassis Ural-43203 trucks (FOI; R-934UM per PARK). Zhitel adds an emitter and antenna trailer and is also reported on KamAZ-43114.

Complex Wheeled complex: control post R-330KMA plus jamming stations R-934UM, R-330Zh Zhitel, R-378UM and Altaets-AM.

CONFUSED WITH **R-330Zh Zhitel seen alone** p. 192 Not decisive alone: a Zhitel truck and trailer is one Diabazol station, but FOI says the full complex may seldom be procured; Oryx counts Zhitel apart.

Borisoglebsk-2 (RB-301B) p. 188 Full view: same role, but on nine tracked MT-LB carriers; Diabazol stations are wheeled Ural-43203 trucks.

R-330T Mandat-B (wheeled) p. 191 Deployed: R-330T raises a telescoping mast system and tows a two-axle generator trailer; the Zhitel trailer carries the antennas.



Mil.ru (D. Abramov), CC BY 4.0

MOBILITY Truck-mounted; antennas raised by hand and set-up is slow (Zhitel 40 min, R-934UM up to 30 min). Operating time reported as 24 h continuous (Protek).

Deployment time, R-934UM station	**30 min or less** R-934UM station, Ural-43203, deploy or stow, claim
Deployment time, R-330Zh Zhitel station	**40 min** R-330Zh station; figure attributed to Protek, claim
Weight	**INA**
Road speed	**INA**

Jamming range, complex	**30 x 30 km** claimed, Area figure for emission-source jamming; target type not stated by source, claim
Jamming range, ground cellular and satellite user equipment	**20-25 km** claimed, R-330Zh Zhitel station; ground-based consumer equipment, claim
Jamming range, user equipment installed on aircraft	**50 km or more** claimed, R-330Zh Zhitel station; airborne equipment, claim
Employment distance from line of contact	**15-30 km** practical, R-330Zh and R-934UM components, Donbas 2014-15, observed
Telecode exchange range	**20 km** claimed, Telecode information exchange; link partner not stated (source also mentions link to higher command post), claim
Reconnaissance frequency range, Diabazol	**0.1-2.0 GHz** Signal analysis and direction finding; complex, claim

SOURCES 3G APA5 ATP DEFUA5 DFNC FOCUS4 FOI ICDS ORYX1 PARK RWW UKRIN WP-EN54 WP-RU54 not in WEG Updated 2026-10-10

R-330Zh Zhitel Р-330Ж «Житель»

WH-AT

Truck-and-trailer jammer and direction finder against satcom, GPS and GSM user equipment In service 2008

OPERATED BY **EW company**, EW company, jamming platoon (radio, GPS, cellular, radio-controlled fuses), jamming squad, 1 (single station on RWW chart; no count stated) D 2016 M

EW brigade, REB-S (anti-aircraft communications and navigation) battalion D 2018 M

EW company, EW company deployed to Ukraine, 2 in the deployed company R 2014 L

NUMBERS **Losses** 25 lost in Ukraine Feb 2022 to Sep 2026 (visually confirmed) (2026-09)

INDICATES *Doctrinally one Zhitel sits in the EW company of a manoeuvre brigade, so a sighting usually points to such a formation nearby. It is also held by the REB-S battalions of district EW brigades, so it can indicate an attached higher-level EW element.*

RECOGNISE **Mast** Deployed: four telescopic masts on the trailer, raised by hand winches; from photograph, guyed. Stowed, from photograph: masts upright at the trailer corners.

Antenna Four active phased-array transmit antennas, one atop each trailer mast. From photograph: ring of vertical direction-finding elements on a mast at the truck body rear.

Complex In action the trailer is uncoupled and parked away from the truck, cable-linked. May work in pairs (master and slave) or under an automated EW command post.

Chassis, trailer Two-axle trailer carrying a container with the four antennas on telescopic masts and a diesel generator.

Chassis, truck Ural-43203 or KamAZ-43114 6x6 holding all working equipment and the operators' room; from photograph, box body with an air-conditioner box above the cab.

CONFUSED WITH **Borisoglebsk-2 stations (R-934BMV, R-378BMV, R-330BMV)** p. 188 Full view: tracked MT-LB carriers. Deployed, from afar: Zhitel's four masts stand on a trailer parked away from its 6x6 truck; from photograph, guyed.

R-934UM, R-378UM and other R-330M1P Diabazol stations p. 191 Full view: also on Ural-43203 trucks. Look for Zhitel's two-axle trailer carrying an antenna container with four telescopic masts.



Mil.ru (D. Abramov), CC BY 4.0



Vitaly V. Kuzmin, CC BY-SA 3.0

MOBILITY 6x6 truck, but the towed antenna trailer is fragile; WEG expects it near roads, not cross-country. Masts raised by hand, up to 40 min to deploy.

L × W × H	**7.36 × 2.55 × 2.71 m** Truck; trailer not included (unclear in source)
Road speed	**85 km/h** maximum, Truck, maximum road
Time into action	**40 min or less** Full deployment including masts, claim
Time out of action	**40 min or less** Full march order, claim

Jamming range	**25 km** maximum effective, Ground user equipment (WEG gives no target type; matches manufacturer's ground-user figure)
Jamming range, airborne users	**50 km or more** claimed minimum, User equipment installed on aircraft, claim
Area covered by a pair	**About 40 x 20 km** claimed, Two paired stations, jamming ground communications and navigation
Frequency band, intercept and DF	**100–2,000 MHz** claim
Jamming bands	**1227.6 MHz; 1575.42 MHz; 1500–1900 MHz** GPS L2 and L1, Inmarsat/Iridium and GSM-1800 bands
Targets	**Inmarsat and Iridium user terminals; GPS receivers; GSM base stations (WEG: GSM 1900; RWW: GSM-900/1800)** claim
Transmitter output	**6,000 W or more** Total energy potential of the four phased arrays, claim
Simultaneous jamming signals	**12 or fewer** Quasi-simultaneous, claim
DF accuracy	**2 degrees or better** RMS bearing error, claim

SEEN WITH Antenna trailer with four phased-array antennas and diesel generator (1 per station)

SOURCES 3G APA5 AR33 ATP CRFS FOI ICDS MIL147 ORYX1 PRO RUSIAD RWW TOPWAR7 TOPWAR17 VRF18 WEG122 WMC51 WMC52 WMC53 Updated 2026-10-06

RP-377L Lorandit

communications jammer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Zaslon-REB

cellular jammer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

EW command and signals reconnaissance

1L222 Avtobaza-M «Автобаза»

ELINT system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MKTK-1 Plavsk «Плавск»

radio monitoring station

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

R-381T Taran P-381T «Таран»

TR

HF/VHF/UHF radio intercept and direction-finding complex on MT-LBu chassis Designed 1980

OPERATED BY **reconnaissance battalion**, radio and radio-technical reconnaissance company (Soviet-era TOE), 1 complex of 7 vehicles: 1 R-381T3, 4 R-381T2, 2 R-381T1 D 1985 M

Divisions (divisional SIGINT set) D 1985 L

Unidentified unit, One R-381T2M captured in Kharkiv Oblast during the 2022 counter-offensive; unit not named, 1 R 2022 L

INDICATES *A Taran group indicates a radio intercept and direction-finding element, in Soviet organisation a reconnaissance battalion company or divisional asset. It listens; no source read says it jams.*

RECOGNISE **Complex** Seven tracked vehicles: 4 R-381T2, 2 R-381T1, 1 R-381T3; a 5-vehicle set is 2 T2, 2 T1, 1 T3.

Chassis MT-LBu tracked carrier: flat-sided welded hull, flat rear plate with a door.

Chassis Close only: seven road wheels a side, no return rollers.

CONFUSED WITH **R-381 Rama** Full view: the predecessor set that Taran replaced is on the wheeled GAZ-66 truck; Taran is on the tracked MT-LBu.

1RL243 Rubicon Also MT-LBu-based radio-technical reconnaissance, but microwave (SHF) band; Taran covers 1.5-1000 MHz. No visible cue separates them.

MOBILITY Tracked and fully amphibious on the base MT-LBu chassis. Fitted-vehicle weight, speed and fording limits: INA.

Weight	**15,550 kg** Base MT-LBu chassis, not the Taran-fitted vehicle
L × W × H	**7.21 × 2.85 × 1.905 m** Base MT-LBu
Road speed	**61.5 km/h** maximum, Base MT-LBu
Road range	**500 km** maximum, Base MT-LBu
Time into action	**10 min** design requirement, Target in 1970-73 research (NIR) concept for a planned 10-station complex, stowed to deployed; fielded figure INA

Detection range, R-381T radio emitters	**up to 40 km** up to, Ground radio emitters; complex of 7 vehicles
Detection range, R-381T aviation radio	**up to 100 km** up to, Aircraft radio communications
Practical employment frontage	**18-20 km** Soviet-era radio and radio-technical company front; DF baseline could be extended, by not more than 40 km, mainly within R-415 link range
Frequency band, R-381T1	**1.5-30 MHz** HF radio communications of the enemy; same station also covers 100-400 MHz aircraft radio and 300-1000 MHz radio relay
Frequency band, R-381T2	**30-100 MHz** VHF radio communications of the enemy
Crew	**INA**

SEEN WITH R-381T2 VHF reconnaissance station (4 per complex (2 in 5-vehicle set)); R-381T1 HF reconnaissance station (2 per complex (2 in 5-vehicle set))

SOURCES ATP ICDS OKRU ORYX1 TANKAFV TWZ34 WP-EN19 WP-RU237 not in WEG

Updated 2026-10-10

RB-105B Less

SIGINT system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

RB-108S

EW command post

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

RB-109A Bylina РБ-109А «Былина»

WH-AT

Automated command post linking an EW brigade's intercept and jamming systems In service 2017

OPERATED BY **EW brigade**, brigade command post (main and reserve CP), one five-truck complex per brigade D 2024 M
Unidentified unit, OSCE mini-UAV sighting near Chornukhyne, Luhansk region, 28 Jul 2018 R 2018-07 L
Unidentified unit, vehicle reported hit by HIMARS, video published 13 Jan 2024, place not stated R 2024-01 L
NUMBERS **Losses** 1 RB-109A destroyed (Oryx, visually confirmed) (2026-10)
INDICATES *A Bylina complex marks the command post of an EW brigade: the system that collects the emitter picture and assigns targets to the brigade's jamming systems.*
RECOGNISE **Complex** Five trucks plus life-support equipment, not counting troop support vehicles.
Chassis High-mobility (all-terrain) KamAZ trucks.
Complex Can field a main and a reserve command post.
CONFUSED WITH **Bylina-KV (Bylina-KRET)** Name clash: Bylina-KV is the HF control system for Murmansk-BN jamming complexes, not the RB-109A EW brigade command post.

(Picture not available)

MOBILITY Five high-mobility trucks; weights, dimensions and speeds not published.

Vehicles in complex	**5 trucks** plus life-support equipment; excludes troop support vehicles
Weight	**INA**
Time into action	**INA**

Target identification time	**within seconds** claimed, selects and identifies targets automatically; Russian EW-troops journal via ICDS, claim
Detection range, radio emitters	**up to 800 km** up to, emitters at the front and in depth; depends on radio horizon and height of SIGINT (RTR) modules; Army Recognition, origin not stated
Own jamming	**own self-protection system** attacks through subordinate EW systems
Crew	**INA**

SEEN WITH High-mobility truck (KamAZ per 3G) (5); Life-support equipment; Leer-3 (RB-341V); Leer-2; R-330Zh Zhitel; Palantin; Tirada-2; Lorandit; Diabazol; RB-108S

SOURCES 3G AR40 ATP DFRLAB2 FOI ICDS IZV23 JTOWN LBUA LIGA2 ORYX1 RG232 TASS3 not in WEG

Updated 2026-10-10

Shipovnik-Aero «Шиповник-АЭРО»

WH-AT

Truck-mounted UAV control-link jammer and radio monitor Introduced 2016

OPERATED BY **Unidentified unit**, One system captured by Ukraine; technical inspection October 2022; place and date of capture not stated, 1 R 2022-10 M
Unidentified unit, Donbas (Ilovaysk 2014, Debaltseve 2015), 60-240 km from contact line (ICDS); date doubtful R 2015 L
INDICATES *A sighting shows a specialised counter-UAV jamming asset; RUSI says these were widespread in mid-2022 but not in every formation. No source names the holding unit type. ICDS put it 60-240 km from the line in Donbas 2014-15 (date doubtful).*
RECOGNISE **Antenna** Deployed: a direction-finding receive antenna system and transmit antenna systems with a set azimuth sector, on external mounts.
Chassis Truck-mounted: the equipment fits in the body of a KamAZ-4320 (developer, 2016).
Complex Base hardware complex, control, comms, power supply and life-support equipment, plus an externally deployed set: remote automated workplace and data link to the base.
SEEN WITH KamAZ-4320 truck (1 (equipment fits in one truck body)); Remote working place with remote antennas



Mike1979 Russia, CC BY-SA 3.0

MOBILITY Road truck; takes 20-40 min (3G) or up to 40 min (RUSI) to deploy.

Time into action	**20-40 min** Time to deploy the station
Chassis	**KamAZ-4320 (IZ states two-axle)** Izvestia 2016, pre-service article
Crew	**3**

Detection range, UAV control signals	**about 10 km** radius, Detect and identify control signals of enemy UAVs; developer statement, claim
Radio monitoring frequency range	**25–2500 MHz** Radio monitoring equipment
Jamming frequency bands, UAV control links	**400–500, 800–925, 2400–2485 MHz** Transmitting antenna system; 25–100 MHz also listed for suppression equipment

SOURCES 3G DFNC2 FOI ICDS IFAX2 IUS IZ8 RUSI6 RUSI10 WP-RU218 not in WEG

Updated 2026-10-10

Svet-KU РБ-636 «Свет-КУ» WH-AT

Mobile radio monitoring and direction-finding (technical control, KTK) complex In service 2012

OPERATED BY **EW brigade** D 2024 M
Navy fleet EW units, EW manoeuvre group, technical control station (Northern Fleet) O 2025-04 M seen with Northern Fleet EW specialists (2025-04), Pacific Fleet (MoD announcement, early 2017)
Unidentified unit, Luhansk area, Donbas; OSCE aerial sighting 2020-04-28; also recorded in Ukraine 2016, 2017, 2019 and 2021 R 2021 M
Unidentified unit, Luhansk oblast 2023-08; Kherson oblast 2023-11; near northern border 2024-06 R 2024-06 M
NUMBERS **Losses** 5 visually confirmed: 2 RB-636 (1 damaged, 1 captured), 3 RB-636AM2 (destroyed) (Oryx) (2026-10); **Losses** 1 captured by Ukraine Mar 2022, made public Nov 2022 (Ukrainian press; Focus says RB-636AM2, Espreso RB-636) (2022-11)
INDICATES *Doctrinally an EW brigade asset for monitoring own forces' emissions; also held by fleet EW units. A sighting suggests an EW brigade or fleet EW element with direction-finding is working nearby.*
RECOGNISE **Antenna** Extendable antenna array that rotates in the horizontal plane to receive from any direction.
Mast Array extends for work; retracted, the Ford Transit version looks like a civilian van and can work in road traffic.
Chassis Early version on two-axle KamAZ-4350 truck; 2015 version on Ford Transit van. From photograph: a 2015 exhibit was a KamAZ with box body.
Complex Crew of 3, deploys in 10 min (developer). Works with other fixed and mobile monitoring stations; Svet-VSG is the fixed version.
CONFUSED WITH **Svet-VSG** Full view: Svet-VSG is a fixed installation for immobile sites, not on a vehicle.
Civilian Ford Transit van Stowed: the van version does not differ from its civilian counterpart, a Polish analysis says; only the raised, rotating array tells them apart.


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Truck version on KamAZ off-road chassis; van version on a commercial Ford Transit. Figures INA.
Time into action **10 min** crew of 3, claim

Detection range, emitter search	**30 km** claimed, any emitting source, stated as radius by Northern Fleet operator, 2025, claim
Frequency range	**30–18,000 MHz** reception, search and analysis, claim *also 25 MHz–18 GHz D246 DEXP2*
Simultaneous analysis and DF bandwidth	**at least 20 MHz** claim
Scan speed, band occupancy analysis	**at least 500 MHz/s** frequency-band occupancy analysis, claim
Scan speed, spatial-energy detection	**100 MHz/s** spatial-energy detection, claim
Direction-finding accuracy	**5 deg (30–100 MHz); 2 deg (1–3 GHz)** depends on emitter frequency
Power consumption	**max 3 kW** claim
Crew	**3** deployment crew, claim

SEEN WITH Svet-VSG; Less
VARIANTS **RB-636AM2 Svet-KU** Van version on Ford Transit, shown 2015; looks civilian with array stowed. Earlier RB-636AM2 on two-axle KamAZ-4350. Van version reported able to work covertly, including in road traffic; other differences INA.

SOURCES 3G AINF232 AINF242 ARMADA10 ATP D246 DEXP2 ESPR3 FOCUS16 FOI ICDS ORYX1 VRF16 WMC45 WWW119 not in WEG Updated 2026-10-10

Torn «Торн» WH-AT

Mobile HF/VHF/UHF radio reconnaissance and direction-finding system In service 2012

OPERATED BY **Reconnaissance units of motor rifle and tank brigades and divisions**, reconnaissance subunits of brigades and divisions R 2018 M
Unidentified unit, Donetsk region (Donetsk 2015, Debaltseve 2018, Novohryhorivka Feb and Jun 2019, OSCE); unit not named R 2019 M
Unidentified unit, Command post and support vehicle captured by Ukraine, March 2022; place not stated, 2 vehicles R 2022-03 M
INDICATES *Reported to equip reconnaissance units of brigades and divisions, so it points to signals collection and direction finding for that formation, not jamming. Sources disagree on the holding subunit.*
RECOGNISE **Mast** Remote antenna posts on telescopic masts, set up apart from the trucks and cabled to them (Russian state media).
Complex Two KamAZ-5350 trucks: one with antennas, processing equipment and operator workstations, one with rigging and cabling for the antennas.
Chassis KamAZ-5350 truck, equipment in a van body (kung).
Antenna Close only: sixteen-element Tu-10M 'Roza' antenna seen with captured Torn-MDM, plus parts of other antennas, probably VU-11 communications antennas.
CONFUSED WITH **Tornado-G and Tornado-S rocket launchers** p. 123 Name clash: Tornado-G and -S are multiple rocket launchers, listed apart from Torn by Oryx; Torn is a pair of radio reconnaissance trucks.
RB-341V Leer-3 p. 190 Leer-3 control post is also a KamAZ-5350 with a box body (from photograph); no visible cue separates the two beyond fitted antennas and equipment.

MOBILITY INA. Code inferred from the KamAZ-5350 truck chassis; no source gives cross-country figures.
Time into action **15 min or less** Torn-MDM, preparation for work at Zapad-2025 exercise, claim
Weight **INA**
Road speed **INA**
Length **INA**

Detection range, VHF emitters	**30 km** maximum ('up to'), VHF band emitters; emitter type and height not stated. Ukrainian MoD media relaying an online presentation, claim
Detection range, HF emitters	**70 km** maximum ('up to'), HF band emitters; emitter type and height not stated. Ukrainian MoD media relaying an online presentation, claim
Frequency range	**1.5 MHz to 3 GHz** Torn and Torn-MDM; open-source figure from an online presentation not seen
Vehicles per complex	**2 KamAZ-5350**
Crew	**INA**

SEEN WITH KamAZ-5350 rigging and cable truck (1 per complex); Tu-10M Roza antenna

SOURCES 3G ARMADA11 ARMYINF15 DEFUA16 DFR FOI ICDS MIL127 ORYX1 RG14 RG26 UKRINF14 WMC16 WP-RU135 WP-UK4 WWW121 not in WEG Updated 2026-10-10

GNSS, drone and IED jamming

Alurgit

GNSS jammer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Argus-Antidron

UAV jammer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers

Гроза.04.К / СЕРП-ВС6Д / Силок-01 «Чистюля» / «Стриж-3»

MP

Small man-portable and tripod jammers against FPV and reconnaissance drones In service 2018

OPERATED BY **Assault units (Roselectronics statement)**, Chistyulya R 2024-08 L

Units in the war zone (Rostec statement), Groza-04K R 2024-03 L

Russian forces in Ukraine (Forbes via RG), Serp-VS6D and Silok-01 named together R 2025-04 L

INDICATES *Chistyulya is reported with assault units and Strizh-3 on the front line; Silok-01 is meant to protect control posts. No source links any of them to a unit type.*

RECOGNISE **Mast** Strizh-3: one unit on a portable tripod on firm ground; the maker also lists mast or roof mounting.

Chassis Chistyulya: carry case with a separate remote control panel.

Antenna Chistyulya: antennas of three types. Strizh-3: six sectors, all radio parts combined in one unit.

Complex Strizh-3: detection unit, protection unit and control panel. Silok-01 was found hidden inside a ruined house.

CONFUSED WITH **Chistyulya vs Strizh-3** Chistyulya: a portable case with three antenna types and a remote panel. Strizh-3: one six-sector unit on a tripod, mast or roof.

MOBILITY Chistyulya is a carry case; Strizh-3 is set up on firm ground on a tripod and is mains powered. Groza-04K, Silok, Serp: INA.

Weight, Chistyulya	**up to 8 kg** Chistyulya case; third version Chistyulya-P, claim
Weight, Strizh-3	**46 kg with transceivers** Unit with transceivers (30 kg unit plus 16 kg transceivers); tripod 10 kg extra, claim
Jamming range, UAV control and navigation channels (Chistyulya)	**up to 1,000 m** claimed, Radius over the upper hemisphere; Chistyulya; also blocks drone photo and video links, claim
Jamming range, UAV control and navigation channels (Strizh-3)	**up to 2,000 m** claimed, Blocking range; detection to 2,500 m. Retailer sheet copying maker (NTT) data, claim
Jamming range, UAV control, telemetry and communication links (Silok-01)	**3–4 km** claimed, Maker (Sozvezdie) presentation figure per Defence-UA; Gagadget gives 'claimed range 4 km', claim
Jamming range, UAV communication and navigation links (Serp-VS6D)	**up to 5 km** claimed, Forbes as summarised by Rossiyskaya Gazeta (state media); original source not stated, claim
Channels, Serp-VS6D	**6** claim

SEEN WITH Strizh-3 detection and blocking module, control and alarm panel (1 module and 1 panel per set); Chistyulya remote-control unit

VARIANTS **Chistyulya-P** INA.

SOURCES ANTIKOR CNEWS DEFUA11 DETSYS2 FOCUS10 GAGA LIGA6 MIL102 MIL103 ORYX1 RG8 TOPWAR12 not in WEG

Updated 2026-10-10

Harpya

UAV jammer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Infauna РБ-531Б «Инфауна»

WH-AT-A

Vehicle-mounted radio jammer and IED jammer, with smoke self-screening In service 2012

OPERATED BY **Dedicated EW units and manoeuvre reconnaissance units** D 2024 L

EW battalion, EW battalions of the Airborne Forces (VDV) (WEG 2015); RIA 2012 and FOI say VDV EW units R 2015 M

INDICATES *Presence suggests a VDV or other EW subunit escorting a column or protecting a battalion-level position against radio-controlled IEDs and guided munitions. WEG 2015 places it in VDV EW battalions; no source gives counts.*

RECOGNISE **Antenna** Roof dome in place of the BTR-80 turret, housing the main antenna; a telescopic mast raises it when deployed.

Chassis K1Sh1 8x8 hull, a modified BTR-80 with the turret removed; four hatches at the front, a door at each side centre.

Fittings Starboard side: auxiliary antenna, optoelectronic sensor and smoke grenade launchers, 6 x 81 mm in two groups of three. No weapon fitted.

CONFUSED WITH **Kushetka-B / R-149BMR command vehicle (K1Sh1)** p. 228 Hard without the antennae in view, OSINT analysts say. Kushetka-B has a small turret with a 7.62 mm MG and a long rectangular box where Infauna has a camera.



The Ministry of Defence of the Russian Federation, CC BY 4.0



Игорь Руденко, CC BY 4.0

MOBILITY Amphibious 8x8 on BTR-80 derivative; operates on the move and escorts columns.

Weight	**13,614 kg** WEG: combat weight, listed under BTR-80 chassis
L × W × H	**7.65 × 2.90 × 2.46 m**
Road speed	**80 km/h** maximum

Jamming range, target not stated	**3 km** disruption range, WEG 'Disruption Range'; target and conditions not given
Smoke screen distance	**130 m** up to, aerosol against laser and TV-guided weapons
Jamming band, communications	**20–2020 MHz** frequency range as given by WEG, WEG 2015 and RWW; sub-bands not given
Output power	**60 W**
Crew	**3**

SEEN WITH K1Sh1 chassis (BTR-80 derivative) (1 per vehicle)

SOURCES 3G AR56 ATP DFRLAB3 FOI GS19 ICDS RDP4 RG4 RWW VRF8 WEG52 WEG2015 WP-RU100 Updated 2026-10-06

Lesochek РП-377УВМ1Л «Лесочек»

MP

Small jammer vs radio-controlled IEDs and drone links; man-portable or vehicle-fitted In service 2013

INDICATES *Fitted to vehicles or carried by troops as protection against radio-controlled IEDs and drones. Russian sources tie it to Airborne Troops and ground formations; its presence alone does not identify the unit type.*

RECOGNISE **Complex** Not a separate vehicle: a set of small jammer transmitters carried in a backpack or case or installed on a vehicle.

Chassis Stated fits: BTR-80/82, T-72B3, T-90M, Tigr, Rys, Typhoon-K, trucks; seen on BMD-4M (MoD video, Dec 2023), BMP-97 in Syria (photo caption).

Antenna Close only: case with antennas, beams and fasteners; Ukrainian observers identify the RP-377 family by their shape.

CONFUSED WITH **RP-377VM family (VM1, VM2, VM3, UVM2, UVM3)** Not decisive: Militarnyi identifies an RP-377 by its case, antennas, beams and fasteners, but cannot say whether a vehicle set is Lesochek or an RP-377VM.

RP-377LA Lorandit Vehicle not a reliable cue: Lorandit can also be carried in cases. A Krynky claim named Lorandit; Militarnyi judged it Lesochek or an RP-377VM.



Vitaly V. Kuzmin, CC BY-SA 4.0



Nickel nitride, CC0

MOBILITY Carried in backpack or case, or fitted to cars and armour. The truck command-vehicle version can also go on railway platforms or fixed sites with its supplied power unit.

Weight	**INA**
Dimensions	**INA**
Crew	**INA**

Frequency range	**20–3000 MHz** claimed, Radio-control channels of IED fuzes; developer claim relayed by Ukrainian MoD news agency ArmyInform, claim
Jamming range, small drones	**INA** claimed, Russian MoD says any quadcopter or FPV drone in range loses control; no distance given, claim
Jamming range, radio-controlled IED receivers	**INA**

SEEN WITH BTR-80/82, BMD-4M, BMP-97 Vystrel, T-72B3, T-90M, Tigr, Rys, Typhoon-K

VARIANTS **RP-377UVM1L Lesochek** Transmitter set fitted to cars and armoured vehicles.

SOURCES 3G AR56 ARMYINF5 BPSZ FOI MIL73 MONOCLE RG7 RT5 RWW TAKT TASS12 not in WEG Updated 2026-10-10

Pole-21 Р-340РП «Поле-21»

FX

Networked GNSS jamming posts protecting fixed sites from GNSS-guided weapons and UAVs In service 2016

OPERATED BY **combined arms army**, Army EW specialists; first used in an exercise with battalion tactical groups, with R-934BMV and Silok-01 (MoD via AiF) O 2021-04 M
Fixed jamming posts at protected sites, Fixed jamming posts on cell towers, buildings or ground mounts at protected sites R 2016 L
military base, First set delivered by air to Hisor airbase for the 201st Military Base, Tajikistan (CMD press office via Sputnik); deployed early Dec 2019, covered base zones and air defence positions in a Jan 2020 exercise (Topwar), 1 set R 2019-11 L
INDICATES *A post on a cell tower or fixed mount suggests a protected fixed site such as a strategic facility or command post. A single R-340RP in the field indicates a GNSS-jamming layer near that position.*
RECOGNISE **Mast** Posts on existing or purpose-built towers and masts, cell towers, roofs of tall buildings, or ground mounts.
Antenna One equipment container and up to three antenna modules per post; a Ukrainian specialist says the antennas look like civilian cell antennas.
Chassis Some posts are set on a vehicle or shown as a wheeled mobile unit.
Complex Modular: up to 100 posts, 1 to 3 jamming modules each, networked and controlled by GSM, cable or radio.
CONFUSED WITH **R-330Zh Zhitel** p. 192 Full view: Zhitel is a truck-borne station of the wheeled Diabazol complex; Pole-21 posts sit on towers, roofs or ground mounts. Ukrainian press has mixed up the names.

MOBILITY Posts are fixed on masts or mounts. A wheeled mobile unit is also reported. Weights and dimensions: INA.

Power supply	**220 V, 50 Hz; 600 W consumption** WEG (Pole-21E)
Operating temperature	**-40 to 50 C** Pole-21E per WEG
Weight	**INA**
Jamming range, GNSS receivers (ground or air not stated)	**up to 25 km** effective, WEG (Pole-21E); Russian press gives 25 km per jamming module for the domestic Pole-21
Jamming frequency band	**1.176 to 1.602 GHz (GPS, GLONASS, Galileo, BeiDou)**
Coverage area of one complex	**150 km²** WEG; number of posts not stated
Output power per module	**300 to 1,000 W variable** max radiation pattern, single frequency; Pole-21E
Jamming coverage per post	**azimuth at least 125 deg; elevation within 25 deg**
Crew	**INA**

SEEN WITH Jamming posts (up to 100 per complex); Jamming modules (1 to 3 per post)
VARIANTS **Pole-21E** INA. **Pole-21M** INA.

SOURCES 3G AIF11 ATP DPSU FERG FERG2 FOCUS9 FOI IZRU IZV8 KPOST2 TOPWAR10 UKRINF1 WEG75 WP-UK2

Updated 2026-10-06

REBovets Valley

UAV jammer trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

6 EW

Repellent-1 Репеллент-1

WH-AT

Wheeled counter-UAV EW complex: detects and jams small drone control and GNSS links In service 2016

INDICATES *Sightings so far (Donbas 2018, Kherson 2022) name no holding unit type. Its presence shows a counter-UAV EW asset is deployed in that area, not which formation owns it.*
RECOGNISE **Mast** Collapsible telescopic mast beside the control cabin at the rear of the truck.
Antenna Sensor and jamming head at the mast top: ELINT and jamming equipment and a panoramic camera.
Chassis Three-axle MAZ-6317 truck in most reports; also offered on KamAZ at the customer's choice, including an 8x8.
Complex Single vehicle with rear control cabin (two operator monitors, small-arms and NBC protection). Mobile and stationary versions are offered. Crew 3.
CONFUSED WITH **Shipovnik-Aero** p. 196 Deployed: Shipovnik-Aero sets its direction-finding and transmit antennas out as remote equipment linked to the truck; Repellent's sensor head tops a mast on the truck.
VARIANTS **Repellent-1 (MAZ-6317 chassis)** Three-axle MAZ-6317 truck; described in Russian press and Wikipedia. **Repellent-1 (Kamaz chassis)** Kamaz truck (WEG: 6317 8x8; Armada: 6350), chosen at customer request.

MOBILITY Not amphibious (WEG). Fords 1.0 m; 60% gradient, 0.6 m step (WEG). Chassis type disputed, so figures may differ by chassis.

Weight, combat	**23,650 kg** WEG figure, Kamaz-6317 chassis
L × W × H	**9.4 × 2.7 × 3.35 m**
Road speed	**85 km/h** maximum
Road range	**1,000 km** maximum
Detection range, UAV control-link signals	**up to 30 km** up to, ground-station command signals; UAV telemetry up to 10 km; target size and altitude not given, claim
Jamming range, small UAV control and telemetry links	**up to 30 km** up to, air target: small UAVs; telemetry and satellite-navigation links; control link up to 10 km, claim
Simultaneous UAV targets	**up to 12; detect and jam in up to 25 s** claimed, brochure claim, claim
Direction-finding error	**3 degrees** maximum, maximum; azimuth 0-360 degrees, claim
Frequency range	**200 MHz to 6 GHz** detection and jamming, claim
Jamming power	**300 W to 1 kW** by subsystem: data link 300-500 W; control and telemetry 500-1,000 W; satellite navigation 300-1,000 W, claim
Crew	**3**

SOURCES 3G ARMADA9 ARMYINF9 BCAT3 IZV9 LIGA9 OSCE RUSIPL UASV UKRINF12 UKRINF22 WEG84 WP-EN158

Updated 2026-10-06

Rtut-BM 1Л262Э «Ртуть-БМ» TR

Vehicle jammer against radio proximity fuses and VHF radio In service 2013

OPERATED BY **EW company**, EW company of motor rifle and tank formations (FOI: 'probably') D 2018 M
Unidentified unit, EW units of a combined arms formation, Eastern MD, Buryatia; in service since 2015; contest, article undated R 2015 L

INDICATES *Probably held by EW companies of motor rifle and tank formations. A sighting may indicate such a formation's EW element covering first-echelon troops, a command post or a troop concentration against radio-fuzed shells.*

RECOGNISE **Mast** Lifting mast hinged at the rear of the hull; laid along the roof when stowed.
Antenna Antennas of several kinds on the lifting mast. Stowed: covered by a front lifting cover and an awning.
Chassis MT-LBu tracked armoured chassis; operator workplace and equipment inside the hull.
Complex Single vehicle. Delivered in parallel with Borisoglebsk-2 (also MT-LBu based), probably to the same units.

CONFUSED WITH **SPR-2 Rtut-B (predecessor)** Full view: SPR-2 is a turretless wheeled BTR-70 or BTR-80 with a large telescopic mast; Rtut-BM is on the tracked MT-LBu.


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Tracked armoured chassis (MT-LBu); cross-country mobility stated only as sufficient. Deploys from march in 10 min or less (KRET).

Time into action	**10 min or less** From march; KRET figure. Deploy and stow time 'not more than 10 min' per reference site, claim
Chassis	**MT-LBu tracked armoured chassis**
Weight	**INA**

Operating frequency range	**95–420 MHz** claimed, Equipment operating band; RWW gives the same band for the predecessor SPR-2, claim
Jamming frequency range	**80–900 MHz** claimed, Single secondary source (Military.com.vn via 3G), claim
Jamming range, radio-fuzed artillery projectiles and rockets	**Area up to 50 ha** claimed, Protected ground area against projectiles with radio proximity fuses; KRET figure, claim

SOURCES 3G ATP DEFBLOG4 DEFUA13 FOI ICDS LENTA11 ORYX1 RWW TOPWAR14 VRF13 WEG2015 not in WEG

Updated 2026-10-10

Stupor, Garpun-3 and LPD-801 handheld jammer guns ЛПД-801 «Ступор», «Гарпун-3» MP

Man-portable directional jammers against small UAV control and navigation links In service 2018

OPERATED BY **Russian forces in Ukraine**, Stupor, LPD-801 R 2022-07 L
Russian units (anonymous TASS source), Garpun-3 R 2022-10 L

INDICATES *Sources name no holding unit, so a gun sighting shows only that a position or facility is covered against small drones at close range. One LPD-801 was seen with front-line trench troops (Feb 2023). No echelon or unit type.*

RECOGNISE **Chassis** Carried like a rifle. LPD-801: service-rifle outline, battery a magazine-style pack. Stupor: plastic body, carried like an assault rifle.
Complex Length: Stupor 1,160 mm, LPD-801 970 mm, Garpun-3 900 mm (maker; RG gives over 1 m).
Antenna Garpun-3: antenna unit under a cover, plus an instrument compartment with the controls.
Mount Garpun-3 in a fixed post: on a mount with powered aiming in two planes and remote control.

CONFUSED WITH **Stupor, LPD-801 and Garpun-3** LPD-801: battery shaped like a rifle magazine. Garpun-3: covered antenna unit and instrument compartment. Stupor: 1,160 mm long against 970 mm for LPD-801.


Kirill Borisenko, CC BY-SA 4.0

MOBILITY Carried and fired by one person; line-of-sight use. Battery life limits continuous operation (Garpun-3 30 to 60 min, LPD-801 60 min, Stupor up to 4 h).

Weight, LPD-801	**4.1 kg** With battery: gun not over 3.5 kg plus 0.6 kg pack; retailer gives full set about 4 kg, claim
Weight, Garpun-3	**6.5 kg** Manufacturer sheet; with battery not stated, claim
Weight, Stupor	**5.5 kg** Working weight, as quoted by Gazeta.ru in Wikipedia

Jamming range, small UAV, LPD-801	**1 km** effective, Air target: small UAV; manufacturer sheet, claim
Jamming range, small UAV, Garpun-3	**1,500 m** not less than, Air target: small UAV; manufacturer sheet, claim
Jamming range, small UAV, Stupor	**2 km** claimed, Air target: UAV in line of sight; 20 degree sector; source is TASS report, Russian MoD developer, claim

SOURCES AIF4 DEFPOST3 DETSYS FOCUS7 GARP IZ3 LENTA6 RG1 RG25 WEG54 WP-RU102

Updated 2026-10-10

Tetrazdr

UAV jammer trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Volnorez, Saniya and Sapfir vehicle anti-drone jammers «Волнорез», «Сания», «Сапфир» NA

Jammers on armour and vehicles, and a mobile set (Sapfir), against FPV and tactical drones In service 2023

OPERATED BY **motor rifle brigade**, tank fitted with Saniya, Pervomaisky area near Donetsk O 2024-01 L
Naval Infantry (first two Volnorez sets, trials on boats), 2 sets R 2023 L

INDICATES *Fitted to tanks, other armour and cars on the contact line, Volnorez often by the crews themselves; sightings show units under drone threat, not a particular unit type. Sapfir was reported covering engineer units.*

RECOGNISE **Chassis** Add-on fitted to many carriers: T-80BVM tank, other armour, cars. Volnorez announced for T-80BVM mod. 2023, not seen on the Feb 2024 batch.
Antenna Saniya: one box with eight antennas on a vibration-mounted bracket, typically on the stern or on an anti-drone roof screen.
Antenna Volnorez: radiating antenna in a housing shaped like a harbour breakwater block, on a magnetic base; one module per band, one or several per vehicle.

CONFUSED WITH **Saniya vs Volnorez** Saniya: one box with eight antennas on a bracket. Volnorez: breakwater-shaped antenna housings on magnetic bases, one or several per vehicle.

MOBILITY Carried by the host vehicle; no own mobility. Saniya is said to work while moving; Volnorez is powered from the vehicle battery.

Power input, Saniya	**up to 1100 W** claimed, Saniya, claim
Weight	**INA**
Jamming range, drone control link (Volnorez)	**600 m** claimed, Air target (drone); Volnorez; Russian claim, claim
Frequency band, Volnorez	**900–2000 MHz** claimed, Russian social media claim relayed by UAS; other sources give 170 MHz–7 GHz depending on modules, claim
Jamming range, FPV drone (Saniya)	**1 km** claimed, Air target (FPV drone); Saniya; depends on weather, terrain, drone, claim
Detection range, Saniya detector	**1.5 km** claimed, FPV drone, passive radio detection, claim
Jamming range, tactical drones (Sapfir)	**5 km** maximum, Air target (drones); Sapfir; ground control stations also jammed, claim
Detection range, Sapfir	**30 km** claimed, Drones; Sapfir; source unspecific on size, claim
Frequency band, Sapfir (modernised)	**300 MHz–6 GHz** claimed, Arms-fair claim, Dubai Airshow 2023; modernised Sapfir; export or domestic configuration not stated, claim

SEEN WITH Carrier vehicle (T-80BVM, other tanks, armoured vehicles, trucks) (1 set per vehicle (Saniya); 1–2 Volnorez sets, sometimes more modules)

SOURCES AMAL5 DEVUA MILIN4 ORYX1 RG14 RG234 RGRU15 RT10 TADV4 TOPWAR16 TWZ39 UAS not in WEG

Updated 2026-10-10

7 Engineers

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
CROSSING						
BMK-130M	–		towing and motor boat	–	–	*205*
BMK-460	–	БМК-460	towing and motor boat	–	–	*205*
BMK-MO	–		towing and motor boat	–	–	*205*
BMK-MT	–		towing and motor boat	–	–	*206*
GSP	–	ГСП	ferry · legacy	–	–	*206*
IRM Zhuk	–	ИРМ «Жук»	Amphibious engineer reconnaissance of routes, water obstacles and minefields · 1980	**3.6 m** mine-detector lane width	**TR-A**	206
KMM	–		bridgelayer · legacy	–	–	*207*
KRVD	–		temporary road deployment kit	–	–	*207*
MLZh-VF-VT	–	МЛЖ-ВФ-ВТ	Floating rail and road bridge-ribbon and rail ferry set for wide rivers · 2005	**0.5 km** bridge length, claimed	**TW**	207
MMK bridge-mechanised complex	–	ММК	Truck-mounted bridge layer · 2013	**40–41 m** bridge span, single unsupported	**WH-AT**	208
MT-55A	–		bridgelayer	–	–	*208*
MTU-20	–	МТУ-20	bridgelayer	–	–	*208*
MTU-90	–	МТУ-90	bridgelayer	–	–	*209*
PMP heavy folding pontoon bridge park	–	ПМП	Truck-carried folding pontoon park for 60-t floating bridges and 40-170 t rafts · 1961	**0.227–0.382 km** bridge length, full set	**WH-AT**	210
PPS-84	–	ППС-84	pontoon park · legacy	–	–	*211*
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	–	ПТС-4	Amphibious carrier for cargo and vehicles · 2007	**12–85 t** payload	**TR-A**	211
TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge	–	ТММ-3	Bridging · early 1970s	**18–40 m** gap bridged	**WH-AT**	212
TMM-7	–	ТММ-7	Truck-launched heavy scissor bridge, 16 m span per truck, four-truck set · 2017	**16 m** span per truck; 64 m per set	**WH-AT**	212
OBSTACLE CLEARING AND EARTHMOVING						
BAT-2	–	БАТ-2	Armoured route-clearing tractor and dozer on MT-T chassis · 1987	**200–450 m³/h** dozer capacity	**TR**	213
BAT-M	–		route-clearance vehicle · legacy	–	–	*213*
BMR-3M	–	БМР-3М «Вепрь»	Armoured mine-clearing vehicle on T-90 chassis with roller trawl · 2000	**0.8–3.2 m** swept lane width	**TR**	214
BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines	–	БТМ-3; МДК-3; ПЗМ-2; ЭОВ-3521; ЭОВ-3523; ЭОВ-4421	Machines that dig trenches, pits and shelters for troop and vehicle positions · 1963	**1.1–5 m** digging depth	**TR**	214
IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	–	ИМР-2	Tank-based heavy engineer vehicle for obstacle and minefield clearing · 1980	**200–300 m³/h** dozer capacity	**TR**	215
MTK-2	–		mine-clearing vehicle	–	–	*215*
UR-67	–	УР-67	mine-clearing line charge · legacy	–	–	*215*
UR-77 Meteorit	M1979	УР-77 «Метеорит»	Tracked mine-clearing vehicle firing rocket-towed explosive line charges · 1978	**0.2–0.5 km** line charge, launch range	**TR-A**	216
UR-83P	–	УР-83П	portable mine-clearing line charge	–	–	*216*
Uran-6	–	Уран-6 «Уран-6»	Remote-controlled tracked demining and obstacle-clearing vehicle · 2016	**0.3–1 km** radio control range	**TR**	216
MINE LAYING						
ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer	–	ИСДМ «Земледелие»	Remote minelaying by 122 mm rockets · 2020	**5–15 km** ISDM mine rocket, min–max	**WH-AT**	217
PKM	–		man-portable minelaying kit	–	–	*217*
PMR-3	–		towed minelayer · legacy	–	–	*218*
PMZ-4	–		towed minelayer	–	–	*218*
UMZ	–	УМЗ Универсальный минный заградитель	Truck-mounted remote scatterable minelayer · 1979	**0.15–1.5 km** minefield length	**WH-AT**	218
UMZ-G Kleshch-G	–		universal tracked remote minelayer · trial	–	–	*219*
VSM-1	–	ВСМ-1	helicopter remote mining system	–	–	*219*
RECOVERY AND REPAIR						
BREM and BTS armoured recovery vehicles	–	БРЭМ	Armoured recovery and repair vehicles for tank and infantry vehicle units · 1975	**6.5–35 t** winch pull	**TR**	220
REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles	–	РЭМ-КЛ; КТ-Л; МТП-А2.1; МТО-АТ	Wheeled field repair, recovery and towing of unit vehicles on truck chassis · 2016	**10.5–14 t** winch / recovery pull	**WH-AT**	221
CBRN DEFENCE						
ARS-14, TMS-65 and TZ-74 decontamination vehicles	–	АРС-14КМ	Truck-mounted decontamination and smoke vehicles of RKhBZ · 1969	**10–40 vehicles/h** decon throughput	**WH-AT**	222
RKhM CBRN reconnaissance vehicles	–	РХМ-4, РХМ-6, РХМ-8, РХМ-9	Radiation, chemical and biological reconnaissance · 2006	**3–6 km** chemical agent, detect	**WH-AT-A**	222
TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	–	ТДА-2К	Truck-mounted thermal aerosol generators that screen troops and sites from view and IR · 1982	**over 1 km** smokescreen length	**WH-AT**	223

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
MT-LB	Light armoured amphibious tractor and APC	2 Armoured vehicles	107

Crossing

BMK-130M

towing and motor boat

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BMK-460 BMK-460

towing and motor boat

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BMK-MO

towing and motor boat

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BMK-MT

towing and motor boat

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

GSP ГСП

ferry legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

IRM Zhuk ИРМ «Жук»

TR-A

Amphibious engineer reconnaissance of routes, water obstacles and minefields In service 1980

OPERATED BY **engineer-sapper battalion** D 1990 M
engineer-sapper battalion, naval engineer battalion D 1990 L

INDICATES *Sources place the IRM in divisional engineer-sapper battalions and, in an undated list, in engineer brigades and regiments. A sighting suggests engineer reconnaissance of routes, fords or water barriers, for example before a river crossing.*

RECOGNISE **Working equipment** Two retractable mine-detector arms on hull front; PIR-451 periscope at commander's station, right front. Small turret, one 7.62 mm PKT, IR searchlight to its right.

Stowed Detector arms retracted. Rocket self-recovery racks on the rear deck between the propellers.

Deployed Two three-bladed cowled propellers at the rear sides for swimming. Trim vane extended at the front before entering water. Detector arms forward when scanning.

Chassis Close only: BMP-1-based hull with seven road wheels a side where the BMP-1 has six; fully tracked, amphibious.

CONFUSED WITH **BMP-1** p. 101 Full view: IRM has two mine-detector arms on the bow and rocket racks on the rear deck, the BMP-1 neither. Close only: seven road wheels against six.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Amphibious, swims on two rear propellers. Armour is small-arms proof only.

Weight	**18,000 kg** combat weight
L × W × H	**8.30 × 3.15 × 2.42 m** hull
Road speed	**52 km/h** maximum

Range, 7.62 mm PKT	**1,500 m** effective, WEG states no ammunition type and no day or night condition
Echo sounder depth range	**0.5 to 20 m (EIR echo sounder)** stated range, water depth measured by EIR sounder
Reconnaissance rate	**land route 8 to 10 km/h; minefield 5 km/h; 100 m water barrier in 5 min** typical, WEG attributes these to unnamed Russian sources
Crew	**6: commander, driver, 4 dismountable engineers**
Armament	**1 x 7.62 mm PKT, 1,000 rounds**

SOURCES ARMFORC ATP FM100 IISS25 JANESRG ORYX1 RUSARMY2 WEG53 WEG2015 WP-EN30 WP-RU101

Updated 2026-10-09

KMM

bridgelayer legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

KRVD

temporary road deployment kit

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MLZh-VF-VT МЛЖ-ВФ-ВТ

TW

Floating rail and road bridge-ribbon and rail ferry set for wide rivers In service 2005

OPERATED BY **Railway Troops pontoon-bridge battalions** D 2018 M
Railway Troops pontoon-bridge battalions, 34th Railway Brigade; bridge demonstration on the Oka River, Moscow Oblast O 2022-08 L

INDICATES *Sections or a floating rail-and-road bridge point to a Railway Troops pontoon-bridge battalion building a crossing or rail ferry on a wide river. In 2022 it was reported with a railway brigade that installed it on the Oskil at Kupyansk.*

RECOGNISE **Chassis** APS-1 special road train, accepted 2020: KamAZ-53504 tractor and Politrans 9417 semi-trailer carrying one pontoon-bridge section (from scale model).
Working equipment River link of six pontoons: two centre pontoons with rails, two centre pontoons without, two end pontoons carrying fairing shields.
Deployed River part of ferries with a 13.55 m transitional part and a shore part of up to 82.16 m at each end; tower lifting supports at each bank.

CONFUSED WITH **PMP pontoon bridge** Deployed: rails in deck recesses along the middle pontoons, a road lane between wheel guards; PMP links join into a roadway. NZhM-56 also carries trains.



Mil.ru, CC BY 4.0

MOBILITY One pontoon-bridge section rides on the APS-1 semi-trailer. Afloat, links join into ferries of 34.5 to 69 m or more; a pusher pontoon, the PST-1, is part of the set.

Time into action, bridge assembly	**3 days** MLZh-VT bridge, deployment
Weight, pontoon section	**INA**
Road speed	**INA**

Bridge length	**about 500 m** claimed, MLZh bridge-ribbon received by the Railway Troops in 2016; carries rail and road traffic, claim
Load, rail	**train of 3,000 t** claimed, Railway train mass; Railway Troops commander's figure for the MLZh-VT, August 2005, claim
Length, river part, maximum	**325.5 m** Design figure, design documentation finished after March 2000; river part is built from ferries

SOURCES BSUT GS24 LENTA9 LIFE MILPER2 MODEL ORYX1 REDSTAR3 RUSIPL STUDF WEG67 WMC20 WSPOT4 ZVEZ21 not in WEG

Updated 2026-10-20

MMK bridge-mechanised complex MMK

WH-AT

Truck-mounted bridge layer: one unsupported span of about 40 m for loads up to 60 t In service 2013

INDICATES *Indicates a bridging asset able to lay one unsupported span of about 40 m for tracked loads up to 60 t (adopted 2013). It does not by itself identify the unit type or echelon holding it.*

RECOGNISE **Chassis** Ural 532361-1012 8x8 truck under every vehicle of the set; flat-fronted cab with no bonnet (cab from photograph).

Working equipment Assembling vehicle: boom along the bed from above the cab to the rear; launch frame at the rear with a cross-tube ending in round plates (from photograph).

Stowed Transport vehicle: open-topped, trough-shaped bridge section on the bed behind the cab, its top edge sloping down to the rear (from photograph).

Deployed One span 40 m long and 4 m wide with no intermediate supports.

CONFUSED WITH **TMM-7 mechanised bridge** p. 212 Deployed: TMM-7 is 16 m scissor spans, each resting on two struts; MMK one 40 m span with no intermediate supports. Full view: TMM-7 on KamAZ 6350 8x8, MMK on Ural 8x8.

SEEN WITH MMK bridge-assembling vehicle (1 per set); MMK bridge sections (4 per set); MMK end-ramp vehicle (also carries one bridge section) (1 per set)



Vitaly V. Kuzmin, CC BY-SA 3.0



Vitaly V. Kuzmin, CC BY-SA 3.0

MOBILITY Wheeled 8x8 truck chassis. Lays one unsupported span of about 40 m; vehicles cross at up to 15 km/h (tracked) and 20 km/h (wheeled).

Time into action, 40 m bridge	**45 min** crew of 11, 40 m bridge, claim
Weight	**INA**
Road speed	**INA**
Road range	**INA**

Bridge span length	**40 m** single unsupported span, claim
Bridge width	**4 m** claim
Load class, tracked vehicles	**60 t** maximum gross weight of tracked IFVs and MBTs, claim
Axle load, wheeled vehicles	**12.5 t** maximum axle load of wheeled fighting vehicles, claim
Crew, bridge assembly	**11** to mount a 40 m bridge, claim
Crossing speed, tracked vehicles	**15 km/h** maximum speed on the bridge, claim
Crossing speed, wheeled vehicles	**20 km/h** maximum speed on the bridge, claim
Traffic capacity	**300 tracked or 400 wheeled vehicles per hour** claim

SOURCES AR80 AR81 AR82 AR83 JFORCES RECOMON RWW TOPWAR9 WEG2015 WP-RU147 not in WEG

Updated 2026-10-20

MT-55A

bridgelayer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MTU-20 MTY-20

bridgelayer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MTU-90 MTY-90

bridgelayer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PMP heavy folding pontoon bridge park ПМП

WH-AT

Truck-carried folding pontoon park for 60-t floating bridges and 40-170 t rafts In service 1961

OPERATED BY **motor rifle division**, engineer battalion, pontoon bridge company (also in tank divisions), half set: 16 river and 2 shore links and 1 service vehicle on KrAZ-214; 6 BMK-90/150 boats per company D 1991 M
engineer-sapper brigade, pontoon bridge battalion of the army or front engineer brigade (FM 100-2-3 'Engineer Brigade, Army or Front'), one full set: 32 river and 4 shore links on KrAZ-255, 15 BMK-150 boats D 1991 M
pontoon-bridge regiment, two pontoon bridge battalions (army or front/district level), three full sets: 96 river and 12 shore links on KrAZ-255 D 1991 M
motor rifle brigade, engineer battalion, pontoon bridge company, one pontoon park; RWW calls it 'PP-61' but its figures (268 m at 60 t; 90- and 120-t bridges) match PP-91, not PMP. 6 BMK boats, 7 PTS-2 D 2016 L
Unidentified unit, engineer unit (Войсковая часть) of Eastern Military District, INA (new PMP-M park to be received) R 2017-02 L seen with engineer unit of the Eastern Military District (PMP-M; EMD press release of 3 Feb 2017 as cited by ru.wikipedia, release not read)

NUMBERS **Losses** 47 PMP(-M) river links and 3 shore links lost (Oryx) (2026-09)

INDICATES *A half set (16 river links, 2 shore links, about 6 boats) matches a division engineer battalion's pontoon company. Over 100 link carriers, or three full sets, matches an army or front pontoon-bridge regiment. Either points to a planned bridged river crossing.*

RECOGNISE **Stowed** River link: four hinged steel pontoons folded into one tall block filling the truck bed, 6.75 m long. Shore link is shorter, 5.6 m, with a ramp end.
Deployed Link unfolds on hitting the water to a flat deck 6.75 m long, about 8 m wide. Links pin into a continuous steel ribbon, 6.5 m roadway, held in line by boats.
Chassis 6x6 truck carriers: KrAZ-214, later KrAZ-255B. Ural-4320 and KamAZ-53501 carriers also seen. Separate trucks carry river links, shore links and boats.
Working equipment Roller bed on the truck; a folding jib and a winch behind the cab recover the link. Truck backs to the water, brakes hard and the link slides off the rollers.
Deployed, 20-t For 20-t loads each link is split into half-links, giving a narrower 3.29 m roadway and a longer bridge.
Stowed, boats BMK-90/150 tug-motor boats ride on their own truck carriers, 6 per half set and 12 per full set; PMP-M sets have 16.

CONFUSED WITH **PP-91 / PP-2005 (PP-91M) pontoon parks** Deployed: river link 7.36 m long against PMP's 6.75 m. PP-2005 rides on KamAZ-63501 8x8; Ural-4320 trucks carry both parks. Oryx files some links as 'unknown' park.
PPS-84 pontoon park Deployed: links also join side by side, giving a roadway of almost 14 m against PMP's 6.5 m.
TMM-3 truck-launched scissors bridge p. 212 Stowed: same KrAZ-255B truck, but carrying folded 10.5 m scissors spans with folding trestle legs and a launching girder, not a pontoon block.
PMM-2 self-propelled ferry p. 211 Deployed: a PMM-2 is one tracked vehicle afloat, boat bow and cab, its two box pontoons hinged out to each side; PMP links are flat decks held in line by boats.


Vitaly V. Kuzmin, CC BY-SA 4.0


Zinnsoldat, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Carriers must back to the water's edge to launch and recover links. PMP bridge limited to currents of 2 m/s, PMP-M to 3 m/s.

River link weight	**6,790 kg** one river link
Shore link weight	**7,252 kg** one shore (ramp) link
Time into action, bridge	**7 m of bridge per minute** ideal conditions *also about 30 min for a full-set bridge TI2*
Time out of action, per link	**a few minutes** retrieval of one link by winch and jib
River link, unfolded	**6.75 m long, 8 m wide** *also 6.75 x 8.09 x 1.11 m WP-RU175*
Weight, carrier with link	**INA** *also 19.7 t gross WEG2015*
Road speed	**INA** maximum *also 70 km/h WEG2015*
Road range	**INA** cruising *also 850 km WEG2015*
Fording	**INA** *also 1.0 m WEG2015*
Ground pressure	**INA**

Bridge, full set, 60-t	**227 m** maximum, 32 river + 4 shore links, 6.5 m roadway
Bridge, full set, 20-t	**382 m** maximum, split half-links, 3.29 m roadway
Maximum current	**2 m/s** PMP *also 3 m/s TI2 WP-RU175*
Bridge, half set, 60-t	**119 m** 16 river + 2 shore links
Bridge, half set, 20-t	**191 m** 16 river + 2 shore links, split *also 281 m, 3.27 m wide, class 20 GS24*
Load capacity, bridge	**60 t** full-width bridge; 20 t on split-link bridge
Roadway width	**6.5 m** 60-t bridge *also 3.29 m VRF11 WP-RU175*
Rafts	**40, 60, 80, 110, 170 t** 2, 3, 4, 5+1 shore, 8+1 shore links *also 40, 60, 80, 130, 170 t SPT WP-RU175*
Raft assembly, 40-t	**8 min** 2 river links, working party 6
Tank speed on bridge	**up to 30 km/h** tanks on 60-t bridge
Crew per carrier	**3** WEG figure, in the block copied from the PMM-2 page; WEG 2015 KrAZ-255B page gives 3 in cab
Working party, full bridge	**approx. 65** full bridge set

SEEN WITH River link on KrAZ-214 or KrAZ-255B (or Ural-4320, KamAZ-53501) carrier (32 per full set, 16 per half set); Shore (ramp) link on carrier truck (4 per full set, 2 per half set); Roadway mats (vystilki) on trucks (2 per full set); BMK-90/150 tug-motor boats on truck carriers (12 per full set (16 for PMP-M), 6 per half set); PTS-2 (or K-61) tracked amphibious transporter (7 in a brigade engineer battalion; 28 in an army engineer brigade (1991)); GSP tracked self-propelled ferry (12 half-ferries per division engineer battalion; 24 in an army engineer brigade (1991)); PMM-2 self-propelled amphibious ferry (replacing GSP); TMM-3 truck-launched bridge (4 per engineer battalion)

VARIANTS **PMP-M** Same folding river links; shore link has a straightened deck; hydrodynamic shield kit. Carried on KrAZ-255B; KamAZ-53501 carriers also recorded. Bridge usable in currents up to 3 m/s against 2 m/s for PMP; set lists 16 boats instead of 12. **PMP on Ural-4320 carriers** PMP links on Ural-4320 6x6 trucks in place of KrAZ-255B. None known; same links. **PP-91** Bigger river link, 7.36 m long and 8.28 m wide, on KrAZ-260G (Ural-53236) carriers; BMK-225 boats. 60-, 90- and 120-t bridges and double-width roadway; lengths per set differ between sources (see open questions). **PP-2005 (PP-91M, PP-2005M)** PP-91-type links on KamAZ-63501 8x8 carriers. Boats: BMK-MT with PP-2005M (VPK); BMK-3 seen with PP-91M (AIF, 2025). Bridges to 120 t; rafts 90-360 t (PP-91) or 90/190/380 t (PP-2005M per VPK). In a Group Centre pontoon-bridge company, 2025-02.

SOURCES AIF10 ATP FM23 GS24 MIL100 ORYX1 RWW SPT TI2 VPK14 VRF11 WEG67 WEG2015 WMC28 WP-EN144 WP-RU175 WP-RU176 Updated 2026-10-06

PPS-84 ППС-84

pontoon park legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry ПТС-4

TR-A

Amphibious carrier for cargo and vehicles (PTS-4); self-propelled river ferry (PMM-2) In service 2007

OPERATED BY **motor rifle brigade**, engineer battalion, 7 PTS-2 per engineer battalion (RWW names PTS-2, not PTS-4) D 2016 M
tank brigade, engineer battalion, 7 PTS-2 per engineer battalion (RWW names PTS-2, not PTS-4) D 2016 M

INDICATES *PTS-2 amphibians are a brigade engineer battalion asset in RWW, so PTS-type carriers suggest engineer river-crossing support. IISS25 lists PMM-2 without unit type; no unit is tied to PTS-4 here.*

RECOGNISE **Stowed** PMM-2: two large box pontoons carried one above the other on the hull; MT-T-type chassis with seven road wheels and four return rollers.

Working equipment PTS-4: open rear cargo area, platform 8.28 x 3.3 m, one remote-controlled 12.7 mm machine gun. PMM-2: boat-like bow, PTS-2-style cab.

Deployed PMM-2: pontoons hinge out to each side, with wave deflectors and ramps; deck 10 m long, 4.2 m wide; two 5 m loading ramps; two propellers lowered aft.

CONFUSED WITH **PTS-2 / PTS-3** Close only: PTS-4 carries a remote-controlled 12.7 mm MG, PTS-2 a 7.62 mm MG. PTS-3 has higher sides than the PTS-2.



Алексей Китаев (Aleksey Kitaev), CC BY-SA 4.0

MOBILITY Amphibious tracked. PMM-2 fording 1.2 m, vertical step 2.8 m (WEG15; implausible, see open_questions). PTS-4 vertical step 0.65 m, trench 2.5 m (WEG).

Weight, PTS-4	**33.1 t** empty, per WEG
Weight, PMM-2	**36 t** combat weight, per WEG15; ru Wikipedia: ferry mass 36 t
L × W × H	**8.3 × 3.3 × 3.2 m** WEG; ru Wikipedia gives 8.28 m for the cargo platform only

Payload on land, PTS-4	**12 t**
Payload on water, PTS-4	**18 t**
Payload, PMM-2 single ferry	**42.5 t** WEG; RUWM gives 42.5 t for the PMM-2M
Payload, PMM-2 two joined	**85 t** WEG gives 85 t for two PMM-2; RUWM gives 85 t for two PMM-2M, assembly 8 min

SOURCES AR92 AR93 IISS25 RWW WEG79 WEG2015 WP-EN153 WP-RU185 WP-RU186 WP-RU187 WWW22 WWW114

Updated 2026-10-06

TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge TMM-3

WH-AT

Bridging: TMM-3 truck scissors bridge; MTU-72 tank-chassis bridge layer In service early 1970s

OPERATED BY **engineer-sapper battalion**, brigade engineer battalion; sets almost always attached to the movement support detachment (OOD), 4 TMM-3 truck-launched bridge sets per brigade engineer battalion, each laying a 10 m span; together a 42 m bridge D 2024-02 M

engineer-sapper regiment, engineer and bridge subunit (press-release wording) O 2020-11 M

Unidentified unit, one TMM-3 span carried on an MT-LB as an improvised bridge (TRENCH) R 2026-06 L

Unidentified unit, single MTU-72 struck, Oct 2024 (Kharkiv region) and Dec 2025 (Donetsk region) R 2025-12 L

INDICATES *TMM-3 sets are held by the brigade engineer battalion and almost always attached to its movement support detachment, which bridges minor gaps ahead of the main body. Four trucks together suggest a route or a crossing of up to 42 m being prepared.*

RECOGNISE **Stowed** TMM-3: each 10.5 m span folds to 5.2 m; spans ride on the truck bed. MTU-72: bridge folded 9.42 m long on a hull 11.64 m long, 3.38 m high.

Chassis TMM-3: KrAZ-255B 6x6 soft-skin truck; spare wheel on a steel frame above the cab. MTU-72: turretless T-72 hull: six road wheels, three return rollers, exhaust left rear.

Deployed TMM-3: scissors spans on adjustable trestle legs, roadway 3.8 m, laid over the tailgate. MTU-72: one 20 m bridge, 3.3 m wide, spans an 18 m gap.

Working equipment TMM-3: hydraulic slewing mast with forked end and winch lifts the folded span. MTU-72: single bridge launched from the hull, hydraulic front blade. Cantilever type.

CONFUSED WITH **TMM-6 truck-launched bridge** Full view: four-axle 8x8 carrier (MAZ-543 or MZKT-7930) with 17 m spans, against the three-axle KrAZ-255B and 10.5 m spans of the TMM-3.



MTU-72. Vitaly V. Kuzmin, CC BY-SA 4.0



TMM-3. Mil.ru (Ministry of Defence of the Russian Federation), CC BY 4.0



Gwafton, CC BY-SA 3.0; GFDL



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY TMM-3 is an unarmoured 6x6 truck (WH-AT). MTU-72 is tracked (TR), armoured. TMM-3 span: gap to 40 m, 3 m deep.

Weight, TMM-3 truck with bridge	**19,500 kg**
Weight, MTU-72	**40,000 kg** Combat weight
L × W × H	**9.3 × 3.2 × 3.15 m**
Road speed, TMM-3	**71 km/h**

Obstacle, TMM-3 bridge set	**up to 40 m wide, 3 m deep** Set of four spans; ATP gives 42 m total length
Load class, TMM-3	**60 t** Wheeled and tracked loads; tracked vehicles at 15 km/h on bridge
Bridge geometry, TMM-3	**4 spans of 10.5 m; roadway 3.8 m** Spans can be connected to 10.5, 21, 31.5 or 42 m (RWW); ATP gives 10 m per set and 42 m together
Crew, TMM-3	**1 + 1 in cab (driver, passenger) per truck**

SOURCES AR83 ARMYINF14 ATP FORSS IISS25 JANESRG JFORCES KOLESA2 MIL126 ORYX1 RWW TRENCH4 WEG51 WEG2015 WP-EN184 WP-EN185 WP-RU243 WP-RU244 WSN11
Updated 2026-10-20

7 ENGINEERS

TMM-7 TMM-7

WH-AT

Truck-launched heavy scissor bridge, 16 m span per truck, four-truck set Designed 2017

NUMBERS **Losses** None visually confirmed: Oryx lists no TMM-7 among Russian engineering vehicle losses (snapshot Sep 2026) (2026-09); **Holdings** Not listed: IISS gives no TMM type among Russian Army bridge layers (late 2024) (2024)

INDICATES *A TMM-7 indicates Engineer Troops heavy truck bridging, laid as four-truck sets for a 64 m crossing. Reported in Ukraine by the Russian MoD in 2023; no holding unit or confirmed loss is cited as of 2026.*

RECOGNISE **Chassis** KamAZ-63501 8x8 truck, four axles, two-door cab at front, bridge launcher at rear

Working equipment Span launched over the rear by a hydraulic arm; on the 2020 build the folded span appears to be opened by cable

Stowed One 16 m folded scissor span on the bed; from photograph, span top above cab roof and rear end beyond the last axle

Deployed Spans 4 m wide, four joined into a 64 m bridge on struts; 2019-2020 builds have two trackways, the 2017 build one full-width deck

CONFUSED WITH **TMM-3 family (TMM-3, TMM-3M2)** p. 212 Full view: four axles (8x8) against three on TMM-3 family trucks (KrAZ-255B 6x6, KamAZ-53501). Chassis hidden: span 16 m long against 10 to 10.5 m on TMM-3 sets

TMM-6 Deployed, full set: four 16 m spans (64 m) against six 17 m spans (102 m) in a TMM-6 set; a shorter bridge does not settle it. Full view: MZKT-7930 carrier

KVD temporary roadway layer Stowed: one folded scissor span on the bed, against a drum of wound 50 m metal roadway on the KVD; same KamAZ-63501 8x8 with two-door cab

SEEN WITH KamAZ-63501 (1 per bridge vehicle); TMM-7 (4 bridge vehicles per set)

(Picture not available)

MOBILITY Wheeled 8x8 truck; designer gives gaps up to 5 m deep; bridge height 1.8 to 5 m

Weight	**24.0 t** Bridge-laying vehicle, 2020 build, claim
L × W × H	**11.5 × 3.3 × 3.8 m** Travelling order, 2020 build, claim
Road speed	**75 km/h** maximum, claim
Time into action	**5 min one span; 40 min set of four** Laying the bridge, claim
Road range	**INA** claim
Fording	**INA** claim
Time out of action	**INA** claim
Ground pressure	**INA** claim

Span length	**16 m** One span per truck, claim
Bridge length, set	**64 m** Four trucks, four spans, claim
Gap width, set	**up to 100 m** Water or dry gaps, two-track crossing; designer's figure, claim
Gap depth or support height	**1.8 to 5 m** Bridge height; designer gives obstacles up to 5 m deep, claim
Bridge width	**4 m** Span width, claim
Load class	**60 t** Wheeled and tracked loads, claim
Span weight	**6 t** Span with support, design weight, not more than, claim
Traffic capacity	**300 wheeled or 250 tracked vehicles per hour** Maximum, claim
Crew	**2** Per bridge vehicle, claim

SOURCES AR82 AR83 FORSS IISS25 ORYX1 PIONT PIONT6 RECO RT8 RWW WEG2015 ZR9 not in WEG

Updated 2026-10-21

Obstacle clearing and earthmoving

BAT-2 БАТ-2 TR

Armoured route-clearing tractor and dozer on MT-T chassis In service 1987

OPERATED BY **engineer-sapper battalion**, route construction and clearing section; usually in the movement support detachment (OOD), 4 per battalion D 2016 M

INDICATES *Doctrinally a BAT-2 moves with an engineer movement support detachment ahead of a march column, improving the route. A BAT-2 in a column may indicate engineer route preparation for an advance.*

RECOGNISE **Stowed** Blade carried vertically in front of and over the crew cab when not in use. Fully enclosed armoured cab with bullet-proof windows front, sides and rear.

Working equipment Hydraulic dozer blade of variable geometry and a skid in front; a 2 t crane turntable behind the cab; ripper at the rear; storage unit behind the cab.

Chassis MT-T based: seven road wheels a side, front idler, rear drive sprocket; engine at rear, cab at front.

CONFUSED WITH **BAT-M** Close only: older AT-T (T-44/T-54 based) chassis with 500 mm tracks and a 13-tooth sprocket; BAT-2 is on the MT-T.



Kirill Borisenko, CC BY-SA 4.0



ArmyInform, CC BY 4.0

MOBILITY Fords 1.3 m. Ground pressure about 0.8 kg/cm²; one Russian source says it often bogs down.

Weight	**39.7 t** combat weight
L × W × H	**9.64 × 4.2 × 3.69 m**
Road speed	**60 km/h** WEG15 gives INA

Crew	**2** commander and driver; ArmyInform via Army Recognition says up to 3 in Ukrainian service
Troop capacity	**8** engineer squad in cab
Blade width	**4.5 m** bulldozer position; 4.2 m road clearing; 4.1 to 4.35 m grading
Crane capacity	**2 t** boom reach 7.3 m
Winch	**25 t** cable length 100 m

SOURCES AR21 ATP IISS25 KAT MIL10 ORYX1 PRIZ RWW U242 WEG17 WEG2015 WP-EN26 WP-RU35 WP-RU36 WSN6

Updated 2026-10-09

BAT-M

route-clearance vehicle legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BMR-3M БМР-3М «Вепрь» TR

Armoured mine-clearing vehicle on T-90 chassis with roller trawl; clears lanes and routes In service 2000

OPERATED BY **Engineer troops units**, engineer troops units (not named) R 2024 M
Unidentified unit, sapper subunits, Mariupol airport and Volnovakha area R 2022-09 L
Unidentified unit, engineer troops demining group on the contact line R 2024-09 L

INDICATES *Indicates engineer troops clearing routes or lanes through minefields. WEG says it is mainly for road clearance escorting convoys; Russian MoD reports it clearing ground near the contact line, followed by sappers with hand-held detectors.*

RECOGNISE **Stowed** Welded armour wheelhouse with commander's cupola and 12.7 mm MG mount in place of the turret; ERA boxes on hull front and wheelhouse; trawl section carried at the rear.

Working equipment Two roller frames at the bow, each with a set of steel wheels, with cutters on the outer side and a chain device in front; electromagnetic attachment above.

Chassis Turretless T-90 tank hull; running gear as T-90: six road wheels, front idler, rear drive sprocket, exhaust on left hull side above last road wheel.

Deployed Roller frames pushed ahead of the tracks, one in front of each track; the BMR-3MA TMT-S trawl spans the full width.

CONFUSED WITH **IMR-3M** p. 215 Full view: also T-90 based, but with a front dozer blade and a telescopic boom with manipulator; BMR-3M has roller frames at the bow and no boom.

BMR-3 Full view: predecessor on the T-72A hull with the KMT-7 trawl and a hand-operated jib crane; height 2.51 m against 2.93 m.

T-90 or T-72 with KMT roller trawl p. 96 Tank keeps its turret and 125 mm gun; BMR-3M has a wheelhouse with commander's cupola and only a 12.7 mm MG.

BREM-1 armoured recovery vehicle p. 220 Full view: also a turretless tank hull (T-72A), but with a front dozer blade and a crane, no roller frames at the bow.


Vitaly V. Kuzmin, CC BY-SA 4.0


Mil.ru, CC BY 4.0

MOBILITY Tank-class tracked vehicle, 48 t (WEG), about 50 t with trawl per Russian media. Trawl cuts dirt-road speed to 35-40 km/h; sweeping speed up to 12 km/h. Fords 1.2 m unprepared, 5 m prepared.

Weight, combat	**48 t**
L × W × H	**6.93 × 3.78 × 2.93 m**
Road speed	**50 km/h** maximum
Speed, dirt road with trawl	**35-40 km/h** trawl fitted
Road range	**500 km** maximum
Fording	**1.2 m unprepared; 5 m prepared**

Range, 12.7 mm MG	**2,000 m** effective, ground targets, 12.7x108 mm
Range, 12.7 mm MG vs air	**1,500 m** effective, air targets, 12.7x108 mm
Crew	**2 (commander, driver) + 3 sappers**
Armament	**1 x 12.7 mm NSV MG**
Swept lane width	**2 tracks x 0.8 m** KMT-7, against track-width mines; uncleared strip of 1.62 m between
Swept lane width, continuous	**3.2 m** belly mines with contact fuze; 6-7 m vs magnetic fuzes
Swept lane width, Vepr	**almost 4 m** Vepr on T-90A, 2024, claim
Mine roller trawl	**KMT-7 (or KMT-8)** BMR-3MA: TMT-S
Roller blast resistance	**up to 10 TM-62 blasts** TMT-S trawl rollers, claim
Belly protection	**blast of 7.5 kg TNT** claim
Smoke grenade launchers	**2 banks of 81 mm, forward-firing**
Radio-fuze jammer	**PR 377 IV transmitter on KMT-7**
Crew endurance closed down	**2 days**

SEEN WITH KMT-7 track-width mine roller trawl (1 per vehicle); TMT-S heavy roller trawl (BMR-3MA) (1 per vehicle); T-90 / T-90A tank chassis (1); Hand-held mine detector (2 per vehicle)

SOURCES AIF AR30 IISS25 JANESRG RWW TECHINS VM WEG26 WP-RU51 WP-RU52 WP-RU53 WWW14 Updated 2026-10-09

BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines БТМ-3; МДК-3; ПЗМ-2; ЭОВ-3521; ЭОВ-3523; ЭОВ-4421 TR

Machines that dig trenches, pits and shelters for troop and vehicle positions In service 1963

OPERATED BY **engineer-sapper battalion**, engineer-technical company: engineer-position platoon and command-post equipment squad (brigade battalion), Position squad: 2 MDK-3, 2 BTM-4M, 2 EOV-3521. Command-post squad: 2 EOV-3521 D 2008 L
engineer-sapper battalion, engineer-position company, engineer-position platoon (division battalion), Table lists 2 each of BTM, MDK, PZM, EOV (layout unclear) D 2017 L
motor rifle brigade, a platoon assigned to fortification work in a brigade defence (worked example), 1 PZM with a platoon (worked example) D 2016 L

INDICATES *Engineer-sapper battalion equipment held for fortifying positions and command-post areas. Its presence points to defensive works being prepared. Ukraine also operates BTM-3 and PZM-2.*

RECOGNISE **Chassis** Tracked: BTM-3 on AT-T, MDK-3 on MT-T tractor. Wheeled: PZM-2 on T-155 tractor; EOV-4421 on KrAZ-255B, EOV-3521 on Ural, EOV-3523 on KamAZ-53501 truck.

Working equipment BTM-3: bucket rotor lowered behind hull, star throwers at sides. MDK-3: bladed rotor with thrower, dozer blade, ripper. PZM-2: chain digger, dozer blade, winch.

Working equipment EOV-4421 and EOV-3521: one-bucket backhoe on a rotating platform with its own operator cab, frame with outriggers. EOV-4421 works as backhoe only.

Stowed BTM-3 carries the rotor raised on a lifting linkage that shortens it for travel. MDK-3 is about 10.2-10.3 m long travelling, 11.75 m working, cab at front.

CONFUSED WITH **BAT-2 engineer vehicle** p. 213 Full view: front dozer blade, folded upright over the cab for travel, and a crane; no rotor or chain digger.

TMK-2 and TMK-3 trench machines Deployed: TMK-2 digs with a bucketless rotor, PZM-2 with a chain digger. TMK-3 rides on an articulated K-703MV wheeled tractor.


BTM-3. Лапонь, CC0


PZM-2. Cooper6, CC BY-SA 4.0


EOV-4421. Vitaly V. Kuzmin, CC BY-SA 4.0


MDK-3. ShinePhantom, CC BY-SA 3.0

MOBILITY BTM-3 and MDK-3 tracked, PZM-2 and EOV types wheeled. Mostly unarmoured; BTM-4M has an armoured cab. Slow while digging. Transport speed 36 to 90 km/h by type.

Weight, BTM-3	**27.7 t** claim
Weight, MDK-3	**39.5 t** claim
Weight, PZM-2	**12.8 t** claim
Weight, EOV-4421	**20 t** claim

Trench depth, BTM-3	**up to 1.5 m** soils up to category IV, unfrozen, claim
Output, BTM-3, trench 1.1 m deep	**270 - 810 m/h** technical output, depends on soil
Output, BTM-3, trench 1.5 m deep	**270 - 560 m/h** technical output, depends on soil
Pit depth, MDK-3	**3 m** maximum digging depth
Output, MDK-3, pits	**800 m³/h** technical output, claim
Trench depth, PZM-2	**1.2 m** unfrozen and frozen ground, claim
Pit depth, PZM-2	**up to 3.0 m** unfrozen ground only, claim

SOURCES ATP CYBER EXK FOCUS5 KAT ORYX1 PRIZ RWW WEG44 WEG2015 WP-RU36 WP-RU78 WP-RU79 Updated 2026-10-09

IMR-2 / IMR-2M / IMR-3M combat engineer vehicle ИМР-2 TR

Tank-based heavy engineer vehicle for obstacle and minefield clearing In service 1980

OPERATED BY **engineer-sapper battalion**, mine clearing platoon (brigade engineer battalion), 2 IMR-3M per platoon D 2016 M
engineer-sapper brigade, 2 delivered Nov 2018, 1 more due first half 2019 (Central MD press service, state claim) R 2018-11 L

INDICATES *An IMR-3M in a column suggests the mine clearing platoon of a brigade engineer battalion; its elements may join the movement support detachment (OOD) ahead of the main body to clear routes and minefield lanes. Separate engineer brigades also hold it.*

RECOGNISE **Chassis** Turretless tank hull, no gun: T-72 for IMR-2 (six road wheels a side), T-90 for IMR-3M. A boom superstructure stands where the turret would be.
Working equipment Dozer blade across the bow; telescopic boom with grab or bucket on a rotating superstructure where a turret would be.
Stowed Blade raised onto the hull roof; boom drawn back and turned. A KMT track-width mine plough may be fitted.

CONFUSED WITH **BREM-1 armoured recovery vehicle** p. 220
Stowed: BREM-1 has a crane and a cargo platform on a new superstructure; IMR a telescopic boom on a rotating mount where the turret was. Both have a front blade.


Kirill Borisenko, CC BY-SA 4.0

MOBILITY Fords 1.2 m unprepared; 5 m with snorkel equipment (Russian Wikipedia). Not amphibious. Heavy: 44 to 50 t.

Weight, IMR-2	**44.3 t** combat weight
Weight, IMR-3M	**49.5 t** combat weight with KMT-R3 plough
L × W × H	**9.55 × 3.735 × 3.68 m**

Crew	**2 (commander-operator, driver-mechanic)**
Boom lifting capacity	**2 t**
Boom reach	**8.4 m** IMR-2M
Dozer capacity	**200 to 250 m³/h** IMR-2 earthmoving
Armament, IMR-3M	**12.7 mm NSVT or Kord remote mount**
Armament, IMR-2	**7.62 mm PKT** original IMR-2
Mine plough lane clearing, IMR-2M	**6 km/h** AT mines, lane clearing rate (WEG term)

SOURCES ATP IISS25 JANESRG RWW TASS6 TSAMTO WEG30 WEG51 WEG2015 WP-EN26 WP-EN73 WP-RU51 WP-RU53 WP-RU98 WP-RU99 WSN6 Updated 2026-10-01

MTK-2

mine-clearing vehicle

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

UR-67 УР-67

mine-clearing line charge legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

UR-77 Meteorit УР-77 «Метеорит»

NATO: M1979 **TR-A**

Tracked mine-clearing vehicle firing rocket-towed explosive line charges In service 1978

OPERATED BY **engineer-sapper battalion**, mine clearing platoon (organic engineer battalion of a maneuver brigade), 2 per platoon D 2016 M

INDICATES *Doctrine places two per engineer mine clearing platoon, so one suggests engineers preparing a breach or route clearing. In Ukraine it has also been fired as improvised short-range artillery.*

RECOGNISE **Working equipment** Turret-like launcher superstructure with launch ramps at the top rear of the hull; no gun.

Chassis 2S1-derived hull: seven road wheels a side, drive sprocket front, idler rear, no return rollers; driver front left.

Stowed Charges carried on board: hull holds two launchers and compartments for the line charges (UZP-77 or UZ-67).

CONFUSED WITH **2S1 Gvozdika** p. 126 Full view: same hull; 2S1 has an enclosed turret with a 122 mm howitzer, UR-77 a launcher superstructure at the hull rear and no barrel.

IMR-2 / IMR-3M and BREM-1 p. 220 Full view: turretless tank hulls with six road wheels and a front dozer blade; UR-77 is on the 2S1 hull with seven road wheels.

UR-67 Full view: same role, but the launcher rides on a BTR-50PK hull, or on a BTR-D in one loss Oryx lists; UR-77 uses the 2S1 hull with seven road wheels.



Vladimir Sappinen, CC BY 3.0

MOBILITY Tracked, 2S1-derived, amphibious: WEG gives 5 km/h swimming, GlobalSecurity 4.5 km/h. Fording depth and ground pressure INA. Reload after firing takes 30 to 40 minutes.

Weight, combat	**15.5 t**
L × W × H	**8.4 × 2.8 × 3.1 m**
Road speed	**60 km/h**

Range, UZP-77 line charge	**200 to 500 m** not stated, charge launch distance, UZP-77; UZ-67 charge 200 to 350 m (WEG)
Crew	**2**
Cleared lane length, UZP-77	**80 to 90 m** anti-tank minefield; UZ-67 charge 75 to 80 m
Cleared lane width	**up to 6 m** one line charge
Line charge length	**93 m** UZP-77; UZ-67 is 83 m
Cleared lane length, ZRShch	**100 m** lane 6 m wide; charge in 6 m sections of 41 kg

SOURCES ESPR4 GS40 IISS25 JANESRG MILUA8 ORYX1 RBTH RWW TWZ37 TWZ38 WEG112 WEG2015 WP-EN26 WP-EN73 WP-EN195 WP-RU53 WP-RU260 WWW123 Updated 2026-10-01

UR-83P УР-83П

portable mine-clearing line charge

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Uran-6 Уран-6 «Уран-6»

TR

Remote-controlled tracked demining and obstacle-clearing vehicle In service 2016

OPERATED BY **Engineer units of the Southern and Eastern Military Districts**, engineer units R 2015-11 L

Mine action centre, International Mine Action Center R 2022-05 L

INDICATES *Seen with an engineer regiment or brigade or the Mine Action Center: points to area clearance of mines and explosive items, reported behind the front line. CNA (2019) saw no Uran robots in combined arms unit structure.*

RECOGNISE **Chassis** Low armoured tracked chassis, about 1.4 m high, unmanned. Reported as outwardly similar to the Croatian DOK-ING MV-4.

Working equipment Tool mounted in front: chain flail (tiller); bulldozer blade 1.8 m wide. Shovel and forklift tools at rear.

Deployed Flail turning ahead of the tracks; no crew aboard, the operator works a separate control panel at a distance.

Stowed Close only: four cameras, one top centre, two armoured at the sides, one facing rear. Carried on a four-axle KamAZ hook-lift transport truck.

CONFUSED WITH **Uran-9** Full view: same maker's armed robot with a 30 mm 2A72 gun, 9M120 Ataka missiles and Shmel-M launchers; Uran-6 carries a flail or blade at the front.



Kirill Borisenko, CC BY-SA 4.0



Mil.ru, CC BY 4.0

MOBILITY Slow tracked machine, 5 km/h maximum; claimed radio control range 0.3-1 km; operator stays clear of the vehicle.

Weight	**6 t** approximately; fit not stated, claim
L × W × H	**4.56 × 2.01 × 1.47 m** with tool, claim
Road speed	**5 km/h** maximum, tracked, unmanned, claim

Remote control distance	**1 km** claimed maximum, by radio from a control panel, claim
Crew	**Unmanned; one remote operator**
Blast resistance	**60 kg TNT equivalent** manufacturer figure, claim
Tool set	**5 interchangeable tools** full set: flail, roller and milling mine trawls, bulldozer blade, mechanical gripper (AIF)
Clearing width	**1.6 m** flail fitted, claim
Clearing depth	**35 cm** flail fitted, claim
Bulldozer blade width	**1.8 m** claim

SEEN WITH Remote control unit (1)

SOURCES AIBUS AIF18 AR127 ARTECH ATP CNA JFOR RGNEWS TASS35 WEG115 WP-RU263 Updated 2026-10-09

Mine laying

ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer ИСДМ «Земледелие»

WH-AT

Remote minelaying by 122 mm rockets (ISDM) and tracked mechanical minelaying (GMZ-3) In service 2020

OPERATED BY **engineer-sapper battalion**, obstacle platoon (brigade engineer battalion per RWW; division engineer battalion per WEG), 3 GMZ-3 per obstacle platoon D 2016 M
engineer-sapper brigade D 2024 L
engineer-sapper regiment D 2024 L
engineer-sapper brigade, battalion (divizion) of the brigade R 2022-02 M
Unidentified unit, ISDM crew R 2024-09 M

INDICATES *An ISDM points to an engineer brigade or army engineer regiment remote-mining subunit preparing minefields 5–15 km out. A group of three GMZ-3 suggests a brigade engineer obstacle platoon, likely a mobile obstacle detachment.*

RECOGNISE **Chassis** ISDM: four-axle KamAZ-6560 8x8 truck; the transloader uses the same chassis.
Working equipment ISDM: launcher on the rear deck carrying two box containers, each of 25 tubes in five rows of five.
Chassis GMZ-3: tracked, on the SA-4 Ganef chassis; seven road wheels, front drive sprocket, rear idler, four return rollers. Driver front left, engine to his right.
Working equipment GMZ-3: operator compartment at rear; mines leave through ports in the rear hull plate onto a conveyor and plough. PKT MG; three 81 mm smoke launchers each side.
Deployed ISDM: fires two 25-round containers from the truck; empty containers are swapped as a unit. GMZ-3: plough cuts a furrow behind the hull when burying mines.

CONFUSED WITH **BM-21 Grad** p. 122 Full view: Ural 6x6 truck with 40 open tubes; ISDM is a four-axle KamAZ-6560 with two 25-tube box containers.
UMZ minelayer Full view: three-axle ZIL-131 truck with six firing modules of 30 tubes; ISDM is a four-axle KamAZ-6560 with two 25-tube containers.



GMZ-2 tracked minelayer. Vitaly V. Kuzmin, CC BY-SA 4.0



Mil.ru, CC BY 4.0

MOBILITY ISDM: 8x8 truck, not amphibious, fords 1.8 m per WEG. GMZ-3: tracked, not amphibious, 28.5 t; lays surface mines at up to 16 km/h, buries at 6 km/h.

Weight, GMZ-3	**28.5 t** combat
L × W × H	**10.3 × 2.5 × 3.27 m**
Road speed, ISDM	**90 km/h** maximum, KamAZ-6560 chassis
Road speed, GMZ-3	**60 km/h** maximum

Range, ISDM mine rocket	**15 km** maximum, cassette rocket with AP or AT mines, claim
Minimum range, ISDM mine rocket	**5 km** cassette rocket with AP or AT mines, claim
Laying speed, GMZ-3	**16 km/h surface; 6 km/h buried** maximum
Range, 7.62 mm PKT (GMZ-3)	**2,000 m** max effective, day
Rocket calibre, ISDM	**122 mm** claim
Rockets per launcher, ISDM	**50 (2 containers x 25)**
Rocket mass and length, ISDM	**100 kg; 4 m** solid-fuel rocket
Container mass, ISDM	**3.8 t** per 25-round container; loaded state not stated
Reload, ISDM	**several minutes** container swap by transloader at a technical position
Mine load, GMZ-3	**208 AT mines**
Minefield length per load, GMZ-3	**1 km (pressure mines); 2 km (influence mines)** one vehicle, one load

SEEN WITH ISDM transport-loading vehicle (KamAZ-6560 8x8; small crane per blog source); KamAZ-6560 (1 per launcher); Automated mine-barrier control system with UMZ-K Klesch (Izvestia writes UZM-K)

SOURCES ARMINF4 ATP IISS25 IZV223 JANES5 M360 MPER4 ORYX1 OVC RWW TI3 WEG121 WEG2015 WP-EN206 WP-EN207 WWW124 ZR16 ZR24 Updated 2026-10-06

PKM

man-portable minelaying kit

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PMR-3

towed minelayer legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PMZ-4

towed minelayer

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

UMZ УМЗ Универсальный минный заградитель

WH-AT

Truck-mounted remote scatterable minelayer Introduced 1979

OPERATED BY **Ground Forces (SV); holding unit not named** D 2024 L

INDICATES *Sources say Russian ground forces employ UMZ but name no holding unit or count. It must work close to the area it mines, so it points to an obstacle task near the line. Ukraine also uses UMZ launchers.*

RECOGNISE **Body** Six hexagonal launcher blocks of 30 tubes each in the load body, three each side.
Cab ZIL-131 (ZIL-131V) truck cab and bonnet; the truck is the carrier.
Axles Three axles, 6x6.
Details Blocks rotate 360 degrees and tilt, set by hand before laying; control panel is in the cab.

CONFUSED WITH **UMZ-K** Full view: six rotary launchers on a newer truck, KamAZ-63501 8x8 (Army-2015) or Asteys 6x6 (Army-2019), with an armoured mine body; a ZIL-131 bonnet marks the UMZ.
ISDM Zemledeliye p. 217 Full view: four-axle KamAZ-6560 with two 25-tube box containers; UMZ is a three-axle ZIL-131 with six 30-tube blocks.

MOBILITY Truck chassis; off-road speed about 30 km/h. Lays mines at 10 to 40 km/h and needs 60 to 90 min to reload.

Weight, with mine load	**10,000 kg** ZIL-131 carrier
Weight, without mine load	**8,300 kg**
L × W × H	**7.1 × 3.0 × 2.5 m**
Road speed	**80 km/h**
Road range	**525 km** cruising
Fording	**1.4 m**

Crew	**2**
Launch tubes	**180 (6 blocks x 30)**
Mines per load, PFM-1S / POM-2 / PTM-3	**11,520 / 720 / 180** basic load by mine type; one source gives 180 to 11,520 range
Minefield length	**1,000 to 1,200 m** WEG general figure, mine type not stated; WEG gives one-load maxima of 3,200 m (PFM-1S), 5,000 m (POM-2), 600 m (PTM-3)
Laying distance from vehicle	**30 to 60 m** vehicle moving 10 to 40 km/h
Laying speed	**10 to 40 km/h**
Maximum dispensing gradient	**33%**

SEEN WITH ZIL-131 truck (ZIL-131V) (1 per launcher); Mine cassettes (PFM-1S, POM-2, PTM-3) (180 to 11,520 mines per load)

VARIANTS **UMZ on BTR-80** Launcher blocks mounted on top of a modified BTR-80 armoured personnel carrier instead of a ZIL-131 truck.

SOURCES AR100 AR124 ATP DEFUA18 KYIVP7 MILUA7 ORYX1 RTRU2 RWW WEG77 WEG2015 ZR24

Updated 2026-10-09

UMZ-G Kleshch-G

universal tracked remote minelayer trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

VSM-1 BCM-1

helicopter remote mining system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Recovery and repair

BREM and BTS armoured recovery vehicles БРЭМ

TR

Armoured recovery and repair vehicles for tank and infantry vehicle units In service 1975

OPERATED BY **motor rifle battalion**, support platoon (evacuation squad), 3 BREM-L (RWW organisation chart) D 2016 M

INDICATES *A BREM seen with a column marks a maintenance or evacuation element of a battalion or brigade. Type of base chassis shows what it supports: T-72 hull for tanks, BMP-3 hull for motor rifle units.*

RECOGNISE **Chassis** Bases: T-72A (BREM-1, turret removed, new superstructure), BMP-1 (BREM-2), BMP-3 (BREM-L), BTR-D (BREM-D), BTR-80 8x8 (BREM-K, keeps a turret).

Working equipment BREM-1: modified T-72A hull, turret removed, new superstructure, front 3.1 m dozer blade that doubles as earth anchor, crane, winch, 12.7 mm NSVT MG.

Stowed Light ARVs: swivel crane and winch; cargo platform on BREM-2 and BREM-L; BREM-K spares platform on turret roof. BTS-4: platform amidships, jib at left front, rear spade.

CONFUSED WITH **IMR-2 / IMR-3M engineer vehicles** p. 215 Stowed: IMR has a telescopic boom on a rotating mount where the turret was; BREM-1 a crane and cargo platform on a new superstructure. Both have a front blade.



BREM-L. Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY BREM-1 (41 t tank hull) cannot swim; it fords 1.2 m, 5 m with snorkel. BREM-2, -L, -D and wheeled BREM-K swim. BREM-D is air-droppable.

Weight, BREM-1 **41 t** combat weight
Weight, BREM-2 **14 t**
Weight, BREM-L **18.7 t**

Tow load, BREM-1	**50 t** maximum, semi-rigid tow bars
Crew, BREM-1	**3**
Crane capacity, BREM-1	**19 t at 2 m; 3 t at 4.4 m** crane length 4.4 m; WEG and RWW share one lineage
Main winch, BREM-1	**25 t; 100 t with snatch blocks; 200 m cable**
Dozer blade width, BREM-1	**3.1 m**

SOURCES AR34 ATP IISS25 JANESRG MIL25 ORYX1 RWW WEG29 WEG30 WP-EN35 WP-RU51 WP-RU53 WP-RU56 WP-RU57 WP-RU58 WP-RU59 WP-RU60 WP-RU61 Updated 2026-10-09

REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles РЭМ-КЛ; КТ-Л; МТП-А2.1; МТО-АТ

WH-AT

Wheeled field repair, recovery and towing of unit vehicles on truck chassis In service 2016

OPERATED BY **motor rifle battalion**, support platoon (43 personnel); one REM-KL on Ural-532362, three MTO-UB1 on Ural in a maintenance squad, 1 REM-KL and 3 MTO-UB1 per battalion D 2016 M

combined arms army, repair-evacuation subunit of the Eastern MD (2019-07); CAA in Priamurye (2019-10); first REM-KL batches R 2019-10 M seen with Combined arms army of the Eastern Military District, Priamurye (2019-10), Newly formed repair-evacuation subunit of the Eastern Military District (2019-07)

NUMBERS **Losses** Oryx visually confirmed losses: 19 REM-KL, 7 MTP-A2.1, 4 MTP-A2, 7 Ural-4320 KT-L, 1 KrAZ-260 KT-L, 1 MTO-UB2, 3 MTO-UB1, 6 MTO-AT (2026-09)

INDICATES *REM-KL or MTO-UB1 may point to a motor rifle battalion support platoon (2016 chart). REM-KL has also gone to an army-level repair-evacuation unit (2019 MoD reports). Other members: unit not established.*

RECOGNISE **Cab** REM-KL: cab-over-engine, flat front; crew compartment has three ballistic glass windows.

Body REM-KL: workshop, IM-95 crane-manipulator, recovery winch. MTP-A2.1: BAKM-890 crane-manipulator, 360° slew. MTO-UB1: workshop, 2.5 t crane.

Axles REM-KL: 8x8, Ural 5323-62 chassis. MTP-A2.1 on Ural-43202-31; KT-L and MTO-UB1 on Ural-4320.

Details KT-L (model TK6A): semi-lift towing device, ballast box and double rigid tow bar. MTO-AT: workshop on ZIL-131 chassis.

CONFUSED WITH **BREM-K (GAZ-59033)** p. 220 Full view: armoured BTR-80 8x8 hull that keeps its turret, spares platform on the turret roof; REM-KL is a cab-over Ural 8x8 truck with a crane.

VARIANTS **REM-KL** 8x8 cab-over-engine Ural-532362; workshop body, crane, winch. Recovery to 16 t (state claim); winch 10.5 t. **MTP-A2.1** Ural-43202-31 with BAKM-890 crane-manipulator (360° slew) and semi-lift transport device; Oryx lists MTP-A2 separately. Crane 4,000 kg at 2.1 m; carries defective vehicles semi-lifted. **KT-L** Ural-4320 with semi-lift towing device, ballast box and rigid tow bar; Oryx also lists a KrAZ-260 version. Carries 8.5 t semi-lifted; pulls stuck vehicles with 14 t force.



Vitaly V. Kuzmin, CC BY-SA 4.0



Vitaly V. Kuzmin, CC BY-SA 3.0



Vitaly V. Kuzmin, CC BY-SA 4.0



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Truck chassis, no armour. REM-KL fords 1.2 m, 90 km/h maximum, 30-50 km/h with a load (WEG, state sources).

Mass, REM-KL	**18.25 t** REM-KL; Wikipedia gives the same figure
Mass, MTP-A2.1	**12,895 kg** MTP-A2.1; kerb mass (snaryazhennaya massa)
L × W × H	**9.2 × 2.95 × 3.56 m** REM-KL
Road speed, REM-KL	**90 km/h** maximum, REM-KL
Speed with load in tow, REM-KL	**30 km/h dirt road; 50 km/h paved road** maximum, REM-KL carrying or towing a recovered vehicle, claim
Road speed, MTP-A2.1	**75 km/h** maximum, MTP-A2.1; OZLIB table, labels and figures listed apart, 13 of each, paired by order
Speed with load in tow, MTP-A2.1	**50 km/h** maximum, MTP-A2.1 as recovery train (evakopoezd); OZLIB table, labels and figures listed apart, 13 of each, paired by order
Road range, REM-KL	**1,000 km** maximum, REM-KL; Eastern MD press service gives 'up to 1,000 km', claim
Road range, MTP-A2.1	**1,100 km** MTP-A2.1 at 40 km/h on reference fuel use (883 km at 60 km/h); OZLIB, paired by order
Fording, REM-KL	**1.2 m** REM-KL
Fording, MTP-A2.1	**1.0 m** MTP-A2.1, hard bottom, natural wave; OZLIB, paired by order
Time to prepare for recovery, REM-KL	**under 10 min** REM-KL; towing preparation 12 min
Length, MTP-A2.1	**8,510 mm** MTP-A2.1 on Ural-43202-31; textbook table, row 'length'
Width, MTP-A2.1	**2,500 mm** MTP-A2.1 on Ural-43202-31; textbook table, row 'width'
Height, MTP-A2.1	**3,300 mm** MTP-A2.1 on Ural-43202-31; textbook table, row 'height'

Crane lifting capacity, REM-KL	**2.8 t at 3 m; 0.95 t at 8.1 m** maximum, REM-KL crane; hook height 8.25 m *also up to 2.83 t, IM-95 crane-manipulator VPK18*
Crane lifting capacity, MTP-A2.1	**1,650 kg at 5.4 m; 2,300 kg at 3.8 m; 4,000 kg at 2.1 m** maximum, MTP-A2.1 BAKM-890 crane-manipulator; maximum lift height 7.1 m
Recovery capacity, MTP-A2.1	**13 t semi-lifted on hard roads, 10 t on dirt; tows 10 t on hard roads, 7 t on dirt** maximum, MTP-A2.1; OZLIB table, labels and figures listed apart, 13 of each, paired by order
Recovery capacity, REM-KL	**16 t semi-lifted, off road; 22 t semi-lifted, on road** REM-KL; semi-lifted carriage *also up to 16 t total mass (repair and evacuation) VPK18*
Winch pull, REM-KL	**10.5 t** REM-KL
Crew, REM-KL	**3** REM-KL *also 2 listed (driver/crane operator; mechanic) RWW*
Recovery capacity, KT-L	**8.5 t semi-lifted; tows 5 t on dirt roads, 10 t on hard roads** KT-L (model TK-6A) on Ural-4320; figures legible, text labels lost
Recovery pull, KT-L	**14 t** KT-L (model TK6A); pulling out stuck vehicles on evacuation routes
Crew, MTO-UB1	**5: squad leader/mechanic, crane operator, mechanic, machinist, driver** MTO-UB1 (not a member of this entry; MTO-UB2 crew INA)
Crane lifting capacity, MTO-UB1	**2.5 t** MTO-UB1 on Ural-4320

SEEN WITH BREM-L (3 per motor rifle battalion support platoon); MTO-UB1 (3 per motor rifle battalion maintenance squad); Ural-5323 / Ural-532362 (1 chassis per REM-KL)

SOURCES JANESRG ORYX1 OZLIB PARMKT RVVDKU RWW SILARF VPK18 WEG83 WEG2015 WP-EN157 WP-RU59 Updated 2026-10-10

CBRN defence

ARS-14, TMS-65 and TZ-74 decontamination vehicles APC-14KM

WH-AT

Truck-mounted decontamination and smoke vehicles of RKhBZ (NBC defence) troops In service 1969

OPERATED BY **motor rifle brigade**, decontamination platoon, RKhBZ company (company also supports tank brigades), 8 ARS-14KM per RKhBZ company D 2024 M

RKhBZ regiment, Eastern Military District NBC protection regiment, Amur Region, received ARS-14KM batch R 2020 L

NUMBERS **Losses** 3 ARS-14 losses recorded in Ukraine since Feb 2022: 1 destroyed, 2 captured (Oryx); no unit named (2026-10)

INDICATES *An ARS-14KM or TMS-65 usually means an RKhBZ subunit is near; ATP puts 8 ARS-14KM in a company supporting a motor rifle or tank brigade. TMS-65 is also used to clear snow and ice on airfields.*

RECOGNISE **Chassis** ARS-14KM on KamAZ-43114 (or 43101) 6x6; ARS-14 on ZIL-131; ARS-15 on Ural-375; TMS-65 on Ural-375E, TMS-65M/U on Ural-4320; TZ-74 on Tatra 148 6x6.

Working equipment ARS: oval-section steel tank on the frame, side equipment boxes, hose rack on top (base ARS-14). KM adds heater, aerosol generator, pumps.

Working equipment TMS-65, TZ-74: gas turbine on the rear bed, operator cab on its left; TMS-65 engine and cab share a turntable. TZ-74 has an obscurant tank on the right.

Stowed TMS-65 engine is locked horizontal for travel; TMS-65 comes with a PTs-4.2-754V water-tank trailer, TMS-65M tows a PTs-5.6-817 (WEG).

Deployed TMS-65 turns engine and cab 90 deg either side, engine up 12 and down 23 deg; works in pairs about 50 m apart. ARS uses hoses, brushes and spray guns.

CONFUSED WITH **TZ-74** Full view: Tatra 148 with the turbine at the rear and an obscurant tank on the right; TMS-65 is a Ural with engine and cab on a turntable.

ARS-14 (ZIL-131) p. 252 Full view: older base model on the ZIL-131 6x6; ARS-14KM is on a KamAZ-43114.

TDA-3 smoke generator p. 223 Full view: KamAZ-5350 with three rectangular modules in line behind the cab; TMS-65 carries its turbine on a turntable on a Ural.

VARIANTS **ARS-14** ZIL-131 chassis, oval tank, one engine-driven pump plus a hand pump. **ARS-14KM** KamAZ-43101 or 43114 chassis. **ARS-15** Ural-375 chassis. **TMS-65** Ural-375E chassis, VK-1A turbojet (VK-1 in some sources) on turntable.



ARS-14. Vitaly V. Kuzmin, CC BY-SA 4.0



ARS-14KM. Vitaly V. Kuzmin, CC BY-SA 4.0



TMS-65U. Vitaly V. Kuzmin, CC BY-SA 4.0



TMS-65D. Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Wheeled all-terrain trucks. TMS-65 with water trailer is limited to 40 km/h on roads. Roads are treated on the move at 3-4 km/h (TMS-65) or 5-7 km/h (ARS-14).

Weight, ARS-14KM	**15,350 kg** WEG 'Max Weight'; matches KamAZ-43114 gross weight, may not be the station
Weight, TMS-65	**8 t** Empty, Ural-375 chassis
Weight, TZ-74	**21.9 t**
L × W × H	**7.35 × 2.96 × 2.98 m**
Crew, ARS-14KM	**1**
Crew, TMS-65 and TZ-74	**2**
Liquid capacity per fill, ARS-14KM	**2,500+1,000 L** Water or aqueous decontamination solution
Throughput, TMS-65, decontamination and disinfection	**30-40 vehicles/h** One vehicle takes 150-200 L water or suspension

SOURCES ATP AVIAROS CYCLO LOL54 MOCR ORYX1 SDN STUD1 STUD2 STUD2A SVRHBZ TOPWAR5 WEG43 WEG2015 WP-RU75 Updated 2026-10-09

RKhM CBRN reconnaissance vehicles PXM-4, PXM-6, PXM-8, PXM-9

WH-AT-A

Radiation, chemical and biological reconnaissance; marks contaminated ground In service 2006

OPERATED BY **RKhBZ troops**, RKhBZ troops; deliveries of RKhM-8 and RKhM-9 planned for 2021 R 2021 M

RKhBZ units of the Eastern MD in Primorye and Buryatia, batch of RKhM-6 received; holding units not named R 2015-11 M

NUMBERS **Losses** 2 RKhM-4, 11 RKhM-6 (10 destroyed, 1 captured), 5 BRDM-2RKhb (3 destroyed, 2 captured) lost since Feb 2022 (Oryx, photo-confirmed) (2026-09)

INDICATES *Seen together, these vehicles suggest an RKhBZ (CBRN defence) reconnaissance subunit. Russia fields RKhBZ brigades and regiments; doctrine attaches NBC reconnaissance subunits to manoeuvre units.*

RECOGNISE **Axles** Chassis separates the members: BTR-80 8x8 amphibious (RKhM-4, -6); Tigr-M 4x4 (RKhM-8); three-axle KamAZ-63969 Typhoon (RKhM-9); BRDM-2 4x4 (BRDM-2RKhb).

Body RKhM-4/-6 keep a turret with 14.5 mm KPVT and 7.62 mm PKT. RKhM-8 reported unarmed: two banks of two smoke dischargers at front roof, detectors on roof.

Cab RKhM-4 and RKhM-6 are BTR-80 based; RKhM-6 keeps driver forward, NBC laboratory amidships, engine aft. RKhM-8 is a 4x4 Tigr-M armoured car.

Details BRDM-2RKhb has two rectangular racks at the rear, one per side, dispensing lane-marking poles with pennants. Base BTR-80 has six smoke dischargers on the turret rear.

CONFUSED WITH **BTR-80 APC** p. 110 RKhM-4 and -6 keep the turret and look almost the same as the APC and other BTR-80 types; some RKhM-6 show box-like detectors on the roof (from photograph).

RKhM-5 (BMD-3 based, airborne) Full view: tracked BMD-3 hull, not the wheeled BTR-80 of the RKhM-4 and -6.

RKhM (MT-LB based, older) p. 107 Full view: tracked hull of MT-LB components with a raised superstructure, a 7.62 mm MG cupola and boxes for dispensing pennants.



RKhM-6. Vitaly V. Kuzmin, CC BY-SA 4.0



RKhM-8. Nickel nitride, CC0



RKhM-9. Mike1979 Russia, CC BY-SA 4.0



BRDM-2RKh. ShinePhantom, CC BY-SA 3.0

MOBILITY BTR-80 and BRDM-2 based members swim (RKhM-6 at 9 km/h). Swimming for RKhM-8 and RKhM-9 not stated. Reconnaissance speed is far below road speed.

Weight, RKhM-6 combat	**13.6 t**
Weight, RKhM-4 full	**13.5 t** claim
Weight, RKhM-8 combat	**7.5 t** claim
Weight, RKhM-9 gross	**20 t** claim
Detection range, PKhRDD-2B remote chemical detector (RKhM-6)	**about 3 km** claimed, Remote vapour detection; target and conditions not stated
Chemical monitoring radius, RKhM-6	**up to 6 km** claimed, around troop positions, chemical situation, claim
Detection range, UAV reconnaissance complex (RKhM-9)	**up to 25 km** claimed, Terrain survey distance of the onboard unmanned aerial complex, claim
Crew, RKhM-4, -6, -8	**3**
Armament, RKhM-4 and RKhM-6	**14.5 mm KPVT and 7.62 mm PKT machine guns**

SOURCES AG5 AMAL AR43 IISS25 JANESRG ORYX1 RG21 RG2108 RT21 RWW TOPWAR4 U243 USER8OCT VPK8 VRF4 VRF5 VRF6 WEG40 WEG2015 WP-RU70 WP-RU71 Updated 2026-10-09

TDA-2K, TDA-3 and TDM-2K smoke generator vehicles ТДА-2К

WH-AT

Truck-mounted thermal aerosol generators that screen troops and sites from view and IR In service 1982

OPERATED BY **motor rifle brigade**, RKhBZ company, aerosol platoon (RKhBZ company also supports tank brigades), 5 TDA-2K per aerosol platoon D 2024 M

RKhBZ brigade, 5 TDA-3 delivered in one batch R 2017 L

INDICATES *TDA-2K or TDA-3 indicates an RKhBZ subunit, doctrinally an aerosol platoon in the brigade RKhBZ company. A column laying white aerosol suggests a screening task for an advance or a high-value site.*

RECOGNISE **Deployed** Opaque white aerosol forms in air from a hot gas jet; TDA-2K lays smoke while moving at 10 to 40 km/h (developer sheet).

Working equipment TDA-3: three rectangular modules in line behind the cab (power unit, liquid tanks, powder tank). TDA-2K: insulated tank, gas-thermal generator, two fuel tanks.

Chassis TDA-3 on a KamAZ-5350 6x6 truck with the standard cab for its two-man crew. TDA-2K on a KamAZ-4310 (43114) truck.

CONFUSED WITH **TMS-65M decontamination/smoke vehicle** p. 222 Full view: Ural-4320 6x6 with a turbine on a turntable at the rear and a movable nozzle; TDA-3 is a KamAZ-5350 with three modules behind the cab.



Vitaly V. Kuzmin, CC BY-SA 4.0



Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY TDA-3: full-time all-wheel drive, central tyre inflation, fords 1.75 m (WEG). Not amphibious. TDA-2K: 60 km/h highway, 930 km (ATP). TDM-2K limits INA.

Weight, combat	**15.75 t** TDA-3; WEG says combat weight, topwar says curb weight
Weight	**15.1 t** TDA-2K, full weight as stated by Belarus MoD, claim
L × W × H	**7.85 × 2.5 × 3.29 m** TDA-3

Smokescreen length	**over 1,000 m** claimed, TDA-2K, length of the opaque part of the screen, claim
Smoke duration per fill	**4–13 h** claimed, TDA-2K, one tank charge, claim
Smoke duration per fill	**110 min–6 h** claimed, TDA-3, depends on flow rate 10–30 l/min, claim
Speed while laying smoke	**10–40 km/h** claimed, TDA-2K, claim
Crew	**2** TDA-3 and TDA-2K
Smoke mixture tank	**4,800 l (4,200 l working)** TDA-2K, claim

SOURCES AR110 ATP FOCUS12 MILBY ORYX1 STUD1 TOPWAR5 TWZ33 VRF14 WEG93 WEG2015 WWW118

Updated 2026-10-09

8 Command and signals

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
COMMAND AND STAFF VEHICLES						
AShT-4310	–		topographic command and staff vehicle	–	–	*226*
BMD-1KSh-A	–	БМД-1КШ-А «Сорока»	Airborne battalion chief-of-staff command and staff vehicle · 1975	**300 km** R-130 HF radio, max, HF	**TR-A**	226
BMP-1KSh command and staff vehicle	M1978	БМП-1КШ «Поток-2»	Command and staff vehicle for regimental and battalion commanders · 1972	–	**TR**	226
R-145BM Chayka command and staff vehicle	–	Р-145БМ «Чайка»	Turretless radio command and staff vehicle for mobile command posts · 1960	**20–350 km** VHF/HF radio, VHF, HF	**WH-AT-A**	227
R-149 command and staff vehicles	–	Р-149	Tactical command and staff vehicles with HF/VHF radios and data terminals · 1990s	**6–450 km** VHF/HF/UHF radio, 1.5–108 MHz; 1.5–1.75 GHz	**WH-AT-A**	228
VTS Ladoga	–	ВТС «Ладога»	Armoured command, staff and reconnaissance vehicle for NBC conditions · 1980s	–	**TR**	229
ARTILLERY AND AIR DEFENCE COMMAND						
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	M1974	1В12 «Машина-С»	Tracked command, observation and fire direction vehicles, SP howitzer battalion · 1972	**20–250 km** vehicle radios	**TR-A**	230
1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	M1979-2B	1В18, 1В19, 1В119, 1В152, 1В1003 «Клён-1», «Клён-2», «Реостат», «Спектр», «Капустник-Б»	Artillery battery and battalion command, observation and fire direction vehicles · 1979	–	**WH-AT**	231
Akatsiya-E	–		air defence command and control complex	–	–	*232*
Akatsiya-M	–		command and control automation system	–	–	*232*
ASUNO-S	–		artillery fire control system	–	–	*232*
Barnaul-T	–	«Барнаул-Т»	Automated command and control set for tactical short-range air defence, battery to brigade · 2015	**1–40 km** data link and radios	**TR-A**	233
Polyana-D4	–	9С52 «Поляна-Д4»	Automated command post of an Army air defence missile brigade · 1986	–	**WH-AT**	233
PRP-4A Argus / PRP-4M Deytery	–	ПРП-4А «Аргус»	Mobile artillery reconnaissance post on BMP-1 chassis · 1988	**10–20 km** tank, radar detect	**TR-A**	234
PU-12M7	–	9С482М7 ПУ-12М7	Air defence battery command post · 1977	**5–40 km** data link, radio, VHF, HF	**WH-AT-A**	234
RADIO AND SIGNALS						
Andromeda-D	–		command and control system	–	–	*235*
ESU TZ	–	ЕСУ ТЗ	tactical-level command and control system	–	–	*235*
P-240I-4 Pereselenets	–	П-240И-4 «Переселенец»	Digital field communications vehicle linking command posts · 2015	**40 km** comms range, at least	**WH-AT**	235
R-142N Deimos-N	–	Р-142Н «Деймос-Н»	Truck-mounted HF/VHF command and staff vehicle for regiment, brigade and division staffs · 1976	**3–350 km** HF/VHF/air-band radios, 1.5–149.975 MHz	**WH-AT**	236
R-161 Poisk HF radio station	–	Р-161 «Поиск»	Medium and high power HF/VHF radio stations on trucks for operational-level links	**75–2,000 km** HF radio, max, 1.5–59.999 MHz	**WH-AT**	236
R-166 Artek	–	Р-166 «Артек»	Medium-power HF/VHF mobile radio station for command post signal nodes · 1996	**70–2,000 km** HF/VHF radio, max, HF 1.5–30, VHF 30–80 MHz	**WH-AT**	237
R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations	–	Р-412А; Р-412АМ; Р-417	Beyond-line-of-sight radio relay link between headquarters	**150 km** R-412A link, at least, 4438–4555, 4630–4749.98 MHz	**WH-AT**	237
R-416GM Granit-M radio relay station	–	Р-416ГМ «Гранит-М»	Truck-mounted digital radio relay station for field command networks · 2018	**40 km** R-416G-MS link, up to	**WH-AT**	238
R-439 Legenda-2	–	Р-439 «Легенда-2»	Military satellite communication stations	–	**WH-AT**	238
Redut-2US	–	«Редут-2УС»	Mobile digital radio-relay and broadband wireless communications complex for command posts · 2011	**30–55 km** relay and wireless access	**WH-AT**	239
SA-14RM/SM	–		encryption command post	–	–	*239*
Sozvezdie	–		tactical command and control system · legacy	–	–	*240*
Strelets	–	КРУС «Стрелец»	Soldier-worn reconnaissance, command and communications set · 2007	**1.5–8 km** squad net, R-853-V2M link	**MP+AD**	240
TRANSPORT AND TANKER AIRCRAFT						
An-148-100E	–	Ан-148-100Е	staff and passenger jet of the VKS	–	–	*241*
Tu-154	CARELESS	Ту-154	three-engine passenger and staff jet of the VKS	–	–	*241*
EARLY-WARNING, COMMAND AND ELECTRONIC-WARFARE AIRCRAFT						
Tu-214PU-SBUS	–	Ту-214ПУ-СБУС	airborne command post aircraft	–	–	*242*

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
PRP-4A Argus / PRP-4M Deytery	Mobile artillery reconnaissance post on BMP-1 chassis	8 Command and signals	234
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	Tracked command, observation and fire direction vehicles, SP howitzer battalion	8 Command and signals	230

Command and staff vehicles

AShT-4310

topographic command and staff vehicle

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BMD-1KSh-A БМД-1КШ-А «Сорока» TR-A

Airborne battalion chief-of-staff command and staff vehicle In service 1975

OPERATED BY **air assault regiment**, 2 to 7 BMD-1KSh per regiment in the 2000 list R 2000 L
artillery regiment, 0 to 2 per regiment in the 2000 list R 2000 L

INDICATES *The BMD-1KSh is a battalion chief-of-staff vehicle. A 2000 list places it in airborne regiments and in the artillery, air defence, engineer and signal units of airborne divisions.*

RECOGNISE **Hull** Turretless BTR-D hull with raised centre compartment; no bow machine guns or firing ports, equipment in their place.
Turret No turret. Commander's cupola sits aft and to the left of the base BTR-D position; officers' hatches moved forward to the driver's hatch.
Details Three armoured-cover windows in the superstructure plate; folding clothes-horse antennas round the superstructure, two masts; 4 m HF whip, mast antenna optional.
Armament None fitted as standard; bow machine guns replaced by equipment.

CONFUSED WITH **BTR-D** p. 105 Base carrier: bow machine guns, firing ports and officers' roof hatches over the centre; no armoured windows in the superstructure.



Alf van Beem, Public domain

MOBILITY Amphibious, swims at 10 km/h. Climbs 32 degrees, 0.7 m wall, 2.5 m trench (ru-wiki figures, base BMD-1KSh).

Weight, combat	**8.7 t** BMD-1KSh
L × W × H	**5.883 × 2.63 × 1.65 to 2.00 m** Hull; same as BTR-D hull (BMD-1 hull 5.40 m)
Speed, road	**60 km/h** BMD-1KSh
Range, HF radio R-130	**300 km** maximum, Up to, with 4 m whip antenna; BMD-1KSh
Crew	**6** BMD-1KSh
Radios	**2 R-123M, 2 R-111, 1 R-130** Original BMD-1KSh
Radios, A version	**R-168-100U-2, R-168-UN5-2, R-168-100KB** BMD-1KSh-A; replace R-111, R-123, R-130

SOURCES AR16 JANESRG ORYX1 WEG2015 WP-EN22 WP-RU29 WP-RU30 WP-RU38 not in WEG

Updated 2026-10-09

BMP-1KSh command and staff vehicle БМП-1КШ «Поток-2»

NATO: M1978 **TR**

Command and staff vehicle for regimental and battalion commanders In service 1972

OPERATED BY **motor rifle regiment**, regimental command post, 1 in regimental HQ of a BMP-equipped motor rifle regiment (FM 100-2-3 table, OCR scrambled) D 1991 M
tank regiment, regimental command post, INA (FM 100-2-3 table reads 0 for the tank regiment HQ) D 1990 M

INDICATES *A BMP-1KSh marks a regimental command post; one source also gives one per battalion. Sources describe it for motor rifle and tank regiments. Oryx records 15 Russian losses 2022-26 but names no unit.*

RECOGNISE **Hull** BMP-1 hull: pointed nose, almost horizontal ribbed glacis, driver front left, two bulged rear doors.
Turret Fixed turret with a 10 m telescopic antenna mast in place of the gun; only two roof hatches, directly behind the turret.
Roof and rear Box-shaped generator set at the centre rear of the hull roof; four elevatable whip antennas at the rear, two each side; tube case for mast parts on the right rear.

CONFUSED WITH **BMP-1 IFV** p. 101 Full view or chassis hidden: BMP-1 has a 73 mm gun with a missile rail above and four roof hatches; the KSh turret has no gun, two roof hatches behind it.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Amphibious, swims. Radios run on the move from an engine-driven generator; a portable generator set is used at halts (RUWK2).

Weight, combat	**13 t**
L × W × H	**6.74 × 2.94 × 2.15 m**
Road speed	**65 km/h**
Crew	**3 crew plus 4 staff officers**
Armament	**1 x 7.62 mm PK, 2,000 rounds** carried machine gun, fired through the rear-door port (RUWK2); WEG lists it as PKT
Antenna mast height	**10 m** AMU Hawkeye telescopic mast, raised
Radios	**2 x R-111, R-123MT, R-130M**
Navigation	**TNA-3 gyroscopic navigation device**

SOURCES FM23 GS12 IISS25 JANESRG ORYX1 VALKA3 VALKACZ WEG21 WEG22 WEG2015 WP-EN30 WP-RU44 WP-RU46

Updated 2026-10-01

R-145BM Chayka command and staff vehicle Р-145БМ «Чайка»

WH-AT-A

Turretless radio command and staff vehicle for mobile command posts In service 1960

OPERATED BY **anti-tank battalion**, ACV listed as 'BTR-60PU/BRDM-2'; battery placement unclear in OCR, 5 per battalion (BTR-60PU or BRDM-2) D 1991 L
artillery brigade, 1 per brigade O 1994 L
RKhBZ (NBC protection) troops, Wikipedia names the vehicle BTR-60PU/PUM and equates BTR-60PU with R-145BM R 2022 L
INDICATES *Built for radio links at mobile command posts, so it points to a command post or communications node. A Soviet-era source places it at tank, motor rifle and artillery regiment and formation HQs; the current echelon is not fixed.*
RECOGNISE **Hull** BTR-60 8x8 hull (BTR-60PA base) with no turret.
Roof Collapsible frame antenna on the left side of the roof; cylindrical box (TZK) on the roof.
Mast 10 m telescopic mast and AB-1-P/30 generator on the roof.
Details Horn-shaped fittings ('horns') on the left and right upper edges of the front armour; hinged antenna leg supports on the upper side armour, mid-length.
CONFUSED WITH **BTR-60PB APC** Full view or chassis hidden: BTR-60PB has a turret with 14.5 mm and 7.62 mm MGs on the forward roof above the second wheel station; R-145BM has no turret.



VargaA, CC BY-SA 4.0

MOBILITY Amphibious 8x8, light armour; swims (no fording depth given). Petrol engines.

Weight, combat	**10.3 t**
L × W × H	**7.56 × 2.83 × 2.31 m**
Road speed	**80 km/h**

Range, R-130M zenith antenna	**75 km** HF, halted or moving, symmetrical zenith-radiation antenna
Range, R-130M dipole	**350 km** HF, halted only, symmetrical dipole
Range, R-123MT 4 m whip	**20 km** VHF, halted or moving
Range, R-111 3.4 m whip	**35 km** VHF, halted or moving
Crew	**2**
Radio fit	**2 x R-111, R-123MT, R-130M, R-012M call device**
Mast height	**10 m** AMU telescopic mast (Wikipedia); Jane's gives a 10 m radio antenna for the BTR-60PU command version of BTR-60PA

SOURCES ACONF145 ARINF FM100 IISS25 JANESRG ORYX1 RUSARMY4 UNIAN5 WEG81 WEG2015 WP-EN20 WP-EN21 WP-EN154 WP-RU190 WP-RU193 WP-RU194 Updated 2026-10-06

R-149 command and staff vehicles P-149

WH-AT-A

Tactical command and staff vehicles with HF/VHF radios and data terminals (ESU TZ) In service 1990s

OPERATED BY **motor rifle regiment**, R-149MA3 O 2022-09 M seen with 1st Guards Motor Rifle Regiment
command brigade, R-149AKSh-1 O 2022-03 L seen with 60th Control Brigade
motor rifle division, R-149AKSh-1 O 2022-03 L seen with 2nd Guards Motor Rifle Division
tank regiment, R-149MA3 O 2022-09 L seen with 1st Tank Regiment
motor rifle brigade, R-149MA1 O 2022-09 L seen with 27th Separate Guards Motor Rifle Brigade
motor rifle regiment, R-149MA1 O 2022-09 L seen with 752nd Motor Rifle Regiment
motor rifle division, R-149MA1 O 2022-09 L seen with 2nd Guards Motor Rifle Division
motor rifle brigade, brigade-level command and staff (R-149MA1, maker); one observed with 27th Sep Gds MRB R 2022 M
command brigade, command formation (R-149MA1), per Southern MD press service R 2018 L seen with command formation of 58th Combined Arms Army (Southern MD)
Signal units, signal units (R-149AKSh-1, R-149MA1) R 2019 L seen with 41st Combined Arms Army signal units
Company-platoon-squad level command (unit type not stated), R-149MA3 R 2025 L
INDICATES *An R-149MA1 or R-149AKSh-1 suggests a brigade, regiment, division or army control-brigade command post nearby. An R-149MA3 serves company to squad command; those destroyed or captured in 2022 were with a motor rifle regiment and a tank regiment.*
RECOGNISE **Body** MA1 and BMR: 8x8 K1Sh1 hull with built-up middle section, extra hatches and an unarmed turret. AKSh-1: van body on a three-axle KamAZ-5350 truck.
Roof MA1 and BMR: louvred box housing on the roof over the middle hull; tube cases along both sides of the rear roof (from photograph).
Mast R-149BMR: ASh-4 telescopic mast, AZI NVIS HF and discone antennas.
Turret R-149MA3: standard BTR-80 turret with 14.5 mm KPVT listed; one lost MA3 was turretless.
Axles Close only, BTR-based: four tyred wheels a side; door between 2nd and 3rd wheels, upper part opens to the right, lower part folds down.
CONFUSED WITH **K1Sh1 family (R-166-0.5, BMM-80, 1V152, Kushetka-B)** p. 237 Same K1Sh1 hull with built-up middle section and extra hatches; R-149BMR shares its configuration with BMM ambulances and the 1V152. Hull alone is not decisive.
R-166-0.5 Artek (K1Sh1) p. 237 From photograph: railed frame on the forward roof and cable drums at the rear; no louvred box housing over the middle roof as on MA1 and BMR.
RB-531B Infauna (K1Sh1) p. 199 Turret removed; antenna in a domed housing on the roof, raised on a mast; sensor and smoke launchers on the right. DFRLab: a K1Sh1 command vehicle was misread as Infauna.
PU-12M7 (K1Sh1) p. 234 From photograph: mast with a dome-shaped head, and a sensor box on the cupola; the R-149BMR mast ends in a crossbar.
BTR-80 APC p. 110 Full view: BTR-80 turret carries 14.5 mm and 7.62 mm MGs; MA1 and BMR have an unarmed turret on a built-up middle hull. MA3 is listed with the armed turret.
R-416GM radio relay station (KamAZ-5350) p. 247 Deployed: raises a mast of up to 30 m with three dish antennas. Stowed, both are three-axle KamAZ-5350 trucks with an equipment body.
SEEN WITH BTR-80 / K1Sh1 (GAZ-59032) chassis (1 per R-149MA1, MA3 or BMR); KamAZ-5350 6x6 truck (1 per R-149AKSh-1); R-168-100UE-2 VHF radio (2 per R-149MA1; 2 per R-149AKSh-1 (R-168-100U-2)); R-168-100KBE HF radio (INA; forms 1-2 simplex HF channels per R-149MA1); E-351BrM power station on K1Sh1
VARIANTS **R-149AKSh-1** KamAZ-5350 6x6 truck with van body instead of armoured 8x8 hull. Not amphibious, armour INA (WEG); 2 HF R-168-5KV and 2 VHF R-168-100U-2 radios, 5 officer workstations (WEG). **R-149MA1** Unarmed K1Sh1 hull based on BTR-80. Brigade-level; 4 workstations, crew 6, HF to 350 km on mast antenna when halted (maker). **R-149MA3** WEG lists the standard BTR-80 armed turret (sheet reuses BTR-80 text). Company-platoon-squad command; no HF set in WEG list (2 VHF R-168-25U-2, UHF R-168-MRA, R-168-0.1UM). **R-149BMR** K1Sh1 hull with ASh-4 telescopic mast, AZI HF and discone antennas. Brigade and regiment-battalion level; 1 HF and 4 VHF channels, HF to 350 km, VHF to 60 km.


Ministry of Defence of the Russian Federation, CC BY 4.0


Ministry of Defence of the Russian Federation, CC BY 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0


Mike1979 Russia, CC BY-SA 3.0

MOBILITY BTR-80-based versions swim (WEG). R-149AKSh-1 on KamAZ-5350 is not amphibious; fords 1.75 m (WEG).

Weight, R-149MA1	**15,000-15,050 kg** maximum, claim
Weight, R-149BMR	**13.6 t** combat
L × W × H	**7.65 × 2.9 × 2.41 m**
Road speed, BTR-based versions	**80 km/h** maximum
Road speed, R-149AKSh-1	**100 km/h** maximum
Road range, BTR-based versions	**600 km** cruising
Road range, R-149AKSh-1	**1,000 km** cruising
Swimming speed, BTR-based versions	**10 km/h** maximum
Fording, R-149AKSh-1	**1.75 m**
Time into action, R-149MA1	**10 min on the move / 30 min halted** maximum, deployment for work on the move / at a halt, claim
Length, R-149BMR / R-149MA3	**7.7 m**
Length, R-149AKSh-1	**7.85 m**
Width, R-149AKSh-1	**2.5 m**
Height, R-149AKSh-1	**3.29 m**
Time into action, R-149BMR	**INA** Wikipedia gives 5 min on the move, 20 min halted; single source
Time out of action	**INA**

Range, VHF R-168-100UE-2, R-149MA1	**25 km** maximum, on the move, vehicle antenna, claim
Range, VHF R-168-100UE-2 on mast, R-149MA1	**55 km** maximum, halted, mast antenna, claim
Range, HF R-168-100KBE, R-149MA1	**350 km** maximum, halted, mast antenna; 50 km (20 km moving) on ASh-4 whip, claim
Range, HF air-ground Prima, R-149MA1	**450 km** maximum, HF to aircraft, claim
Range, VHF air-ground Prima, R-149MA1	**120 km** maximum, VHF to aircraft, claim
Range, HF, R-149BMR	**350 km** maximum, HF band 1.5-30 MHz, claim
Range, VHF, R-149BMR	**60 km** maximum, VHF band 30-108 MHz, claim
Range, VHF R-168-100U-2, R-149AKSh-1	**25-60 km** maximum, 30-108 MHz, 2 sets
Range, HF R-168-5KV, R-149AKSh-1	**15-300 km** maximum, 1.5-30 MHz, 2 sets
Range, VHF R-168-25U-2, R-149MA3	**25-40 km** maximum, 30-108 MHz, 2 sets
Range, UHF R-168-MRA, R-149MA3	**6-20 km** maximum, 1.5-1.75 GHz data radio
Range, 14.5 mm API-T (KPVT), R-149MA3	**2,000 m** effective, API-T, day; armament per WEG only
Crew, R-149MA1	**6** claim
Crew, R-149BMR / R-149MA3	**3** WEG gives the BTR-80 APC crew of 3 plus 7 personnel
Workstations, R-149AKSh-1	**3 electronics + 5 officer**
Workstations, R-149MA1	**4** claim
Navigation accuracy, R-149MA1	**30 m** Azimut navigation set, claim

SOURCES 3G ACONF AR50 AR56 AR94 ARMYINF7 ARMYINF8 ATP DFRLAB3 ELSIG GAGA2 JANESRG KI14 MIL106 ORYX1 RUSARMY5 UNIAN6 VPK17 WEG82 WEG2015 WMC32 WMC33 WMC34 WMC35 WP-EN21 WP-RU65 WP-RU100 WP-RU195 WP-RU196 WSPOT14 WSPOT24 WSPOT25 WSPOT26 WSPOT27 WSPOT28 WSPOT29 WSPOT30
Updated 2026-10-06

VTS Ladoga ВТС «Ладога» TR

Armoured command, staff and reconnaissance vehicle for NBC conditions Designed 1980s

OPERATED BY **Unidentified unit**, vehicle hit by drone near Lyman (TWZ) or Kreminna (FOCUS), 2024-03 (Oryx: destroyed); no unit named R 2024-03 L
Unidentified unit, Special detachment for Chornobyl reconnaissance, 1986 (Soviet; vehicle from Kirov Plant), 1 R 1986 L

INDICATES *A very rare Soviet vehicle. One seen at the front in 2024 is a reactivated vehicle of uncertain role (carrier, ambulance or command vehicle are suggested), not evidence of a standard formation.*

RECOGNISE **Hull** T-80 tank hull and chassis; a new armoured-steel superstructure holds a front control compartment with the driver's post and a rear passenger compartment.
Turret No turret or gun: a new upper structure with roof hatches and a side door with integrated steps replaces the T-80 turret. A mast carries cameras.
Suspension Tracked T-80 running gear and gas-turbine drive.

CONFUSED WITH **T-80 main battle tank** Full view: same hull and running gear, but Ladoga has no gun turret; a new armoured upper structure with roof hatches and a side door replaces it.
BMO-T heavy flamethrower carrier p. 101 Also turretless, box superstructure, but T-72 running gear: three return rollers against the T-80's five, kept on Ladoga (from photograph). BMO-T has a 12.7 mm MG cupola.

MOBILITY Fords 1.2 m, crosses trenches over 2 m and 1 m obstacles (Army Recognition figures). Heavy T-80 chassis.

Weight	**42 t** condition not stated by sources
Road speed	**70 km/h** maximum, maximum, highway *also 110 km/h NAKED2*
Road range	**350 km** maximum *also 330 km AR68 WWW19*
Fording	**1.2 m** figure from Army Recognition, original source not named
Bridge load class	**47** 42 t tracked x 1.10, rounded up, estimated
Engine power	**1250 hp** GTD-1250 gas turbine; early vehicles GTD-1000TF, 1100 hp
Length	**INA**
Width	**INA**

Crew	**2 crew plus 4 in the passenger compartment** *also 6 persons inside TECHIN*
Endurance, water and food	**48 h** stores carried; Rossiyskaya Gazeta via Naked Science, claim
Auxiliary power	**18 kW** gas-turbine power unit; supplies all systems when stationary, claim

SOURCES AR68 FOCUS8 JANESRG NAKED2 ORYX1 TECHIN TRENCH TWZ20 USER8OCT WEG62 WP-RU43 WWW19 not in WEG

Updated 2026-10-09

Artillery and air defence command

1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex 1B12 «Машина-С» NATO: M1974 TR-A

Tracked command, observation and fire direction vehicles, SP howitzer battalion In service 1972

OPERATED BY **self-propelled artillery battalion**, each battery: one 1V13 (battery FDC) and one 1V14 (battery COP); battalion HQ: one 1V15 (battalion COP) and one 1V16 (battalion FDC), 8 per battalion: 3 1V13, 3 1V14, 1 1V15, 1 1V16 D 2016 H

self-propelled artillery regiment, howitzer battalion with 2S19M1, at least 3 1V13 and 3 1V14 seen with one battalion R 2021-09 L

NUMBERS **Losses** 25 1V13(M) and 20 1V14 lost since Feb 2022 (Oryx, photo-confirmed) (2026-09)

INDICATES *A 1V13 marks a battery firing position, where it stands behind the guns. A 1V14 or 1V15 marks a battery or battalion command observation post, usually with the supported manoeuvre unit. A full set of eight serves one SP howitzer battalion.*

RECOGNISE **Hull** MT-LBu hull with steep glacis; vertical rear with a single door. Three or four antennas on the hull roof.

Turret Round rotating turret shaped as a truncated cone on the rear half of the hull. On 1V14 and 1V15 it carries a laser rangefinder and optical sights.

Armament 1V13 and 1V16: 12.7 mm DShKMT machine gun on the turret. 1V14 and 1V15: 7.62 mm PKMB machine gun on a mount on the turret roof.

Details 1V13, 1V14, 1V15: rectangular box on the right hull side below the turret. M-suffix vehicles carry the generator in an external box at the hull rear.

Suspension Close only: seven road wheels each side, no return rollers. The MT-LB it derives from has six.

CONFUSED WITH **MT-LB** p. 107 Chassis hidden: MT-LB turret sits at the front over the driver, not on the rear half. Full view: six road wheels, not seven.

MT-LBu radar carriers (ARK-1M, Zoopark-1) p. 177 Same seven-wheel MT-LBu hull, but a parabolic (ARK-1M) or electronically scanned (Zoopark-1) radar antenna where 1V12 vehicles have an MG turret.


Vitaly V. Kuzmin, CC BY-SA 4.0


Simon Q from United Kingdom, CC BY 2.0

MOBILITY Amphibious, propelled by its tracks in water.

Weight	**14.8 t** 1V13 and 1V14, combat weight
L × W × H	**7.475 × 2.85 × 2.425 m** hull
Road speed	**62 km/h** maximum, claim
Road range	**500 km** maximum, claim

Detection range, 1V14 optical reconnaissance	**up to 10,000 m** maximum, day
Detection range, 1V14 optical reconnaissance (night)	**up to 2,500 m** maximum, night
Range, laser target illumination (1V14)	**up to 7,000 m** maximum, for laser-guided (corrected) munitions
Radio range	**20–25 km** stated, 1V13 and 1V14, vehicle radios
Radio range, R-111	**220–250 km** stated, 1V15 and 1V16, vehicle radio
Radio range, R-130MT	**130 km** stated, 1V15 and 1V16, HF vehicle radio
Crew, 1V13	**6** senior battery officer, section commander-surveyor, computer, senior radio operator, radio operator, driver
Crew, 1V14	**6** includes battery commander
Crew, 1V15	**6** includes battalion commander
Crew, 1V16	**7** includes battalion chief of staff
Armament, 1V13 and 1V16	**1 x 12.7 mm DShKMT (500 rds), 1 x RPG-7 (5 rds)**
Armament, 1V14 and 1V15	**1 x 7.62 mm PKMB (1,250 rds), 1 x RPG-7 (5 rds)**

SEEN WITH 1V13 battery fire direction vehicle (3 per battalion set); 1V14 battery command observation post vehicle (3 per battalion set); 1V15 battalion commander's command observation post vehicle (1 per battalion set); 1V16 battalion fire direction (chief of staff) vehicle (1 per battalion set)

SOURCES AG1 ARMF13 ARMF14 ARMF15 ARMF16 FAS1 JANESRG JREW02 MILINF ORYX1 RWW TWZ1 VRF1 WP-RU1 not in WEG

Updated 2026-10-06

1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles

1B18, 1B19, 1B119, 1B152, 1B1003 «Клён-1», «Клён-2», «Реостат», «Спектр», «Капустник-Б»

NATO: M1979-2B **WH-AT**

Artillery battery and battalion command, observation and fire direction vehicles In service 1979

OPERATED BY **artillery battalion**, 1V18 battery commander's COP vehicle; 1V19 battalion commander's COP vehicle; towed gun and MRL battalions, 3 x 1V18 and 1 x 1V19 per battalion set D 2016 M
VDV, 1V119 in VDV artillery and mortar units (RWW), used with 2S9 Nona-S (WEG15, ru-wiki) D 2016 M
Naval Infantry, 1V119 in naval infantry artillery (RWW, ru-wiki), used with 2S9 Nona-S D 2016 M
artillery battalion, 1V152 as battery and battalion command-observation post of the 1V126 Kapustnik-B set; gun, mortar and MRL units D 2016 M
Tornado-G, Grad and Msta units, 1V1003 command and observation vehicle of the 1V198 system R 2022-09 L

NUMBERS **Losses** 12 1V119 lost: 4 destroyed, 8 captured (Oryx, visually confirmed) (2026-10); **Losses** 6 1V18 Klyon-1 lost, all destroyed (Oryx, visually confirmed) (2026-10)

INDICATES *1V18/1V19 suggests a towed gun or MRL battalion (three battery and one battalion vehicle per set). 1V119 suggests VDV or naval infantry artillery, often 2S9. 1V152 or 1V1003 marks a gun or MRL battery or battalion command post.*

RECOGNISE **Body** Armoured command vehicles on APC hulls: 1V18/1V19 on BTR-60PB, 1V152 and 1V1003 on BTR-80, 1V119 on a tracked airborne hull.
Turret 1V18/1V19: unarmed turret with NNP-21 and DV observation devices and a rangefinder. 1V19 adds a stowage box on each hull side.
Hull 1V119: observation turret in place of the gun turret on a BMD-family tracked hull; a radar may be fitted on the roof.
Details 1V119: 30 mm AG-17 grenade launcher and a folding antenna.

CONFUSED WITH **BTR-60PB APC** BTR-60PB turret above the second wheel station carries 14.5 mm and 7.62 mm MGs; the 1V18/1V19 turret carries observation devices and no gun.
K1Sh1 command vehicles (Kushetka-B, BMM-80) 1V152 shares the K1Sh1 layout of the Kushetka-B command vehicle and the BMM ambulances; the hull alone is not decisive.
Turretless BTR-60 command vehicles (BTR-60PU-12, R-145BM) p. 227 Turret removed and a mast on the roof (PU-12 at right front, R-145BM a frame antenna on the left); 1V18/1V19 keep an observation turret.
BMD-1 p. 99 BMD-1 turret carries a 73 mm gun with a missile rail above; on the 1V119 an observation turret takes its place.
BTR-D airborne APC p. 105 BTR-D has no turret, only a small flat superstructure with a hatch on top; 1V119 carries an observation turret.
BMD-1KSh command vehicle p. 226 No turret: raised centre compartment with three armoured-cover windows and folding clothes-horse antennas; 1V119 carries an observation turret.

VARIANTS **1V18 Klen-1** Battery commander vehicle on BTR-60PB; unarmed observer turret. Battery level; 3 x R-123M and R-107M radios.
1V19 Klen-2 Like 1V18 plus stowage box each upper hull side. Battalion commander vehicle; adds R-130M, R-111 radios. **1V18-1, 1V19-1** INA. Described only as modernised models. **1V119-1** INA. More modern on-board equipment set. **1V152M** INA. Modernised 1V152 in Kapustnik-BM set. **1V118 Reostat** BMD-family hull, without the Tall Mike radar. Command-observation post (COP) vehicle paired with the 1V119 FDC vehicle in VDV and naval infantry artillery. **1V127 Kapustnik-S** INA. Kapustnik set modification for self-propelled artillery (RWW writes 'Kapustnik-C').



Mcoffsky, Public domain



1V119 Reostat. Olegvdv68, Public domain



1V18 Klen. Andrey Butko, CC BY-SA 3.0 / GFDL

MOBILITY 1V18/1V19, 1V152, 1V1003: 8x8 wheeled, 1V18 amphibious. 1V119 is tracked (code TR) and can be parachute-landed with airborne troops (WEG15).

Weight, 1V18/1V19	**10.1 t** combat weight, BTR-60PB chassis *also 10.3 t WIKRD18*
Weight, 1V119	**6.7 t** combat weight, BMD-1 chassis *also 8.0 t WP-RU27*
Weight, 1V152	**12.6 t** combat weight, BTR-80 chassis
L × W × H	**7.22 × 2.82 × 2.06 m** hull
Road speed, 1V18/1V19	**80 km/h** maximum
Road speed, 1V119	**61 km/h** maximum *also 60 km/h WP-RU27*
Road speed, 1V152	**80 km/h** maximum
Road range, 1V18/1V19	**500 km** cruising
Road range, 1V119	**500 km** cruising *also 320 km AR16*
Road range, 1V152	**700 km**
Swimming speed, 1V18/1V19	**10 km/h** maximum, amphibious, water
Swimming speed, 1V119	**10 km/h** maximum, amphibious, water *also 9 km/h WP-RU27*
Swimming speed, 1V152	**9 km/h** maximum, amphibious, water
Time into action, 1V18	**10 min** battery ready to open fire from the march
Time into action, 1V119	**10 min** battery ready to open fire from the march
Length, 1V119	**5.88 m** hull *also 5.85 m WP-RU27*

Accuracy, 1V198 Kanonada	**up to 10 m** claimed, Rostec claim: locating and striking targets from two or more emplacements in succession, claim
Detection range, PSNR-5K Tall Mike (1V119 optional)	**3 km people; 12 km vehicles** claimed, I-band ground surveillance radar, roof-mounted on 1V119; reference-site figure, claim
Crew, 1V18/1V19	**6** *also 5 WIKRD18 WP-EN20 WP-RU28*
Crew, 1V119	**6** *also 4 to 6 WP-RU27*
Fire control capacity, 1V126 Kapustnik-B	**Battalion COP/FDC: up to 4 batteries; battery COP/FDC: up to 8 guns** 1V152 is the COP vehicle of the set
Fire control capacity, 1V198 Kanonada	**Up to 4 batteries of various types** 1V1003 command and observation vehicle with 1V1004 staff vehicle, claim
Radios, 1V18	**3 x R-123M, 1 x R-107M**
Radios, 1V19	**2 x R-123M, 1 x R-107M, 1 x R-111, 1 x R-130M**
Radios, 1V119	**3 x R-123M, 1 x R-107M** *also three R-173 and R-159 sets AR16*
Navigation and sights, 1V18/1V19, 1V119	**1T121-M navigation; 1D15 laser rangefinder; 1PN44 day/night sight** WEG15 list for 1V18/1V19 and 1V119
Hull armour, 1V119	**15 mm**

SEEN WITH 1V17 Mashina-B set (3 x 1V18, 1 x 1V19, 3 x 1V110, 1 x 1V111) (8 vehicles per battalion set); 1V110 and 1V111 fire direction vehicles (3 and 1 per 1V17 set); 1V153 command-staff vehicle (Ural-4320), Kapustnik-B; 1V1004 command-staff vehicle (Ural truck), 1V198; 2S9 Nona-S 120 mm SP gun-mortar; BTR-60PB / BTR-80 / BMD-1 or BTR-D hulls (1V18/19; 1V152 and 1V1003; 1V119)

SOURCES ACONF145 AR16 AR17 JANESRG ORYX1 RUWK152 RWW TASS2 WEG2015 WIKRD18 WP-EN20 WP-EN21 WP-EN22 WP-RU27 WP-RU28 WP-RU29 WP-RU30 not in WEG
Updated 2026-10-09

Akatsiya-E

air defence command and control complex

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Akatsiya-M

command and control automation system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

ASUNO-S

artillery fire control system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Barnaul-T «Барнаул-Т»

TR-A

Automated command and control set for tactical short-range air defence, battery to brigade In service 2015

OPERATED BY **motor rifle brigade**, brigade AD subunit; BO quotes a 'missile division' (battalion) commander O 2021-12 M
airborne division, air defence missile regiment, one full divisional set O 2018-06 M
airborne division, air defence missile regiment O 2018 L
motor rifle brigade, brigade commander's CP (9S931-1 wheeled); 9S931 planning module; short-range AD battery CPs (9S932-1); MANPADS platoon commanders (9S933); MANPADS squads (9S935) R 2011 L
air defence missile regiment, regiment CP (9S931-1 MP-K, 9S931); battalion CPs (9S931); battery C2 posts (9S932-1); MANPADS platoons (9S933) and squads (9S935) R 2025-06 L

INDICATES *A 9S932-1 marks a short-range air defence battery command post. Strela-10, Tor, Osa, Tunguska or MANPADS fire units it controls are likely nearby; in VDV units the kit belongs to the division's AD regiment.*

RECOGNISE **Chassis** Modified MT-LBu tracked amphibious carrier (9S932-1). Airborne version on BTR-MD/BTR-MDM tracked carrier.
Antenna 1L122-1E rectangular L-band antenna array, 1.2 x 0.8 m (maker's figure), on the top rear of the hull; folded down in transit.
Complex Tracked 9S932-1 at battery, 9S931 on MT-LBu, 9S931-1 on KamAZ 6x6 with trailer at brigade; 9S933 and 9S935 are portable MANPADS kits.

CONFUSED WITH **1L122-2E self-propelled Garmon radar** p. 169 Same MT-LBu chassis and radar family, but the antenna rides on a lifting boom; on the 9S932-1 it sits on the top rear of the hull, folded down in transit.
PPRU-1M / PPRU-M1 Also an MT-LBu AD battery command post, but it carries a 9S80-series radar instead of the 1L122 array on the top rear of the hull.
9S737 Ranzhir p. 234 Older AD battery command post on an MT-LBu-derived chassis that takes target data from external radars; the 9S932-1 carries its own 1L122 array.


Ministry of Defence of the Russian Federation, CC BY 4.0


Doomych, Public domain


Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Amphibious tracked MT-LBu; swims 5 km/h maximum. The BTR-MDM (VDV) version is parachute-droppable.

Weight, combat	**11,000 kg** MT-LBu chassis figure; 9S932-1 weight INA
L × W × H	**6.45 × 2.86 × 1.86 m** MT-LBu chassis
Road speed	**60 km/h** maximum
Road range	**500 km** cruising

Detection range, 1L122-1E	**40 km** maximum (1-40 km), aircraft, helicopters, cruise missiles, UAVs at up to 700 m/s; export 1L122-1E brochure figure, claim
Minimum detection range, 1L122-1E	**1 km** export 1L122-1E, claim
Detection altitude, 1L122-1E	**10 km** maximum, export 1L122-1E; 'at least 10 km', claim
Data link range, 9S932-1	**20 km** communication range, stationary; 10 km on the move (9S933: 3 km / 1 km)
Radar band, 1L122-1E	**L-band** claim
Elevation coverage, 1L122-1E	**-5 to +45 deg** export 1L122-1E, claim

SOURCES APA4 BO DB FAS1 GS7 KZ MIL9 ORYX1 SDU TOPWAR3 TWZ1 VALKA WEG15 WMC4 WP-RU32 WP-RU33 Updated 2026-10-06

Polyana-D4 9C52 «Поляна-Д4»

WH-AT

Automated command post of an Army air defence missile brigade (S-300V, Buk, Tor) In service 1986

OPERATED BY **air defence missile brigade**, brigade command post (combat control post MP06 and command-staff vehicle MP02) D 2021-12 H
air defence missile brigade, brigade command post; vehicle captioned as 9S52M Polyana-D4M O 2010-12 M
combined arms army, army air defence and aviation command post (SKP PVO i aviatsii) R 2021-12 M
military district, district air defence and aviation command post (KP PVO i aviatsii) R 2021-12 M

INDICATES *Indicates the command post of an Army air defence missile brigade (S-300V/V4 or Buk), or an army or district AD command post. Up to four SAM battalions, a radar post and a point-defence CP report to a brigade Polyana.*

RECOGNISE **Body** MP06 on BAZ-6950 8x8: cab forward, engine compartment behind the cab, then the van body. SKN-6950 bodies built on this chassis for C2 sets have chamfered sides.
Axles Four axles in two widely spaced pairs (base 1.5 + 3.8 + 1.5 m); front pair steers. Single tyres 1300x530-533.
Cab Two-door cab with three reverse-raked windscreens and an oval vent hatch in the centre of the front wall.
Details Complex adds MP02 command-staff van on Ural-375 or Ural-43203 6x6 with KP4 trailer, MP45 maintenance van and two generator trucks (KamAZ-4310 on D4M).

CONFUSED WITH **Baikal-1 air defence command post** Also an 8x8 AD command van (MAZ-7910), but with its own FL-94 telescoping mast and turbine generator; Polyana MP06 is powered by separate generator trucks.
PORI-P1M radar data processing post Deployed: a van on the same Ural-43203 or KamAZ-4310 6x6 as the MP02, so the MP02 alone does not settle it; look for the 8x8 MP06 at the site.
9S457 S-300V battalion command post p. 154 Full view: tracked MT-T chassis shared with other S-300V vehicles, with a telescoping datalink mast; Polyana vehicles are wheeled trucks.



© Vitaly V. Kuzmin
Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Wheeled truck complex with generator trucks; needs a road or firm track. Deploys or packs up in about 20 to 35 min. Fording 1.2 m (Ural) and 1.3 m (BAZ) chassis figures.

Weight, gross, Ural-375D chassis (MP02)	**13.2 t** chassis figure; MP02 as fitted INA
Weight, gross, BAZ-6950 chassis (MP06)	**29.4 t** chassis figure; MP06 as fitted INA
L × W × H	**7.36 × 2.67 × 2.68 m** cargo truck
Road speed, Ural-375D	**75 km/h** maximum

SAM battalions controlled	**up to 4** 9S52 and 9S52M; S-300V (9S457) or Buk (9S470) battalion CPs
Air targets tracked simultaneously	**up to 250** 9S52M1
Targets received	**up to 1,000 per 10 s** 9S52M1, claim
Linked objects, total	**up to 14** 9S52M1; AEW aircraft, subordinate SAM unit CPs, higher and cooperating CPs, claim
Superior CP interfaces	**1** variant not stated
Radar data sources, simultaneous	**up to 3** variant not stated
Target designations issued	**up to 5 per battalion, 2 per point-defence CP** 9S52M, claim
Automated workstations	**8 in combat control post, 3 in command-staff vehicle** variant not stated
Data transfer channels	**16 in CCP, 4 in CSV** variant not stated

SEEN WITH MP02 command-staff vehicle (KShM) (1)

SOURCES APA4 APA11 ATP IISS25 KZ2019 KZ2021 NASHAVT RDP7 RUSAR1 RUSARMM USER8OCT VPK15 VRF12 WEG76 WP-EN145 WP-EN146 WP-RU177 Updated 2026-10-01

8 COMMAND

PRP-4A Argus / PRP-4M Deytery ПРП-4А «Аргус»

TR-A

Mobile artillery reconnaissance post on BMP-1 chassis (target location, fire adjustment) In service 1988

OPERATED BY **motor rifle brigade**, fire control and artillery reconnaissance battery, artillery spotting platoon D 2016 M
tank brigade, fire control and artillery reconnaissance battery, artillery spotting platoon D 2016 L
self-propelled artillery battalion, battalion fire control platoon, artillery spotter squad D 2016 L
rocket artillery battalion, MLRS (BM-21) battalion HQ, fire control platoon, artillery spotter squad D 2016 L
Artillery units of the Central and Southern Military Districts, artillery units R 2018-06 L

INDICATES *Doctrinally a brigade- or regiment-level artillery reconnaissance asset feeding a fire direction centre. In defence it sits behind first-echelon companies; in offence it moves with forward reconnaissance detachments up to 20 km ahead of the main body.*

RECOGNISE **Hull** BMP-1 infantry fighting vehicle hull and chassis, amphibious.
Turret Radar retracts into a hatch in the turret roof (PRP-4, 4M, 4MU); on the Argus the radar is mast-mounted. PRP-4M: antenna mount behind the radar hatch.
Turret sides Protected housings for optical devices on both sides of the turret, with an extra fairing on the right side (PRP-4 family).
Armament One 7.62 mm PKTM machine gun and four smoke dischargers only. Some PRP-4M carry a fake gun mantlet and offset barrel, resembling a BMP-2.
Suspension Close only: BMP-1 running gear, six road wheels each side, front sprocket, rear idler, three return rollers, skirted upper track.
CONFUSED WITH **BMP-2** p. 102 PRP-4M is fitted with a fake gun mantlet and offset barrel to look like a BMP-2; check for the radar hatch and antenna mount on the turret roof.
PRP-3 Val Launcher racks for illumination rockets on the turret rear and a folding rectangular radar antenna; the PRP-4 family lacks the rocket launchers.


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Amphibious on BMP-1 chassis; swim speed 7 km/h (WEG). Armour reported to stop 12.7 mm rounds all round (WEG).

Weight, combat	**13.8 t**
L × W × H	**6.74 × 2.94 × 2.15 m**
Road speed	**65 km/h** maximum, paved road
Road range	**550 km** paved road

Detection range, radar (moving tank-type target)	**12 km** up to, moving tank-type target
Detection range, radar (person)	**7 km** up to, single soldier
Detection range, stationary tank, engine off (sensor not stated)	**2 km** no less than, stationary tank-type target, engine not running; ARMYR and RWW name no sensor, WEG lists it under radar, claim
Detection range, optical-electronic (tank-type target, day)	**8 km** up to, tank-type target, daytime
Detection range, optical-electronic (tank-type target, night)	**3 km** up to, tank-type target, night

SOURCES AR91 ATP GS12 JANESRG JREW02 MIL104 ORYX1 RWW WEG22 WEG2015 WP-EN30 WP-RU181 Updated 2026-10-01

PU-12M7 9С482М7 ПУ-12М7

WH-AT-A

Air defence battery command post: fuses radar data and cues SHORAD fire units In service 1977

OPERATED BY **motor rifle regiment**, air defence missile-artillery battery; also regimental air defence chief's post (ARMF: PU-12 family 1977-95; ORUZH: undated PU-12M7 sheet), 1 per battery (PU-12 family) D 1995 M
tank regiment, air defence missile-artillery battery; also regimental air defence chief's post (ARMF: PU-12 family 1977-95; ORUZH: undated PU-12M7 sheet), 1 per battery (PU-12 family) D 1995 M
motor rifle regiment, regiment on BTR, Soviet 1980s establishment, 3 PU-12 per regiment D 1989 L
air defence missile regiment, Osa regiment main control means (PU-12, from late 1970s per ARMF) D 1979 L

INDICATES *A PU-12-series or Ranzhir vehicle marks the command post of a short-range air defence battery (Strela-10, Tunguska, Tor, Osa, Shilka or Igla teams, up to 4-6 fire units) or a regimental air defence chief's post nearby.*

RECOGNISE **Body** BTR-80 based K1Sh1 hull: built-up centre section and extra roof hatches; unarmed cupola in place of the gun turret (from photograph).
Mast Telescopic mast at hull rear, raised for work, with a dome-shaped head and a box halfway up (from photograph); passive antennas mid-mast, camera on top.
Details Close only: box sensor with two lenses on a pan-tilt head on the cupola (from photograph); side door between second and third axles.
Ranzhir 9S737 Ranzhir sits on the tracked MT-LBu; 9S737M Ranzhir-M on tracked GM-5965 chassis unified with Tor-M1 combat vehicles.
CONFUSED WITH **R-149MA1, R-149BMR (K1Sh1)** p. 228 Same K1Sh1 hull. From photograph: louvred box housing on the middle roof, no sensor box on the cupola; the R-149BMR mast ends in a crossbar, not a dome.


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY PU-12M7 is amphibious on the BTR-80 base. 9S737 and 9S737M are tracked; 9S737M fords 1.0 m.

Weight, PU-12M7	**13.6 t**
Weight, 9S737 (WEG figure)	**25000 kg** WEG lists a Tata LPK 2518 truck chassis; see open_questions
Weight, 9S737M	**31 t** GM-5965.05 tracked chassis; RUSA2 gives 'not more than 31,000 kg'
L × W × H	**7.7 × 2.9 × 2.41 m**

Coordinates measurement envelope, PU-12M7 (connected radars)	**up to 100 km** maximum, coordinates measurement envelope from connected radars; PU-12M7 has no radar of its own, claim
Data link range, PU-12M7 by radio	**up to 40 km** maximum, radio link to higher and subordinate posts, claim
Data link range, PU-12M7 by field cable	**up to 15 km** maximum, field telephone cable, claim
Data link range, 9S737 to higher post	**up to 30 km** maximum, radio, claim
Data link range, 9S737 to fire units	**up to 5 km** maximum, radio, claim
Crew, PU-12M7	**4** commander, driver, radio operator, operator
Targets received, PU-12M7	**up to 99** export catalogue figure, claim
Targets tracked by operator, PU-12M7	**up to 9** PU-12M6: 5-7, claim
Target altitude limit, PU-12M7	**up to 25 km** claim
Target speed limit, PU-12M7	**up to 787 m/s** claim

SEEN WITH 9K35M2/M3 Strela-10M2/M3 (up to 6 per PU-12M7); 2K22M1 Tunguska-M1 (up to 6 per PU-12M7)

SOURCES 3G APA4 AR56 ARMF JANESRG ORUZH ORYX1 ROE2 RUSA1 RUSA2 TWZ1 VPK16 WEG80 WMC31 WMC32 WMC33 WMC34 WMC35 WP-RU33 WP-RU65 WP-RU188 WP-RU189 WP-RU190
Updated 2026-10-06

Radio and signals

Andromeda-D

command and control system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

ESU TZ ECY T3

tactical-level command and control system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

P-240I-4 Pereselenets П-240И-4 «Переселенец»

WH-AT

Digital field communications vehicle linking command posts (radio, radio relay, switching) In service 2015

OPERATED BY **Combined arms brigades**, command company or battalion D 2019 M

INDICATES *CNA places the vehicle in command companies and battalions of brigades and regiments, linking field command posts. One may indicate a brigade or regiment command post nearby.*

RECOGNISE **Axles** Three axles, six-wheel drive (KamAZ-5350 chassis).

Body Box shelter with chamfered roof edges and small windows high on the sides, on a bed with ribbed side panels (from photograph).

Cab KamAZ-5350 cab over the engine (from photograph); seats three, has a sleeping berth, armour can be added.

CONFUSED WITH **P-260-U signals vehicle (Redut-2US)** p. 239 Full view: Redut-2US vehicles ride the four-axle KamAZ-63501 and raise a 32 m mast; P-240I-4 rides a three-axle KamAZ-5350.

P-240TM signal node (Soviet era) Same 'P-240' name. Full view: P-240TM is a K6.131 box-body van on a ZiL-131, worked with a P-241T; P-240I-4 rides a KamAZ-5350.

R-416GM Granit-M radio-relay station p. 238 Same KamAZ-5350 chassis. Deployed: R-416GM raises a mast with three parabolic antennas. Stowed: tell only "KamAZ signals van".

MOBILITY Truck chassis, all-wheel drive; no figures found for this fit.

Weight	**INA**
Road speed	**INA**
Road range	**INA**
Time into action	**INA**
Length	**INA**
Width	**INA**
Height	**INA**

Secure channels	**more than 100** claimed, cryptographic channels, claim
Total channel capacity	**more than 2,000 kbit/s** claimed, all channels together, claim
Communications range	**at least 40 km** claimed, medium and conditions INA, claim *also exceeds 40 km CNA*
Crew	**INA**

SEEN WITH Akveduk-25U radio station (1); Radio relay station and digital radio relay equipment; KamAZ-5350 Mustang (1)

VARIANTS **P-240BTZ** BTR-80 based switchboard vehicle with Zenit set (per Wikipedia); not a truck. Switchboard vehicle with Zenit set, planned successor to P-240BT; not the digital P-240I-4 suite. Current Russian service INA. **P-240BT** BTR-60PB hull converted to a telephone switchboard vehicle; not a truck. Telephone switchboard; WEG lists R-123M radio and switchboard. Not the digital P-240I-4 suite. Current Russian service INA.

SOURCES AR87 ARMYINF7 CNA ORYX1 TASS15 VALKA5 WEG2015 WP-EN21 WP-EN82 WP-RU147 WPBTR60 not in WEG

Updated 2026-10-09

R-142N Deimos-N P-142H «Деймос-Н»

WH-AT

Truck-mounted HF/VHF command and staff vehicle for regiment, brigade and division staffs In service 1976

OPERATED BY **motor rifle division**, regiment (brigade) to division staffs D 2020 M
motor rifle brigade, brigade staff D 2020 M

INDICATES *A general-purpose command and staff vehicle for regiment (brigade) to division staffs. Seeing one suggests a regiment, brigade or division command post nearby.*

RECOGNISE **Axles** Two axles: GAZ-66 4x4 truck with the cab over the engine. The R-142NSA version is on a three-axle 6x6 KamAZ-43114 chassis.
Body Metal van body K-66N, rear door to the staff compartment. Vehicle 6.06 m long, 2.4 m wide, 3.3 m high.
Details Roof loop antenna of two spaced vertical frames; 3.4 m and 4 m whips that a motor lowers to horizontal; seven-section 11 m telescopic mast raised at halt.
Details At halt: petrol generator set carried out of the body on its cable, two 25 m wire dipole legs strung on the mast or natural supports.
Details Close only: second door on the right side of the body into the radio room, with a small two-step ladder; generator to the left of the rear door.

CONFUSED WITH **R-142NSA** Full view: three-axle 6x6 KamAZ-43114, 7.94 m long, against the two-axle GAZ-66 of the R-142N (6.06 m).
R-142D Deimos-D Full view: rides the airborne GAZ-66B, open cab with canvas cover and a windscreen that folds flat; R-142N has a hard-top cab (from photograph).
R-166 Artek (truck) p. 237 Full view: R-166 is a three-axle KamAZ-4310 or -43114, 8.3 m long, against the two-axle GAZ-66 of the R-142N (6.06 m).
R-161 Poisk HF radio station p. 236 Full view: R-161A2M is a three-axle ZIL-131 with the engine ahead of the cab; R-142N a two-axle GAZ-66 with the cab over the engine.



R-142N. Vitaly V. Kuzmin, CC BY-SA 4.0



R-142NSA. Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY GAZ-66 4x4 with metal van body. Fords 0.8 m on firm bottom. Radios work on the move up to 40 km/h; the mast and wire dipole are used only at halt.

Weight	**5.97 t** R-142N, complete with crew, not more than
L × W × H	**6.06 × 2.40 × 3.30 m** R-142N
Fording	**0.8 m** R-142N, firm bottom
Turning radius	**9.5 m** R-142N, by front bumper

Communication range, R-130M HF	**350 km** R-142N, roof loop (AZI) antenna or wire dipole, day and night, between like stations
Communication range, R-130M HF	**50 km day, 20 km night** R-142N, 4 m whip, at halt and on the move
Communication range, R-111 VHF	**60 km** R-142N, antenna on 11 m mast, at halt
Communication range, R-123MT VHF	**40 km** R-142N, antenna on 11 m mast, at halt
Communication range, R-809M2 air band	**6 km** R-142N, discone on mast, to aircraft
Communication range, R-142NMR	**350 km** maximum range, R-142NMR, HF 1.5-30 MHz and VHF 30-108 MHz FH, voice and data
Crew	**3** R-142N: station chief, radio operator, driver-electrician; plus workplaces for commander and two officers
Frequency coverage	**1.5-10.99, 20-52 and 100-149.975 MHz** R-142N: one HF and three VHF channels plus optional R-809M2 air-band radio
Mast height	**11 m** R-142N, telescopic mast, seven sections; WEG15 gives an 11 m mast for R-142 NSA
Power	**4 kW engine-driven generator; 1 kW petrol set at halt** R-142N, G-290 and AB-1-P/30, 27-29 V DC

SEEN WITH GAZ-66 (1); KamAZ-43114 (1 (R-142NSA)); R-130M Samshit HF radio (1)

SOURCES ARMSNET ATP CRYPTO DUDAK KOLESA3 ORYX1 RWW VPK17 WEG2015 WMC36 WP-EN107 WP-RU108 WP-RU191 WP-RU192 not in WEG Updated 2026-10-09

R-161 Poisk HF radio station P-161 «Поиск»

WH-AT

Medium and high power HF/VHF radio stations on trucks for operational-level links

OPERATED BY **Unidentified unit**, one Oryx-listed loss; no unit, place or date given R 2022 L

INDICATES *A ZIL-131 radio van with a wide wire-antenna field on masts suggests the radio centre of a higher-level field command post. R-161A-series stations serve front 'Ekvator' nets, R-161-5 General Staff 'Polyus' nets. Unit type not established.*

RECOGNISE **Body** R-161A2M: one K6-131 van body (kung) on a ZIL-131 chassis.
Axles ZIL-131 chassis: three axles, 6x6 drive, engine ahead of the cab.
Details Deployed: rhombic, V and dipole wire antennas on telescopic masts (12 m or 18 m by source) over a site about 150 x 100 m.
Details Roof lockers for antennas; roof whips.
Cab Close only: heater, mushroom ventilator and biological filters over the driver's cab; generator air intake and exhaust through opening side panels.

CONFUSED WITH **R-166 Artek (truck)** p. 237 Full view: R-166 rides a KamAZ-4310 or -43114 with the cab over the engine; R-161A2M a ZIL-131 with the engine ahead of the cab. Both have three axles.
R-142N Deimos-N p. 236 Full view: R-142N is a two-axle GAZ-66 van, 6.06 m long, against the three-axle ZIL-131 of the R-161A2M (7.4 m).

MOBILITY R-161A2M on ZIL-131 truck. Full antenna set needs a site about 150 x 100 m; station can be carried by An-22 aircraft.

Weight	**10430 kg** R-161A2M, with fuel
Time into action	**1 hour** R161-A2M, three-man crew, on site
Length x width x height	**7400 x 2500 x 3470 mm** R-161A2M
Time to establish link, mobile	**50 s** R161-A2M, mobile set-up

Communication range, HF	**2000 km** maximum, R-161A2M, stationary; UTIN: V 2x46 antenna, 10-30 MHz
Communication range, moving	**75 km, 300 km** maximum, R-161A2M moving at 30 km/h: roof whip 75 km, zenith-radiating antenna (1.5-14 MHz) 300 km
Frequency range	**1.5 to 59.999 MHz** R-161A2 and A2M
Transmitter power	**1 kW** R-161A2M, 'from 1000 W' (RUWIKI), 'not less than 1000 W' to antenna (UTIN)
Crew	**4** R-161A2M

SEEN WITH R-160P receiver (1 in R-161A2 and R-161A2M station); R-161-5 Ural-4320 shelter trucks (transmit, receive) (2 per R-161-5 station); KamAZ-4310 30 kW power station (1 per R-161-5 station); R-161PU automated receiving node (INA; one or more per receiving radio centre, remote-controls the transmitters); R-161U automated transmitting node (INA; in the transmitting radio centre alongside R-161A2M stations)
VARIANTS **R-161A2M** Single K6.131 van on ZIL-131, crew of 4. **R-161-5** Two Ural-4320 shelters and a KamAZ-4310 power truck.

SOURCES AR33 ARMYRAD DUDAK ORYX1 RSIG RWW UTIN VPK17 WEG2015 WP-EN107 WP-RU108 WP-RU138 WP-RU192 Updated 2026-10-09

R-166 Artek P-166 «Артек»

WH-AT

Medium-power HF/VHF mobile radio station for command post signal nodes In service 1996

OPERATED BY **military base**, signal and EW subunits R 2025-08 L

military district, signal units R 2018 L

INDICATES *The truck R-166 is built for operational-strategic level radio nets; armoured R-166-0.5s destroyed or captured in 2022 were in the hands of a tank brigade and a motor rifle brigade. Either suggests a brigade or higher command post signal node nearby.*

RECOGNISE **Chassis** R-166: KamAZ-4310 or KamAZ-43114 truck, three axles, 8.3 m long. R-166-0.5: armoured UNSh-10 or K1Sh1 hull (both BTR-80-based), or tracked MT-LBu.

Mast At a halt: V, T, biconical and log-periodic antennas on masts. Mast sets take about 60 min to erect; with roof antennas only the station is ready in 5 min.

Antenna Roof antennas: whips, a loop and a loop-slot antenna (listed for the truck R-166).

Complex Works alone or in a field signal node. Used with R-149AKSh on a 2025 exercise; lost beside R-149MA1 at Nova Basan and Novyi Bykiv in 2022.

CONFUSED WITH **R-149MA1 and other K1Sh1 command vehicles** p. 228 Same K1Sh1 (BTR-80-based) hull. From photograph: R-166-0.5 has no turret and a raised tube frame on the roof; R-149MA1 a vented box housing. Not decisive alone.

R-161 Poisk HF radio station p. 236 Full view: R-161A2M rides a ZIL-131 with the engine ahead of the cab; the R-166 truck a KamAZ-4310 or -43114 with the cab over the engine. Both have three axles.

R-142N Deimos-N p. 236 Full view: R-142N is a two-axle GAZ-66, 6.06 m long, against 8.3 m. Its R-142NSA shares the KamAZ-43114 (7.94 m long): then tell only "signals van".

R-330Zh Zhitel jamming station p. 192 Can ride the same KamAZ-43114, but tows a two-axle trailer with four telescopic antenna masts. Truck alone: tell only "signals or EW van".



R-166-0.5. Vitaly V. Kuzmin, CC BY-SA 4.0



R-166 on KamAZ. Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Works on the move at up to 30 km/h on dirt roads and 60 km/h on paved roads (R-166 truck). R-166-0.5 armoured chassis figures INA.

Weight, R-166 (KamAZ-43114)	**14,840 kg** truck version; not more than (rusarmy.com), claim
L × W × H	**8.30 × 2.61 × 3.52 m** truck version, claim
Speed while transmitting	**30 km/h dirt road; 60 km/h paved** truck version, working on the move, claim
Time into action	**5 min** duplex roof antennas, claim

Communication range, HF, stationary	**2,000 km** up to, R-166, at the halt, claim
Communication range, HF, on the move	**350 km** up to, R-166, moving, claim
Communication range, VHF, stationary	**250 km** up to, R-166, at the halt, claim
Communication range, VHF, on the move	**70 km** up to, R-166, moving, claim
Frequency band, HF	**1.5–30 MHz** R-166, claim
Frequency band, VHF	**30–80 MHz** R-166, claim
Transmitter power	**1 kW (±0.2) per band** R-166 Artek-1 transmitters; R-166-0.5 figure INA, claim
Simultaneous radio links	**2 independent (HF and VHF), duplex or simplex** R-166, claim
Net members	**up to 31 (radial net); up to 15 (all-to-all net)** R-166, claim
Retune time, fixed frequencies	**up to 70 ms** R-166; up to 100 fixed frequencies per channel; up to 1 s to any frequency, claim

SEEN WITH UNSh-10 / K1Sh1 armoured chassis (1); MT-LBu (1)

SOURCES AR33 AR95 AR96 ARMSNET DBLOG2 DUDAK MIL107 ORYX1 RIA3 RUSARMY6 RWW VPK17 WMC35 WMC37 WMC38 WMC39 WP-EN107 WP-EN155 WP-RU108 WP-RU155 WP-RU192 WP-RU197 WSPOT31 WSPOT32 WSPOT33 WWW115 not in WEG

Updated 2026-10-09

R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations P-412A; P-412AM; P-417

WH-AT

Beyond-line-of-sight radio relay link between headquarters

OPERATED BY **Cold War HQ links**, R-412F General Staff-front and front-army; R-412A air defence-air force; R-412B army-grade operational-tactical HQ D 1983 L

Unidentified unit, Air base communications: R-417 'Baget' antenna vehicle, 229th Air Base, Rostov-on-Don (ATESH claim) R 2025 L

seen with 229th Air Base, Rostov-on-Don (4th Air and Air Defence Army)

INDICATES *A tropospheric station at a headquarters or air base suggests a long, beyond-horizon link to a higher or neighbouring command post. The sources do not say which unit type holds each model.*

RECOGNISE **Antenna** R-412A: two parabolic antennas. R-410-7.5: two antenna vehicles on ZiL-131; open-grid mesh dish on a lattice tower over the bed, outrigger legs (from photograph).

Mast R-412F: antennas raised to 20 m on a separate I601 mast vehicle on a ZIL-131 chassis. R-417 has a separate antenna vehicle.

Chassis R-412A: two Ural-375 box-body vehicles (instrument, power). R-412B: MT-LB. R-417: KamAZ-4310 truck.

Complex R-412A set: I606 instrument vehicle plus I613M power vehicle with two generators. R-412F adds the I601 mast vehicle.

CONFUSED WITH **R-416GM Granit-M (R-416G-MS) radio-relay station** p. 238 Forbes took it for a troposcatter relay. R-416GM: three dishes on a mast on the KamAZ roof; R-412F and R-417 raise dishes on a separate antenna vehicle.

VARIANTS **R-412A** Two Ural-375 box vehicles; two parabolic antennas. Three to six telephone channels; terminal or relay station; Cold War role air defence and air force link. **R-412F** R-412A plus I601 mast vehicle on ZIL-131 raising antennas to 20 m. Front-level link; raised antennas. **R-412B** Mounted in MT-LB tracked carriers. Three channels; link to an army-grade operational-tactical headquarters (Czech source). **R-412AM Rezoner** INA. INA. Listed by Oryx and named Rezoner by Russian Wikipedia. **R-417 Baget** KamAZ-4310 truck with separate antenna vehicle. Digital tropospheric station (Russian Wikipedia list); other capability INA for the Russian set.



R-410-7.5. ShinePhantom, CC BY-SA 3.0



ShinePhantom, CC BY-SA 3.0



Bernhard Gröhl, CC BY-SA 3.0



R-412MB. Homoatrox, CC BY-SA 3.0

MOBILITY Truck-mounted sets (R-412A, R-412F, R-417); R-412B tracked. Antennas raised by mast vehicle on R-412F. Time into action INA.

Antenna height, R-412F	**20 m** antennas lifted by I601 mast, claim

Link range, R-412A	**at least 150 km** at least, between two stations of the same type, claim
Frequency band, R-412A	**4438–4555 MHz and 4630–4749.98 MHz** two sub-bands, claim
Channels, R-412A	**3 to 6 telephone channels, or 1 telegraph channel** frequency modulation, claim
Telegraph speed, R-412A	**1200, 4800, 12000 or 48000 baud** one telegraph channel, claim
RF power, R-412A	**200 W minimum (one transmitter, two antennas); 400 W (two transmitters)** radiated, minimum, claim
Frequency band, R-417	**4435–4750 MHz** Ukrainian R-417MU, a modernised R-417; Russian set not confirmed

SEEN WITH I613M power vehicle (Ural-375A, two ASD-20T generators) (1 per R-412A); I601 antenna mast vehicle (ZIL-131) (1 per R-412F)

SOURCES FOCUS11 ORYX1 SLOVO U2417 VALKA6 VNTU WMC49 WP-RU250 WP-RU251 not in WEG

Updated 2026-10-09

R-416GM Granit-M radio relay station P-416ГМ «Гранит-М» WH-AT

Truck-mounted digital radio relay station for field command networks In service 2018

OPERATED BY **military district**, Six sets of R-416GM and R-416GM2 delivered (Russian MoD, reported Dec 2023) R 2023-12 M
Unidentified unit, reported Jun 2024 R 2024-06 L
Unidentified unit, reported Mar 2026 R 2026-03 L
command brigade, several (as 'Granit-M') R 2021-11 L
NUMBERS **Losses** 1 R-416GM damaged (Oryx, photo-confirmed; record undated) (2026-10)
INDICATES *A raised mast marks a working relay link. Ukrainian sources say it links forward positions to command posts; Russian MoD says it builds a field backbone network. Strikes reported in Kursk area 2024 and Luhansk deep rear 2026.*
RECOGNISE **Mast** Tall mast raised vertically to work, reportedly up to 30 m, with three parabolic antennas; lattice mast rising just behind the cab (from photograph).
Axles KamAZ-5350 truck: three axles, six-wheel drive.
Body Container for the radio equipment, where the operator works.
CONFUSED WITH **R-439 Legenda-2 satellite stations (MD2, BK)** p. 238 Full view: R-439-MD2 and BK ride an armoured 8x8 K1Sh1 hull with dishes (1.2 m and 0.8 m, or 1.5 m) on the vehicle, not a truck with a mast.
P-240I-4 Pereselenets p. 235 Same KamAZ-5350 chassis. Deployed: the mast with three parabolic antennas marks the R-416GM. Stowed: tell only "KamAZ signals van".
Redut-2US (P-260) signals vehicles p. 239 Full view: Redut-2US rides the four-axle KamAZ-63501, against the three-axle KamAZ-5350, and raises a 32 m telescopic mast.


Vladislav Belogrud, CC BY 4.0

MOBILITY KamAZ-5350 truck chassis; mast must be raised to work. Other limits INA.
Chassis **KamAZ-5350** claim

Mast height, raised	**up to 30 m** sometimes reaches, Ukrainian border guard description of R-416G-MS, claim
Antennas	**3 parabolic** claim
Operating temperature	**-40 to +50 °C** Granit-M, outside air, claim
Crew	**INA**
Link range	**INA**

VARIANTS **R-416GM2** INA.

SOURCES AR87 ARMYINF7 CAMTO CNA FOCUS11 FUTZ KYIVP6 LIGA7 MILUA5 ORYX1 PUBLIC RAMD2 SLOVO U2417 VALKA6 WEG2015 WMC40 WP-EN82 WP-RU147 WP-RU198 WWW116 not in WEG
Updated 2026-10-09

R-439 Legenda-2 P-439 «Легенда-2» WH-AT

Military satellite communication stations: portable, container and BTR-80-based

NUMBERS **Losses** 2 R-439-MD2 destroyed (Oryx, photo-confirmed) (2026-10)
INDICATES *An R-439-MD2 or -BK on a BTR-80-based K1Sh1 hull suggests a tactical-level command element: the MD2 is built for satellite links of mobile tactical-level command posts, and the BK is described as regiment level.*
RECOGNISE **Chassis** BK and MD2 ride the K1Sh1 command hull of the BTR-80 8x8, described as an enlarged hull with no turret armament.
Antenna Dish antennas: R-439-MD2 has 1.2 m (4/6 GHz) and 0.8 m (7/8 GHz) dishes plus an array for 0.2/0.4 GHz; R-439-BK has one 1.5 m dish.
Antenna Portable R-439-P: 1.2 m dish in five segments; antenna module about 1.16 x 0.88 x 1.20 m. R-439-MD1 uses a 0.5 m phased array for use on the move.
Complex R-439-KUL hub: container on a KK-2.02 base with a 2.5 m five-segment dish that can stand up to 25 m from the container. R-439-MD3 packs into three aluminium cases.
CONFUSED WITH **R-149BMR and other K1Sh1 command vehicles** p. 228 Same K1Sh1 (BTR-80-based) hull; look for the dishes: R-439-MD2 has 1.2 m and 0.8 m dishes, R-439-BK one 1.5 m dish.
R-448 portable satellite station Close only: the R-448 antenna is assembled from six elements; the R-439-P dish from five segments.
R-416GM Granit-M radio-relay station p. 238 Full view: R-416GM is a three-axle KamAZ-5350 truck with a mast carrying three parabolic antennas; R-439-MD2 and BK ride an armoured 8x8 hull.
SEEN WITH K1Sh1 (BTR-80-based command vehicle hull) (1 per R-439-BK or R-439-MD2); KK-2.02 container base (1 per R-439-KUL); R-439-KUL hub station (Up to 10 links to R-439-P and other stations); Globus-1, Yamal, Express relay satellites
VARIANTS **R-439-P Legenda-2P** Transportable set, 1.2 m dish in five segments; carried by any transport. **R-439-BK Legenda-2BK** BTR-80 (K1Sh1) hull with one 1.5 m dish. **R-439-BK1** INA. **R-439-MD1** 0.5 m phased-array antenna on a command vehicle.

(Picture not available)

MOBILITY BK and MD2 on K1Sh1 (BTR-80) hull; MD2 links only on 0.2/0.4 GHz while moving, 7/8 GHz at short halts. P, MD3 and KUL are carried sets that must be set up.

Weight, R-439-P set	**132.5 kg** Transportable station; MoD catalogue figure as quoted by RUWIKI, claim
Weight, R-439-MD3 main set	**90 kg or less** claim
Time into action, R-439-P	**15 min** russianarms.ru figure as quoted by RUWIKI, claim
Time into action, R-439-BK	**20 min** claim
Time into action, R-439-MD3	**15 min or less** Crew of 1 to 2, claim
Time into action, R-439-KUL	**1 h** Plus up to 20 min warm-up after power-on, claim
Weight, vehicle (K1Sh1)	**INA**
Crew, R-439-P	**1 to 2** russianarms.ru figure as quoted by RUWIKI, claim
Crew, R-439-KUL	**4** claim
Frequency bands, R-439-MD2	**Rx 3400-3900, 7490-7540, 280-290 MHz; Tx 5725-6225, 7900-8400, 345-385 MHz** C, X and UHF satellite bands, claim
Frequency bands, R-439-BK	**Rx 3400-3900 MHz; Tx 5725-6225 MHz** claim
Transmitter power, R-439-MD2	**10 / 10 / 40 W** 4/6 GHz / 7/8 GHz / 0.2/0.4 GHz, minimum, claim
Transmitter power, R-439-BK	**130 W** claim
Data rate, R-439-P and MD3	**1.2, 2.4, 4.8, 9.6 kbit/s** P also 48 kbit/s per RUWIKI, claim
Links, R-439-KUL	**10 directions** claim
Anti-jam method	**Frequency hopping uplink; spread-spectrum PSK downlink** MD1 and MD3, claim
Power use, R-439-MD1	**0.8 kW at 27 V DC** claim
Crew, R-439-BK and MD2	**INA**

SOURCES ARMYINF7 DUA2 KPEN MILUA5 ORYX1 RAKUL RAMD1 RAMD2 RAMD3 WEG33 WEG2015 WP-EN82 WP-RU198 not in WEG
Updated 2026-10-09

Redut-2US «Редут-2УС» WH-AT

Mobile digital radio-relay and broadband wireless communications complex for command posts In service 2011

OPERATED BY **command brigade** O 2017 M seen with 175th command brigade
command brigade, communications company R 2019 M
Combined-arms formations of the Western Military District R 2015 L seen with Western Military District combined-arms formations
NUMBERS **Losses** 4 vehicles of the complex recorded lost (Oryx) (2026-10)
INDICATES *Marks an operational-level command post or communications node, typically of a command brigade, rather than a battalion tactical post. A complex comprises an R-431AM antenna module and P-260 equipment vehicles.*
RECOGNISE **Axles** Four axles, 8x8 all-terrain chassis (KamAZ-63501).
Details Data transmitters on a 32 m telescopic mast. Antenna module: mast assembly behind the cab, cable drums, railed roof platform, levelling jacks (from photograph).
Body Closed equipment shelter behind the cab (from photograph).
Cab Forward-control cab; P-260T seen with a spare wheel carried behind the cab (from photograph).
CONFUSED WITH **P-240I-4 Pereselenets** p. 235 Full view: three-axle KamAZ-5350; Redut-2US vehicles ride the four-axle KamAZ-63501 and raise a 32 m mast.
R-416GM Granit-M (R-416G-MS) radio-relay station p. 238 Full view: three-axle KamAZ-5350, not a four-axle KamAZ-63501. Deployed: the R-416GM mast carries three parabolic antennas.
Palantin EW complex p. 190 Also on four-axle KamAZ trucks. Deployed, from afar: Palantin raises 15 m antenna masts, against the 32 m Redut-2US mast.
Krasukha-4 jamming station Also on a KamAZ-6350 chassis, but one vehicle carries three rotating parabolic antennas on its roof.
R-439-OD satellite terminal Netted vehicles cannot be told apart: InformNapalm could not say whether a netted vehicle was the Redut-2US P-260-O or an R-439-OD.


Mil.ru, CC BY 4.0


Mil.ru, CC BY 4.0


Georgy Minesashvili, Mil.ru, CC BY 4.0


Mil.ru, CC BY 4.0

MOBILITY Eight-wheel all-terrain truck (KamAZ-63501). Antenna module lowers levelling jacks when deployed (from photograph). No cross-country figures found.

Weight	**INA**
Road speed	**INA**
Road range	**INA**
Time into action	**INA**

Radio-relay data rate	**5–155 Mbit/s** claimed, multi-hop radio-relay lines, 4 directions simultaneously; official documents quoted, claim
Radio-relay range	**up to 55 km** maximum, radio-relay link at up to 155 Mbit/s
Broadband wireless access	**up to 37 Mbit/s, up to 200 subscribers** claimed, broadband wireless network; official documents quoted, claim
Wireless access range	**up to 30 km** maximum, broadband wireless access at up to 37 Mbit/s
Mast height	**32 m** telescopic mast carrying data transmitters
Crew	**INA**

SEEN WITH R-431AM digital radio-relay station (antenna module); P-260-O terminal communications vehicle; P-260-U node communications vehicle

SOURCES AIF2 AR87 AR99 AR100 ARMYINF7 BORG CNA HABR MIL69 MIL109 OLUA ORYX1 RG202 RGPAL RWW UKRINF11 WMC41 WMC42 WP-EN82 not in WEG Updated 2026-10-09

SA-14RM/SM

encryption command post

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Sozvezdie

tactical command and control system legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Strelets КРУС «Стрелец»

MP+AD

Soldier-worn reconnaissance, command and communications set; fire direction link In service 2007

OPERATED BY **Squad to company level**, Squad to company level; platoon and section leaders wear the full set D 2024 H

TOS-1A batteries allocated to manoeuvre brigades, TOS-1A battery allocated to a manoeuvre brigade gets Orlan-10 data over the Strelets network D 2024 L

Ground Forces reconnaissance subunits, first recipients R 2021 M

Spetsnaz brigade, 'Commandos' (TASS reprint); Spetsnaz brigade is an inference R 2021 L

Unidentified unit, Strelets-M used for aircraft target designation in Ukraine (Russian state media claim); no unit named R 2022-06 L

combined arms army, Strelets-M: sniper companies and subunits, over 200 sets (first batch) R 2019-12 L seen with combined arms army of the Western MD, Voronezh region (state media)

INDICATES *Soldiers wearing tablets and a vest-mounted radio set suggest a squad to company level group able to pass target coordinates to artillery or aircraft. Reconnaissance units were first to receive it.*

RECOGNISE **Vest** Commander set is a vest loaded with radios, antennas, tablet and batteries. A squad member carries a small pager-like terminal.

Terminal Portable computer (tablet) with peripherals spread over a load-bearing vest. Commander tablet type TT; rank-and-file tablet type AK.

Components Operating console, vital-signs recorder, R-853-V2M radio, headset, PDU-4 rangefinder on a tripod, SBR-5M Fara-VR radar.

Complex Worn by dismounts. Lighter kit reportedly seen in Syria: tablet, distance-and-coordinates calculator and a communications module.

CONFUSED WITH **Ratnik soldier outfit without Strelets** Strelets adds a tablet (commander) or a small pager-like terminal (squad member) and radios with antennas on the vest.

VARIANTS **Strelets-M** INA. **Strelets C3 variant** INA.



Vitaly V. Kuzmin, CC BY-SA 4.0



Mil.ru, CC BY 4.0



PDU-4. Vitaly V. Kuzmin, CC BY-SA 4.0



SBR-5M Fara-VR radar, good for that entry. Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Worn by one soldier; battery life 12–14 h (ATP). Scouts can use it after a parachute jump (ARMYREC).

Weight	**2.4 kg** Modernised set, claim
Battery life	**12–14 h** VHF link to company network
Water resistance	**2 m briefly (tablets, above IP68)** TT and AK tablets; FOCUS confirms above IP68 only, claim
Time to fix position	**3 min, 10 m error** claimed, After parachute jump; TASS reprint, claim

Range, squad radio network	**about 1.5 km** claimed, Line of sight; each set acts as relay, so reach grows, claim
Data rate, internal network	**11 Mbit/s** claimed, Direct visibility, up to 1.5 km (ARMYREC); VPK gives 11 Mbit/s for a backup Wi-Fi channel, claim
Range, R-853-V2M to aircraft	**up to 8 km** claimed, Target designation data to aircraft, no relay, claim
Range, PDU-4 laser rangefinder	**3–5 km** operating range, Operating range ('дальность действия'); target type not stated, claim

SOURCES AR114 ATP CNA FOCUS15 RG11 VPK23 WP-RU225 ZVEZDA12 not in WEG

Updated 2026-10-09

8 COMMAND

Transport and tanker aircraft

An-148-100E Ан-148-100Е

staff and passenger jet of the VKS

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Tu-154 Ту-154

NATO: Careless

three-engine passenger and staff jet of the VKS

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Early-warning, command and electronic-warfare aircraft

Tu-214PU-SBUS Ту-214ПУ-СБУС

airborne command post aircraft

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

9 Logistics

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
TRUCKS AND UTILITY VEHICLES						
APA-80	–		engine starting vehicle	–	–	*244*
AS-4350.1	–		ambulance	–	–	*244*
BAZ-6909	–		heavy truck chassis	–	–	*244*
Desertcross 1000-3 all-terrain buggy (China)	–		Unarmoured 4x4 utility buggy · 2023	**300–550 kg** payload, 3 seats in cab	**WH-AT**	245
GAZ-51	–	ГАЗ-51	cargo truck 4x2 · legacy	–	–	*245*
GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	–	ГАЗ-66; ГАЗ-3308 «Ши-шига»; «Садко»	Light 4x4 general cargo truck and prime mover for mortars · 1964	**2–2.5 t** payload	**WH-AT+AD**	246
GAZ-3307	–	ГАЗ-3307	cargo truck 4x2	–	–	*246*
KamAZ-4310, -5350 and -6350 Mustang military trucks	–	КАМАЗ-4310, КА-МАЗ-5350, КАМАЗ-6350 «Мустанг»	General-purpose 6x6 and 8x8 cargo and tractor truck chassis for supply and special bodies · 1980	**6–15 t** payload, 30–39 troops	**WH-AT**	247
KamAZ-6560	–	КАМАЗ-6560	heavy truck chassis 8x8	–	–	*247*
MAZ-543	–	МАЗ-543/МАЗ-7310	heavy truck chassis 8x8 · legacy	–	–	*248*
MAZ-531605	–		cargo truck	–	–	*248*
PAK-200	–		field kitchen	–	–	*248*
PAZ-32053	–		bus	–	–	*249*
UAZ-469, UAZ-452 and UAZ-39094 utility vehicles	–	УАЗ-469; УАЗ-452; УАЗ-39094 «Козлик»; «Буханка»; «Фермер»	Light 4x4 command, liaison, cargo and resupply vehicles · 1971	**600–1,075 kg** payload, 6 passengers and 100 kg	**WH-AT**	249
Ural-375D	–	Урал-375Д	cargo truck 6x6 · legacy	–	–	*249*
Ural-4320	–	Урал-4320	cargo truck 6x6	–	–	*250*
Ural-4320-7810 Motovoz-M	–		cargo truck	–	–	*250*
Ural-6370, -63706 and -532301 trucks (newer Ural family)	–	Урал-63706 «Торнадо-У»	Heavy 6x6 and 8x8 cargo trucks and tractors · 2012	**9–16 t** payload	**WH-AT**	251
Ural-43206	–	Урал-43206	cargo truck 4x4	–	–	*252*
ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	–	ЗИЛ-131	Legacy 6x6 cargo trucks and carriers · 1966	**3.5–9 t** payload, 16–24 seats in body	**WH-AT**	252
ZIL-157	–	ЗИЛ-157	cargo truck 6x6 · legacy	–	–	*253*
TANK TRANSPORTERS						
MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks	–	МАЗ-537	Heavy tractor trucks that tow semi-trailers carrying tanks and tracked vehicles · 1963	**50–100 t** semi-trailer gross mass	**WH-AT**	254
TRACKED ALL-TERRAIN CARRIERS						
Aleut and Plastun articulated and light tracked carriers	–	ГАЗ-3344-20 «Алеут»	Two-unit unarmoured · 2018	**2–2.5 t** payload, rear unit, 12 persons total	**TR**	255
ATS-59G	–	АТС-59Г	tracked artillery tractor · legacy	–	–	*255*
Vityaz DT-10, DT-20 and DT-30	–	ДТ-10, ДТ-20, ДТ-30 «Ви-тязь»	Two-section articulated tracked carrier for Arctic, snow and swamp · 1982	**3–30 t** payload, 3–30 t cargo	**TR-A**	256
TRANSPORT AND TANKER AIRCRAFT						
An-140	–	Ан-140	light turboprop transport of the VKS and naval aviation	–	–	*257*
Tu-134	CRUSTY	Ту-134	passenger and liaison jet of the VKS and naval aviation	–	–	*257*
Tu-134UBL	CRUSTY	Ту-134УБЛ	bomber-crew trainer variant of the Tu-134	–	–	*257*
Tu-154M	CARELESS	Ту-154М	upgraded Tu-154 passenger jet of naval aviation	–	–	*258*
Yak-40	CODLING	Як-40	three-engine regional passenger jet, Border Guard	–	–	*258*
EARLY-WARNING, COMMAND AND ELECTRONIC-WARFARE AIRCRAFT						
Tu-214SR	–	Ту-214СР	communications relay aircraft	–	–	*259*
RECONNAISSANCE AIRCRAFT						
Tu-214ON	–	Ту-214ОН	former Open Skies observation aircraft	–	–	*260*
MARITIME PATROL AND AMPHIBIOUS AIRCRAFT						
Be-200ES Altair	–	Бе-200ЧС	search-and-rescue and patrol amphibian	–	–	*261*
Il-18D	COOT	Ил-18Д	turboprop airliner variant in naval aviation	–	–	*261*
TRAINERS AND OTHER FIXED-WING AIRCRAFT						
An-12PS	CUB	Ан-12ПС	search-and-rescue transport aircraft of naval aviation	–	–	*262*
L-39 Albatros	–	Л-39	jet trainer of the VKS and naval aviation	–	–	*262*

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
BREM and BTS armoured recovery vehicles	Armoured recovery and repair vehicles for tank and infantry vehicle units	7 Engineers	220
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	Amphibious carrier for cargo and vehicles	7 Engineers	211

Trucks and utility vehicles

APA-80

engine starting vehicle

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

AS-4350.1

ambulance

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

BAZ-6909

heavy truck chassis

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Desertcross 1000-3 all-terrain buggy (China) WH-AT

Unarmoured 4x4 utility buggy: troop, ammunition and casualty carrier In service 2023

OPERATED BY **military district**, Southern Military District; shown at its Rostov-on-Don HQ in Nov 2023 R 2024-01 L

assault detachment, carry ammunition, food, troops and wounded to positions R 2024-12 L

Unidentified unit, one RKhBZ company; vehicles converted to smoke carriers, reported Jan 2024 R 2024-01 L

INDICATES *Reported in 2024 with assault detachments carrying troops, ammunition, food and wounded to positions, and in a mixed assault group; an RKhBZ company also uses it, so a sighting indicates a light assault or supply element, not a specific unit type.*

RECOGNISE **Cab** Hood at the front, then a three-seat cab behind it; Army-bought vehicles have a soft cab cover with glazing

Body Open frame body with cladding; cargo platform at the rear, two removable seats optional there; tie-down straps on front and rear platforms

Axles Two axles, 27-inch wheels, wheelbase 2,311 mm; rear tyres wider than front, 27x11x14 against 27x9x14 (close only)

Details Reinforced front bumper with rubber fenders and a winch on most Army vehicles; overall 3.33 m long, 1.78 m wide, 1.93 m high

Details Field fits reported: anti-drone grilles or nets, smoke-grenade launchers, camouflage nets, EW sets (close only)

MOBILITY Four-wheel drive on demand, locking differentials; fords 0.4 m; not amphibious; unarmoured, soft cab, 48 L fuel tank

Weight, curb	**1,050 kg** As equipped for the Russian Army (Russian-side figure), claim
L × W × H	**3,327 m × 1,778 m × 1,930 m m** Overall
Road speed	**80 km/h** maximum, On road, claim
Road range	**250 km** estimated, claim
Fording depth	**0.4 m** maximum, claim
Ground clearance	**305 mm** claim
Ground pressure	**INA**

Crew	**3 seats in cab (driver and two passengers)** Two removable seats can be fitted on the cargo platform (maker option), claim
Payload	**550 kg** Russian Army version (Russian-side figure); 2022 model also 550 kg, claim
Towed load	**300 kg trailer** Trailer, Russian Army version (Russian-side figure), claim
Engine power	**87 hp** Two-cylinder petrol engine, claim
Winch pull	**4,500 lb (2,041 kg)** Most Army vehicles fitted with a winch, claim

VARIANTS **Desertcross 1000-3 (RKhBZ smoke conversion)** Remote-fired UDSh smoke canisters mounted on the vehicle, with anti-drone netting.

SOURCES AR47 DEFPOST2 DEFUA4 KYIVP1 MEDUZA2 MIL32 MIL33 MIL34 MIL35 MILIN2 WWW1A4 WWW1B3 WWW1C not in WEG Updated 2026-10-09

GAZ-51 ГАЗ-51

cargo truck 4x2 legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

GAZ-66 and GAZ-3308 Sadko light 4x4 trucks ГАЗ-66; ГАЗ-3308 «Шишига»; «Садко» WH-AT+AD

Light 4x4 general cargo truck and prime mover for mortars; GAZ-3308 replaces GAZ-66 In service 1964

OPERATED BY **materiel support battalion**, MTO transport trucks (ATP Table H-1 lists GAZ-66 among SV logistic vehicles) D 2024 M
motor rifle battalion, mortar battery: 2S12 Sani 120 mm mortars with GAZ-66 as base vehicle, INA (8 2S12 Sani per battery) D 2016 L
artillery battalion, battery fire control vehicles of the 1VI7 Mashina-B set (towed and MLRS artillery), 3 battery vehicles per battalion set (1V110 or 1V18; RWW inconsistent) D 2016 L
Airborne Forces (VDV) and Border Troops, after 1991, undated; statement unsourced in ru Wikipedia R 1992 L
Russian Armed Forces (GAZ-3308), GAZ-3308 adopted as military truck (2000 source); lost in Ukraine 2022- (Oryx; count under numbers) R 2026 L

INDICATES *Doctrinal sources list GAZ-66 among MTO transport trucks, 1VI7 artillery fire control vehicles and mortar carriers, so sightings may point to support, fire control or mortar elements. RWW (2016) says it was almost completely retired.*

RECOGNISE **Cab** GAZ-66: cab over the engine, tilts forward. GAZ-3308: bonnet ahead of the cab (GAZ-3309 cab) with enlarged wheel arches.
Axles Two axles (4x4). GAZ-3308: four tyres, single on the rear axle; GAZ-33085/-33086 twin rear tyres. Close only: GAZ-66 tyres 12.00-18.
Body GAZ-66: all-steel cargo body, optional bows and canvas cover; chassis also takes vans and other bodies. GAZ-3308: drop-side cargo platform.
Details GAZ-66B: open canvas-top cab, windscreen folds flat. Close only: front winch on some GAZ-66.
CONFUSED WITH **GAZ-66 and GAZ-3308 (each other)** From the side: GAZ-66 cab sits over the engine; GAZ-3308 has a bonnet ahead of the cab.
KamAZ-4350 p. 247 Also a cab-over 4x4. Side view: Mustang cab has a closed section behind the doors; GAZ-66 cab ends at the doors (from photograph).


GAZ-66B. Алексей Задонский, CC BY-SA 4.0


GAZ-66. Bestalex, Public domain


GAZ-3308 Sadko. Vitaly V. Kuzmin, CC BY-SA 4.0


GAZ-33081. Анатинаити, CC BY-SA 3.0

MOBILITY Wheeled 4x4 with central tyre inflation. Air-drop applies to GAZ-66B only. Unprepared fording about 1 m.

Weight (empty), GAZ-66	**3,440 kg**
L × W × H	**5.65 × 2.34 × 2.44 m** 5.81 m with winch (ru Wikipedia)
Road speed, GAZ-66	**95 km/h**
Road speed, GAZ-3308	**90 km/h**

Payload, GAZ-66	**2,000 kg** cargo body; WEG gives the same figure as towed load
Payload, GAZ-3308	**2,000 kg** base GAZ-3308; GAZ-33085/-33086 with twin rear tyres carry 4,000 kg
Seats, GAZ-66 and GAZ-3308	**2 in cab** driver and one passenger
Towed load, GAZ-66	**2,000 kg** trailer, on and off highway
Cargo bed, GAZ-66	**3.33 m x 2.05 m** length x width
Cargo bed, GAZ-3308	**3.39 m x 2.145 m** length x width
Engine power, GAZ-66	**115 hp** ZMZ-66 petrol V8

SEEN WITH 2S12 Sani 120 mm and 2B9 Vasilek 82 mm mortars; BM-21V Grad-V (GAZ-66B chassis, 12 rounds)

SOURCES ATP JREW02 ORYX1 RWW WEG45 WEG2015 WMC7 WMC8 WP-EN65 WP-EN66 WP-RU86 WP-RU87 ZR5 Updated 2026-10-10

GAZ-3307 ГАЗ-3307

cargo truck 4x2

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

KamAZ-4310, -5350 and -6350 Mustang military trucks KAMA3-4310, KAMA3-5350, KAMA3-6350 «Мустанг»

WH-AT

General-purpose 6x6 and 8x8 cargo and tractor truck chassis for supply and special bodies In service 1980

OPERATED BY **motor rifle battalion**, logistical support platoon (KamAZ-4350) D 2016 M
command brigade, communications company (Redut-2US on KamAZ-63501) D 2019 M
materiel support brigade D 2016 L
Spetsnaz brigade, GRU Spetsnaz or SSO teams (ATP vehicle list) D 2024 L
motor rifle brigade, 5 Akhmat Z-STS armoured vehicles on 5350 chassis in one convoy (Ukrainian HUR claim) R 2023-03 L
Reconnaissance subunits, Western MD, Tambov oblast (MoD claim), INA; armoured 5350 with MM-501 module R 2018-03 L

NUMBERS **Losses** 1,311 KamAZ 6x6, 55 KamAZ 4x4 and 21 KamAZ 8x8 trucks lost, models unspecified (Oryx, visually confirmed) (2026-10); **Losses** 34 KamAZ with MM-501 armoured cabin, 21 6x6 and 22 8x8 with armoured cabin, 19 KamAZ-6350 artillery tractors lost (Oryx) (2026-10)

INDICATES *Mustang trucks are most of the army's logistic vehicles; the 4350 is the standard truck of battalion support platoons. A 6350 or 63501 may carry a special body: Pantsir-S1, 9A52-4 MRL, Redut-2US relay or Medved tractor.*

RECOGNISE **Cab** Cab over the engine, no bonnet. Mustang family (4350, 5350, 6350): one three-seat cab with a closed section behind the doors (from photograph); takes add-on armour.
Axles Count axles: 4350 two (4x4), 4310 and 5350/53501 three (6x6), 6350/63501 four (8x8). 6350: front pair 1.94 m apart, long gap, rear pair 1.32 m apart.
Body Drop-side cargo platform with drop tailgate, removable bows and tarpaulin. Cranes, shelters and containers are common alternatives.
Details Armoured: bolt-on shields on the standard cab; 5350-379 carries an MM-501 armoured box on the cargo bed with eight firing ports and two roof hatches.
Details Close only: the 53501 differs from the 5350 only by length, 8.5 m against 7.96 m.

CONFUSED WITH **KamAZ-4310 (older generation)** Side view: 4310 cab ends at the doors, with the exhaust stack and spare wheel exposed behind it; the Mustang cab has a closed section behind the doors (from photograph).
Ural-4320 From the side: bonnet ahead of the cab; KamAZ cabs sit over the engine with no bonnet.
KamAZ-63968 Typhoon Full view: armoured 5350 keeps the standard cab with bolt-on shields and a box slid into the cargo bed. The MoD once captioned a Typhoon photo as this truck.

VARIANTS **KamAZ-5350 Mustang** 6x6, 7.96 m long, 6 t payload; standard platform. **KamAZ-53501** Longer 6x6 (8.5 m) than 5350. **KamAZ-5350-379** Armour kit and MM-501 armoured box on the bed. **KamAZ-6350** 8x8, four axles. **KamAZ-63501** 8x8, general-purpose chassis for superstructures.



KamAZ-5350. Vitaly V. Kuzmin, CC BY-SA 4.0



KamAZ-6350. Vitaly V. Kuzmin, CC BY-SA 4.0



Nickel nitride, CC0

MOBILITY Wheeled all-wheel drive with central tyre inflation, not amphibious. Mustang fords 1.75 m. RWW: best for long road hauls, Ural better off-road.

Weight, 5350	**9.2 t** KamAZ-5350
Gross weight, 5350	**15.85 t** KamAZ-5350
Weight, 6350	**11.4 t** KamAZ-6350
Weight, kerb, 4310	**7 t** KamAZ-4310
Payload, 5350	**6 t** KamAZ-5350
Payload, 53501	**10 t** KamAZ-53501; ruwiki only
Payload, 6350	**10 t** KamAZ-6350
Payload, 63501	**15 t** KamAZ-63501; RWW only
Payload, 4310	**6 t** KamAZ-4310 basic
Towed load, 6350	**12 t** KamAZ-6350
Towed load, 5350	**12 t** KamAZ-5350
Engine power, 5350	**260 hp** KamAZ-740.13/740.30-260
Engine power, 6350	**360 hp** KamAZ-740.50-360
Engine power, 4310	**210 hp** 220 hp from 1989
Crew and troops	**1+2 (5350 and 6350)** WEG cab seating

SEEN WITH Pantsir-S1 (96K6) (INA; chassis stated differently, see open_questions); 9A52-4 Tornado MRL

SOURCES ATP CNA D243 KYIV ORYX1 OSONE RWW WEG55 WEG2015 WMC8 WMC10 WP-EN82 WP-EN83 WP-RU106 WP-RU107 WP-RU108 ZR5 Updated 2026-10-10

KamAZ-6560 KAMA3-6560

heavy truck chassis 8x8

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MAZ-543 MA3-543/MA3-7310

heavy truck chassis 8x8 legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MAZ-531605

cargo truck

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PAK-200

field kitchen

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PAZ-32053

bus

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

UAZ-469, UAZ-452 and UAZ-39094 utility vehicles УАЗ-469; УАЗ-452; УАЗ-39094 «Козлик»; «Буханка»; «Фермер»

WH-AT

Light 4x4 command, liaison, cargo and resupply vehicles In service 1971

OPERATED BY **Reconnaissance patrols (ATP example, UAZ-469)**, combat reconnaissance patrol (platoon-sized, task-organized), 1 UAZ-469 with 12.7 mm MG, 1 per patrol (example) D 2024 L

INDICATES *Sources tie these vehicles to no specific unit type. UAZ-452 vans near the line are reported as resupply vehicles and troop carriers, so they point to front-line logistics and transport, not to a formation.*

RECOGNISE **Cab** UAZ-469: bonnet in front, five-door body, soft or metal top. UAZ-452: cab-over-engine van. UAZ-39094: crew-cab pickup.

Body UAZ-452 van: two front doors, one right side door, double rear door. UAZ-39094: open load bed with three drop sides and removable frame tent.

Details Field-fitted cage armour and Kontakt ERA blocks seen on UAZ-452 vans in Ukraine (2024). Close only: fuel filler ports on both sides of the van.

CONFUSED WITH **UAZ-3303 Golovastik** Full view: two-door, two-seat cab and open bed; the UAZ-39094 crew cab has three doors and five seats, 4,847 mm long against 4,474 mm.



Novoklimov, CC0



Alf van Beem, CC0

MOBILITY Light unarmoured 4x4 with petrol engine; fords 0.5 m (WEG), 0.8 m (WEG 2015); not amphibious.

Weight, empty, UAZ-469	**1,650 kg** with fuel
Weight, combat, UAZ-469	**2,450 kg** maximum gross
Weight, empty, UAZ-39094	**1,995 kg** modern 2.7 L petrol model

Towing, UAZ-469	**850 kg** maximum, cross-country, trailer or light gun
Crew, UAZ-469	**1 (driver)**
Capacity, UAZ-469	**6 passengers and 100 kg, or 1 passenger and 600 kg**
Seats, UAZ-39094	**5** crew-cab pickup
Payload, UAZ-39094	**1,075 kg** modern 2.7 L model
Payload, UAZ-3741 van (UAZ-452 family)	**925 kg** modern 2.7 L model; 8-11 seats in UAZ-2206 minibus

SOURCES ATP CNA DEFPOST2 FORCES ORYX1 WEG111 WEG2015 WP-EN191 WP-EN192 WP-RU258

Updated 2026-10-10

Ural-375D Урал-375Д

cargo truck 6x6 legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Ural-4320 Урал-4320

cargo truck 6x6

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Ural-4320-7810 Motovoz-M

cargo truck

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Ural-6370, -63706 and -532301 trucks (newer Ural family) Урал-63706 «Торнадо-У» WH-AT

Heavy 6x6 and 8x8 cargo trucks and tractors; Tornado-U has armoured cab In service 2012

OPERATED BY **Materiel support (MTO) subunits** R 2020-06 L seen with Southern Military District units, first deliveries (Izvestia, June 2020)
Unidentified unit R 2021-05 L seen with Russian forces, Syria (Khmeimim air base parade towing M-46 guns, May 2021)
Unidentified unit, 1 Ural-63706-0010 left behind, captured by Ukraine R 2022 L seen with Russian forces, near Balakliya, Kharkiv region (autumn 2022)
Unidentified unit, 2 (called Ural-63704-0011) captured by Ukraine R 2022-03 L seen with Russian forces, Chernihiv region (March 2022)
NUMBERS **Losses** 47 Ural-63706-0122, 3 Ural-63706-0011 and 2 Ural-64706-0311 'Tornado-U' in Oryx loss list (2026-10)
INDICATES *Per Izvestia's MoD sources (2020), Tornado-U goes first to materiel support (MTO) subunits; an expert said it is to haul ammunition, medicine and food to forward units. A sighting suggests supply or towing traffic near the front.*
RECOGNISE **Cab** Tornado-U: bonnet ahead of the cab, armoured gunner's turret on the cab roof. Ural-6370 civil base and Ural-532301: cab over the engine, no bonnet.
Axles Tornado-U and Ural-6370: three axles (6x6). Tornado-U: solid axles on leaf springs, 16.00R20 tyres. Ural-532301: four axles (8x8).
Body Drop-side cargo body; the truck also works as a semi-trailer tractor or container carrier.
Details Turret shielded on all sides for one gunner; PKM 7.62 mm in 2024, can take a 30 mm grenade launcher or 12.7 mm MG. Cab armour sits under the panels and does not show.
Details Close only: steps hung below the doors, handrails beside them.
CONFUSED WITH **Motovoz-M trucks (Ural-M based)** Same cab and bonnet as Tornado-U. Full view: Tornado-U is delivered to units with an armoured gunner's turret on the cab roof.
Ural-4320 family (Ural-M, Ural Next) Full view: Tornado-U carries a gunner's turret on the cab roof. Close only: Tornado-U tyres 16.00R20 against 14.00-20 on the Ural-4320.
Ural Typhoon-U p. 113 Full view: armoured troop capsule behind the cab where Tornado-U has a cargo platform.


Ural-6370. Vitaly V. Kuzmin, CC BY-SA 4.0


Tornado-U. GennadyL, CC0


Mike1979 Russia, CC BY-SA 4.0

MOBILITY Heavy road train: payload 16 t and gross 30 to 33 t for Tornado-U. Large tyres and axle locks for rough ground; no figure for ground pressure.

Gross weight, Ural-63706 Tornado-U	**33,000 kg** Full laden mass, series vehicle, claim *also 30,000 kg AR126 MIL133*
L × W × H	**9,550 m × 2,550 m × 3,330 m m** Ural-63706 Tornado-U, claim
Road speed	**100 km/h** maximum, Ural-63706 Tornado-U, maximum, claim
Road range	**1,000 km** Ural-63706 Tornado-U, one fill; 2 x 210 l tanks per RG21, one 400 l tank per STKT, claim
Fording depth	**1.8 m** Ural-63706 / 63704 Tornado-U; source does not say if prepared
Payload, Ural-63706 Tornado-U	**16,000 kg** Cargo truck, claim
Towed load, Ural-63706 Tornado-U	**12,000 kg** Trailer (RG21, RG24); TASS 2017 says semi-trailer, claim
Ground clearance	**400 mm** Ural-63706 Tornado-U

Cab protection	**7.62 mm SVD and AK bullets** claimed, Ural-63706 Tornado-U; windows armoured glass; engine armoured
Engine power, Ural-63706 Tornado-U	**440 hp** YaMZ-652 diesel *also 412 hp WP-RU262*
Crew	**3 seats in cab** Driver plus two accompanying the load; roof turret for one gunner
Roof weapon	**7.62 mm PKM in protected mount** Ural-63706 Tornado-U; RG21 says the mount may be armoured, claim
Payload, Ural-532301	**10,000 kg** 8x8 cargo truck; road train up to 34 t *also 9,000 kg RWW*
Gross weight and payload, Ural-6370 civil base	**34,500 kg / 19,500 kg** Civil commercial truck, not the military Tornado-U figures

SEEN WITH Ural-63704 cab-over semi-trailer tractor (tank transporter), shares Tornado-U running gear; Trailer or semi-trailer up to 12 t; 55K6E command post (S-400) (INA; WEG names the Ural-532301)
VARIANTS **Ural-63706-0010 Tornado-U** Base military 6x6 truck with armoured bonneted cab. 16 t payload, 12 t trailer (state media figures for Tornado-U).
Ural-63706-0011 INA. INA. **Ural-63706-0122** INA. INA. **Ural-6370-0121-30** INA. INA. **Ural-532301** Cab-over 8x8, four axles; Oryx lists one with an armoured cab. 10 t payload; older Ural-5323 line, not the Tornado-U line. **Ural-64706-0311** INA. INA.

SOURCES AR126 DEFBLOG5 IZRU3 MIL133 ORYX1 OSONE RG214 RG246 RWW STKT WEG90 WEG114 WP-EN108 WP-RU262 not in WEG Updated 2026-10-10

Ural-43206 Урал-43206

cargo truck 4x4

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

ZIL-131 and KrAZ-255/260 legacy 6x6 trucks ЗИЛ-131

WH-AT

Legacy 6x6 cargo trucks and carriers: ZIL-131 3.5 t, KrAZ-255B 7.5 t, KrAZ-260 9 t In service 1966

OPERATED BY **Units with UMZ remote minelayer**, UMZ minelayer, 6 firing modules on a ZiL-131 truck D 2024 H

engineer-sapper battalion, movement support detachment; TMM-3 bridge sets (KrAZ-255B chassis), 4 TMM-3 sets per battalion (RWW: TMM-3 or TMM-6; TMM-6 is not on KrAZ) D 2024 M

Units with PMP pontoon bridge park, PMP pontoon park, bridge sections launched from KrAZ-255B D 2024 M

materiel support battalion, transport vehicles; ATP lists ZIL-131 among SV MTO trucks without naming the unit D 2024 L

artillery battalion, battalion fire direction centre, 1V111 vehicle of 1V17 set (towed and MRL units); RWW: chassis likely replaced in most units, 1 per battalion D 2016 L

RKhBZ units, decontamination complexes; ATP Table I-3 lists ZIL-131 and KrAZ-260 among prime movers (table scrambled) D 2024 L

NUMBERS **Losses** Oryx photo-confirmed Russian losses: 138 ZiL-131 (+7 tankers), 21 KrAZ-255B (+11 tankers), 8 KrAZ-260 (+9 tankers) (2026-09)

INDICATES *Some carry special kit: PMP and TMM-3 bridging, UMZ minelaying, artillery fire direction. A bare cargo truck says little. RWW (2016): ZiL-131 almost retired, KamAZ-4350 standard in battalion logistic platoons. No holding unit named since 2022.*

RECOGNISE **Cab** KrAZ-260: bonnet ahead of the cab, all-metal cab set partly over the engine, searchlight on the cab roof. KrAZ-255: wood-framed, metal-skinned cab.

Axles Three axles (6x6). KrAZ-255B and -260 on wide 1300x530-533 tyres against 12.00x20 on the ZIL-131.

Body ZIL-131: wooden platform, drop tailgate, slatted sides with benches, tilt. KrAZ-255B: all-metal platform, tailgate, side extensions. KrAZ-260: metal platform, tilt.

Details ZIL-131 7.04 m long, KrAZ-255B 8.65 m. KrAZ-255 from 1969: lights in box housings on the front wings. Both KrAZ: winch under the platform.

CONFUSED WITH **KrAZ-255B and KrAZ-260 (each other)** From the front: KrAZ-260 carries a searchlight on the cab roof.

KrAZ-214 Very similar at first glance: same cab and body. From the front: separate streamlined headlights, not boxes on the wings (early 255B too); narrower tyres.

Ural-4320 From the front: air-filter canister on the right front wing (from photograph). Close only: tyres 14.00-20 against 12.00x20 on the ZIL-131.

VARIANTS **ZIL-131N** INA. **ZIL-131V** Fifth-wheel tractor, no cargo platform. **KrAZ-255B1** INA. **KrAZ-255V** Fifth-wheel tractor.



KrAZ-255B. Vitaly V. Kuzmin, CC BY-SA 4.0



ZIL-131. Stanislav Kozlovskiy, CC BY-SA 3.0



ZIL-131 tanker. Don S. Montgomery, US Department of Defense, public domain

MOBILITY All 6x6 with central tyre inflation. Fording 1 to 1.4 m unprepared; not amphibious (ZIL-131 and KrAZ-260 per WEG).

Weight, laden, ZIL-131	**10,425 kg** gross vehicle weight, with winch
Weight, empty, ZIL-131	**6,700 kg**
Weight, empty, KrAZ-255B	**11.9 t**
Weight, laden, KrAZ-255B	**20 t**

Payload, ZIL-131	**5,000 kg road; 3,500 kg off-road**
Payload, KrAZ-255B	**7,500 kg**
Payload, KrAZ-260	**9 t**
Towed load, ZIL-131	**6,500 kg road; 4,000 kg off-road**
Towed load, KrAZ-255B	**30,000 kg road; 10,000 kg off-road**
Towed load, KrAZ-260	**30 t**
Engine power, ZIL-131	**150 hp at 3,200 rpm**
Engine power, KrAZ-255B	**240 hp at 2,100 rpm**
Engine power, KrAZ-260	**288 hp**

SEEN WITH UMZ remote minelayer (on ZiL-131) (6 firing modules, 180 tubes per truck)

SOURCES ATP JREW02 KOLESA2 ORYX1 RWW WEG64 WEG2015 WMC18 WP-EN105 WP-EN106 WP-EN107 WP-EN108 WP-RU136 WP-RU137 WP-RU138 Updated 2026-10-10

ZIL-157 ЗИЛ-157

cargo truck 6x6 legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Tank transporters

MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks

MA3-537

WH-AT

Heavy tractor trucks that tow semi-trailers carrying tanks and tracked vehicles In service 1963

OPERATED BY **heavy tractor battalion**, first three battalions: Chita, Khabarovsk, Chebarkul (Central and Eastern MDs), KamAZ-65225 with semi-trailers; 30+ per company (plan) R 2017-06 M seen with MTKT battalions at Chita, Khabarovsk and Chebarkul
military district, automotive units, Kaliningrad, a batch, size INA R 2016-12 M seen with Western Military District automotive units (Kaliningrad)
heavy tractor regiment, one regiment per military district; a battalion or separate company per army (plan), 600+ KamAZ-65225 per regiment (plan) R 2017-06 L
heavy tractor battalion, unnamed MTKT battalion on a 250 km exercise march, Penza Oblast, 2017 (concurrent with Zapad-17), about 100 KamAZ-65225 and Ural-63704 R 2017 L
materiel support brigade, repair subunits R 2016 L seen with MTO brigade, Eastern Military District (Amur region)

NUMBERS **Losses** Oryx lists one each destroyed: Ural-542301 tank transporter, MAZ-537, MAZ-74101 Oplot-T tractor unit (no unit named) (2026-10)

INDICATES *Heavy tractors with semi-trailers suggest a planned road move of tracked vehicles; RWW says HETs save wear on tanks and artillery. From 2017 the MoD formed dedicated heavy tractor (MTKT) regiments, battalions and companies.*

RECOGNISE **Cab** Tractor with no cargo body, towing a semi-trailer. MAZ-537: four-seat cab at the front, engine directly behind it. KamAZ-65225: cab over the engine, high-roof sleeper.
Axles MAZ-537: four axles in two pairs, wheelbase 1.7 + 2.65 + 1.7 m, front pair steers. KZKT-7428: usually 8x8, single tyres (6x6, 10x8 exist). KamAZ-65225: 6x6.
Body Fifth wheel (saddle coupling) in place of a cargo body. MAZ-537A: ballast tractor with a welded metal platform and winch.
Details Close only: MAZ-537 cab has two side doors and a roof hatch; MAZ-537G a 15 t winch with 100 m cable. KZKT-7428 cab seats driver and five.

CONFUSED WITH **MAZ-543 family (missile and radar carriers)** From the front: two separate cabs, driver in the left one (MAZ-543M: left cab only); MAZ-537 has one four-seat cab.
Commercial KamAZ-65225 Close only: military deliveries add local protection fittings, winches and power take-offs (state claim, 2016).


Vitaly V. Kuzmin, CC BY-SA 4.0


Georg Pik, CCO


Vitaly V. Kuzmin, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY MAZ-537 not amphibious, fords 1.3 m. Others INA. MAZ-537A: 65 t semi-trailer only on hardened roads (WEG).

Weight, MAZ-537	**21.6 t** curb weight
Weight, KZKT-7428	**23.0 t** curb weight, infobox, claim *also 23.7 t WP-EN188*
Weight, KamAZ-65225	**11.15 t** curb weight, commercial specification, claim
L × W × H	**11.7 × 3.07 × 2.92 m**
Road speed, MAZ-537	**65 km/h** maximum *also 55 km/h WP-RU248*
Road speed, KamAZ-65225	**80 km/h** maximum, commercial specification, claim *also 90 km/h RIA16*
Road range, MAZ-537	**650 km** cruising range
Road range, KZKT-7428	**1,500 km** infobox, condition not given, claim
Fording, MAZ-537	**1.3 m** depth
Length, KZKT-7428	**10.06 m** KZKT-7428-011 table; infobox gives the same, claim
Length, KamAZ-65225	**7.32 m** commercial specification, claim
Daily march, KamAZ-65225	**1,000 km** practical, per day with a relief crew; Izvestia citing MoD sources, 2017, claim

Semi-trailer mass, MAZ-537	**65 t** maximum, later versions (WEG names MAZ-537E); original design load 50 t; RUWP537 infobox gives 65 t for the base model *also 68 t WP-RU248*
Semi-trailer mass, KZKT-7428	**70 t** maximum, lead text; the -011, -013 and -74287 table rows give 100 t, claim *also 100 t WP-EN188*
Semi-trailer mass, KamAZ-65225	**26.7 t** full mass, commercial specification; 64 t permitted by design on roads rated for 10 t axle load, claim *also up to 50 t RIA16*
Fifth-wheel load, MAZ-537	**25 t** base model; 27 t for MAZ-537G
Cab seating, MAZ-537	**driver and 3** four-seat cab
Cab seating, KZKT-7428	**driver and 5** cab for six in total, claim
Winch pull, MAZ-537G	**15 t** 100 m working cable, ENWP537

SEEN WITH ChMZAP-9990 and ChMZAP-5247G semi-trailers; 2-PPT-50 semi-trailer, 50 t; Special semi-trailer for KamAZ-65225, up to 65 t (type not named); KET-T recovery vehicle (MAZ-537G chassis; KZKT-7428-012 chassis for KET-T/KET-TM)

VARIANTS **MAZ-537G** Winch with 100 m working cable. Saddle load 27 t, 15 t winch pull; most numerous version. **KZKT-7428-012** INA. Uses the 525 hp D-12A-525 engine (MAZ-537: D-12A-525A); base model has a 650 hp YaMZ-8401. **KamAZ-65225 (military delivery)** Local protection fittings and winch. Automatic gearbox; payload up to 50 t (state claim, WMD press service 2016).

SOURCES HSCHL IZV17 MINFORM ORYX1 RIA16 RWW WEG108 WP-EN187 WP-EN188 WP-RU221 WP-RU248 WP-RU249

Updated 2026-10-10

Tracked all-terrain carriers

Aleut and Plastun articulated and light tracked carriers ГАЗ-3344-20 «Алеут» TR

Two-unit unarmoured (Aleut) and light-armoured open-top (Plastun-SN) tracked carriers In service 2018

OPERATED BY **Unidentified unit**, Motor rifle formation of the Eastern MD combined arms army, Transbaikalia (unit not named) R 2021 L

Unidentified unit, Eastern MD tank formation, Buryatia; source also says 'air defense forces' (garbled wording, unit not named) R 2021 L

NUMBERS **Holdings** 123 platforms reported delivered to northern ground forces, May 2019 (Russian media via ArmyInform) (2019-05); **Holdings** 14 Plastun-SN (evacuation, reconnaissance, 82 mm mortar carrier) first delivered Oct 2023; 50 reported ordered (2023-11)

INDICATES *Aleut was ordered for Arctic use and issued to Eastern MD formations in Transbaikalia and Buryatia; it has also appeared with combat columns in Ukraine. Plastun-SN is meant mainly for casualty evacuation from the front line.*

RECOGNISE **Hull** Aleut: two tracked units joined by a steering joint. Front power module has a cab for 5 including driver; rear unit is a van body. Unarmoured.

Turret None. Plastun-SN is a light-armoured tracked carrier with no hard roof.

Armament Aleut: pivot mount for a rifle-calibre machine gun ahead of a roof hatch on the front module. Plastun-SN shown with an 82 mm mortar or, for recce, a telescopic mast.

Suspension Close only: Plastun-SN all-season track 50 cm wide. Aleut: side door in the front cab, van door at the stern.

CONFUSED WITH **GAZ-3344 (civilian)** Same two-unit tracked layout. Close only: the army Aleut has a machine-gun pivot mount ahead of the front roof hatch.

SEEN WITH Trailer, towed (Up to 3 t (Aleut))

VARIANTS **GAZ-3344-20 Aleut** Two-unit articulated carrier; transport configuration ordered by army. **Plastun-SN** Light tracked vehicle, open top (no hard roof), light armour.



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Aleut is amphibious, 3.8 km/h afloat; ground pressure 0.2 to 0.21 kg/cm² (reported). Plastun-SN open-topped; fording INA. Both for difficult terrain.

Weight, Aleut	**11 t** GAZ-3344-20 as shown at BIDEC 2017; total weight, claim
Weight, Plastun-SN	**3.8 t** Developer figure, claim
Road speed, Aleut	**50 km/h** Maximum road speed, company figure for vehicle shown at BIDEC 2017 arms fair, claim
Road speed, Plastun-SN	**50 km/h** Maximum, developer figure, claim
Speed afloat, Aleut	**3.8 km/h** Amphibious without preparation, maximum; BIDEC 2017 arms fair figure, claim

Crew and passengers, Aleut	**Front cab 5 incl. driver; 12 persons total** GAZ-3344-20 as presented at BIDEC 2017 arms fair; company figure, claim
Payload, Aleut	**Front 750 kg; rear 2,250 kg** GAZ-3344-20 as presented at BIDEC 2017 arms fair; company figure, claim
Towed load, Aleut	**3 t** Trailer mass, as reported by Ukrainian state media citing Russian sources, claim
Passengers, Plastun-SN	**8; or 4 rescuers and 2 stretchers** Evacuation mode for the second figure, claim
Protection, Plastun-SN	**Br3 and Br4** Br3 stops 9 mm pistol bullet; Br4 stops 5.45 mm enhanced penetration and 7.62 mm ball, claim
Engine, Aleut	**YaMZ-5347-26 diesel** Vehicle shown at BIDEC 2017 arms fair, claim

SOURCES ADU AINF22 AINF23 AR13 AR14 AR15 MILUA WP-RU26 WWW13 ZR3 not in WEG

Updated 2026-10-09

ATS-59G АТС-59Г

tracked artillery tractor legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Vityaz DT-10, DT-20 and DT-30 ДТ-10, ДТ-20, ДТ-30 «Витязь» TR-A

Two-section articulated tracked carrier for Arctic, snow and swamp; weapon-system carrier In service 1982

OPERATED BY **motor rifle brigade**, 80th: 30 DT-10PM received in 2015 O 2023 H
army corps, field kitchens, bakeries and water tankers on DT-30PM O 2020 M
Northern Fleet Arctic air defence units (Pantsir-SA), Pantsir-SA battalion; tactical group on Alexandra Land O 2020-08 M
air defence missile battalion, Tor-M2DT battalion, Pechenga area, Kola Peninsula R 2019-11 M
motor rifle brigade, Tor-M2DT launchers on DT-30 chassis, Kherson region R 2023 L
Unidentified unit, DT-30 used as ammunition carrier, Kharkiv region, March 2022 R 2022-03 L

NUMBERS **Losses** 2 DT-10PM destroyed; 4 DT-30 lost, of which 1 destroyed and 3 captured (Oryx, photo-confirmed) (2026-09)

INDICATES *A Vityaz points to an Arctic-equipped force: Northern Fleet Arctic motor rifle brigades, its army corps and its Tor-M2DT and Pantsir-SA units held them in 2016–2023. One each was reported with unidentified units near Kharkiv (2022) and on Tendra Spit (2025).*

RECOGNISE **Hull** Two tracked sections in tandem, joined by a steerable coupling with hydraulic cylinders; each section runs on its own pair of tracks, all four driven
Front section Enclosed forward-control cab at the front of the first section, engine compartment behind it; DT-30: four small front windows, one door each side
Rear section Second section carries a cargo body, tented body or flat platform; on Tor-M2DT and Pantsir-SA it carries the weapon module
Size DT-30PM 16.15 m long against 14.21 m for the DT-10PM and 9.0 m for the DT-3P; DT-30PM and DT-10PM both 3.1 m wide
Suspension Four wide rubber-band tracks with steel cross-pieces; close only: DT-30PM 12 rubber road wheels per section; DT-30 six dual road wheels, sprocket front, idler rear

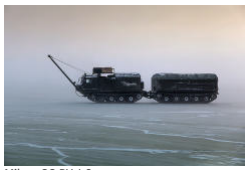
CONFUSED WITH **DT-10PM against DT-30PM** Full view: DT-30PM 16.15 m long against 14.21 m for the DT-10PM; close only: tracks 1.1 m wide against 0.96 m
Tor-M2DT and Pantsir-SA p. 161 Same carrier, but the rear section holds the weapon module instead of a cargo body; Pantsir-SA also has retractable antennas on the front section

SEEN WITH Tor-M2DT; Pantsir-SA

VARIANTS **DT-10PM** Shorter carrier: 14.21 m long against 16.15 m for the DT-30PM; tracks 0.96 m wide against 1.1 m. **DT-30PM** Longest member, 16.15 m; carrier of the Tor-M2DT and Pantsir-SA air defence systems. **DT-30PM-T1** Tor-M2DT launcher: the missile module sits on the rear section in place of a cargo body. **KA-250/30PM** Arctic field kitchen built on the DT-30PM; bakery KhPA-500/30PM and water tanker TsVA-10/30PM use the same carrier.


Vitaly V. Kuzmin, CC BY-SA 4.0


Алексей Кумаев, CC BY-SA 4.0


Mil.ru, CC BY 4.0

MOBILITY P models swim, propelled by their tracks, at 5–6 km/h; base DT-10 and DT-30 do not swim and ford 1.8 m. Cross 4–4.5 m trenches; ground pressure 0.22–0.3 kg/cm²

Weight, curb, DT-10PM	**27.5 t**
Weight, curb, DT-30PM	**30 t**
Weight, gross, DT-30PM	**60 t**
Weight, empty, DT-3P	**7.3 t**
L × W × H	**14.21 × 3.1 × 3.325 m**
Road speed, DT-10PM	**44 km/h** claim

Payload, DT-3P	**3 t**
Payload, DT-10PM	**10 t**
Payload, DT-20	**20 t**
Payload, DT-30PM	**30 t**
Crew, DT-10PM and DT-30PM	**5** cab seats including the driver
Crew and passengers, DT-3P	**1 + 17**
Drawbar pull, DT-30PM	**about 500 kN**

SOURCES AR130 AR131 AR132 ARMYINF16 BAROBS CNA CSIS20 IISS25 MIL135 MIL136 MT ORYX1 RG163 RG203 RG215 RT11 TWZ40 WEG117 WEG118 WEG119 WP-EN200 WP-RU266 WP-RU267
Updated 2026-10-19

Transport and tanker aircraft

An-140 Ан-140

light turboprop transport of the VKS and naval aviation

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Tu-134 Ту-134

NATO: Crusty

passenger and liaison jet of the VKS and naval aviation

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Tu-134UBL Ту-134УБЛ

NATO: Crusty

bomber-crew trainer variant of the Tu-134

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Tu-154M Ту-154М

NATO: Careless

upgraded Tu-154 passenger jet of naval aviation

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Yak-40 Як-40

NATO: Codling

three-engine regional passenger jet, Border Guard

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Early-warning, command and electronic-warfare aircraft

Tu-214SR Ty-214CP

communications relay aircraft

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Reconnaissance aircraft

Tu-214ON Ty-214OH

former Open Skies observation aircraft

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Maritime patrol and amphibious aircraft

Be-200ES Altair Бе-200ЧС

search-and-rescue and patrol amphibian

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Il-18D Ил-18Д

NATO: Coot

turboprop airliner variant in naval aviation

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Trainers and other fixed-wing aircraft

An-12PS Ан-12ПС

NATO: Cub

search-and-rescue transport aircraft of naval aviation

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

L-39 Albatros Л-39

jet trainer of the VKS and naval aviation

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

10 Uncrewed systems

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
GROUND ROBOTIC COMPLEXES						
Kurier / Omich-2 / Bogomol-7V ground robotic complexes	–	НРТК «Курьер», «Омич-2», «Богомол-7В»	Remotely driven tracked robots for fire support, resupply and casualty evacuation · 2024	**3–10 km** Kurier control range	**TR+AD**	264
SMALL RECONNAISSANCE DRONES						
BLA-07	–		reconnaissance UAV	–	–	*265*
DJI Mavic, Air, Mini and Matrice quadcopters (China)	–	«Мавик»	Commercial camera quadcopters for reconnaissance, artillery spotting and light bombing · 2022	**1.5–15 km** control/video link	**AIR-RW**	265
Eleron-3SV	–	Элерон-3СВ «Элерон»	Man-portable short-range electro-optical reconnaissance and artillery-spotting UAV · 2013	**20–25 km** control link	**AIR-FW**	266
Granat-1 / Granat-4	–	Гранат-1 / Гранат-4 «Гранат»	Small reconnaissance UAVs for artillery target acquisition and spotting · 2010	**10–70 km** Granat-1/-4, control link	**AIR-FW**	266
Merlin-VR	–	Мерлин-ВР	Long-endurance reconnaissance and artillery-spotting UAV · 2021	**150 km** control link	**AIR-FW**	267
Mugin-5	–		Chinese commercial fixed-wing UAV · legacy	–	–	*267*
Orlan-10	–	«Орлан-10»	Catapult-launched recon UAV for artillery spotting and EW · 2010	**50–150 km** Orlan-10 control link	**AIR-FW**	268
Supercam S350	–	«Суперкам»	Small electric fixed-wing reconnaissance and artillery fire-adjustment UAV · 2014	**100 km** control link	**AIR-FW**	269
Takhion	–	Тахион «Тахион»	Small electric reconnaissance and fire-correction UAV · 2015	**40 km** radius	**AIR-FW**	269
ZALA 421-16E	–	ZALA 421-16E	Short-range electric reconnaissance and fire-correction UAV · 2011	**50–75 km** control link	**AIR-FW**	270
Zastava	–	Застава «Застава»	Short-range reconnaissance and fire-adjustment mini-UAV · 2012	**10 km** radius	**MP**	270
LARGER RECONNAISSANCE AND STRIKE DRONES						
Forpost	–	«Форпост»	Medium-range reconnaissance UAV · 2013	**150–250 km** radius	**AIR-FW**	271
Korsar	–	Корсар «Корсар»	Medium reconnaissance UAV, fixed wing · 2015	**120–200 km** radius	**AIR-FW**	271
Mohajer-6	–	Мохаджер-6	Iranian-built medium reconnaissance and light strike UAV used by Russia · 2018	**200–500 km** control link	**AIR-FW**	272
Orion	–	«Орион»	Medium-altitude long-endurance reconnaissance and strike UAV · 2019	**250–300 km** radius	**AIR-FW**	272
LOITERING MUNITIONS AND ONE-WAY ATTACK						
Garpiya-A1	–	Гарпия-А1 «Гарпия»	Long-range one-way attack drone for fixed targets at preset coordinates · 2023	**1,000–1,500 km** Garpiya-A1, range	**AIR-FW**	273
Geran-2	–	Герань-2 «Герань»	Long-range one-way attack drone · 2022	**600–2,500 km** Geran-1/2/3, range	**AIR-FW**	274
Gerbera	–	«Гербера»	Cheap foam one-way drone · 2024	**300–600 km** Gerbera, range	**AIR-FW**	275
Italmas	–	Италмас	One-way attack drone · 2023	**200 km** Italmas, range	**AIR-FW**	275
KUB-BLA	–	КУБ-БЛА «КУБ»	Catapult-launched electric loitering munition, 3 kg warhead, tactical strike · 2022	**25–50 km** KUB, range	**AIR-FW**	276
Lancet	–	Изделие 51 «Ланцет»	Loitering munition for precision strikes on artillery, air defence and armour · 2019	**25–100 km** Lancet, range	**AIR-FW**	277
Molniya	–	«Молния»	Cheap fixed-wing FPV one-way attack drone · 2024	**20–230 km** Molniya-1/2, range	**AIR-FW**	278
Shahed-107 (Iran)	–		Light one-way attack drone for mid-range strikes behind the front line · 2025	**300–1,500 km** Shahed-107, range	**AIR-FW**	278
FPV DRONES						
FPV drones	–		Pilot-flown one-way attack quadcopters, radio- or fibre-optic-controlled · 2023	**7–65 km** FPV, range	**AIR-RW**	279
TRAINERS AND OTHER FIXED-WING AIRCRAFT						
Yak-52	–	Як-52	piston trainer, ad hoc counter-drone aircraft · legacy	–	–	*280*
Yak-52B2	–	Як-52Б2	armed counter-drone conversion of the Yak-52 · trial	–	–	*280*
OTHER						
AeroScope	–		Chinese drone detection system · legacy	–	–	*281*

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
Leer-3	UAV-borne cellular	6 Electronic warfare	190
Repellent-1	Wheeled counter-UAV EW complex	6 Electronic warfare	200
Pole-21	Networked GNSS jamming posts protecting fixed sites from GNSS-guided weapons and UAVs	6 Electronic warfare	200

Ground robotic complexes

Kurier / Omich-2 / Bogomol-7V ground robotic complexes НРТК «Курьер», «Омич-2», «Богомол-7В»

TR+AD

Remotely driven tracked robots for fire support, resupply and casualty evacuation In service 2024

OPERATED BY **volunteer formation**, NRTK company O 2026 M **naval infantry division**, company of ground unmanned systems, unmanned systems battalion O 2026 L

INDICATES *A drop of NRTK on P-7 platforms was done by VDV at Tsentr-2026. Operators landed first and took control after landing. Use is by assault, marine and RKhBZ subunits in Ukraine, not one branch.*

RECOGNISE **Kurier** Tracked platform 1.4 m long, 1.2 m wide, 0.58 m high without weapon; weapon module on top (7.62 or 12.7 mm MG, AGS-17). Steel plates may cover the tracks.

Omich-2 Tracked robot 2.04 x 1.405 m with a flat cargo deck seating four paratroops; forward boom with antenna and camera. Takes Kornet, AGS-17, MG or Shmel module.

Omich (first) Cargo deck with a manual-control stand above it, so it can be driven from the platform.

CONFUSED WITH **Kurier and Omich-2 (each other)** Omich-2 is longer, 2.04 m against 1.4 m, with a flat cargo deck and a forward boom carrying antenna and camera; Kurier carries a weapon module on top.

MOBILITY Electric drive; Kurier and Omich carry a generator to recharge. Radio control 3 to 4 km direct, to 10 km with relay. Needs 3 to 5 minutes after landing to start work.

Weight, Kurier	**250 kg** Up to 250 kg; developer figure in MODRT, claim
Weight, Omich-2	**375 kg** Platform mass, RT, claim
Road speed, Kurier	**35 km/h** Up to, claim
Road speed, Omich (economy mode)	**about 18 km/h** On battery, loaded; about 19 km off-road without the generator; range trials at 242nd Gds MRR, 2025, observed
Payload, Omich-2	**over 500 kg; trailer over 1 t** claimed, Claimed, July 2025
Control range, Kurier	**3 km direct; 10 km with air relay** maximum, Radio control; relay is an aerial repeater, claim
Weapon, Kurier at Tsentr-2026	**7.62 mm machine gun module** claim
Weapon options, Kurier	**PKTM 7.62 mm 600 rd; NSVT 12.7 mm 200 rd; AGS-17 or AGS-30 100 rd**
Weapon options, Omich-2	**Kornet or Fagot ATGM, AGS-17, MG, Shmel** claim
Endurance, Kurier	**12 to 72 hours** Depends on mode; 6 to 10 h on battery in active combat, then a diesel generator recharges (RBC)
Crew	**0; remotely operated** Omich can also be driven from its deck

SEEN WITH P-7 parachute platform (3 complexes dropped from P-7 platforms at Tsentr-2026; number per platform INA); Operator team landed ahead of the robot

SOURCES AMAL4 DONM IZOM IZV14 LENTA15 MODRT RBC2 RGTV RMBG VZ2 not in WEG

Updated 2026-10-10

Small reconnaissance drones

BLA-07

reconnaissance UAV

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

DJI Mavic, Air, Mini and Matrice quadcopters (China) «Мавик»

AIR-RW

Commercial camera quadcopters for reconnaissance, artillery spotting and light bombing In service 2022

OPERATED BY **motor rifle regiment**, command post; Mavic used to find enemy positions O 2025-10 L
Russian ground units in Ukraine, many supplied by volunteers, front-line subunits; Mavics favoured in offensive tactical operations R 2023-03 M
Unidentified unit, a scout's Mavic 3, used to give artillery coordinates; place not given R 2022-06 L
Airborne Forces subunits, thermal-camera Mavics for night bombing, southern front across the Dnieper R 2023-04 L
Unidentified unit, UAV squad of one tank subunit of the Center group of forces, at its training ground, Aug 2025; Mavic-type quadcopter for fire adjustment R 2025-08 L
INDICATES *Reported across Russian ground units since 2022, many bought by volunteers; in 2025 reported with a motor rifle regiment and a tank subunit's UAV squad, both of the Center group. A sighting shows neither unit type nor side: Ukraine flies the same types.*
RECOGNISE **Rotors** Four rotors on four arms, a front pair and a rear pair
Size Diagonal: Mini 3 Pro 247 mm, Air 2S 302 mm, Mavic 3 380 mm; Matrice 30T 668 mm, Matrice 300 RTK 895 mm
Arms Stowed: arms folded against the body; Mavic 3 folded 221 x 96 x 90 mm, Matrice 300 RTK folded 430 x 420 x 430 mm with propellers
Camera Camera on a three-axis stabilised gimbal; Mavic 3 head holds a main and a tele camera, Matrice 30T head holds wide, zoom and thermal cameras and a rangefinder
Landing gear Matrice 300 RTK: separate landing-gear legs fitted under the body; Mavic 3: built-in landing gear that houses the antennas
CONFUSED WITH **FPV attack quadcopters** Close: FPV camera faces the flight direction; Mavic, Air and Matrice main cameras sit on a three-axis stabilised gimbal



C.Stadler/Bwag, CC BY-SA 4.0



Gaelle1106, CC BY-SA 4.0

MOBILITY Battery endurance 31 to 55 min; wind limit about 8 to 12 m/s; Mavic 2 Enterprise Advanced not waterproof, Matrice 30T rated IP55, Matrice 300 RTK IP45

Takeoff weight, Mavic 3	**895 g** claim
Takeoff weight, Mavic 2 Pro and Zoom	**907 g and 905 g** claim
Takeoff weight, Mavic 2 Enterprise Advanced	**909 g** without accessories; maximum takeoff weight 1,100 g, claim
Takeoff weight, Air 2S	**595 g** claim
Control and video link range	**Mavic 3, Matrice 30T and 300 RTK 15 km; Air 2S and Mini 3 Pro 12 km; Mavic 2 Enterprise Advanced 10 km** maximum, unobstructed, free of interference, FCC setting; CE setting 8 km (Mavic 2 Enterprise Advanced 6 km), claim
Measuring range, laser rangefinder (Matrice 30T)	**3-1,200 m** 0.5 x 12 m vertical surface, 20% reflectivity, claim
Camera zoom, Mavic 3	**up to 28x** tele camera, hybrid zoom in Explore mode, claim
Thermal camera, Mavic 2 Enterprise Advanced and Matrice 30T	**640 x 512 pixels** uncooled VOx microbolometer; Matrice 30T 1280 x 1024 in super-resolution mode, claim
Zoom camera, Matrice 30T	**21-75 mm (113-405 mm equivalent), 48 MP** claim
Crew	**at least 2** Russian UAV crew at a tank subunit's training ground, 2025: operator flies a Mavic-type drone, a second crew member passes targets by tablet, claim
Training time, operator	**about a week** Russian practice, 2022

SOURCES CNA23 DJIAIR DJIM2 DJIM2EA DJIM3 DJIM3M DJIM30 DJIM300 DJIM300M DJIMINI DRDRONE DXL22 IUS IZ25A IZ25AR IZ25B KOM25 KP55918 OSN3 RAZOM RIA223 RUSIPL not in WEG
Updated 2026-10-09

Eleron-3SV Элерон-3СВ «Элерон»

AIR-FW

Man-portable short-range electro-optical reconnaissance and artillery-spotting UAV In service 2013

OPERATED BY **motor rifle brigade**, UAS company, Eleron platoon; platoons attached to battalions or companies D 2019 M
motor rifle division, UAS company (division asset), Eleron platoon attached to regiments D 2019 M
artillery brigade, UAS company of an army artillery brigade; each platoon flies Orlan-10, Eleron-SV or Granat-4 D 2019 L
Unidentified unit, Eleron-3SV captured in Ukraine (Ukrainian capture reports 2022-2024); no unit named R 2024-04 M
Russian forces in Syria, Russian group in Syria; artillery spotting R 2016 M
airborne division, UAV subunit (planned 2018) R 2018-05 L
INDICATES *Before 2022 Eleron platoons sat in brigade or division UAS companies and were attached to regiments and battalions to spot for artillery; an Eleron may mean such a unit within about 25 km. FSB, MVD and Strategic Missile Forces also use it.*
RECOGNISE **Wings** Eleron-3SV: small flying wing (blended wing body), span 1.47 m; original Eleron-3 has delta wings on a conventional fuselage.
Engines One electric motor driving a pusher propeller at the rear; acoustically near silent.
Tail Eleron-3SV has no tailplane; original Eleron-3 has a tailplane.
Launch About 5 kg; launched from a bungee (T23P) or pneumatic (T27P) catapult, recovered by parachute; carried in two backpacks.
Variant T-16 Eleron T-16: larger (about 20 kg) canard; swept wings with leading-edge extensions and downturned tips, two fins, underwing pylons.
CONFUSED WITH **ZALA 421-16E** p. 270 Also an electric flying wing with a pusher propeller, catapult-launched; larger: span 2,815 mm against 1.47 m.
Takhion p. 269 Also an electric flying wing, catapult-launched and parachute-recovered; larger: span 2 m against 1.47 m, with winglets at the wingtips.



Eleron T-16. Ministry of Internal Affairs of Ukraine, CC BY 4.0

MOBILITY Carried by the crew in two backpacks; needs a catapult to launch and lands by parachute; battery limits flight to about 1.5-2 h.

Take-off weight, Eleron-3SV	**5.3 kg** maximum, claim
Take-off weight, Eleron T-16	**about 20 kg**
Control range, real-time link	**25 km** maximum, real-time video over data link, claim
Flight range, autonomous	**50 km** maximum, no link, imagery recorded on board, claim
Time into action	**10 min** maximum, deploy or pack up complex, claim

Operating altitude, Eleron-3SV	**3,000 m** maximum, above launch point, claim
Payload, Eleron-3SV	**1 kg** maximum, claim
Payload, Eleron T-16	**up to 6 kg** maximum, incl. underwing containers
Sensors	**photo camera, gyro-stabilised TV camera, or thermal imager with low-light colour camera** claim
Other payloads	**radio relay or jammer module** claim
Navigation	**GLONASS/GPS; autonomous, radio-command and orbit modes; automatic return** claim
UAVs per complex	**2** claim
Simultaneous UAVs per GCS	**2**
Crew	**2** claim

SEEN WITH Eleron-3SV air vehicle (2 per complex); Ground control station (1 per complex; controls 2 UAVs at once); T23P bungee catapult or T27P pneumatic catapult; 15Ts56M Typhoon-M anti-sabotage vehicle

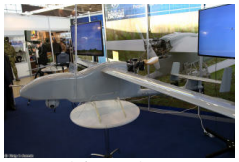
SOURCES 3G AR48 AR49 AR50 ARMYINF ATP BG69 BG137 CNA DBLOG GRROBO1 GS18 IISS25 KI3 MF3 MILUA2 MILUA23 PROF3 RT18 RWW SHEP2 WP-EN55 WP-RU80 WP-RU81 WP-RU82 ZALAAIF ZALAINT ZASROB not in WEG Updated 2026-10-08

Granat-1 / Granat-4 Гранат-1 / Гранат-4 «Гранат»

AIR-FW

Small reconnaissance UAVs for artillery target acquisition and spotting In service 2010

OPERATED BY **motor rifle brigade**, UAV company, short-range platoon (Granat-4 with Orlan-10) D 2016 H
motor rifle brigade, UAV company, mini-platoon (hand-launched Granat-1) D 2016 M
INDICATES *A Granat launch site points to a UAV platoon of a brigade or division UAV company, often attached to a regiment or battalion, or to the Navodchik-2 complex of a tube or rocket artillery battalion; Granat-1 likely near the battery command post.*
RECOGNISE **Wings** Granat-4: aeroplane type, wingspan 3.2 m. Granat-1: flying wing of composite, span 0.82 m.
Engines Granat-4: internal combustion engine, pusher propeller. Granat-1: electric motor, propeller at the front.
Fuselage Granat-4: length 2.6 m; camera ball under the nose (from photograph). Granat-1: length 0.52 m, height 0.24 m. Granat-4 system carried in a KamAZ van.
Tail Granat-4, from photograph: twin tail booms, a fin on each, joined by a tailplane; engine on top at the rear of the pod. Granat-1: tailless flying wing.
CONFUSED WITH **Orlan-10** p. 268 In flight: Orlan-10 has one fuselage, a conventional tail and a tractor propeller in the nose; Granat-4 is a pusher with twin tail booms (from photograph).


Granat-4. Vitaly V. Kuzmin, CC BY-SA 4.0


Granat-1. AnthonyWK, CC BY-SA 4.0

MOBILITY Granat-4 catapult-launched, parachute recovery; system moved in a KamAZ van. Granat-1 hand or elastic catapult launch, carried in a backpack.

Weight, Granat-4 takeoff	**30 kg** manufacturer figure via Kalashnikov, claim
Weight, Granat-1 takeoff	**2.4 kg** claim
Time into action, Granat-4	**15 minutes** not more than, claim

Data link range, Granat-4	**70 km** claimed, photo, video and thermal data transmitted near real time, claim
Range of action, Granat-4	**100 km** claimed, flight range per Kalashnikov, claim
Endurance, Granat-4	**6 h** maximum, claim
Ceiling, Granat-4	**4,000 m** maximum, above sea level; working band 300-2,000 m, claim
Range, laser designation, Granat-4	**3 km** claimed, laser illumination of targets for guided munitions (Krasnopol), claim
Range, Granat-1 video	**10 km** claimed, line of sight, video camera, claim

SOURCES ATP AV21 CHARTER CNA DEFNDR GRROBO1 GS18 IISS25 MF3 MIL51 ROBO4 RWW TADV3 WMC9 WP-EN55 WP-RU82 WP-RU95 WP-RU96 ZAXID not in WEG Updated 2026-10-08

Merlin-VR Мерлин-ВР

AIR-FW

Long-endurance reconnaissance and artillery-spotting UAV In service 2021

INDICATES *An experimental long-endurance reconnaissance UAV, rarely reported. IISS lists it among Russian Army ISR UAVs; no source names the holding unit type, so a sighting does not by itself identify an echelon.*

RECOGNISE **Wings** Wing span about 5 m (4.9 m reported). **Engines** Piston engine with a starter-generator, found in wreckage (2022); the announced hybrid electric mode was absent. **Fuselage** Length 2.02 m. Electro-optical payload module with day and thermal camera. Catapult launch, parachute recovery. **Wreckage** Wreckage: plastic fuel canister with a handle used as the fuel tank; Chinese starter-generator; French thermal-imager matrix.

CONFUSED WITH **Orlan-10** p. 268 Often compared with Merlin-VR. On the ground: smaller, span about 3 m against 4.9 m.



Mil.ru, CC BY 4.0



Mil.ru, CC BY 4.0

MOBILITY Catapult launch with rubber cord needs a prepared site; recovery by parachute with air cushion.

Weight, payload	**6.5 kg** maximum, Maximum payload; claim as repeated by Ukrainian state media, claim
Flight range	**600 km** claimed, Kyiv Post, basis and source not given
Length	**2.02 m**
Wingspan	**about 5 m** 4.9 m in PLANDIY, 5 m in W1RU25

Detection range, optical payload	**30 km** claimed, 90x optical, 200x digital zoom; Russian serviceman's statement; day and thermal camera
Datalink range	**150 km** claimed, Flight distance without loss of link; Russian serviceman's statement
Payload sensor	**Electro-optical and thermal camera, 90x optical zoom** Russian online press (www1.ru)
Crew	**INA**

SOURCES ARMY22 DEFPOST5 IISS25 KYIVP4 PLANDIY W1RU25 W1RU26 not in WEG

Updated 2026-10-09

Mugin-5

Chinese commercial fixed-wing UAV legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Orlan-10 «Орлан-10»

AIR-FW

Catapult-launched recon UAV for artillery spotting and EW; Orlan-30 adds laser designator In service 2010

OPERATED BY **motor rifle brigade**, UAV company, short-range platoon D 2019 H
EW brigade, Leer-3 platoon, 3 per Leer-3 complex D 2024 H
motor rifle division, UAV company D 2019 M
artillery brigade, UAV company, UAS platoon (BKAR artillery reconnaissance version) D 2019 M
EW battalion, Leer-3 crews (battalion or company of a combined arms army) D 2019 M
Spetsnaz units, Leer-3 complex (three Orlan-10 and a command post) R 2017-12 L
motor rifle division, unmanned systems troops subunit R 2026-04 L seen with 71st Guards Motor Rifle Division
artillery regiment, unmanned systems subunit (Orlan-30) R 2026-07 L

INDICATES *Doctrinally the Orlan-10 sits in brigade and division UAV companies and EW Leer-3 platoons, and is used to adjust artillery. A catapult or GCS truck suggests such a unit and nearby fire support; Orlan-30 adds laser-guided Krasnopol.*

RECOGNISE **Wings** High-mounted wing, span 3.1 m on Orlan-10; Orlan-30 is larger with a 3.9 m span.
Engines One small petrol engine in the nose driving a pulling (tractor) propeller; two-blade propeller stated for Orlan-30.
Tail Conventional tail: tailplane and fin at the rear of the fuselage.
Fuselage Overall length 1.8 m. Orlan-30 has a spherical stabilised optical ball in the rear fuselage.
Launch On the launcher: folding catapult; recovered by parachute. Truck-based ground control post nearby.

CONFUSED WITH **Orlan-30** In flight: larger, 3.9 m span against 3.1 m, with a spherical optical ball in the rear fuselage.
Supercam S350 p. 269 In flight: tailless flying wing, 3.2 m span, near-silent electric motor; Orlan-10 has a nose propeller, a tail and a petrol engine.
ZALA 421-16E p. 270 In flight: tailless flying wing, 2,815 mm span, electric pusher propeller at the rear; Orlan-10 has its propeller in the nose and a tail.
Eleron-3SV p. 266 In flight: blended wing body without a tailplane, 1.47 m span, electric pusher at the rear; Orlan-10 has a nose propeller and a tail.
Molniya p. 278 In flight: span 1.5 m against 3.1 m; Molniya-1 also has a nose propeller, Molniya-2 has two motors under the wing.
Merlin-VR p. 267 In flight: larger, span about 5 m (4.9 m reported) against 3.1 m.


Mike1979 Russia, CC BY-SA 4.0


Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Catapult launch and parachute recovery, no runway. Launch wind limit 15 m/s (Orlan-10M). Operates -30 to +40 C. Ground station truck must stay within link range.

Max take-off weight, Orlan-10	**18 kg** Orlan-10M figure (STC); War & Sanctions figure via TV24, claim *also 15 kg RWW*
Max take-off weight, Orlan-30	**30 kg** export Orlan-30, Rosoboronexport at ADEX-2024, claim *also not more than 40 kg W1030*
Flight range, Orlan-10 under radio control	**150 km** maximum, maximum link range with ground antenna, Orlan-10M, claim *also 150 km ATP*
Flight range, Orlan-10 autonomous	**600 km** maximum, pre-programmed flight without radio link *also up to 300 km from ground station ATP*
Flight range, Orlan-30 under radio control	**120 km** maximum, data-link range, export Orlan-30, claim *also 500 km ATP*
Flight range, Orlan-30 autonomous	**300 km** maximum, autonomous mode, export Orlan-30, claim
Time into action	**under 15 min** crew deploys equipment and launches UAV, claim
Wingspan, Orlan-10	**3.1 m** *also just over 1 m KI3*
Wingspan, Orlan-30	**3.9 m** export Orlan-30, claim
Length, Orlan-10	**1.8 m**
Airspeed, Orlan-10	**90-150 km/h** Orlan-10M figure (STC), claim *also 75-170 km/h RWW*
Airspeed, Orlan-30	**90-150 km/h** export Orlan-30, claim
Endurance, Orlan-10	**16 h** maximum *also 14 h STC15*
Endurance, Orlan-30	**8 h** maximum, EDR24 figure is for export Orlan-30
Ceiling, Orlan-10	**6000 m** maximum, above sea level, claim *also 5000 m ATP*
Ceiling, Orlan-30	**3500 m** maximum, above sea level, export Orlan-30, claim *also 5000 m ATP*
Payload, Orlan-10	**5 kg** maximum *also 3 kg STC15*
Payload, Orlan-30	**5 kg** maximum, export Orlan-30, claim *also 6-8 kg normal, 12 kg maximum WP-RU165*
Detection range, Leer-3 payload	**6 km** GSM, possibly 3G and 4G, cellular base stations; distance from the UAV
Practical range, artillery spotting	**40-50 km** distance mentioned in Russian press articles on artillery spotting c. 2015, per RWW; RWW suggests a video-link limit
Practical range, Leer-3 EW tasks	**over 100 km** distance from unit deployment site, Russian MoD statement, after Feb 2022, claim
Laser range, Orlan-30 designator-rangefinder	**200-8000 m** range of measured distances, measured distance, 1064 nm laser, export Orlan-30, claim
Crew	**6** crew chief, 2 UAV pilots, 2 payload operators, 1 technician, claim
UAVs controlled per ground station	**up to 4** simultaneous control
Bomb load, Orlan-10 strike version	**4 HE-frag bomblets** converted VOG-25 grenades in underwing blocks; Russian MoD video, May 2022, claim

SEEN WITH Ground control station, truck-mounted (1 per Leer-3 complex; controls up to 4 UAVs); Folding launch catapult; RB-341V Leer-3 (3 Orlan-10 per complex (ATP, FOI); 2 in a 2015 Eastern MD description (GS)); Strelets; 2S19 Msta-S with Krasnopol

VARIANTS **Orlan-30** Larger airframe, 3.9 m span; spherical gyro-stabilised optical ball in the rear fuselage. Laser designator-rangefinder for guided shells such as Krasnopol; about 8 h endurance. **BKAR** INA. Orlan-10 with electronic reconnaissance pods that locate artillery and other radars and cue fire.

SOURCES ATP CNA EDR24 FN2 FOI GS18 IISS25 KI3 KP262 MASH MIL72 MIL922 MOLKP PLANDIY RUSIPL RWW SCDSA SCMFR STC15 TV24 W1030 W171 WP-EN55 WP-EN132 WP-RU165 ZALAAIF ZTMDB not in WEG
Updated 2026-10-08

Supercam S350 «Суперкам»

AIR-FW

Small electric fixed-wing reconnaissance and artillery fire-adjustment UAV In service 2014

OPERATED BY **airborne division**, separate unmanned systems battalion
O 2026-03 L seen with Ivanovo Guards VDV formation (separate UAS battalion), Dnepr Group of Forces
Unidentified unit, UAV crews R 2024-01 L seen with Vostok Group of Forces, South Donetsk direction

INDICATES *A Supercam S350 overhead suggests a Russian reconnaissance UAV crew working with artillery: MoD reports describe crews passing target coordinates straight to a battery or howitzer battalion and adjusting its fire.*

RECOGNISE **Wings** Flying wing; span 3.2 m per maker (other reports 3.5 m).
Engines Single electric motor driving a propeller; flies almost silently.
Fuselage Modular airframe; wing panels detach from the centre section on landing to avoid damage.
Launch and recovery On the launcher: elastic or pneumatic catapult (MoD: two rubber cords suffice); lands under a parachute.

CONFUSED WITH **ZALA 421-16E** p. 270 In flight: also an electric flying wing, catapult-launched and parachute-recovered, but span 2,815 mm against 3.2–3.5 m.
Orlan-10 p. 268 In flight: nose propeller, a tail and a petrol engine, span 3.1 m against 3.2 m; the S350 is a tailless electric flying wing and near silent.
Supercam S180 On the ground: wing panels permanently fixed to a reinforced centre section; the S350's panels detach on landing.
Supercam SX350 On the launcher: hybrid VTOL tiltrotor (convertiplane) that takes off vertically, no catapult.

SEEN WITH Ground control station (NSU); one controls up to 4 UAVs; Elastic or pneumatic catapult; Pickup-mounted mobile control station (upgraded version); 2S3 Akatsiya battery (MoD: Supercam UAV, model not stated); 2A36 Giatsint-B howitzer battalion

VARIANTS **Supercam S350M** INA. Maker claim: lower take-off weight, endurance over 5 h, better EW resistance, more radio-link frequency channels, video to mobile device.


Supercamaero, CC BY-SA 4.0


Supercamaero, CC BY-SA 4.0

MOBILITY Catapult launch, parachute recovery; deploys in 15 min (maker). Wind up to 15 m/s, -40 to +45 C, moderate rain and snow.

Maximum take-off weight	**15.5 kg** claim
Speed	**65–120 km/h** claim
Flight range	**at least 240 km** maximum, total flight distance per maker, not radius of action, claim
Time into action	**15 min** complex deployment, claim
Wingspan	**3.2 m** claim
Height	**0.3 m**
Endurance	**4.5 h** maximum, claim
Operating altitude	**150–5,000 m** claim
Length	**INA**

Range, command and telemetry radio link	**100 km** maximum, radio line of sight to ground control station, claim
Range, video link	**70 km** maximum, standard video channel to ground control station, claim
Practical range, video link	**about 70 km** good picture and link, operator's account 2024-08, observed
Payload, day camera	**photo camera 20/24/42/60 MP** claim
Payload, video and thermal	**gyro-stabilised thermal and/or PAL or HD video camera, 10x or 33x optical zoom** laser designator optional, claim
Simultaneous UAVs per ground station	**4** claim
Wind limit	**15 m/s** claim
Crew	**INA**

SOURCES AIF14 GS18 IISS25 IZ10 KI3 LIGA11 MEDUZA5 MFRAB NEWSRU4 REFORM RWW SCDSA SCMFR TASS26 TASS27 TASS28 W1A3 W1B3 W1C2 W1D2 W1E W1F W1G W1H W1I W1J WP-RU226 WSPOT37 ZALAAIF ZTMDB not in WEG
Updated 2026-10-08

Takhion Тахион «Тахион»

AIR-FW

Small electric reconnaissance and fire-correction UAV In service 2015

OPERATED BY **military base**, UAV unit O 2022-05 L
Unidentified unit, Anti-underwater-saboteur unit, trials (mil.ru 2016 via Wikipedia) O 2016 L
Unidentified unit, reconnaissance unit of a motor rifle formation R 2020-12 M

INDICATES *A Takhion points to a Russian ground-force reconnaissance subunit or a UAV unit, possibly spotting for artillery. Reported holders are a motor rifle formation, military bases in Armenia and South Ossetia, a combined arms army and Navy units.*

RECOGNISE **Wings** Flying wing, span about 2 m, with winglets at the wingtips.
Engines One electric motor driving a two-blade propeller at the nose (from photograph).
Fuselage Removable payload modules: TV, infrared or photo camera.
Tail No tail unit (flying wing); winglets at the wingtips.

CONFUSED WITH **Eleron-3SV** p. 266 Smaller electric flying wing with a pusher propeller: span 1.47 m against 2 m.
ZALA 421-16E p. 270 Electric flying wing with a pusher propeller; larger: span 2,815 mm against 2 m.


Nickel nitride, CCO

MOBILITY Catapult launch, parachute recovery; runs from a ground control station. Operates in wind gusts to 15 m/s and -30 to +40 C.

Weight, take-off	**25 kg** Wikipedia lineage (WRU, GSEC, RUARM copy one table)
Wingspan	**2,000 mm** TASS: about 2 m
Length	**610 mm** Wikipedia lineage only

Range, radius of action	**40 km** claimed, Radius of action; kalashnikov.club: within direct radio line of sight, claim
Design employment distance from line of contact	**5 to 40 km** Design figure, not observed: 'designed to operate at a distance of 5 to 40 km from the line of contact'
Endurance	**2 h** claimed, claim
Speed, maximum	**120 km/h** Wikipedia table; cruise 65 km/h

SOURCES AR117 ARMYINF13 FOCUS17 GRROBO1 GS37 IISS25 KALCLUB MF3 RIASV RWW TASS29 USER8OCT VRF17 WP-EN55 WP-RU82 ZALAAIF ZALAINT ZVEZDA5 not in WEG
Updated 2026-10-08

ZALA 421-16E ZALA 421-16E

AIR-FW

Short-range electric reconnaissance and fire-correction UAV; spots for Lancet In service 2011

OPERATED BY **combined arms army**, Z-16 reconnaissance UAV crews O 2026-01 L
artillery brigade, UAV reconnaissance-strike subunit (Z-16 with Lancet) R 2024-12 L
artillery regiment, UAV reconnaissance-strike subunit (Z-16 with Lancet) R 2024-12 L

INDICATES *Z-16 flights suggest a reconnaissance-strike chain at work: the maker, relaying Russian media, says Z-16 crews correct artillery, MLRS and air strikes, spot for Lancet, and serve in artillery regiments and brigades.*

RECOGNISE **Wings** Flying wing, span 2,815 mm (421-16E) or 2,800 mm (E2); two removable outer wing panels.
Engines One electric motor driving a pusher propeller; low noise claimed by maker and state media.
Tail No tail unit: flying wing with a full fuselage.
Fuselage Central fuselage, 1,020 mm long without payload, carrying a gyro-stabilised camera or thermal-imager payload.
Launch and recovery On the launcher: pneumatic, elastic or mechanical catapult (E2 also by hand); lands by parachute with an air shock absorber, or into a net.

CONFUSED WITH **ZALA 421-16E5** In flight: much larger, span 5,000 mm against 2,815 mm; take-off weight 29.5 kg.
SuperCam S350 p. 269 In flight: also an electric flying wing, but span 3.2-3.5 m against 2,815 mm.
Orlan-10 p. 268 In flight: propeller in the nose and a tail with a fin; the 421-16E is a tailless flying wing with a pusher. Orlan-10 span over 3 m.
Eleron-3SV p. 266 In flight: also a tailless electric pusher, but span 1.47 m against 2,815 mm.
Takhion p. 269 In flight: flying wing about 2 m in span, against 2,815 mm, with winglets at the wingtips.



Mike1979 Russia, CC BY-SA 4.0


Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Catapult launch from unprepared sites, parachute recovery. Maker limits: wind up to 15 m/s, -30 to +40 C (E).

Take-off weight, maximum	**8-10.5 kg** 421-16E, claim
Speed	**65-110 km/h** 421-16E, claim
Range, flight distance	**200 km** claimed, 421-16E per 2011 article text, in more than 3.5 h; the article's table gives 210 km, claim
Wingspan	**2,815 mm** 421-16E, claim
Length	**1,020 mm** 421-16E, without payload, claim
Flight endurance	**more than 4 h** 421-16E, electric, claim
Control range, video/radio link	**50 km** radius of action, 421-16E; average radius of video/radio link, claim
Altitude, maximum	**3,600 m** 421-16E, claim
Altitude, operating	**500-1,500 m** operating altitude range, current Z-16E, claim
Employment depth	**operational depth** practical, RUSI on Orlan and Zala UAVs, 2024-25; Zala model not given, observed
Payload mass	**up to 1.5 kg** 421-16E, claim
Day camera zoom	**60x optical (HD)** Z-16VHD60 payload, claim
Sensor payloads	**HD camera; camera with thermal imager; thermal imager with laser designator** Z-16VHD60, Z-16VHD20-IRA, Z-16IRQ-V/L payloads, claim
Navigation	**INS with GPS/GLONASS correction, radio range-finder** 421-16E; maker says it continues the task without satellite signal, claim

SEEN WITH ZALA Lancet loitering munition; Ground control station (NSU); Pneumatic catapult

SOURCES AR135 ATP GS18 GS41 IISS25 KI3 LENTA17 MF3 MIL141 MIL142 MIL143 MIL144 RG18 ROBOT RUSI2 SCDSA SCMFR TAD VPK26 WP-EN55 WP-RU82 ZALA1 ZALA2 ZALA3 ZALA4 ZALA6 ZALA7 ZALA8 ZALAAIF ZALAINT ZALAP ZTMDB not in WEG
Updated 2026-10-08

Zastava Застава «Застава»

MP

Short-range reconnaissance and fire-adjustment mini-UAV In service 2012

OPERATED BY **motor rifle battalion**, several complexes
R 2014-01 L seen with separate motor rifle battalion, Central Military District, Orenburg Oblast
At least 12 Russian Army units, not named, INA; held by at least 12 units per InformNapalm (via Ukrinform, Ukrainian state media) R 2020 L
Unidentified unit, present in Ukraine (CNA, March 2023); no unit named R 2023-03 L

INDICATES *RWW lists Zastava among Ground Forces UAVs fielded as artillery spotters; CNA lists it as a 10 km ISR UAV seen in Ukraine. Seeing one suggests short-range reconnaissance or artillery fire adjustment.*

RECOGNISE **Wings** Wing span 2.2 m.
Engines One electric motor on a swappable battery.
Fuselage Length 0.8 m, height 0.24 m. Rubber (spring) catapult launch; parachute recovery with a 180 degree flip before landing (Bird-Eye 400 figures).

CONFUSED WITH **Eleron-3SV** p. 266 Smaller: span 1.47 m against 2.2 m; Eleron-3SV is a tailless flying wing with a pusher propeller.
Granat-1 p. 266 Smaller: span 0.82 m against 2.2 m; a flying wing with the propeller at the front.


Mil.ru, CC BY 4.0

MOBILITY Packs into two backpacks for a two-person crew; 2012 trials found it unsuited to cold climates; operating range -20 to +49 C. Carried by truck or car.

Weight, maximum take-off	**5.5 kg**
Speed, maximum	**100 km/h** relative to air
Time into action	**20 min**
Time out of action	**10 min**
Range of action	**10 km** up to, Flight range from the ground station; ROBOT 'up to 10 km', CNA 'range', WPRU (Bird-Eye 400) 'radius'
Payload	**1.2 kg, TV and IR**
Crew	**3** servicing crew
Launch and recovery	**Catapult launch, parachute recovery**
Positioning	**GPS**

SOURCES AVIA CNA23 GRROBO1 IISS25 RWW UASV2 UKRIN6 WP-EN55 WP-RU271 ZASROB not in WEG
Updated 2026-10-08

Larger reconnaissance and strike drones

Forpost «Форпост»

AIR-FW

Medium-range reconnaissance UAV; Forpost-R adds light guided bombs and missiles In service 2013

OPERATED BY **Higher-echelon or Aerospace Forces reconnaissance assets**, higher-echelon or Aerospace Forces reconnaissance assets (ATP fig. 5-8) D 2024-02 L
Aerospace Forces UAV units, Aerospace Forces UAV units R 2024-11 H
unmanned systems unit, UAV detachment of a naval aviation base, 6 UAV (Kamchatka, 2014) R 2014-01 M
unmanned systems unit, fleet UAV subunit R 2026-05 M
unmanned systems unit, UAV unit of the Syria group R 2024-11 M
INDICATES *IISS lists Forpost only with Aerospace Forces and Naval Aviation, not with Army brigade UAV units. A Forpost overhead points to a fleet or Aerospace Forces UAV unit working for a higher echelon, possibly with light guided bombs.*
RECOGNISE **Wings** Straight high-mounted wing with unswept tips, set toward the rear of the fuselage; span 8.55 m. Forpost-R has two hardpoints for light bombs.
Engines Single piston engine in the fuselage pod driving a pusher propeller; Searcher II has a three-blade pusher.
Fuselage Rectangular-section fuselage pod, 5.85 m long, carrying sensors and engine.
Tail Twin tail booms, each with a vertical fin, joined by a horizontal stabiliser mounted on top.
CONFUSED WITH **Mohajer-6** p. 272 Same layout in both descriptions: twin booms, top-mounted tailplane, straight high wing set to the rear, pusher. Mohajer-6 is larger: span 10 m against 8.55 m.
Bayraktar TB2 In flight: TB2 booms end in an inverted V-tail; Forpost has a fin on each boom joined by a top-mounted tailplane. TB2 span 12 m against 8.55 m.
Orion (Inokhodets) p. 272 From below: single fuselage with a V-tail and no booms, span 16.3 m, against twin booms and 8.55 m for Forpost.


Mike1979 Russia, CC BY-SA 4.0


With vehicle trailer. Mil.ru, CC BY 4.0

MOBILITY Needs a runway for take-off and recovery.

Maximum take-off weight, Forpost-R	**500 kg** claim
Maximum speed, Forpost-R	**200 km/h** claim
Operating range	**250 km** range of employment, directional antenna; 150 km with omnidirectional antenna, claim
Wingspan	**8.55 m** claim
Length	**5.85 m** claim
Range, KAB-20	**8 km** maximum stand-off, released from high altitude; KAB-20L laser or KAB-20S satellite guidance
UAVs per complex	**3 UAV and 1 ground control station** claim
Payload, Forpost-R	**100 kg** claim
Sensors	**Day TV and thermal camera; side-looking radar or ELINT payload as option** claim
Armament, Forpost-R	**2 KAB-20 guided bombs** two hardpoints; declared, not independently confirmed (ArmyInform 2024), claim
Warhead, KAB-20	**7 kg HE-frag, bomb 21 kg**
Munitions, Forpost-RU	**guided and unguided bombs and missiles of up to 40 kg each** claim
Engine	**APD-85 piston, Forpost-R** claim
Crew	**INA**

SEEN WITH Forpost UAV (3 per complex); Ground control station (1 per complex); KAB-20 guided bomb (KAB-20L, KAB-20S) (2 per UAV (Forpost-R, declared)); Krasnopol laser-guided artillery round; Kh-BPLA guided missile (Kornet-D derivative), shown on a Forpost at Army-2021

SOURCES ARMINF2 ATP BCAT1 CALIB D242 EAN EDR IFAX IISS25 IZV5 JANES MAILRU2 MIL40 MK MPER ORYX1 RT2 TASSNN VIKNA WP-EN56 WP-EN57 WP-EN58 WP-EN59 WP-RU83 WP-RU84 WWW1A5 WWW1B4 not in WEG
Updated 2026-10-08

Korsar Корсар «Корсар»

AIR-FW

Medium reconnaissance UAV, fixed wing; strike and EW payloads planned Introduced 2015

OPERATED BY **Aerospace Forces**, Aerospace Forces holding; unit not stated R 2024 L
unmanned systems unit, platoon in brigade or division UAS company (CNA 2019 conjecture) R 2019 L
INDICATES *IISS lists Korsar only among Aerospace Forces ISR UAVs (late 2024); holder unit unknown. CNA (2019) expected the Army might field it in platoons of UAS companies.*
RECOGNISE **Wings or rotors** Wing span 6.5 m (manufacturer figure).
Engines Single piston engine at the rear driving a two-blade pusher propeller.
Fuselage Fuselage 4.2 m long, height 1.2 m.
Tail Twin tail booms carrying a V-tail.
CONFUSED WITH **Forpost** p. 271 In flight: Forpost has a fin on each boom joined by a top-mounted tailplane; Korsar's twin booms carry a V-tail. Span 8.55 m against 6.5 m.
Bayraktar TB2 en-Wikipedia calls the designs similar: twin booms, V-tail, two-blade pusher. Span 12 m against 6.5 m.
VARIANTS **Korsar-M** INA. **Korsar (export)** INA.


Mil.ru, CC BY 4.0

MOBILITY Range 120 km from control post (manufacturer claim); 250 km upgrade planned.

Maximum take-off weight	**200 kg** WPRU gives MTOW; ARMREC and ARMADA say only weight 200 kg, claim
Maximum speed	**150 km/h** claim
Flight range, radius from control post	**120 km** claimed, terrain reconnaissance mission, claim
Length	**4.2 m** claim
Planned armament	**ATGM Ataka or rocket grenades** claimed, not confirmed in service, claim
Engine power	**50 hp** piston engine; 70 hp planned, claim
Crew	**INA**

SEEN WITH Ground control post and several UAVs per system

SOURCES AR64 ARMADA2 ARMINF2 CNA HOTNEWS IISS25 ORYX1 WP-EN58 WP-EN59 WP-RU126 not in WEG
Updated 2026-10-08

Mohajer-6 Мохаджер-6

AIR-FW

Iranian-built medium reconnaissance and light strike UAV used by Russia In service 2018

OPERATED BY **Aerospace Forces**, Aerospace Forces (IISS list, p.38); subunit INA R 2024-12 M
Unidentified unit, One reported on Dzhankoy airfield, Crimea, 2026-03 (Ukrainian SSU claim); holding unit INA R 2026-03 L
INDICATES *A Mohajer-6 points to a runway-based Aerospace Forces ISR or light strike drone; reported use is mainly over southern and coastal Ukraine and Crimea. Holding unit is unknown.*
RECOGNISE **Wings** Straight wings, span 10 m, mounted high and to the rear of the body; uncanted wingtips. Hardpoints: one under each wing on variant A, two under each wing on variant B.
Engines One piston engine driving a three-bladed pusher propeller (twin-boom pusher layout); air intakes on top and bottom of the engine.
Fuselage Rectangular fuselage with upward-sloping nose. Chin gimbal for sensors, fixed forward camera, fixed tricycle landing gear.
Tail Twin tailbooms with a top-mounted horizontal stabilizer. Tail numbers of Russian-held examples seen with ER- prefix (ER-858).
CONFUSED WITH **Bayraktar TB2** In flight: TB2 has an inverted V-tail on its booms and two blades; Mohajer-6 a flat top tailplane and three. Russians on Telegram took a Mohajer-6 wreck for a TB2 (2024).



Hamid Vakili / Fars News Agency, CC BY 4.0

MOBILITY Runway takeoff and landing. Reported to be launched and recovered from runways.

Max takeoff weight	**600 kg** maximum, Open-data figure, Iranian-built type
Maximum speed	**200 km/h**
Flight range	**2,000 km** claimed, 'Operational range (radius of action)' 2,000 to 2,400 km per Wikipedia, from Iranian press, claim
Payload	**100 kg** maximum
Data link range, line of sight	**200 km** claimed, Ground control station data link, direct line of sight, claim
Range, Qaem-series guided bomb	**12 to 40 km** claimed, Glide release from 1,219 to 3,048 m; series-wide figure stated by Iranian minister Hatami, 2019, claim

SOURCES AR84 ARMINF2 EDR IISS25 IRINTL KI3 MIL79 MIL80 MIL81 VIKNA WP-EN57 WP-EN58 WP-RU84 WP-RU148 not in WEG Updated 2026-10-09

Orion «Орион»

AIR-FW

Medium-altitude long-endurance reconnaissance and strike UAV In service 2019

OPERATED BY **Reconnaissance assets of the reconnaissance-fire system**, medium-range reconnaissance UAV among reconnaissance assets of the reconnaissance-fire system (ATP fig. 5-8, OCR garbled) D 2024-02 L
aviation regiment, Naval Aviation UAV regiment (also holds Forpost) R 2024 M
Aerospace Forces (VKS), Aerospace Forces (VKS) UAV holdings; IISS lists 'some Inokhodets' R 2024 M
Unidentified unit, UAV storage site, Kirovske airfield, Crimea, Apr 2026 (Ukrainian General Staff claim: 1 destroyed, 3 damaged), 4 reported at the site R 2026-04 L
aviation regiment, Navy UAV regiment, reported as expected first operator (2020) R 2020-12 L
INDICATES *A large V-tailed pusher UAV indicates a Navy or Aerospace Forces MALE UAV unit (IISS). Export Orion-E radius is 250 km, 300 km with relay; domestic Inokhodets also has satcom. It can find and strike single vehicles.*
RECOGNISE **Wings** Straight mid-mounted wing of high aspect ratio, slight taper; span about 16 m.
Engines Single piston engine (115 hp) in the rear fuselage driving a two-blade pusher propeller.
Fuselage Fuselage 8 m long (Orion-E), asymmetric cross-section; EO/IR turret in forward payload bay; three pylons: one centreline, one under each wing.
Tail V-tail.
CONFUSED WITH **Bayraktar TB2** In flight: TB2 has twin tail booms ending in an inverted V-tail; Orion a single fuselage with a V-tail. Span 12 m against 16.3 m. Ukrainian sources liken the two.
Forpost p. 271 From below: twin tail booms joined by a top-mounted tailplane, span 8.55 m, against Orion's single fuselage, V-tail and 16.3 m span.



Mike1979 Russia, CC BY-SA 4.0

MOBILITY Conventional wheeled take-off and landing from an airfield, with automatic take-off and landing equipment; operating radius limited by line-of-sight datalink unless relay or satcom is fitted.

Max take-off weight	**1,000 kg** Orion-E export, developer figure, claim
Length	**8 m** Orion-E, claim
Wingspan	**16.3 m** Orion-E, claim
Height	**3.2 m** Orion-E, claim
Range, Kh-BPLA	**10 km** maximum, air-launched Kornet derivative; ground or low slow air target; TWZ gives 6.2 miles from RIA source, claim
Payload	**200 kg** Orion-E, maximum payload; normal 60 kg, claim
Hardpoints	**3 (1 centreline, 1 under each wing)** Orion-E, claim
Weapon loads	**1x100 kg bomb, or 6x 20 kg bombs (KAB-20 per EDR), or 3x 50 kg guided bombs, or 4 ATGMs, or 2x 50 kg missiles** Orion-E brochure, claim
Sensors	**EO/IR turret with TV and thermal cameras, laser rangefinder and laser designator** claim
Datalink	**line-of-sight; satellite link on armed Orion-E and on Inokhodets** claim
Engine	**115 hp (86 kW) turbocharged piston engine, two-blade pusher propeller 1.9 m** claim
Detection range, EO/IR turret	**INA**

SOURCES AMR ARMINF2 ATP D242 DPOST2 EDR GS26 IISS25 KP4 MEZHA MIL151 ORYX1 RT7 RUSIPL TWZ28 TWZ29 UPDIU WP-EN57 WP-EN58 WP-EN131 WP-RU84 WP-RU148 not in WEG
Updated 2026-10-08

Loitering munitions and one-way attack

Garpiya-A1 Гарпия-А1 «Гарпия»

AIR-FW

Long-range one-way attack drone for fixed targets at preset coordinates In service 2023

OPERATED BY **Africa Corps in Mali**, wreckage found near Sévaré, May 2026 R 2026-05 L

INDICATES *Shahed-type wreckage may be a Garpiya (Kupol-built, Chinese engine) and not a Geran-2 (built in Tatarstan). Used in Ukraine in 2025 on a Defence Ministry order; a May 2026 wreck in Mali was reported with the Africa Corps.*

RECOGNISE **Wings** Flying-wing layout resembling the Shahed-136; wingspan 3 m on the A1(E) export sheet against 2.5 m for the Shahed-136.

Engines One petrol piston engine driving a pusher propeller at the rear; Limbach L550E engine reported.

Fuselage Fuselage 3.4 m long on the A1(E) export sheet. Mali wreck (May 2026): domed-head warhead, of a type fitted in the Geran-2.

Tail Wingtip fence on the Mali example (2026), like the rudders at the Shahed-136 wingtips; a 'unique bolt-on fin' was reported in 2024.

CONFUSED WITH **Geran-2 (Shahed-136)** p. 274 Hard to separate. Wreckage, close only: 'K'-series marking on the wingtip fence (Mali, 2026). Span 3 m (A1(E) sheet) against 2.5 m (Shahed-136): not decisive alone.

MOBILITY Single-use; automatic flight at 50 to 2,500 m (A1(E) sheet). A truck platform for several drones, said to avoid the need for airfields, was shown with the jet Garpiya in 2026.

Weight, take-off	**250 kg** Garpiya-A1(E) export variant, Rostec release, 2026, claim
Speed, maximum	**at least 170 km/h** Garpiya-A1(E) export variant, automatic flight, claim
Length	**3.4 m** Fuselage length, Garpiya-A1(E) export variant, claim

Range, Garpiya-A1(E)	**at least 1,000 km** maximum, Export variant, fixed target at preset coordinates, Rostec release 2026, claim
CEP, Garpiya-A1(E)	**not more than 4 m** claimed, Export variant; Rosoboronexport release, Aug 2026, claim
Warhead mass, Garpiya-A1(E)	**more than 50 kg** Export variant, Rostec release 2026, claim
Warhead type, Garpiya-A1 KK	**Pre-formed fragmentation, domed head; air-burst** Mali wreck believed to be a Garpiya-A1, KK series, May 2026; same warhead type as fitted in the Geran-2
Guidance, Garpiya-A1	**Inertial plus satellite navigation; on some, a laser sensor for air-burst detonation** Source at the Russian Telegram channel Colonel GSh, Oct 2026: no camera or mesh modem. Mali KK wreck (May 2026): laser rangefinder, jam-resistant navigation
Engine	**Limbach L550E (Xiamen Limbach, China)** Garpiya-A1, reported 2024 and 2025; Shahed-136 uses the MD-550
Use rate, Garpiya-A1	**about 500 a month** Ukrainian military intelligence statement to Reuters, 2025, claim

SOURCES 360RU ARMED FENIX IISS25 ISIS KYIVP2 MIL45 RTRS STRAT TWZ9 UKRPR W1KK WP-EN63 WP-EN64 not in WEG

Updated 2026-10-09

Geran-2 Герань-2 «Герань»

AIR-FW

Long-range one-way attack drone (Iranian Shahed design), used against fixed deep targets In service 2022

OPERATED BY **unmanned systems unit**, strike crews; regiment has one UAV strike battalion, 2 Geran-2 crews per drone regiment O 2025-05 H seen with 7th Separate Regiment of Unmanned Systems Troops

unmanned systems unit, launch teams, combat groups O 2026-09 M seen with GROM Kaskad Separate Unmanned Aviation Brigade (Aerospace Forces)

unmanned systems unit, strike UAV detachment, Aerospace Forces, 5 detachments (2025) R 2025-03 M seen with detachments at Millerovo, Primorsko-Akhtarsk, Shatalovo, Kursk and Oktyabrskoye airfields

INDICATES *Reported Geran operators are Aerospace Forces strike UAV detachments at airfields and the GROM Kaskad brigade at droneports; a drone regiment holds only two Geran-2 crews. A launch site points to these strike units.*

RECOGNISE **Wings** Cropped delta wing blended into the fuselage, span about 2.5 m (Geran-2). Vertical fins at both wingtips; no horizontal tailplane.

Engines Geran-2: piston engine in the rear fuselage, two-bladed pusher propeller; loud moped-like sound heard kilometres away. Geran-1: Wankel rotary engine. Geran-3: turbojet.

Fuselage Tube-like fuselage with short nose cone, about 3.3-3.5 m long; warhead in the nose.

Tail Tailless: wingtip fins serve as rudders. Geran-2 fins extend above and below the wing; Geran-1 fins only above. Geran-3 tail reshaped for jet.

CONFUSED WITH **Gerbera** p. 275 In flight: one central fin just ahead of the pusher propeller, no wingtip fins; span about 2 m against 2.5 m. ISIS: easily mistaken for a Shahed.

Italmas p. 275 In flight: propeller in the nose (tractor), not at the rear; Italmas and Geran-2 are both about 2.5 m in span, so size does not separate them.

Parodiya In flight: high-wing monoplane with a fuselage, not a tailless delta; a decoy flown with Shahed raids.

Geran-5 In flight: jet with a cylindrical body up to 6 m long and 5.5 m span, cruise-missile shape, not a delta flying wing.

VARIANTS **Geran-1** Smaller: about 2.6 m long, 2.2 m span; wingtip fins point upward only. Range 700-1,000 km, warhead 10-20 kg, 135 kg launch weight. **Geran-2** Baseline: 3.3-3.5 m long, 2.5 m span, piston pusher. Later series add cameras, antennas, black paint. 50 kg (BCh-50) or 90 kg (BCh-90) warhead; jam-resistant satnav; some series camera-guided via mesh modem or Starlink. **Geran-2 E series** R-60 missile on a rail above the forward fuselage, nose camera and second camera behind rail; or a Verba MANPADS launcher on the back (WPEN, early 2026). Operator-cued launch of R-60 against helicopters and aircraft hunting drones (state claim, Ukraine, Dec 2025). **Geran-2 Ь series** Camera on a gyrostabilised gimbal under the forward fuselage, not in the nose cone. Onboard camera; reported in use from September 2025. **Geran-2 MS series** INA. Infrared camera, Nvidia Jetson computer, video modem; scouts routes for mobile air defence before strikes (Ukrainian intelligence, Jun 2025, via WPEN). **Geran-3** Jet-powered version of the Shahed 136 design (Telefly JT80 turbojet); tail reshaped. Shahed 238 analogue: 3.5 m long, 3 m span. Speed 300-370 km/h, range up to 1,000 km (Ukrainian intelligence). **Geran-4** Jet-powered; no shape description in sources read. Launched by GROM Kaskad brigade in July 2026 (Ukrainian intelligence, state claim); no performance figures read.



Iranian Shahed-136 and -131. S. Hossein Alaei / Fars News, CC BY 4.0

MOBILITY Rail-launched with rocket booster from trucks or fixed sites; pre-programmed one-way flight, no recovery.

Launch weight, Geran-2	**200 kg**
Launch weight, Geran-1	**135 kg**
Launch weight, Geran-3	**250-370 kg** Shahed 238 figure *also 370 kg LBUA3*
Speed, Geran-3	**300-370 km/h** maximum, Telefly JT80 turbojet; maximum reached in defended zones and terminal dive, claim *also 550-600 km/h CSIS3 LBUA3*
Flight range, Geran-2	**1,350 km** reported, standard 50 kg warhead; figure from leaked Alabuga (manufacturer) documents, claim *also 1,000-2,500 km CSIS2*
Flight range, Geran-2 with BCh-90	**650 km** reported, 90 kg warhead, smaller fuel tank; leaked Alabuga documents, claim *also 1,200 km PROF4*
Flight range, Geran-1	**700-1,000 km** estimated, estimate; DIA estimate 900 km, estimated
Flight range, Geran-3	**up to 1,000 km** operational, U-series, Telefly JT80 turbojet; Ukrainian intelligence, claim *also 600-700 km LBUA3*
Length, Geran-2	**3.3-3.5 m** *also 3.5 m RUSI3 WP-EN64*
Wingspan, Geran-2	**2.5 m** *also 3 m UAHB*
Flight speed, Geran-2	**about 180 km/h** *also 140-150 km/h average UAHB*
Length, Geran-1	**2.6 m**
Wingspan, Geran-1	**2.2 m**
Length, Geran-3	**3.5 m** Shahed 238 figure
Wingspan, Geran-3	**3 m** Shahed 238 figure

Range, Geran-2	**1,350 km** reported, 50 kg warhead; leaked Alabuga documents; see mobility data for alternatives, claim
Flight altitude, Geran-2	**60-4,000 m** operating, Ukrainian General Staff handbook, claim
Flight altitude, Geran-2 observed	**700-2,000 m en route; down to 200 m near target** practical, Ukrainian General Staff handbook, observed 2022-23; as low as 20 m along rivers and roads, claim
Ceiling, Geran-3	**up to 7 km** maximum *also 9,000 m LBUA3 CSIS3*
Flight time to target, observed	**15-30 min average** practical, Ukrainian General Staff handbook, Shahed-136 use 2022-23, claim
Warhead, Geran-2	**40-50 kg (BCh-50)** HE-fragmentation; leaked Alabuga slide; Ukrainian General Staff handbook (state claim) gives 40 kg, claim *also 50 kg: 9 kg case, 41 kg explosive PROF4*
Warhead, Geran-2 heavy	**90 kg (BCh-90)** reduces range; combat-tested Nov 2023 per leaked Alabuga documents; reported fielded autumn 2025, claim
Warhead, Geran-1	**10-20 kg**
Warhead, Geran-3	**50 kg** expert view; some Russian variants reported at 90 kg *also 50-90 kg CSIS3*
Guidance	**Inertial with GNSS (GPS/GLONASS) correction** jam-resistant Kometa CRPA antenna, 4 to 16 elements by 2025; some series add camera and mesh, LTE or Starlink link

SEEN WITH Truck-mounted launch container (rocket booster) (up to 5 drones per container (Iranian-shown launcher)); Gerbera decoy and reconnaissance drone

SOURCES AINF3 CSIS2 CSIS3 IISS25 ISIS ISIS2 JAMES LBUA3 MIL46 MIL47 MIL48 PROF4 RUSI3 TWZ9 UAHB W1ITAL WP-EN64 WP-EN67 WP-RU88 not in WEG

Updated 2026-10-08

Gerbera «Гербера»

AIR-FW

Cheap foam one-way drone: Shahed decoy, reconnaissance, small-warhead strike, relay In service 2024

OPERATED BY **unmanned systems unit** R 2024-07 L seen with Stalin's Falcons

Unidentified unit, launch team with car; car struck on the ground, Dec 2025 R 2025-12 L

INDICATES *Gerberas are flown with Shahed/Geran-2 in mass raids to draw fire and locate air defences. A vehicle carrying a ready Gerbera marks a launch point.*

RECOGNISE **Wings** Tailless delta with double-swept (cranked) leading edge; elevons on the trailing edge. Span about 2 m against 2.5 m for Geran-2; other reports give 2.5 m.

Engines One small piston engine at the rear driving a two-blade fixed-pitch pusher propeller.

Fuselage Foam body over a plywood frame, about 2 m long. Camera in the nose on reconnaissance and strike versions.

Tail Single central vertical fin just ahead of the propeller; no fins on the wingtips.

CONFUSED WITH **Geran-2 (Shahed-136)** p. 274 In flight: fins at both wingtips, no central fin; Gerbera has one fin just ahead of its pusher. Span 2.5 m against 2 m. ISIS: easily mistaken.

Italmas p. 275 In flight: propeller in the nose (tractor); Gerbera has a pusher propeller at the rear with a central fin just ahead of it.

Parodiya In flight: high-wing monoplane with a fuselage, not a tailless delta; also a decoy flown with Shahed raids.

VARIANTS **Gerbera (decoy)** No warhead; outwardly the basic airframe. Unarmed false target to draw air-defence fire and saturate defences. Some carry a 3D-printed Luneburg lens to enlarge radar cross-section. **Gerbera (reconnaissance)** Gimbal camera (Topotek KHY10S90) in nose; 4G or mesh-network modem and antennas. Visual and electronic reconnaissance: locates air defence and records strike results; mesh modem relays. **Gerbera (strike)** Warhead in the nose; camera for operator terminal guidance on some. HE-frag warhead of 2.5 to 5 kg reported; shorter range than unarmed version. **Gerbera (FPV carrier)** Carries an FPV drone; first recorded 2026-02. Reported aim: deliver an FPV drone deep without draining its battery in transit.



State Border Guard Service of Ukraine, CC BY 4.0

MOBILITY Carried by car to a launch point; catapult launch, no runway (reported). Slow (max about 160 km/h); range shrinks with a warhead.

Weight	**about 18 kg** dry (CAPSS); TSN gives no condition
Speed, maximum	**160 km/h**
Flight range	**600 km** maximum, without payload; shorter with warhead; some have a second fuel tank in the nose for extended range
Wingspan	**2.5 m**
Length	**about 2 m**
Launch method	**carried by car to launch point; catapult** car observed 2025-12; catapult reported, not observed, observed
Time into action	**INA**

Operating altitude	**up to 1 km** maximum, Espreso report via Kyiv Post, 2025-02
Warhead	**up to 5 kg** strike version; 2.5 kg HE-frag seen in nose 2025-02, observed
Guidance	**pre-programmed route (presumed); CRPA anti-jam satnav; operator camera guidance on strike version**
Datalink	**4G modem with SIM; mesh-network modem (Xingkai XK-F358) on some** observed
Sensor	**Topotek KHY10S90 3-axis gimbal camera** reconnaissance and strike versions; HUR component analysis, claim
Engine	**DLE60 two-stroke petrol; Stinger 70 twin also found** Chinese hobby engines, observed
Crew	**INA**

SEEN WITH Geran-2 (Shahed-136); Launch vehicle (car); FPV drone carried as payload

SOURCES ARMYINF2 CAPSS FAKTY ISIS KP24 KP25 KP26 MIL49 MILUA3 TSN TWZ9 W1ITAL WP-EN67 WP-RU89 not in WEG Updated 2026-10-08

Italmas Италмас

AIR-FW

One-way attack drone (loitering munition), piston engine In service 2023

OPERATED BY **Unidentified unit**, used against Ukraine, reported Oct 2023 R 2023-10 L

INDICATES *Reported only as a drone used against Ukraine; no source names the operating unit, so sighting does not indicate a particular unit type.*

RECOGNISE **Wings** Flying wing like the Geran-2; span 2.5 m (claim).

Engines Internal-combustion engine in the nose driving a tractor propeller. Sound: Ukrainians call it 'lawnmower'; buzzes like a Shahed but at another pitch.

Fuselage Plywood, 'assembled from sticks'; length 2.5 m (claim). Wreckage: plastic bottle as fuel tank; captured examples carried a radar reflector.

Launch On the launcher: launched from a catapult.

CONFUSED WITH **Geran-2 (Shahed 136)** p. 274 In flight: Geran-2 has a pusher propeller at the rear and fins at both wingtips; Italmas has its propeller in the nose. Both about 2.5 m span.

Gerbera p. 275 In flight: pusher propeller at the rear with one central fin just ahead of it; Italmas has its propeller in the nose.

Geran-3 (turbojet drone) p. 274 In flight: turbojet, no propeller; Italmas has an internal-combustion engine and a nose propeller. Some 2023 reports also called Italmas Geran-3.

MOBILITY Launched from a special catapult (2025 footage, Russian press). Road transport INA.

Flight range	**200 km** claimed, claimed, over 200 km per Rossiya 1 TV; Ukrainian sources call the claim possible propaganda, claim
Length	**2.5 m** as claimed in a Russian news report, claim
Wingspan	**2.5 m** as claimed in a Russian news report, claim
Launch method	**catapult** seen in footage before a combat launch, 2025-02

Range, one-way attack	**200 km** claimed, claimed (Rossiya 1 TV: over 200 km); warhead not specified, claim *also threat to territory at least 150 km deep UNIAN2*
Warhead mass	**50 kg** claimed, as claimed in a Russian news report (2025-01), claim *also 40 kg WP-EN75*
Warhead type	**Shaped-charge (cumulative) warhead** claimed, claimed against armoured vehicles incl. HIMARS; artillery and personnel also named as targets; Rossiya 1 TV, claim

SOURCES AR58 TWZ9 UNIAN2 W1ITAL WP-EN64 WP-EN75 WWW2 WWW3 not in WEG Updated 2026-10-09

KUB-BLA КУБ-БЛА «КУБ»

AIR-FW

Catapult-launched electric loitering munition, 3 kg warhead, tactical strike Introduced 2022

INDICATES *A KUB strike or wreck suggests a reconnaissance UAV is working with the launch team, within about 25 km (export KUB-E radius); one trade report says KUB is mostly used by special forces and VDV units.*

RECOGNISE **Wings** Wide triangular (delta) wing, span 1.21 m; overall 1.21 x 0.95 x 0.165 m.

Engines One electric motor driving a pusher propeller at the tail; battery at rear; claimed near-silent.

Fuselage Flat airframe, 165 mm high; a 2024 version carries an onboard camera.

Launch On the launcher: catapult launch from the ground or a boat; munitions carried in large shock-resistant cases.

CONFUSED WITH **Lancet-3 (Izdeliye 51/52)** p. 277 From below: two X-shaped wing sets in tandem on a body about 1.65 m long; KUB has one flat delta wing, 1.21 m span, 0.95 m long.

KUB-2 In flight: square-section body, straight trapezoidal low wing and a high tailplane, like Switchblade; KUB-BLA is a flat delta.

SEEN WITH Ground control station (1 per complex); Unified launch equipment (catapult) (1 per complex); KUB guided carrier with HE-frag warhead and battery (25 per complex); Battery charging station (1 per complex); ZALA 421-16E2 or other reconnaissance UAV; Skat-350M reconnaissance UAV (with KUB-2)

VARIANTS **KUB-2** Square-section body, straight trapezoidal wing, high tailplane; nose optical-electronic sensor (KUB-2-E export description). **KUB-10E** INA.



armyinform.com.ua, CC BY 4.0

MOBILITY Munition and launcher carried in cases; catapult launch. Carrier vehicle not stated in sources.

Weight, maximum take-off	**8 kg**
Speed	**80–130 km/h** claim
Time into action	**20 min** complex deployment, claim
Time out of action	**10 min or less** maximum, complex strike-down after use, claim
Wingspan	**1.21 m** SNOB and EDR give 1210 x 950 x 165 mm unlabelled; ARMYREC labels them, claim

Range, KUB HE-frag warhead	**25 km** radius, radius of action, KUB-E export figure (Kalashnikov via TASS), claim
Altitude, KUB HE-frag warhead	**150–1,000 m** operating, flight altitude band, KUB-E export figure (Kalashnikov via TASS), claim
Altitude, KUB-10E	**100–2,500 m** operating, flight altitude band; export designation, claim
Warhead mass	**3 kg** original HE-frag warhead; heavier 'increased-power' warhead delivered from Dec 2023, mass not stated, claim
Guidance	**To coordinates set manually or from target image; GPS** original version; trade press thinks it carries no camera, claim
Wind limit	**gusts to 10 m/s** day and night use, claim
Attack profile	**Vertical dive from above** claim

SOURCES AR67 EDR23 EDR25 EDRL F45 IISS25 KYIV2 MIL70 NAKED ORYX6 RAMBLER2 RG242 SNOB TASS10 WP-EN100 WP-RU130 WWW1A7 WWW1B6 WWW1C2 WWW1D WWW1I not in WEG
Updated 2026-10-08

Lancet Изделие 51 «Ланцет»

AIR-FW

Loitering munition for precision strikes on artillery, air defence and armour In service 2019

OPERATED BY **high-power artillery brigade**, unmanned systems troops Lancet reconnaissance-strike crew O 2026-06 L seen with 45th Svir High-Power Artillery Brigade (Zapad group)
combined arms army, 56th separate special-purpose battalion O 2024 L seen with 56th separate special-purpose battalion, 51st Guards Combined Arms Army
air assault division O 2023-07 L seen with 76th Guards Air Assault Division
airborne division O 2023-07 L seen with 98th Guards Airborne Division
Special Operations Forces detachments (first users), Special Operations Forces detachments (first users) O 2023-07 L seen with Senezh SOF detachment, Kubinka-2 SOF detachment
army corps, Kaskad unit O 2023-07 L seen with Kaskad unit, 1st Army Corps
volunteer formation O 2023-05 L seen with PMC Wagner
unmanned systems unit, Lancet crew R 2026-07 M
artillery brigade, reconnaissance-strike subunit with ZALA UAVs and Lancet R 2024-12 L
artillery regiment, reconnaissance-strike subunit with ZALA UAVs and Lancet R 2024-12 L
INDICATES *A Lancet strike usually means a crew working with a scout UAV (ZALA or Orlan-10) within tens of km. A main counter-battery tool; reported in artillery brigade and regiment recce-strike subunits (2024) and unmanned systems troops (2026).*
RECOGNISE **Wings** Two X-shaped wing sets in tandem. Izdeliye 52: both sets of equal span. Izdeliye 51: larger-span front X-wing with a smaller rear set.
Engine Electric motor driving a pusher propeller in the tail; near silent in flight.
Fuselage Body about 1.65 m long with the optical sensor in the nose. Wreckage: warhead and battery mid-body.
Launch On the launcher: pneumatic catapult (domestic crews and Lancet-E); Izdeliye 53 fires from a four-round container. Control station looks like a case.
Complex Usually works with a ZALA scout UAV (Z-16 or 421-16E2) circling above the target to find it and record the strike.
CONFUSED WITH **KUB-BLA** p. 276 From below: one flat delta wing, 1.21 m span, body 0.95 m long; Lancet has two X-shaped wing sets in tandem on a body about 1.65 m long.
Molniya p. 278 From below: one wing with a nose motor (Molniya-1) or two motors under the wing (Molniya-2); Lancet has two X-wing sets and a tail pusher.



Nickel nitride, CC0

MOBILITY Catapult-launched by a small team; launch team of two plus two operators. Flies 80-110 km/h on battery power; usually needs a scout UAV for targets.

Weight, maximum take-off, Lancet-3	**12 kg** Lancet-3 (Izdeliye 52 class) *also 18 kg EDRL*
Speed, level flight	**80-110 km/h** speed range, Lancet-3 and Lancet-1; developer figure per UAHB appendix; GS gives Lancet-3 cruise 80, maximum 110, claim *also up to 100 km/h observed UAHB*
Speed, terminal dive	**300 km/h** Lancet-3
Time into action	**under 1 min** Izdeliye 51E from KPU 51E single-use launcher, export, one-person crew, claim
Length	**1.65 m** Lancet-3, approximate
Wingspan	**about 1.0 m** Lancet-3, single last-resort source
Endurance	**40 min** Lancet-3 and Izdeliye 51 *also 30 min EDRL*
Altitude, flight	**60-3,000 m** Lancet type, Ukrainian General Staff figure, claim *also 1,500 m maximum; 200-600 m operating EDRL*
Range, Lancet-3 (Izdeliye 52)	**40 km** flight range with 3 kg warhead *also 48-66 km UAHB*
Range, Izdeliye 51	**50 km** communication range, control link range, 5 kg warhead; ZALA website figure reported by RT, claim *also 40 km EDRL*
Range, Lancet	**about 70 km** practical, MiG-29 struck at Dolgintsevo airfield 2023-09, shown on video (KYIV); about 70 km from the front per Russian claims reported by Wikipedia, observed *also over 70-80 km GS23*
Warhead, Izdeliye 52	**3 kg** HE-frag or shaped charge (RT); Izvestia describes one 3 kg head combining both effects; wreckage showed a KZ-6 shaped charge (MILN)
Warhead, Izdeliye 51	**5 kg** 5 kg per RT (Izdeliye 51); RUSI gives 5 kg shaped charge for Lancet-3M; RG gives 3 or 5 kg payloads of HE-frag, shaped-charge or thermobaric type
Guidance	**coordinate, electro-optical and combined** TV channel to operator; terminal homing on designated object (RUSIMP); thermal imager on newer lots (RT)
Crew	**4** launch team of two (munition and pneumatic catapult) and two operators (scout UAV and strike), one Lancet team, 2024, claim *also 1 EDR22*
Fuze	**contact or non-contact** contact or non-contact (UAHB table, 2023); non-contact detonation reported on newer drones (MILN, 2023)
Strike record claim	**about 2,000 verified strikes, Jan to early Jul 2024** Kalashnikov statistics: 309 guns and mortars, 280 SP guns, over 200 tanks, 85 SAM systems, 51 radars, claim

SEEN WITH ZALA Z-16 reconnaissance UAV; ZALA 421-16E2 reconnaissance UAV; Orlan-10 reconnaissance UAV; Pneumatic catapult launcher; Ground control station
VARIANTS **Izdeliye 52** Two X-shaped wing sets of equal span. 3 kg HE-frag or shaped-charge warhead; steeper dive; link range over 30 km (state media). **Izdeliye 51** Larger-span front X-wing, smaller rear wing set. 5 kg warhead; longer range, 50 km link (developer figure). A thermal sight is reported on new Lancets (2024), variant not named. **Izdeliye 53** Four large front wings at 45 degrees, folding; launched from a four-round container, no catapult. More automated targeting; claimed group and swarm attack. **Lancet-1** Smaller airframe of the same tandem X-wing layout. 5 kg take-off weight, 1 kg warhead, 30 min endurance. **Lancet-E** Export set. 51-E has a larger-span front X-wing; 52-E has two X-wings of equal span; pneumatic launcher. Z-16-E scout with Izdeliye 51-E (40 km, 18 kg, 30 min) and 52-E (25 km, 12 kg, 15 min); export figures, manufacturer claim.

SOURCES ATP EDR22 EDR23 EDRL GS22 GS23 IZV6 KYIV2 MIL70 MOLKP ORYX1 RAMB3 RG6 RT4 RUSI6 RUSI7 TASS11 UAHB VM3 WP-EN100 WP-EN101 WWW110 not in WEG Updated 2026-10-08

Molniya «Молния»

AIR-FW

Cheap fixed-wing FPV one-way attack drone; also recon, fire spotting, FPV carrier, courier In service 2024

OPERATED BY **Rubicon detachment** O 2025-12 M seen with Rubikon Center for Advanced Unmanned Technologies
unmanned systems unit R 2026-06 M seen with Sever grouping of forces, Vostok grouping of forces, Zapad grouping of forces
unmanned systems unit R 2026-06 L seen with 50th Separate Unmanned Systems Brigade 'Varyag'

INDICATES *Points to a drone crew of an unmanned systems, airborne or Rubikon unit within the reported 30-60 km range of the target, more if Starlink-fitted. Crews move launch point after each launch.*

RECOGNISE **Wings** Wing about 1.5 m span, built of plywood; airframe also uses foam and plastic.
Engines Electric. Molniya-1: one tractor motor in the nose. Molniya-2: two motors under the wings. Export Lightning 13 has four.
Fuselage Fuselage of two longitudinal aluminium tubes with a plywood centre section; camera in the nose.

CONFUSED WITH **Lancet loitering munition** p. 277 Two X-shaped wing sets in tandem; Molniya looks like a conventional model aeroplane, with one wing and a tail (from photograph).
Orlan-10 p. 268 In flight: span over 3 m against 1.5 m, petrol engine with nose propeller; Molniya-2 has two motors under the wing.

SEEN WITH Pneumatic catapult with compressor; FPV goggles and hand controller; FPV quadcopter carried as payload (1 to 2 per Molniya (carrier role)); Starlink terminal (on some airframes)

VARIANTS **Molniya-1** Single electric motor in the nose. About 5 kg (Ukrainian maker's estimate), 3-5 kg payload, about 40 km range; earlier flights without warhead, later with one. **Molniya-2** Two electric motors under the wings. Up to 6 kg explosive, 50 km (MoD claim). Later builds: Starlink link (over 230 km, Dec 2025); AI-equipped builds reported 2026. **Molniya-2R** INA. Reconnaissance version; thermal cameras, satellite terminal on some. Molniya also used for fire adjustment.



Russian Ministry of Defence (mil.ru), CC BY 4.0



Zenwort, CC BY-SA 4.0

MOBILITY Man-portable: breaks down into about 10 pieces carried by three soldiers in backpacks. Launched by pneumatic catapult or by hand; one-way, not recovered.

Weight	**10 kg** Variant not stated *also about 5 kg VIKNA4*
Speed	**120 km/h** Molniya-2, serviceman in MoD video, claim *also up to 80 km/h FN2*
Wingspan	**1.5 m** Variant not stated
Endurance	**up to 40 min** maximum, Variant not stated
Operating altitude	**up to 300-400 m** Molniya-2, serviceman in MoD video, claim *also max 3 km VIKNA4*

Range, Molniya-2 with warhead	**up to 50 km** maximum, Molniya-2; MoD figure, control link not stated, claim *also up to 60 km W1D*
Range, Molniya-1 with warhead	**about 40 km** maximum, Kharkiv regional prosecutor's office; manual FPV control, no GPS, claim *also 20-40 km VIKNA4*
Warhead mass, Molniya-2	**up to 6 kg explosive** claim *also 3-5 kg MOLKP VIKNA4*
Warhead types	**shaped-charge, fragmentation, thermobaric; also improvised: grenades, RPG rounds, anti-tank mines, thermite**
Guidance	**Manual FPV via nose camera and goggles; ELRS radio link on Molniya-1 (Airlogix); later AI modules and Starlink**
Crew	**INA** Kit carried by three soldiers

SOURCES BI FN2 GS18 GWARA ISW2 KI12 MIL70 MIL82 MIL83 MIL84 MODMR MOLKP U2411 USER8OCT VIKNA4 W1A W1B W1C W1D WP-EN118 not in WEG

Updated 2026-10-08

Shahed-107 (Iran)

AIR-FW

Light one-way attack drone for mid-range strikes behind the front line In service 2025

OPERATED BY **Russian forces**, Frontline zones and regions; a further example filmed over Sumy R 2025-11 M

INDICATES *Reported with Russian forces striking Ukrainian frontline regions in Nov 2025 (Ukrainian intelligence claim). A sighting points to strikes beyond the immediate front line, with less reach than the Shahed-136; no holding unit is named.*

RECOGNISE **Wings** Straight rectangular wing set high on the fuselage, about midway between nose and tail, with control surfaces on the wing; span 2.4 to 3 m
Engines One piston engine. Wreckage: a Chinese two-stroke gasoline DLE 111 in the sample examined by Ukrainian intelligence
Fuselage Cylindrical fuselage with pointed nose, 1.5 to 2.5 m long. Close only: pitot tube at the front
Tail X-shaped tail fin assembly at the rear

CONFUSED WITH **Shahed-136 (Geran-2)** p. 274 Full view: Shahed-136 has delta wings; this has a straight rectangular wing and X-tail. Length 3.3 to 3.5 m against 1.5 to 2.5 m for the Shahed-107.
Shahed-101 Hard to separate: Ukraine first called it a new Shahed-101. Wreckage: a 4-channel anti-jam antenna points to the 107; the 101 is reported with an electric motor.

MOBILITY One-way, not recovered. Launch from a static catapult reported. Ukrainian intelligence estimates about 300 km range from tank capacity; other figures run to 1,500 km.

Weight	**about 27 kg (60 lb)** total weight, Landmines and Coffee (Ukrainian Telegram channel), Nov 2025
Flight range	**about 300 km** operational range, estimated, Ukrainian intelligence estimate from a 28 L fuel tank, sample examined Nov 2025, claim
Cruising speed	**120 km/h** Landmines and Coffee (Ukrainian Telegram channel), Nov 2025

Range, Shahed-107	**about 300 km** operational range, estimated, 28 L fuel tank; Ukrainian intelligence estimate, Nov 2025, claim
Warhead	**15 kg, cumulative high-explosive fragmentation** sample examined by Ukrainian intelligence, published 25 Nov 2025, claim
Guidance	**inertial unit similar to Sadra, anti-jamming module, four-element antenna** sample examined by Ukrainian intelligence, Nov 2025; flight controller drives wing control surfaces and engine, claim
Powerplant	**Chinese DLE 111 two-stroke gasoline engine; 28 L fuel tank** sample examined by Ukrainian intelligence, Nov 2025, claim
Launch method	**static catapult launcher** usual method reported by Landmines and Coffee, Nov 2025

SOURCES AR108 ARMYINF11 CSIS2 FENIX5 LIGA10 MEDUZA4 MIL118 TWZ32 U2418 not in WEG

Updated 2026-10-16

FPV drones

FPV drones

AIR-RW

Pilot-flown one-way attack quadcopters, radio- or fibre-optic-controlled In service 2023

OPERATED BY **Rubicon detachment**, FPV drone operators O 2025-12 M seen with Rubicon Center for Advanced Unmanned Technologies

motor rifle brigade, FPV drone crews O 2026-03 L seen with 4th Motor Rifle Brigade (Southern grouping)

artillery brigade, FPV drone crews; a subunit of the anti-tank battalion works with UAVs O 2026-05 L seen with 238th Artillery Brigade, 8th Guards Combined Arms Army

Spetsnaz battalion, FPV drone operators O 2025-12 L seen with 58th Separate Spetsnaz Battalion (Okhotnik detachment), 51st CAA

Unidentified unit O 2025-05 L seen with Sudny Den

unmanned systems unit, FPV crews of the unmanned systems troops R 2026-02 M

engineer-sapper battalion R 2024-03 L seen with special mining battalion, Southern group of forces

INDICATES *An FPV strike means a drone crew in flight range: 7-10 km claimed for the radio VT-40, 10 to over 40 km for fibre-optic types. Russian reports name crews in motor rifle and artillery brigades, a Spetsnaz battalion and drone units; the type fixes no echelon.*

RECOGNISE **Rotors** Quadcopter; fibre-optic types need a larger frame, motors and battery. A Ukrainian commander reports them at 20-50 m up.

Payload Munition strapped under the frame: RPG-7 grenades, KZ-6 shaped charges, or improvised charges such as a plastic tube of explosive wrapped in steel balls.

Link Fibre-optic types: large cylindrical spool between frame and munition, trailing reflective fibre. Radio types: standard analogue or digital antennas.

Frame Close only: carbon fibre, aluminium or polymer frame, electronics in the middle, battery strapped on top; a captured VT-40 was braced with extra carbon rods.

CONFUSED WITH **Ukrainian FPV drones** Wreckage: same layout and largely the same parts; fibre-optic types fly on both sides. A captured VT-40 had a stamped serial number and carbon-rod bracing.

Bomber drones In flight: hovers over the target and drops a heavier payload, mostly at night; an FPV dives into the target.

Reconnaissance quadcopters Close: an attack FPV carries its munition strapped under the frame; quadcopter spotter drones cue the strike.


National Police of Ukraine, CC BY 4.0


National Police of Ukraine, CC BY 4.0


National Police of Ukraine, CC BY 4.0

MOBILITY Fibre-optic types are slower and less agile: the spool adds weight and limits sharp turns; the fibre can snap or be cut.

Flight altitude, fibre-optic types	**20-50 m** practical, reported by a Ukrainian drone commander, observed
Weight	**INA**

Range, KVN fibre-optic	**20 km** maximum, fibre-optic spool; figure 'according to Russian resources', Jan 2025, claim *also 50-65 km MIL41*
Range, Provod fibre-optic	**over 40 km** claimed, spool length; Ovod centre statement via TASS, Aug 2026, claim *also 25-30 km W1PROV*
Range, VT-40	**7-10 km** claimed, munitions of 1.3-3 kg, claim *also 7-8 km TEXTY*
Range, fibre-optic types	**over 10 km** practical, Russian fibre-optic drones striking Kostiantynivka, just over 10 km from the contact line, Apr 2025, observed
Payload, KVN fibre-optic	**3.5 kg** according to Russian resources, Jan 2025, claim
Payload, VT-40	**1.3-3 kg** claim *also about 2 kg TEXTY*
Payload, Ovod	**up to 4 kg** claim
Radio links, VT-40	**video 1.3 GHz; control 800-900 MHz** captured example, Sep 2023, observed
Fibre break rate, KVN	**1-2 per 10 launches** maker's figure from nearly 1,000 uses, quoted Jan 2025, claim
Crew	**INA**

SEEN WITH Fibre-optic spool (1 per fibre-optic drone); Reconnaissance UAV crews; Signal booster (relay) drones

VARIANTS **KVN Knyaz Vandal Novgorodsky** Fibre-optic spool under the frame; resembles the Chinese Skywalker commercial fibre-optic quadcopter. Fibre-optic link, immune to jamming. Russian sources claim 20 km, then 50-65 km with new spools; contact fuze. Thermal imager version in series from Jan 2025. **Provod** Fibre-optic spool; spool length differs between versions. Maker claims use at over 40 km (Aug 2026); the designer gave 25-30 km with up to 4.5 kg in Feb 2026. **Boomerang** Carries its fibre-optic spool on the frame, like KVN. Fibre-optic; a Russian officer says it proved itself at the line alongside KVN (2025). **Piranha-5** Pocket size: 12 cm diameter, 0.3 kg. Fibre-optic; Russian claim of up to 1 kg payload, 220 km/h and 1-3 km radius; mainly for operator training. **Ovod** INA. Radio-controlled; developer claims lift of up to 4 kg and Ploshchad onboard homing after loss of link. **VT-40 Vladlen Tatarsky** Serial number stamped on the captured example; frame braced with carbon rods. Radio-controlled; video on 1.3 GHz, control on 800-900 MHz. Producer claims 1.3-3 kg munitions at 7-10 km.

SOURCES AIF3 AR52 AR53 CYCLO2 ESP2 ISW1 IZ IZ2 KI7 KP LENTA4 MIL41 NGE PRIME RG3 RIA RUSI2 TASS4 TEXTY W1KVN W1PROV W1RU2 WP-EN60 not in WEG Updated 2026-10-08

Trainers and other fixed-wing aircraft

Yak-52 Як-52

piston trainer, ad hoc counter-drone aircraft legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Yak-52B2 Як-52Б2

armed counter-drone conversion of the Yak-52 trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Other

AeroScope

Chinese drone detection system legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

11 Aircraft and helicopters

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
ATTACK HELICOPTERS						
Ka-52 Alligator	HOKUM B	Ка-52 «Аллигатор»	Two-seat attack and reconnaissance helicopter with anti-tank missiles · 2011	**460–545 km** range, internal fuel, 2–2.8 t combat load	**AIR-RW**	284
Mi-24P/V and Mi-35M	HIND	Ми-24, Ми-35M	Armoured attack helicopter with an eight-seat troop cabin · 1972	**415–460 km** range, normal weight, 8 troops; 1.5 t cargo	**AIR-RW**	285
Mi-28N Night Hunter	HAVOC B	Ми-28Н «Ночной охотник»	Two-seat attack helicopter · 2009	**435–450 km** range, internal fuel, 2.3 t combat load	**AIR-RW**	285
TRANSPORT AND SPECIAL-MISSION HELICOPTERS						
Ka-226	HOODLUM B	Ка-226	light utility and training helicopter	–	–	*286*
Mi-8AMTSh-VN Sapsan	–	Ми-8АМТШ-ВН	special-forces assault helicopter in flight test · trial	–	–	*286*
Mi-8MNP-2	–	Ми-8МНП-2	FSB special-purpose helicopter	–	–	*286*
Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/Mi-17 family)	HIP	Ми-8	Medium transport and armed assault helicopter · 1965	**520–960 km** range, load not given, 24–36 troops; 3.63–4 t	**AIR-RW**	287
Mi-8MTPR-1	HIP	Ми-8МТПР-1 «Рычаг-АВ»	Helicopter jammer against air-defence and aircraft radars · 2015	**150 km** air-defence radar jamming, C/X band 5.1–11 GHz	**AIR-RW**	288
Mi-8PPA	HIP K	Ми-8ППА	jamming helicopter (legacy) · legacy	–	–	*289*
Mi-26 Halo	HALO	Ми-26	Heavy transport helicopter · 1983	**475–670 km** range, loaded, 82 troops or 20 t	**AIR-RW**	289
NAVAL HELICOPTERS						
Ka-27 and Ka-29	HELIX	Ка-27	Shipborne anti-submarine, search-and-rescue and assault transport helicopter family · 1981	**100–200 km** combat radius; endurance 3.5 h (Ka-27PL), Ka-29: 16 troops or 2 t	**AIR-RW**	290
OTHER						
Ansat-U	–	Ансат-У	light trainer helicopter	–	–	*291*

Attack helicopters

Ka-52 Alligator Ка-52 «Аллигатор»

NATO: Hokum B **AIR-RW**

Two-seat attack and reconnaissance helicopter with anti-tank missiles In service 2011

OPERATED BY **Aerospace Forces army aviation units supporting the Ground Forces** D 2024-02 M
army aviation brigade R 2026-01 M seen with 15th Army Aviation Brigade
helicopter regiment R 2026-01 M seen with 39th Separate Helicopter Regiment, 55th Separate Helicopter Regiment, 440th Separate Helicopter Regiment
army aviation brigade R 2026-01 L seen with 16th Army Aviation Brigade
army aviation brigade R 2021-01 L seen with 18th Army Aviation Brigade
helicopter regiment, about 20 in 2021 R 2022-07 L seen with 319th Separate Helicopter Regiment
training centre, 8 in the 696th Regiment (Sep 2010) R 2010-12 L seen with 344th Centre for Combat Training and Aircrew Conversion, 696th Instructor and Research Helicopter Regiment
helicopter squadron R 2024-12 L seen with Special Purpose Aviation Brigade (Syria), helicopter squadron



Peer.Gynt, CC BY-SA 2.0

NUMBERS **Holdings** ε62 Ka-52A and ε20 Ka-52M in the Aerospace Forces (IISS estimates) (2024); **Holdings** About 140 Ka-52 at the start of the full-scale invasion (The War Zone estimate) (2022-02); **Losses** About 40 Ka-52 lost by July 2023 (UK MoD, 'highly likely'; The War Zone: almost 40) (2023-07); **Losses** 68–69 Ka-52 lost: 55 destroyed (1 non-combat), 13 damaged, 1 damaged and captured (Oryx, photo-confirmed; heading 68, entries add to 69) (2026-10)

INDICATES *Indicates an Aerospace Forces army aviation brigade or helicopter regiment supporting a district, army or division, often in a joint grouping: two brigades and four regiments held Ka-52A in late 2024, all also flying Mi-8s.*

RECOGNISE **Rotors** Two coaxial three-blade main rotors, widely separated, turning in opposite directions, 14.5 m across; no tail rotor
Fuselage and cockpit Two seats side by side; two turboshafts high on the fuselage above the stub wings, semicircular intakes, exhausts turned outward
Stub wings and stores Stub wings with countermeasure pods at the tips; six pylons from the 4th production batch, four before; 30 mm gun on the right of the fuselage
Tail Tapering tail boom; back-tapered fin with a square tip; tailplane high on the boom ahead of the fin, with end plates
Nose sensors Radar in the nose radome; sensor ball under the nose, ahead of the nose wheel. Close only: Ka-52M has two small air intakes on the radome

CONFUSED WITH **Mi-28N and Mi-28NM Havoc** p. 285 Side on, low pass: Mi-28 has one five-blade main rotor and a tail rotor, Ka-52 two stacked rotors and no tail rotor. Head-on: Mi-28 cockpits in tandem
Mi-24 and Mi-35 Hind p. 285 Side on, low pass: Hind has one five-blade main rotor, a tail rotor and a cabin for eight troops; Ka-52 two stacked rotors and no tail rotor
Ka-29 Helix-B p. 290 Side on, low pass: both have coaxial rotors. Ka-29 has a cabin for 16 troops, door behind the main wheels on the left; Ka-52 only a two-seat cockpit

VARIANTS **Ka-52M** Two small air intakes on the nose radome, absent on earlier Ka-52 (close only); L418-2 missile-warning sensors where the Ka-52 has L370-2. Longer-range GOES-451M sight, AESA radar (2020 ministry claim), L418 self-defence, LMUR. Delivered from Jan 2023; UK MoD: highly likely in south Ukraine, Jul 2023. **Ka-52K Katran** Folding rotor blades and wing panels; four wing pylons instead of six. Naval version for landing ships; Kh-35U anti-ship missile stated in 2017. Four pre-series aircraft in Navy trials (2017); two in combat in Syria, 2016.

MOBILITY Flies very low, masked by terrain, and at night (2023). Army aviation bases or airfields typically sit 20-30 km from the supported ground units.

Maximum take-off weight	**10,800 kg** claim *also around 27,000 lb (about 12.2 t), Ka-52M TWZ11*
Empty weight	**7,800 kg** *also 7,700 kg ATP*
Maximum speed	**300 km/h** 310 km/h maximum permissible, claim *also 310 km/h ATP*
Practical range	**460 km** flight range, not combat radius, claim *also 520 km WP-RU104*
Ferry range	**1,110 km** ferry configuration, claim
Fuselage length	**14.2 m** claim
Overall length	**16.0 m** claim
Main rotor diameter	**14.5 m** each of two coaxial rotors, claim
Height	**5 m** claim
Cruise speed	**260 km/h** claim
Service ceiling	**5,500 m** dynamic ceiling, claim
Hover ceiling	**4,000 m** static ceiling, claim

Range, 9A4172K Vikhr-1	**8-10 km** ground target; tandem HEAT, laser beam-riding; 2 x 6 on UPP-800 launchers, claim *also 10 km WP-RU104*
Range, 9A4172K Vikhr-1	**about 8 km or more (slant range)** practical, launched from low level at vehicles, including moving ones; Russian MoD and Telegram videos, 2023, observed
Range, 9M120-1 Ataka	**6 km** maximum, ground target; 9K113U Shturm-VU, 2 x 6 missiles, claim *also 3.7 miles TWZ12*
Range, LMUR (izdeliye 305)	**up to 14.5 km** maximum, ground target; made for the Ka-52M; UK MoD (Jul 2023) says the Ka-52 fleet carries it, claim *also roughly 15 km FN WP-EN77*
Detection range, GOES-451M sight, TV channel	**about 15 km (9.3 miles)** Ka-52M; tank, claim
Detection range, GOES-451M sight, thermal channel	**about 12 km (7.5 miles)** Ka-52M; tank, claim
Detection range, FH01 Arbalet-52 radar	**about 12 km (7.5 miles)** tank; about 25 km (15.5 miles) for a large ground target such as a railway bridge *also 25 km WP-EN77*
Crew	**2 (pilot, weapons operator), side by side**
Gun	**30 mm 2A42 in NPPU-80 movable mount, right side of fuselage**
Gun ammunition	**240-460 rounds** 30 x 165 mm *also 460 rounds WP-RU104*
Combat load	**2,000 kg on four pylons; 2,800 kg on six** claim

SEEN WITH Mi-8 transport helicopters (Mi-8AMTSh, Mi-8MTV-5) (in all six units with Ka-52A (IISS, 2024); about 20 Mi-8AMTSh in the 319th Regiment (2021)); 9A4172K Vikhr-1 anti-tank missile (RS-AT-16 Scallion; IISS lists 9M120-1 Vikhr) (up to 12 per helicopter (2 × 6)); 9M120-1 Ataka anti-tank missile (9K113U Shturm-VU) (up to 12 per helicopter (2 × 6)); Izdeliye 305 (LMUR) guided missile; S-8 (80 mm) and S-13 (122 mm) unguided rockets in pods; 9M39 Igla-V air-to-air missile (up to 4 (2 × 2))

SOURCES AFT1 AFT2 AFT3 ATP CNA FM4480 FN GS20 GS21 IISS25 JANESAW MIL57 ORYX5 RDP6 TWZ11 TWZ12 WP-EN77 WP-EN78 WP-EN79 WP-RU104 not in WEG Updated 2026-10-16

Mi-24P/V and Mi-35M Ми-24, Ми-35M

NATO: Hind AIR-RW

Armoured attack helicopter with an eight-seat troop cabin; fire support and anti-armour In service 1972

OPERATED BY **Aerospace Forces army aviation units supporting the Ground Forces** D 2024-02 L
helicopter squadron, 8 Mi-24P in the squadron in Armenia, 4 in the one in Tajikistan R 2024 M

NUMBERS **Holdings** ε96 Mi-24D/V/P and ε56 Mi-35 in the Aerospace Forces (IISS estimates); 7 Mi-24P in Naval Aviation (2024)

INDICATES *A sighting in 2024 pointed to an army aviation brigade, helicopter regiment or squadron of the Aerospace Forces, all also flying Mi-8s, or to Naval Aviation or the Border Guard. Ukraine flies the same family, so the type alone does not show the side.*

RECOGNISE **Rotors and engines** One five-blade main rotor over mid-fuselage; two turboshafts on the roof, two round intakes just above the cockpit, exhausts on the sides
Fuselage and cockpit Two tandem bubble canopies, gunner in front of pilot; troop cabin behind with a two-part door each side, seats for 8 troops
Stub wings and stores Stub wings at mid-fuselage, angled 12° down, carrying rockets and missiles: three stations a side on Mi-24V/P, two on Mi-35M
Tail Swept fin with tail rotor on its left: three blades on Mi-24V/P, X-shaped rotor on Mi-35M (from photograph); tailplane on the boom ahead of the fin
Undercarriage Tricycle wheels that retract in flight on Mi-24V/P and stay down on Mi-35M; fixed tail bumper under the tail

CONFUSED WITH **Mi-24V/P and Mi-35M** Side on, low pass: Mi-35M has two pylons a wing against three on the Mi-24V/P, an X tail rotor and wheels that stay down; the pylon count is the quickest cue
Mi-28N Havoc B p. 285 Side on, low pass: Mi-28 tailplane high on the fin, Mi-24/35 tailplane on the boom; Mi-28 engines in side pods. X tail rotor and fixed wheels do not settle it
Mi-8/Mi-17 Hip p. 287 Side on, low pass: Hind has two tandem bubble canopies, the Mi-8 one glazed nose cockpit. Weapon outriggers alone do not settle it: armed Mi-8s carry them



Srđan Popović, CC BY-SA 4.0

MOBILITY Wheels retract on Mi-24V/P, fixed on Mi-35M. Rockets are mostly fired in a nose-up climb from stand-off distance.

Maximum take-off weight	**11,500 kg** Mi-35M export figure; same for Mi-24V, claim
Empty weight	**8,680 kg** Mi-24V
Maximum speed	**300 km/h** Mi-35M export figure as relayed in 2018 and 2022, claim
Range at speed	**450 km** maximum, Mi-24V at 500 m, normal take-off weight, 5% fuel reserve

Range, 9M120 Ataka-V	**6,000 m** maximum, Mi-24VM (Mi-35M); 9M120 tandem HEAT, radio-command guidance; launch altitude 0 to 4,000 m, claim
Minimum range, 9M120 Ataka-V	**400 m** 9M120 tandem HEAT, claim
Range, 9M120M Ataka-V	**8,000 m** maximum, Mi-24VM (Mi-35M); 9M120M tandem HEAT, radio-command guidance; launch altitude 0 to 4,000 m, claim
Minimum range, 9M120M Ataka-V	**800 m** 9M120M tandem HEAT, claim
Range, unguided rockets	**about 10 km** firing distance, Mi-35M, lofted fire in a nose-up climb with the PrVK-24 sighting computer; S-8KOM rockets named for the practice; spread about 250 m in range, 150 m laterally
Detection range, Mi-35M optronic sight	**5–6 km** day, targets in general

SOURCES AIF35 AIFSVO AIRW35 AIRWP AIRWV AIRWVM AR74 ATP FM4480 HISTNET IISS25 MILUA4 MISS20 ORYX5 RUSIPL SBBY UNIAN4 WMC19 WP-EN77 WP-EN114 WP-RU143 WWW1S8 WWW112 not in WEG Updated 2026-10-22

Mi-28N Night Hunter Ми-28Н «Ночной охотник»

NATO: Havoc B AIR-RW

Two-seat attack helicopter: anti-armour, fire support, escort and drone interception In service 2009

OPERATED BY **helicopter regiment**, first Mi-28N squadron, formed 2009-10, 16 R 2010 L

NUMBERS **Holdings** ε67 Mi-28N, ε9 Mi-28NM and 24 Mi-28UB in Aerospace Forces army aviation (IISS estimates) (2024); **Holdings** About 110 Mi-28 of all versions before Feb 2022; probably no more than 10 Mi-28NM in service early 2023 (2023-01); **Holdings** 55 Mi-28 employed at the outset of the war (JAPCC estimate, assuming 30% of the fleet unavailable) (2022-02)

INDICATES *A Mi-28 indicates a VKS army aviation brigade or helicopter regiment: six such units held Mi-28N in late 2024, in the Leningrad and Southern districts. In 2024 Mi-28s were reported hunting drones over Russia. The Mi-28NM is rare (ε9 in 2024, IISS estimate).*

RECOGNISE **Rotors** Single five-blade main rotor above mid-fuselage; four-blade tail rotor, blades set in an X, on the right side of the fin
Fuselage and cockpit Fuselage tapering to nose and boom; two tandem stepped cockpits, gunner in front, pilot behind; two engine pods on top, exhausts turned down
Stub wings and stores Tapered stub wings aft of mid-fuselage, two pylons under each; 30 mm cannon in a turret under the nose
Tail Tapering tail boom to a swept-back fin; tailplane mounted high on the fin
Undercarriage Fixed tailwheel undercarriage; close only: door to a windowless compartment in the left rear fuselage
Nose sensors and mast radar Mi-28N: no radar on the rotor mast. Mi-28UB and Mi-28NM: radar on top of the rotor mast. Mi-28NM: nose sensor turret in a cylindrical housing

CONFUSED WITH **Ka-52 Alligator** p. 284 Side on, low pass: two stacked coaxial rotors and no tail rotor. Head-on: two seats side by side, where the Mi-28 has tandem stepped cockpits
Mi-24 and Mi-35 Hind p. 285 Side on, low pass: Mi-28 tailplane high on the fin, the Hind's on the boom ahead of the fin. Fixed wheels and X tail rotor do not settle it: the Mi-35M has both



Mil.ru, CC BY 4.0

MOBILITY Rotary wing; terrain-following flight at 5-15 m (maker's figure); Ukraine claimed a strike on Mi-28s refuelling at a field airstrip over 150 km behind the line (2026)

Maximum take-off weight	**12,000 kg** Mi-28N, claim
Normal take-off weight	**10,700 kg** Mi-28N, claim
Empty weight	**8,095 kg** Mi-28N, claim
Maximum speed	**305 km/h** Mi-28N, claim

Range, 9M120 Ataka-V	**6,000 m** maximum, 9M120 tandem HEAT, radio-command guidance; launch altitude 0 to 4,000 m, claim
Minimum range, 9M120 Ataka-V	**400 m** 9M120 tandem HEAT, claim
Range, 9M120M Ataka-V	**8,000 m** maximum, 9M120M tandem HEAT, radio-command guidance; launch altitude 0 to 4,000 m, claim
Minimum range, 9M120M Ataka-V	**800 m** 9M120M tandem HEAT, claim
Range, LMUR (izdeliye 305)	**over 9 miles (about 14.5 km)** maximum, Mi-28NM; inertial with satellite correction, thermal-imaging seeker with two-way datalink to the operator
Range, 30 mm 2A42, light armour	**1,500 m** effective, light armoured vehicles; NPPU-28 turret, AP or HE-frag-incendiary rounds, claim
Range, 30 mm 2A42, personnel	**4,000 m** maximum, personnel; NPPU-28 turret, claim
Range, 30 mm 2A42, air targets	**2,500 m** effective, low-speed air targets; NPPU-28 turret, claim
Detection range, sighting system	**up to 10 km** maximum, Mi-28N; sighting system with the night-vision station, search for point, moving and group targets, claim

SEEN WITH Mi-8 (1 with a pair of Mi-28NM, to recover a downed crew (video, Jan 2023))

SOURCES AR76 ATP FM4480 FN IISS25 JANES3 LENTA8 MIL76 MISS20 ORYX5 RUSI8 TWZ21 TWZ22 U2410 UKRINF7 UNIAN4 WP-EN77 WP-EN79 WP-RU145 not in WEG Updated 2026-10-17

Transport and special-mission helicopters

Ka-226 Ка-226

NATO: Hoodlum B

light utility and training helicopter

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Mi-8AMTSh-VN Sapsan Ми-8АМТШ-ВН

special-forces assault helicopter in flight test trial

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Mi-8MNP-2 Ми-8МНП-2

FSB special-purpose helicopter

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/Mi-17 family) Ми-8

NATO: Hip **AIR-RW**

Medium transport and armed assault helicopter; also crew rescue, resupply and fire support In service 1965

OPERATED BY **Special operations forces (GRU Spetsnaz and SSO)** D 2024 M
aviation regiment, transport regiments and squadrons R 2024 M
National Guard aviation unit, transport squadrons (8 in the force, aircraft and helicopters) R 2024 M
military base, helicopter squadron, 201st (Tajikistan): 4 Mi-8MTV, 2 Mi-8MTV-5-1; base in Armenia: 4 Mi-8AMTSh, 4 Mi-8MT R 2024 M
Unidentified unit, pair hunting surface drones near Cape Tarkhankut, Crimea; one claimed shot down 31 Dec 2024, 2 R 2024-12 L

NUMBERS **Holdings** 271 Mi-8/AMTSh/AMTSh-VA/MT/MTV-5/MTV-5-1 in the VKS transport fleet; 4 Mi-8T and 4 Mi-8MT with naval aviation (IISS) (2024); **Losses** 54 Mi-8 lost: 40 destroyed, 13 damaged, 1 defected and captured (Oryx, visually confirmed) (2026-10); **Losses** Ukrainian side, same family: 32 Mi-8, 3 Mi-17V5 and 1 Mi-8/17 lost (Oryx, visually confirmed) (2026-10); **Holdings** 60 Mi-8 and some Mi-8AMTSh with the National Guard; Mi-8 among about 200 Border Guard Service helicopters (IISS estimate) (2024)

INDICATES *Every Russian army aviation brigade and helicopter regiment listed the Mi-8 in 2024, as did naval, National Guard and Border Guard aviation; one captured in 2023 was reported with a helicopter regiment. Ukraine flies the same family.*

RECOGNISE **Rotor system** Single five-blade main rotor over mid-body; two engines on the cabin roof with two round intakes just above the cockpit
Fuselage and cockpit Long cabin with glazed-in cockpit in the nose; fuel tank low on each side; upswept rear with clamshell doors, or a ramp on the Mi-8MTV-5 and Mi-8AMTSh
Stores Weapon rack low on each cabin side, three pylons per rack on the Mi-8MT, carrying rocket or gun pods
Tail Tapered boom to a small swept fin with tail rotor on top; rotor on the right on the Mi-8T, on the left on the Mi-8MT and later; small tailplanes ahead of fin
Undercarriage Fixed tricycle landing gear and a tail bumper
Details, close only Semi-cylindrical dust filters on intakes from the Mi-8MT; exhaust mixer boxes on later armed variants; nose radome and chin sensor turret on some Mi-8AMTSh

CONFUSED WITH **Mi-24/Mi-35 Hind** p. 285 Side on, low pass: Hind has two tandem bubble canopies and a chin turret (Hind D on), Mi-8 one glazed nose. Stub wings alone do not settle it: armed Mi-8s have side racks
Mi-26 Halo p. 289 Side on, low pass: Mi-26 is 33.8 m long against 18.32 m, tail rotor on the right (left on Mi-8MT and later). On the ground, rotors stopped: eight blades against five
Ka-29 Helix-B p. 290 Side on, low pass: Ka-29 has two stacked rotors 1.4 m apart and is 11.3 m long against 18.32 m; Mi-8 one main rotor and a tail rotor on the fin
Mi-8MTPR-1 jamming helicopter p. 288 Side on, low pass: four antennas on the cabin sides, two receivers forward and two transmitters aft; own entry

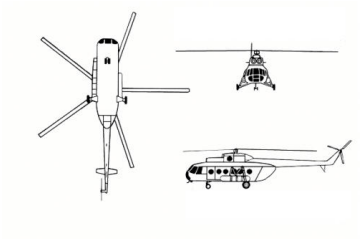
VARIANTS **Mi-8T** Tail rotor on the right side; no dust filters on intakes; engine cowls longer than on the Mi-8MT. TV2-117A engines of 1,500 hp; 24 troops or 4 t; IISS lists 4 with naval aviation (2024). **Mi-8MT** Tail rotor on the left; semi-cylindrical dust filters on intakes; shorter engine cowls; APU exhaust on the left behind the rotor. TV3-117MT engines of 1,900 hp; two side racks with three pylons each. **Mi-8MTV-2** Removable armour plate on each side of the nose; close only: two blade antennas over the tail boom. TV3-117VM engines: take-off and landing up to 4,000 m, level flight to 6,000 m; armoured cockpit; 30 troops. **Mi-8MTV-5** Rear ramp in place of clamshell doors (also on the Mi-8AMTSh); port door widened from 0.83 to 1.25 m; extra sliding door on the right. Up to 36 troops, out in 15 s (brochure figure shared with export Mi-17V-5); Russia now fields the Mi-8MTV-5-1 sub-variant. **Mi-8AMTSh Terminator** Some carry a nose thimble radome and a chin sensor turret; rear ramp; otherwise no practical difference from the Kazan-built Mi-8MTV-5-1 beyond the factory. Shturm-V with 9M114 or 9M120 missiles, 23 mm gun pods, S-8 rockets; armour under and ahead of the cockpit. **Mi-8AMTSh-VA** Additional external fuel tanks. Arctic version: engine and gearbox oil heating for start at -60 C; inertial navigation without satellite signals.



Mil.ru, CC BY 4.0



Vitaly V. Kuzmin, CC BY-SA 4.0



Drawing: US Department of the Army, FM 44-80 (1996), public domain

MOBILITY Mi-8MTV and later take off and land at up to 4,000 m altitude; the Mi-8MTV-5 can fly with its ramp open to carry long loads

Maximum take-off weight	**13,000 kg** Mi-8MT; Mi-8T 12,000 kg; the Mi-8MTV-5/Mi-17V-5 brochure copy gives 11,000-13,000 kg without a label
Take-off weight, normal	**11,100 kg** Mi-8/Mi-17 (ATP table); Mi-8T and Mi-8MT (Wikipedia)
Empty weight	**7,200 kg** Mi-8MT
Maximum speed	**250 km/h** Mi-8/Mi-17 (ATP), Mi-8MT (Wikipedia); 230-250 km/h for Mi-8MTV-5 (brochure)
Range at speed	**960 km** Mi-8/Mi-17 (one ATP table row for both types)
Ferry range	**1,600 km** export Mi-17V-5 brochure figure, modernised fuel system, claim
Fuselage length	**18.32 m** Mi-8; FM 44-80 prints it as 'length'
Length, rotors turning	**25.31 m** Mi-8T, Mi-8MT and Mi-8MTV-1
Main rotor diameter	**21.3 m**
Height	**5.54 m** tail rotor turning
Cruise speed	**220 km/h** Mi-8MT; 230 km/h for Mi-8MTV-1 and Mi-8AMT
Service ceiling, Mi-8MT	**5,000 m** ATP 'ceiling' for Mi-8/Mi-17; ru.wikipedia 'dynamic ceiling' for the Mi-8MT
Service ceiling, Mi-8MTV-2 and later	**6,000 m** level flight, TV3-117VM engines
Take-off and landing altitude, Mi-8MTV-2 and later	**4,000 m** TV3-117VM engines
Endurance	**INA**

Crew	**3** pilot, pilot-navigator and flight technician
Capacity, troops	**24** equipped troops; Mi-8T and Mi-8MT
Capacity, troops, Mi-8MTV-2	**30**
Capacity, troops, Mi-8MTV-5	**36** with additional folding seats; brochure figure shared with export Mi-17V-5, claim
Payload, internal	**3,629 kg** Mi-8/Mi-17 (ATP table)
Payload, sling	**2,721 kg** external load, Mi-8/Mi-17 (ATP table)
Engines	**2 × TV3-117MT, 1,900 hp (Mi-8MT); 2 × TV3-117VM, 2,000 hp (Mi-8MTV); 2 × TV2-117A, 1,500 hp (Mi-8T)**
Armament, Mi-8MT and Mi-8MTV-2	**Up to six UB-32A-24 (S-5) or four B-8V20 (S-8) rocket pods, bombs, GUV-8700 or UPK-23-250 gun pods; optional PKT nose machine gun**
Armament, Mi-8MTV-5	**Up to four S-8 rocket pods, 23 mm gun mounts or up to 2,000 kg of bombs** brochure, Mi-8MTV-5 and export Mi-17V-5, claim
Armament, Mi-8AMTSh	**Shturm-V system with 9M114 or 9M120 Ataka missiles; UPK-23-250 23 mm gun pods; B8V20A pods with S-8 80 mm rockets; Igla air-to-air missiles**
Self-protection, Mi-8MT and Mi-8MTV-2	**ASO-2V flare launchers under the tail boom or in fairings on the cabin flanks; Lipa IR jammer at the tail-boom root (Mi-8MTV-2)**
Self-protection, Mi-8MTV-5	**Armoured crew cabin, exhaust mixer boxes, self-sealing fuel tanks** claim

SEEN WITH B8V20 rocket pod with S-8 80 mm rockets (up to 4 per helicopter (Mi-8MT, Mi-8MTV-2)); UPK-23-250 gun pod; Shturm-V system (9M114, 9M120 Ataka missiles) (up to 8 missiles (Mi-8AMTSh)); VSM-1 helicopter mining system; Mi-8MTPR-1 jamming helicopter; Mi-28NM attack helicopter pair (1 Mi-8 per pair as crew-rescue cover (one 2023 video))

SOURCES AR77 AR78 ATP AVIAT4 BMPD9 CNN23 FM4480 IISS25 JANESAW MIL77 ORYX5 TASS13 TWZ21 TWZ23 TWZ24 V16P1 V16P3 VMAG WP-EN78 WP-EN117 WP-RU146 not in WEG
Updated 2026-10-17

Mi-8MTPR-1 Ми-8МТПР-1 «Рычаг-АВ»

NATO: Hip **AIR-RW**

Helicopter jammer against air-defence and aircraft radars In service 2015

OPERATED BY **Army Aviation units**, Dedicated EW helicopters inside Army Aviation D 2024 H

helicopter regiment, Attack helicopter regiment also flying Ka-52A, Mi-24P and Mi-8, in the 6th Air Force and Air Defence Army (Moscow MD), 1 regiment R 2024 M

helicopter regiment, a few airframes R 2022 M seen with 440th Independent Helicopter Regiment

army aviation brigade, Aircraft seen in Ukraine in MoD imagery are tied to the 15th and 18th brigades by The War Zone R 2022 M seen with 15th Army Aviation Brigade, 16th Army Aviation Brigade, 18th Army Aviation Brigade

Eastern MD air force and air defence formation, delivered to the formation's air units in late 2020 (Russian MoD via TASS, state claim) R 2020 M

NUMBERS **Holdings** ε16 Mi-8MTPR-1 EW helicopters in the Aerospace Forces (IISS estimate) (2024); **Holdings** About 20 Mi-8MTPR-1 in the Aerospace Forces (The War Zone) (2022-10); **Holdings** First 12 of 18 delivered in the first half of 2016 (TASS, Russian state claim) (2016); **Holdings** All 18 of the 2013 order believed delivered (AIN Online) (2019-06)

INDICATES *Reported in 2022 with army aviation brigades, two of them in the war in Ukraine, and in 2022 and 2024 with a helicopter regiment: an EW helicopter jamming air-defence and aircraft radars to cover strike aircraft and helicopters. About 16 held (IISS estimate).*

RECOGNISE **Rotors** Single main rotor with five blades over the cabin

Fuselage Mi-8MTV-5-1 airframe with no rear ramp and no armour plates round the crew cabin

Antennas Four antenna units on the fuselage sides: forward pair receives, rear pair transmits; further antennas on the fuselage

Tail Added antenna on the tail boom; tail rotor on the left of the tail pylon, as on every Mi-8MT-derived type

Details Close only: a flare launcher in one rear cabin window on each side

CONFUSED WITH **Mi-8 / Mi-17 Hip transports** p. 287 Side on, low pass: four antenna units on the fuselage sides and one on the tail boom. From the rear: no ramp, which the Mi-8MTV-5-1 transport has



Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Endurance 2.4 h with the jammer fitted (KNIRTI figure); orbits above 3,000 m (10,000 ft). Flight figures below are for the earlier Mi-8MT or Mi-8MTV-1 or the Mi-8/Mi-17 in general.

Maximum take-off weight	**13,000 kg** Mi-8MT (Jane's 1992-93) and Mi-8MTV-1, the types before the Mi-8MTV-5-1 airframe; Army Recognition gives 11,000-13,000 kg for the Mi-8MTV-5/Mi-17V-5 transport
Normal take-off weight	**11,100 kg** Mi-8/Mi-17 in general, Mi-8MT and Mi-8MTV-1, earlier types than the Mi-8MTV-5-1 airframe; ru.wikipedia calls it the normal take-off weight
Maximum speed	**250 km/h** Mi-8/Mi-17 in general, Mi-8MT and Mi-8MTV-1, earlier types than the Mi-8MTV-5-1 airframe; Army Recognition gives 230-250 km/h for the Mi-8MTV-5/Mi-17V-5 transport
Range at speed	**495 km** Mi-8MT, an earlier type than the Mi-8MTV-5-1 airframe *also 675 km AR77*
Ferry range	**960 km** Mi-8/Mi-17 in general and Mi-8MT, earlier types than the Mi-8MTV-5-1 airframe *also 1,600 km AR77*
Fuselage length	**18.4 m** Mi-8MT, an earlier type than the Mi-8MTV-5-1 airframe; the family length with rotors turning is 25.31 m
Length, rotors turning	**25.31 m** Mi-8T, Mi-8MT and Mi-8MTV-1, the same figure for every version in the ru.wikipedia table; not stated for the Mi-8MTV-5-1
Main rotor diameter	**21.29 m** Mi-8MT, an earlier type than the Mi-8MTV-5-1 airframe; 21.3 m for every version from the Mi-8T on in the ru.wikipedia table
Height	**5.5 m** Mi-8MT, an earlier type than the Mi-8MTV-5-1 airframe; 5.54 m with the tail rotor turning for every version in the ru.wikipedia table
Cruise speed	**240 km/h** Mi-8MT, an earlier type than the Mi-8MTV-5-1 airframe *also 230 km/h WP-RU146*
Endurance, fully equipped	**2.4 h** Mi-8MTPR-1 with Rychag-AV, loiter time, claim
Service ceiling	**5,000 m** Mi-8/Mi-17 in general and Mi-8MT, earlier types than the Mi-8MTV-5-1 airframe; the Mi-8MTV-1 and later types with TV3-117VM engines, which the Mi-8MTV-5-1 has, are given 6,000 m *also 6,000 m WP-RU146 AR77*
Empty weight	**INA** Mi-8MTPR-1 with Rychag-AV *also 7,100 kg WP-EN116*

Jamming range, air-defence fire-control radars	**150 km (93 mi)** up to, C- and X-band radars, chiefly ground-based SAM fire-control radars; Rychag-AV with L187A jammer; effective radiated power 105 kW per target; KNIRTI figure, claim *also hundreds of kilometres BG ICDS AR79 D246*
Employment altitude	**above 3,000 m (10,000 ft)** practical, Orbit height for best jamming effect; war in Ukraine, 2022, observed
Frequency range, L187A jammer	**5.1-11 GHz** C- and X-band, wavelength 2.7-5.9 cm; KNIRTI figure, claim *also 5,100-10,950 MHz AIF6*
Targets jammed at once, L187A	**8 radars** Within a sector 45 degrees in azimuth by 15 degrees in elevation; KNIRTI figure, claim
Effective radiated power, L187A	**105 kW** Per target, at up to 150 km (93 mi); KNIRTI figure, claim
Mass, Rychag-AV mission equipment	**1,200 kg** Whole Rychag-AV system *also 1,400 kg TWZ23 MIL78*
Crew	**2 pilots and 1 flight technician, plus the system operator** Operator station at the front of the divided cargo hold

SEEN WITH Rychag-AV jamming system (L187A jammer) (1 per helicopter); Mi-8MTV-5-1 (1 (airframe converted))

SOURCES AIF6 AIN2 AR77 AR79 ATP BG CZMOD D246 FM4480 FOI ICDS IISS25 MIL78 ORYX5 SHEP3 TWZ23 WP-EN116 WP-RU146 not in WEG

Updated 2026-10-23

Mi-8PPA Ми-8ППА

NATO: Hip K

jamming helicopter (legacy) legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Mi-26 Halo Ми-26

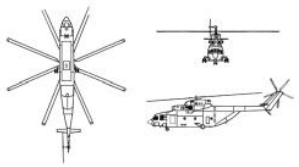
NATO: Halo **AIR-RW**

Heavy transport helicopter: up to 20 t inside or on a sling, or 82 troops In service 1983

OPERATED BY **Unidentified unit**, Airfield in Crimea, drone strike of 27-28 Jun 2025, 1 R 2025-06 L

INDICATES *A Mi-26 points to an army aviation brigade, or to National Guard or Border Guard aviation; one helicopter regiment is reported with it (IISS, 2024). It is the main Russian helicopter for moving equipment, so a sighting suggests heavy lift.*

RECOGNISE **Rotors** Single eight-blade main rotor, 32 m across, on a hump over mid-fuselage; five-blade tail rotor, 7.61 m across
Engines Two turboshaft engines on top of the cabin; round intakes above and behind the cockpit, exhausts at the sides of the engines
Fuselage Long body tapering to nose and rear; stepped-up cockpit; rear clamshell doors with loading ramp; no stub wings
Tail Swept-back fin with tail rotor on the right side; fixed tailplane low on the fin; tail skid retracts for loading
Undercarriage On the ground: fixed tricycle undercarriage with twin wheels on each leg; leg height adjusts hydraulically for loading
CONFUSED WITH **Mi-8 / Mi-17 Hip** p. 287 On the ground, rotors stopped: eight main rotor blades, 32 m across, against five blades, 21.29 m across, on the Mi-8 family



Drawing: US Department of the Army, FM 44-80 (1996), public domain

MOBILITY Range depends on load: 500 km with 7,700 kg cargo; ferry range 1,920 km needs auxiliary tanks. Service ceiling 4,600 m; hover ceiling out of ground effect 1,800 m.

Maximum take-off weight	**56,000 kg** Mi-26T; Mi-26T2V unchanged
Normal take-off weight	**49,600 kg** Mi-26T
Empty weight	**28,200 kg** Mi-26T

Capacity, payload	**20,000 kg** maximum, Inside the cabin or on the external sling; a combined load must not exceed 20 t, claim
Crew	**5** Two pilots, navigator, flight engineer, flight technician; Mi-26 and Mi-26T2V
Capacity, troops	**82** With weapons and equipment; Mi-26T manual figure, also quoted for the export Mi-26T2 (Jordan), claim
Capacity, stretchers	**60** Medical evacuation fit

SOURCES AR75 ATP AVIAST CZMOD DEFEX EDR3 FM4480 FOI IISS25 MIL57 ORYX5 RHPR TECHIN2 VESTMAI WP-EN78 WP-EN115 WP-EN116 WP-RU144 not in WEG Updated 2026-10-17

Naval helicopters

Ka-27 and Ka-29 Ka-27

NATO: Helix AIR-RW

Shipborne anti-submarine, search-and-rescue and assault transport helicopter family In service 1981

OPERATED BY **naval aviation squadron**, Pacific Fleet, one squadron with Ka-27 and Ka-29 R 2024 H
naval aviation regiment, one regiment each in the Northern, Baltic and Black Sea Fleets; the Baltic and Black Sea regiments are mixed (Ka-27/29 with Mi-8 and Mi-24; the Black Sea regiment also Ka-31 and Be-12) R 2026-01 M
naval aviation regiment, Black Sea Fleet mixed regiment; Ka-31R radar picket received January 2020, still listed with the regiment in 2026, 1 Ka-31R (2020) R 2026-01 M
Black Sea Fleet naval aviation, against Ukrainian sea drones, Ka-27 filmed attacking a sea drone, 6 May 2024; Ka-27PS firing a cabin pedestal-mounted PKM at a Magura-V5, Jun 2024; Ka-29 downed near Anapa during a Ukrainian drone attack, 21 Jun 2024 (cause unconfirmed) R 2024-06 M
INDICATES *A Russian Helix indicates naval aviation: a fleet naval aviation regiment or squadron, a ship's flight or Border Guard aviation. In 2024 Black Sea Fleet Ka-27s were filmed attacking Ukrainian sea drones. Ukraine also flies Ka-27 and the Ka-27-derived Ka-32.*
RECOGNISE **Rotors** Two coaxial three-blade rotors 1.4 m apart, no tail rotor; rotor diameter 15.9 m against fuselage length 11.3-12.25 m
Fuselage Nacelle with two turboshafts on top of the fuselage; two-seat side-by-side cockpit with a sliding door each side, cabin behind it
Stores Ka-29: four pylons on outriggers; Ka-27PL: weapons bay under the cabin floor, one optional bomb rack on the starboard fuselage side
CONFUSED WITH **Ka-29 Helix-B** Head-on: the Ka-29 has three flat windscreen panels and four pylons on outriggers; the Ka-27PL and Ka-27PS have a two-piece curved windscreen



US Navy, public domain

MOBILITY Flies from ships with a helicopter deck and from shore airfields; Ka-27PL searches up to 200 km from its ship in up to sea state 5; flotation bags for ditching

Maximum take-off weight, Ka-27PL	**12,000 kg** normal take-off weight 10,600 kg
Maximum take-off weight, Ka-29	**11,500 kg** internal load; 12,600 kg with slung load
Take-off weight, Ka-31R	**12,500 kg** normal take-off weight
Empty weight, Ka-27PL	**6,100 kg**

Detection range, Initsiativa-2KM radar	**25 km** not less than, surface target of 250 m² radar cross-section, helicopter at 100-500 m
Detection range, Initsiativa-2KM radar	**5 km** not less than, surface target of 2 m² radar cross-section, helicopter at 100-500 m
Detection range, VGS-3 dipping sonar	**8 km** Project 613 diesel submarine at 6-8 kt and 100 m depth, sea state 2
Detection range, FH-A radar (Ka-27M)	**250 km** radius, all-round mapping of sea and ground surface; figure given for export FHA01E, claim
Detection range, Oko radar (Ka-31R)	**250 km** maximum surveillance radius, surface vessels; E-801E as described in 1999; Russian media give more than 250 km for the E-801M
Detection range, Oko radar (Ka-31R)	**100-150 km** maximum surveillance radius, fighter-size air target below the helicopter; E-801E as described in 1999

SOURCES AIRWAR AIRWAR29 AIRWAR31 AIRWARPS AR59 AR60 AVIAT AVIAT2 BABEL2 DEF243 IISS25 JANESAW KI9 LENTA7 MIL56 MIL57 MOSTIM ORYX5 PORTST TASS8 THEINS TWZ10 VFS27 VFS29 VIKNA3 WP-EN76 WP-EN77 WP-RU103 WWW1A6 WWW1B5 not in WEG
Updated 2026-10-21

Other

Ansat-U Ансат-У

light trainer helicopter

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

12 Boats and landing craft

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
LANDING SHIPS AND CRAFT						
Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren	ROPUCHA, ALLIGATOR	БДК проектов 775, 1171, 11711 «Тапир», «Иван Грен»	Large landing ships · 1966	–	**SHIP**	294
Project 1176 Akula landing craft	ONDATRA	Проект 1176 «Акула»	Landing craft for one tank, 20 troops or 50 t of cargo onto an unprepared shore · 1970s	**611–926 km** range at 10 and 5 kn, 1 tank, 20–22 troops or 50 t, draught 1.55 m	**SHIP**	295
Project 12322 Zubr	POMORNIK	проект 12322	air-cushion landing craft	–	–	*295*
Project 21820 Dyugon	–	проект 21820	air-cavity landing craft	–	–	*295*
Serna	–	проект 11770 «Серна»	Fast air-cavity landing craft carrying a tank or two APCs onto an unprepared beach · 1994	**185–1,111 km** range at 30 and 12 kn, 1 MBT/2 APC; 92–100 troops, draught 1.52 m	**SHIP**	296
ASSAULT AND PATROL BOATS						
BK-16	–	БК-16	Fast transport and assault boat for 19 troops · 2016	**700–741 km** cruising range, 16–24 troops, draught 0.87 m	**SHIP**	297
FSB Border Service patrol boats (Mangust, Sobol, Tunets)	–	12150, 12200, КС-701 «Мангуст», «Соболь», «Тунец»	Fast patrol boats of the FSB Border Service coast guard · 2001	**759–926 km** range, Mangust, Sobol, 6–10 troops, draught 0.89 m	**SHIP**	297
Grachonok	–	Проект 21980 «Грачонок»	Anti-saboteur guard boat for naval bases and their approaches · 2009	**370 km** range at 16 kn, draught 1.86 m	**SHIP**	298
Project 02800	–	проект 02800	assault landing boat	–	–	*298*
Raptor	–	проект 03160 «Раптор»	Fast armoured patrol and landing boat · 2015	**482–556 km** cruising range, 20 troops, draught 0.9 m	**SHIP**	299
RIVERINE BOATS						
Dnipro small boats	–		Small river and coastal boats · 2014	**150 km** Skanda uncrewed, max, 8 troops (BL-680)	**SHIP**	300
Project 1204 Shmel	–	проект 1204	armoured river gunboat	–	–	*300*

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	Amphibious carrier for cargo and vehicles	7 Engineers	211
PMP heavy folding pontoon bridge park	Truck-carried folding pontoon park for 60-t floating bridges and 40-170 t rafts	7 Engineers	210

Landing ships and craft

Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren БДК проектов 775, 1171, 11711 «Тапир», «Иван Грен»

NATO: Ropucha, Alligator **SHIP**

Large landing ships: beach tanks and troops; used as Black Sea supply ships since 2022 In service 1966

OPERATED BY **Unidentified unit**, Berdyansk, 24 Mar 2022: Tapir Saratov destroyed while unloading; Ropucha Caesar Kunikov and Novocherkassk damaged (Ukrainian General Staff claim), 3 ships R 2022-03 H seen with Saratov, Caesar Kunikov, Novocherkassk

fleet, LST by fleet: Baltic 4, Northern 6, Black Sea 3, Pacific 4, 17 LST in all R 2024 M seen with Baltic Fleet, Northern Fleet, Black Sea Fleet

Unidentified unit, Berdyansk, 21 Mar 2022: Russian state TV report showed Tapir Orsk unloading BTR-82A APCs, 1 ship R 2022-03 M seen with Orsk

fleet, Six ships from the Baltic and Northern Fleets, five Ropucha and Project 11711 Pyotr Morgunov, entered the Black Sea on 8-9 Feb 2022, before the invasion, 6 ships R 2022-02 M seen with Baltic Fleet, Northern Fleet, Pyotr Morgunov

landing ship brigade, Ropucha Georgy Pobedonosets and Olenegorsky Gornyak, Ivan Gren Pyotr Morgunov; entered the Black Sea on 9 Feb 2022, 3 ships R 2022-02 M seen with 121st Landing Ship Brigade, Northern Fleet

naval infantry brigade, Planned first-wave landing force for two detachments of three large landing ships, between Mykolaiv and Odesa; landing dropped in early April 2022, 6 ships in two detachments R 2022-04 M seen with 810th Naval Infantry Brigade, Black Sea Fleet, 336th Naval Infantry Brigade, Baltic Fleet

landing ship brigade, Saratov and Nikolai Filchenkov in the Black Sea Fleet brigade, Nikolay Vilkov in the Pacific Fleet brigade; Orsk in refit, 3 ships R 2014-03 L seen with 197th Landing Ship Brigade, Black Sea Fleet, 100th Landing Ship Brigade, Pacific Fleet

NUMBERS **Holdings** 17 LST in Navy service: 9 Project 775 (2 more non-operational), 3 Project 775M, 3 Project 1171, 2 Project 11711 (IISS) (2024); **Losses** 4 landing ships lost (Oryx, 30 Sep 2026): Tapir Saratov, Ropucha Novocherkassk and Caesar Kunikov destroyed; Ropucha Minsk damaged beyond economical repair (2026-09); **Losses** Reported hits 2023: Olenegorsky Gornyak 4 Aug at Novorossiysk, Minsk 13 Sep at Sevastopol, Novocherkassk destroyed 26 Dec at Feodosia (2023); **Losses** Caesar Kunikov sunk 14 Feb 2024 by naval drones (Ukrainian claim); Yamal and Azov targeted 24 Mar 2024, damage not confirmed (2024)

INDICATES *Seen in the Black Sea in 2022-26, these ships indicate Navy sealift of vehicles and supplies; Russia has used them mainly as cargo ships. A 2022 landing near Odesa by two naval infantry brigades was dropped by April. Ukraine reports repeated hits in port.*

RECOGNISE **Hull** Ropucha 112.5 m long, 15 m beam; Tapir 113.1 m, 15.6 m; Ivan Gren 128 m, 16.5 m, the longest and broadest of the three.

Superstructure Ropucha: extensive stern superstructure. Tapir: superstructure at the stern only, cargo-ship profile. Ivan Gren: helicopter hangar for Ka-27 or Ka-29.

Bow Ropucha: bow ramp, long sliding hatch cover over the bow vehicle deck. Tapir: bow ramp closed by sliding gates. Both: hinged stern port. Ivan Gren: bow and side ramps.

Armament Ropucha I/II: two twin 57 mm mounts. Ropucha III: one 76 mm gun, two AK630. Tapir: twin 57 mm guns. Ivan Gren: three AK630-series guns.

Masts Close only: Tapir foremast stands further aft in modifications III and IV (frame 31) than in I and II (frame 17).

CONFUSED WITH **Tapir and Ropucha** From the shore: Tapir has a cargo-ship profile and a deck crane (one on ships in service). From above: Ropucha has a long sliding hatch cover over the bow.

Ivan Gren and Ropucha III From the shore: Ivan Gren has a helicopter hangar and three AK630 guns; Ropucha III has one 76 mm gun and two AK630.

SEEN WITH Ka-29 Helix B helicopter (1 (Ivan Gren))

VARIANTS **Project 775 Ropucha I/II** Two twin 57 mm gun mounts. Lift of 10 MBT and 190 troops, or 24 APC(T) and 170 troops. **Project 775M Ropucha III** One 76 mm gun and two AK630 in place of the two 57 mm mounts. Same lift as Project 775; MR-352 Pozitiv radar and MR-123/176 Vympel fire control replace MR-302 Rubka and MR-103 Bars. **Project 1171 Tapir mod. III/IV** Grad-M rocket launcher added; foremast further aft (frame 31, against 17); two cargo hatches against four. 440 troops against 313; range 4,800 nmi against 4,400 nmi; endurance 20 days against 15.



George Chernilevsky, CC BY-SA 4.0



OlegErm, CC BY-SA 4.0



PH2 Edward N. Vasquez, US Navy, public domain



Vodnik, CC BY-SA 3.0



Drawing: Walle83, public domain

MOBILITY Sea-going displacement hulls that beach to land. A bow ramp lands vehicles (Ropucha's lets amphibious vehicles swim out in sea state up to 4); a stern port loads from a pier.

Speed	**18 kn** Project 775 Ropucha
Speed	**17 kn** Project 1171 Tapir
Speed	**18 kn** Project 11711 Ivan Gren
Range at speed	**6,100 nmi at 15 kn** at stated speed, Project 775 Ropucha
Range at speed	**4,800 nmi at 16 kn** at stated speed, Project 1171 Tapir, modifications III and IV; 4,400 nmi in I and II
Range at speed	**3,500 nmi at 16 kn** at stated speed, Project 11711 Ivan Gren
Displacement, full load	**4,080 t** Project 775 Ropucha
Displacement, standard	**2,900 t** Project 775 Ropucha
Displacement, full load	**4,360 t** Project 1171 Tapir
Displacement, standard	**3,400 t** Project 1171 Tapir
Displacement, full load	**6,600 t** Project 11711 Ivan Gren, first two ships; figure from an export sheet (Project 11711E), claim
Displacement, standard	**5,080 t** Project 11711 Ivan Gren
Length	**112.5 m** Project 775 Ropucha
Beam	**15 m** Project 775 Ropucha
Draught	**3.7 m** Project 775 Ropucha
Bow ramp and beaching	**Bow ramp and stern port; designed for beach landings; amphibious vehicles can swim out from the ramp in sea state up to 4** Project 775 Ropucha

Capacity, vehicles	**10 MBT or 24 APC(T)** Project 775 Ropucha and Project 775M, alternative loads
Capacity, troops	**190 with 10 MBT; 170 with 24 APC(T)** Project 775 Ropucha and Project 775M
Capacity, vehicles	**20 tanks** Project 1171 Tapir
Capacity, troops	**300** Project 1171 Tapir
Capacity, vehicles	**13 MBT/36 AFV** Project 11711 Ivan Gren, first two ships
Capacity, troops	**300** Project 11711 Ivan Gren, first two ships
Capacity, helicopters	**1 Ka-29 Helix B** Project 11711 Ivan Gren, first two ships
Armament, Ropucha I/II	**2 twin 57 mm guns** Project 775 Ropucha
Armament, Ropucha III	**1 76 mm gun; 2 AK630 close-in guns** Project 775M
Armament, Tapir	**2 twin 57 mm guns; at least 2 twin launchers for Strela-2 (SA-N-5) SAM** Project 1171 Tapir
Armament, Ivan Gren	**1 AK630M-2 and 2 AK630M close-in guns; Igla SAM (1 x 4 launcher)** Project 11711 Ivan Gren
Crew	**87 (8 officers)** Project 775 Ropucha
Crew	**55 (5 officers)** Project 1171 Tapir
Crew	**about 100** Project 11711 Ivan Gren

SOURCES IISS25 JANES2 MAREX NAVYP NLOOK NNEWS3 ORYX1 RUSIPL UKRIN3 WP-EN102 WP-EN103 WP-EN104 WP-RU131 WP-RU132 WP-RU133 WWW111 not in WEG Updated 2026-10-19

Project 1176 Akula landing craft Проект 1176 «Акула»

NATO: Ondatra SHIP

Landing craft for one tank, 20 troops or 50 t of cargo onto an unprepared shore In service 1970s

OPERATED BY **landing ship brigade**, Three craft remained in 2015, used in exercise landings, 3 craft R 2015 L
fleet, D-325 and two Project 21820 craft together landed six BTR-82A with a naval infantry assault subunit, Kaliningrad region, March 2025, 1 craft R 2025-03 L

INDICATES *A sighting indicates a Russian Navy landing craft (8 in service, 2024). Reported with the Baltic Fleet in March 2025, when D-325 and two Dyugon craft landed six BTR-82A with naval infantry. Ukraine's Navy held one (Svatove) before 2022.*

RECOGNISE **Hull form and size** Small conventional-hull craft, 24.5 m long and 5.2 m in beam, with an open cargo hold 12.5 m long and 3.6 m wide.
Superstructure Wheelhouse at the stern, behind the open hold, with a mast on its roof (from photograph)
Bow Bow ramp for vehicles to drive onto an unprepared shore; the cargo hold is open.

CONFUSED WITH **Serna (Project 11770)** p. 296 GUR first called both craft Sernas. Underway: Serna 30 kn, Akula 11.5 kn. Close: Serna typically four 7.62 mm machine guns, Akula none.



Alex omen, CC BY 3.0

MOBILITY Conventional hull: 11.5 kn, 330 nmi at 10 kn, endurance 2 days. Bow ramp lands vehicles on an unprepared shore.

Speed	**11.5 kn** maximum
Range at speed	**330 nmi at 10 kn** cruising range, At 10 kn
Range at speed	**500 nmi at 5 kn** cruising range, At 5 kn

Capacity, vehicles	**1 main battle tank** Alternative to the troop or cargo load
Capacity, troops	**20** Alternative to the tank or cargo load
Capacity, cargo	**50 t** Alternative to the tank or troop load
Cargo hold, length by width	**12.5 m by 3.6 m** Open hold, side height 2.2 m
Crew	**5**
Armament	**none**

SOURCES DEFEX2 GLAVCOM GOGIN IISS25 MIL94 MIL95 MILPER3 ORYX3 RUBRYKA TWZ26 WMC22 WP-EN129 WP-RU163 WWW1RU not in WEG Updated 2026-10-17

Project 12322 Zubr проект 12322

NATO: Pomornik

air-cushion landing craft

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Project 21820 Dyugon проект 21820

air-cavity landing craft

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Serna проект 11770 «Серна»

SHIP

Fast air-cavity landing craft carrying a tank or two APCs onto an unprepared beach In service 1994

OPERATED BY **fleet**, 2 at the February 2022 invasion (Militarnyi count) R 2023-11 M seen with Black Sea Fleet
flotilla R 2020-02 M seen with Caspian Flotilla
landing craft division R 2026-04 M seen with Baltic Fleet landing ship division (дивизион десантных кораблей)

NUMBERS **Holdings** 11 Serna (Project 11770) in Navy service, capacity 2 APC or 100 troops (IISS) (2024); **Losses** 2 photo-confirmed: 1 destroyed, 1 damaged (Oryx) (2026-09); **Losses** Ukraine claims 2: one hit by a TB2 at Snake Island in May 2022, one sunk by sea drones in Crimea on 10 Nov 2023 (state claims) (2023-11)

INDICATES *Indicates Navy lift for two APCs or 92 to 100 troops. Caspian Flotilla naval infantry (2020) and a Baltic Fleet landing ship division (2026) exercised with it; in 2022-23 Black Sea Fleet craft moved troops, BTR-82s and Tor launchers (Ukrainian claims, video).*

RECOGNISE **Hull form and size** Small open-deck landing craft, 25.6 m long and 5.8 m wide; semi-planing aluminium-alloy hull
Superstructure Pilot house over the 13 x 4 m cargo deck, which extends 2 m under it
Bow Articulating bow ramp for driving vehicles onto an unprepared shore
Armament Machine guns (7.62 mm PKMB; 14.5 mm KPVT reported 2025) and Igla MANPADS; a Tor launcher has been carried on deck
Propulsion Ventilated waterjets, no propellers; air cavity under the bottom at speed
Masts and sensors Mast, overall height with mast 9.6 m; Pal-N-3 navigation radar (close only)

CONFUSED WITH **Project 1176 Ondatra** p. 295 Underway: Serna runs semi-planing at up to 30 kn, Ondatra at 11 kn. Moored, length does not settle it: 25.7 m against 24.0 m. GUR mixed up the pair in 2023.
Project 21820 Dyugon p. 295 From the shore: an enlarged Serna design, 45.0 m against 25.7 m long and 8.6 m against 5.66 m wide.



Anton Blinov / Mil.ru, CC BY 4.0

MOBILITY Air-cavity hull: 30 kn up to sea state 2, 27 kn at sea state 3, 8 kn or less at sea state 5 fully laden; beaches on an unprepared shore; one day's endurance.

Speed, maximum	**30 kn** sea state 2, waves up to 0.75 m, claim
Range at speed	**600 nmi** endurance, at 12 kn
Displacement, standard	**61 t** without cargo
Displacement, full	**99.7 t** with cargo, claim
Length	**25.6 m**
Beam	**5.8 m**
Draught	**1.52 m**
Endurance	**1 day** claim
Beaching and bow ramp	**beaches on an unprepared shore over a bow ramp; can refloat itself**

Capacity, vehicles	**2 APC**
Capacity, troops	**100 troops**
Capacity, cargo	**45 t** claim
Cargo deck	**13 x 4 m**
Crew	**5**
Armament	**none fitted**
Navigation radar	**Pal-N-3**

SEEN WITH Tor-M2 (1 seen aboard (May 2022)); BTR-82A (up to 2 per craft (IISS APC capacity))

SOURCES AR107 ARMYINF10 ESPR2 IISS25 ISTOR MILEN NAVYP2 NAVYPD NAVYPO ORYX1 PORTN TASS24 TSN4 TWZ26 TWZ31 W1A2 W1B2 WP-EN168 not in WEG Updated 2026-10-17

Assault and patrol boats

BK-16 БК-16 SHIP

Fast transport and assault boat for 19 troops; coastal and harbour anti-sabotage patrol In service 2016

OPERATED BY **Rosgvardia unit**, 3 (IISS, late 2024); 4 reported Feb 2026 R 2026-02 H
fleet, 5 in the Black Sea Fleet (Feb 2026) R 2026-02 M seen with Black Sea Fleet, Baltic Fleet, Northern Fleet

NUMBERS **Losses** 3 destroyed, visually confirmed, the first by TB2 in May 2022 (Oryx, listed as BK-16E) (2026-09); **Losses** Reported hit: 1 on 7 Aug 2025, 1 in Oct 2025 (HUR); neither counted as a confirmed loss (Militarnyi) (2025-10); **Losses** Ukrainian state claims: 1 hit 12 Feb 2026 near Novoozerne, 2 destroyed early Mar 2026 (one possibly a Raptor), 1 hit 3 Sep 2026 in Sevastopol (2026-09)

INDICATES *A BK-16 points to a Navy fleet, most often the Black Sea Fleet, to Rosgvardia or to MoD special-purpose units (2019-2026). Its maker said in 2024 and 2026 that it is used against sea drones in the Black Sea.*

RECOGNISE **Hull** CB90-type fast assault boat hull, 16.45 m long and 4.0 m wide, draught 0.87 m
Superstructure Armoured wheelhouse and armoured troop compartment; height over waterline 4.33 m
Armament Remote weapon station with a 12.7 mm MG, not fitted to every boat; two 7.62 mm MGs (maker: four) on pintle mounts at the rear deck sides
Propulsion Waterjet propulsion, two diesels

CONFUSED WITH **Raptor (Project 03160)** p. 299 Look-alike CB90-type boats, both about 17 m by 4 m. Close only, not decisive: BK-16 maker's fit has four 7.62 mm MGs, the Raptor two; Militarnyi gives the BK-16 two

SEEN WITH Reconnaissance UAV, deck-launched

VARIANTS **BK-10** Rigid-inflatable boat, 10.48 m against 16.45 m long and 2.8 m against 4.33 m high over waterline.



Georgiy Dolgopskiy, CC BY-SA 4.0

MOBILITY Coastal waters, straits, river mouths and lakes; one-day endurance; runs in to an unprepared shore to land troops; can be carried in a large landing ship's dock

Speed, maximum	**42 kn** BK-16, claim
Speed, economical	**30 kn** BK-16, claim
Range at speed	**400 nmi** cruising range, BK-16, claim
Displacement, full	**19.5 t** BK-16, Kalashnikov catalogue 2017, claim
Length	**16.45 m** BK-16, Kalashnikov catalogue 2017, claim
Beam	**4.0 m** BK-16, Kalashnikov catalogue 2017, claim
Draught	**0.87 m** BK-16, Kalashnikov catalogue 2017, claim
Height over waterline	**4.33 m** BK-16, Kalashnikov catalogue 2017, claim

Radius of action, deck-launched UAV	**25 km** reconnaissance UAV launched from the deck
Crew	**2** claim
Capacity, troops	**19** claim
Armament	**four 7.62 mm MGs plus a combat module, two 12.7 mm MGs or a 40 mm grenade launcher** transport-landing fit, maker's options, claim
Optional load	**up to four sea mines, or Kornet ATGM launchers** Izvestia reference box, 2019
Armour	**wheelhouse and troop compartment armoured, engines protected** claim
Sensors	**thermal imagers for night work** claim

SOURCES AINF AR22 AR23 AR24 IISS25 IZV19 MIL11 MIL12 MIL13 MIL14 MIL15 MT16 ORYX1 ORYX3 R360 RT23 SHEP17 UKRF USM WP-RU37 WWW132 not in WEG Updated 2026-10-17

FSB Border Service patrol boats (Mangust, Sobol, Tunets) 12150, 12200, КС-701 «Мангуст», «Соболь», «Тунец» SHIP

Fast patrol boats of the FSB Border Service coast guard In service 2001

OPERATED BY **Border Guard maritime unit**, 57 Mangust, 21 Sobol across the Border Service R 2024 H
Border Guard maritime unit, Tunets, number INA R 2024 M

INDICATES *Mangust and Sobol are mainly FSB Border Service boats (Navy 2 Mangust; other agencies use Mangust types): a sighting most likely means border-guard tasking. Reported: a Tunets in a 2023 landing; in 2026 a Sobol guarding the Crimean Bridge, one in the Baltic.*

RECOGNISE **Hull and size** Three sizes of patrol craft: Tunets 8.8 m long, Mangust 19.45 m, Sobol 30.3 m; beams 2.5 m, 4.4 m and 5.8 m.
Tunets Small aluminium-hulled boat with 1.2 m side height.
Armament Mangust: one 12.7 mm Uprava-Kord or 14.5 mm MTPU-1 machine-gun mount; remote-controlled, on the bow, in the Navy version. Sobol: one 14.5 mm MTPU mount.

VARIANTS **Project 12150 Navy version** Remote-controlled 12.7 mm (14.5 mm) gun station on the bow; 20.2 m long, 4.6 m beam, against 19.45 m and 4.4 m for the Border Service boat.


Aleksandr Markin, CC BY-SA 2.0


Anton Blinov, Mil.ru, CC BY 4.0

MOBILITY Coastal and littoral craft. Endurance 2 days (Mangust) and 3 days (Sobol); Tunets is an 8.8 m boat drawing 0.37 m.

Speed, Mangust	**50 kn** maximum, Border Service boat
Speed, Sobol	**48 kn** maximum
Speed, Tunets	**85 km/h (about 46 kn)** maximum

Armament, Mangust	**1 remote-controlled 12.7 mm Uprava-Kord gun; 2 Igla MANPADS; 2 30 mm grenade launchers; 1 DP-64 hand anti-diver grenade launcher** Border Service boat
Armament, Sobol	**1 14.5 mm MTPU mount; 2 Igla MANPADS; 1 30 mm grenade launcher**
Crew, Mangust	**6** Border Service boat
Crew, Sobol	**6**

SOURCES DEF242 FOCUS6 IISS25 LBUA2 MCHS MIL42 MIL43 MIL44 ORYX1 ORYX3 PN180 PN209 PN304 RFERL U245 USM2 VIKNA2 WP-EN61 WP-EN62 not in WEG Updated 2026-10-17

Grachonok Проект 21980 «Грачонок» SHIP

Anti-saboteur guard boat for naval bases and their approaches In service 2009

OPERATED BY **Rosgvardia unit**, Naval units of the National Guard, 4 (TASS, Jul 2021; Russian Wikipedia table, May 2025); IISS counts 2+ R 2024 H

fleet, 6 to 9: 6 in the Russian Wikipedia table (May 2025), 9 per Ukrainian outlets (May 2026) R 2026-05 M

anti-sabotage detachment, Northern Fleet detachment for combating underwater sabotage forces and means (Russian MoD, Jan 2025) R 2025-01 M

INDICATES *Indicates guarded waters of a naval base or of a key structure such as the Kerch Bridge: held by all four fleets and the Caspian Flotilla, by a Northern Fleet anti-sabotage detachment and by National Guard naval units (2025). Ukraine reported strikes in 2026.*

RECOGNISE **Hull** Small single-deck craft, 31 m long and 7.4 m in beam, with raked stem and transom stern

Superstructure Continuous main deck; foredeck directly ahead of the wheelhouse, open after deck behind the main superstructure

Armament One 14.5 mm pedestal machine-gun mount and anti-diver grenade launchers around the superstructure: DP-65A remote-controlled, DP-64 hand-held

Stern Crane-manipulator on deck; rigid-hull inflatable boat normally carried at the stern



Mil.ru, CC BY 4.0



Georgiy Dolgopskiy, CC BY-SA 4.0

MOBILITY Harbour and coastal guard boat: 200 nmi at 16 kn, five days' endurance, designed for seaworthiness to sea state 4

Speed, maximum	**23 kn** full speed, claim
Speed, economical	**16 kn**
Range at speed	**200 nmi** range at economical speed, at 16 kn economical speed, claim

Crew	**8** claim
Armament, machine gun	**1 x 14.5 mm MTPU naval pedestal mount (KPVT machine gun)**
Armament, anti-diver grenade launchers	**1 DP-65A remote-controlled and 1 DP-64 hand-held twin-barrel launcher**
Armament, MANPADS	**Igla or Verba, 4 missiles carried** portable launchers, not a fixed mount
Sensor, navigation radar	**MR-231 Pal**
Sensor, diver-detection sonar	**MG-757 Anapa**

SOURCES BABEL BAIRD FOI IISS25 KYIVP3 LENTA5 MIL43 MIL50 MINS NNEWS NNEWS2 UKRINF UPRAVDA USM3 WP-EN68 WP-RU92 WWW17 not in WEG Updated 2026-10-17

Project 02800 проект 02800

assault landing boat

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Raptor проект 03160 «Раптор»

SHIP

Fast armoured patrol and landing boat: patrol, anti-sabotage, landing up to 20 troops In service 2015

OPERATED BY **anti-sabotage detachment**, first 3 boats, Mar 2015 O 2015-03 M
flotilla, 1 Kornet-armed boat shown, Jul 2022 O 2022-07 M
fleet, about 6 (Ukrainian estimate, Mar 2026) R 2026-03 M
Unidentified unit, Mariupol, Mar 2022: hit on 21 Mar (Russian channel: damaged); a Russian expert says used in taking the city R 2022-03 M
Unidentified unit, near Snake Island, May 2022, in the operations to take the island R 2022-05 M
naval special-purpose unit, commando teams being formed in 2017, Project 03160 their planned main transport R 2017 L

INDICATES *A Raptor points to a Navy fleet or anti-sabotage detachment (Caspian Flotilla, 2023) guarding a base or coast, or to a fast landing of up to 20 troops; reported at Mariupol, Berdiansk and Snake Island in 2022, possibly on the Dnipro in 2023.*

RECOGNISE **Hull** Small landing boat 16.9 m long and 4.1 m wide, draught 0.9 m
Superstructure Wheelhouse set toward the bow, behind the bow ramp; troop compartment for 20 behind the wheelhouse
Bow Bow ramp; the passage from the ramp runs through the wheelhouse; troops also leave by top and rear hatches of the troop compartment
Armament One remote weapon module with a 14.5 mm machine gun; two 7.62 mm machine guns on pintle mounts, one each side
Propulsion Two waterjets driven from an engine room in the stern

CONFUSED WITH **BK-16 (Project 02510)** p. 297 Look-alike CB90-type boats, both about 17 m by 4 m. Close only, not decisive: BK-16 maker's fit has four 7.62 mm MGs, the Raptor two; Militarnyi gives the BK-16 two
CB90 (Swedish; used by Ukraine) Same wheelhouse-forward layout. Close: CB90 H has a twin 12.7 mm MG fixed in front of the helmsman and a ring-mount gun aft of the wheelhouse; Raptor a remote module


Andrewrabbott, CC BY-SA 4.0

MOBILITY Coastal waters, straits and river mouths up to 100 nmi from base; 0.9 m draught; any heading up to sea state 5; can be carried by a large landing ship

Speed, maximum	**48 kn** full speed, claim
Speed in waves	**28 kn at 2.5 m wave height; 20 kn at 4.5 m** wave height as given, claim
Range at speed	**300 nmi** cruising, economical speed, about 20 kn, claim
Displacement, full	**23 t** claim

Range, 14.5 mm KPVT (Uprava-Kord)	**2 km** aimed fire range, aimed fire from the stabilised remote module, claim
Detection range, Uprava-Kord electro-optical module	**3 km** maximum, gyro-stabilised electro-optical channel, claim
Range, Kornet ATGM	**5.5 km by day, 3.5 km at night** maximum, anti-tank missile; Kornet-armed boats only, claim
Crew	**2** claim
Capacity, troops	**20**
Armament, remote weapon module	**1 x 14.5 mm KPVT machine gun in Uprava-Kord module** claim
Armament, machine guns	**2 x 7.62 mm Pecheneg on pintle mounts, one each side** claim
Protection	**armoured wheelhouse and troop compartment; 39 mm bullet-resistant glass** claim

SEEN WITH Uprava-Kord remote weapon module (1)

SOURCES AINF25 AINF222 AR97 AR98 BAIRD2 DOCK ESPR2 IISS25 IZV242 LIGA8 MIL11 MIL108 NAVN ORYX1 ORYX3 PROF22 R360 RFERL2 RT23 SHEP6 WP-EN156 WP-RU37 WP-RU199 not in WEG

Updated 2026-10-17

Riverine boats

Dnipro small boats

SHIP

Small river and coastal boats: BL-680 assault boat and improvised civilian craft In service 2014

OPERATED BY **river flotilla**, Dnipro River Flotilla and its river boat brigades (GUR: 91st and 92nd), announced Mar 2024; early 2025: boats taken from local people, plus Raptor, Grachonok and Tunets boats. UK: possibly under the Dnipro Group of Forces R 2025 M **river flotilla**, Flotilla boats used by assault groups training in occupied Zaporizhzhia and Kherson oblasts to cross water, Dec 2024 (Ukrainian Southern Defence Forces spokesman) R 2024-12 L

INDICATES *Boats on the lower Dnipro may belong to the Dnipro River Flotilla (announced 2024), which also uses boats taken from local people, or to assault groups trained to cross water (Ukrainian claims, 2024–25). A BL-680 was in patrol and logistics use in 2025.*

RECOGNISE **Hull form and size** BL-680: rigid inflatable boat (RIB), carries eight troops; the DIU calls it a speedboat.

Hull form and size Improvised boats: small dinghies and makeshift craft (2025 footage), some with sides reinforced (2023 Ukrainian statement).

Armament and mounts Improvised boats: machine guns carried on board (Ukrainian statement on saboteur boats, 2023).

Propulsion signs Improvised boats: outboard motors (Ukrainian statement on saboteur boats, 2023).

MOBILITY Small craft for river and coastal use. The uncrewed Skanda, built on the BL-680, is quoted at up to 150 km at 20 kn or more (DIU).

Range at speed, Skanda uncrewed boat on BL-680 hull	**up to 150 km** up to, at a speed of at least 20 kn; uncrewed Skanda, not the troop-carrying BL-680, claim
Maximum speed, BL-680	**INA**
Length, BL-680	**INA**
Capacity, troops, BL-680	**8** for landings, patrols and logistics, claim
Armament, improvised assault boats	**machine guns** Ukrainian statement on Russian saboteur boats near the Dnipro islands, Mar 2023, claim
Propulsion, improvised assault boats	**outboard motors** Ukrainian statement on Russian saboteur boats near the Dnipro islands, Mar 2023, claim
Crew, BL-680	**INA**
Payload, Skanda uncrewed boat on BL-680 hull	**INA**

SEEN WITH Project 1204 Shmel armoured boat (planned for the flotilla, unconfirmed 2024 report); Project 1206 Kalmar air-cushion landing craft (planned for the flotilla, unconfirmed 2024 report); Project 03160 Raptor patrol boat (reported in the flotilla, early 2025); Project 21980 Grachonok anti-sabotage boat (reported in the flotilla, early 2025)

SOURCES EMP1 EMP2 ESPR7 KI2 MIL36 MIL37 MIL38 U244 UKR300 UKRINBL USM6 WWW16 YAHOOUK YAHTEL not in WEG

Updated 2026-10-17

Project 1204 Shmel проект 1204

armoured river gunboat

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

13 Weapons

Munitions and the portable anti-tank missile systems: rounds, rockets, missiles, bombs and mines. Plain rounds and rockets are grouped by calibre and launcher family; guided rounds and missiles have lines of their own. A launcher's own entry (in Fires, Air defence or Armoured vehicles) gives the basic figures of its weapons, and a vehicle built around a missile system (Kornet-T, Khrizantema-S, Shturm-S) is in Armoured vehicles. Guns and machine guns and their ranges are in Table 3c.

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
ANTI-TANK GUIDED MISSILES						
9A4172 Vikhr	SCALLION		air-launched anti-tank guided missile	**8–10 km** max, 9A4172K Vikhr-1	–	*304*
9K11 Malyutka	SAGGER	9К11	anti-tank guided missile system · legacy	–	–	*304*
9K111 Fagot / 9K111-1 Konkurs	AT-5 SPANDREL	9К111-1 «Конкурс»	Wire-guided SACLOS anti-tank missiles on a common launcher · 1970	**0.07–4 km** Fagot/Konkurs, min–max	**MP+AD**	305
9K112 Kobra	SONGSTER		gun-launched anti-tank missile system · legacy	–	–	*305*
9K116 Kastet	SWINGER	9К116	gun-launched anti-tank missile system	–	–	*306*
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M	AT-11 SNIPER	9К119 «Рефлекс»	Laser-guided ATGM fired from a tank's 125 mm smoothbore gun · 1985	**0.075–5.5 km** Svir/Invar, min–max	**NA**	306
Kornet	AT-14 SPRIGGAN	9К135 «Корнет»	Laser beam-riding heavy ATGM, portable or vehicle-mounted, vs tanks and bunkers · 1998	**0.1–10 km** Kornet, min–max	**MP**	307
Metis	AT-7 SAXHORN	9К115 «Метис»	Man-portable wire-guided · 1978	**0.04–2 km** Metis, min–max	**MP+AD**	308
ARTILLERY ROUNDS AND MORTAR BOMBS						
3OF38 Santimetr	–	3ОФ38	152 mm guided artillery round (course-corrected)	**12 km** guided, max	–	*309*
3OF39 Krasnopol	–	3ОФ39	152 mm guided artillery round (laser-homing)	**18–20 km** guided, max	–	*309*
3OF69 Kitolov-2	–	«Китолов-2»	120 mm guided gun-mortar round (laser-homing)	**9 km** guided, max	–	*309*
3OF75 Santimetr-M	–	3ОФ75	152 mm guided artillery round (course-corrected)	**15 km** guided, max; developer table 1999 (NVO), Yarovan; 18 km ru-Wikipedia as alternative	–	*310*
3RB30	–	3РБ30	152 mm communications jammer artillery round	**22 km** jammer, max	–	*310*
3RB30 152 mm communications jammer round	–	3РБ30	152 mm round that lands a transmitter to jam HF/VHF radio	**13.5–22 km** 3RB30 jammer, max, HF/VHF 1.5–120 MHz	**NA**	310
120 mm gun-mortar rounds (3OF49, 3OF50, 3BK19)	–	3ОФ49, 3ОФ50, 3БК19	120 mm HE-frag, rocket-assisted and HEAT rounds for the 2A51, 2A60 and 2A80 gun-mortars · 1981	**1–12.8 km** 3BK19 HEAT to 3OF50 RA, max	**NA**	311
120 mm mortar bombs (OF-843B and Iranian HE bomb)	–	53-ОФ-843Б	120 mm HE mortar bombs for the 2B11/2S12 mortar and 2S9, 2S23, 2S31, 2S34 gun-mortars	**0.45–7.1 km** OF-843B HE, min to max	**NA**	311
122 mm howitzer rounds	–	3БК13, 3ОФ24, 3ОФ56	122 mm HE-frag and HEAT howitzer rounds for the D-30 and 2S1 · 1970s	**1–15.2 km** HEAT to HE-frag, max	**NA**	311
152 mm gun and howitzer rounds	–	3ОФ45	152 mm HE-frag, base-bleed and cluster rounds for howitzers and guns · 1979	**14.5–30.5 km** cluster to HE-frag, max, full or long-range charge	**NA**	312
203 mm gun rounds (3OF43, 3OF44)	–	3ВОФ34, 3ВОФ35	HE-frag and rocket-assisted rounds, separate loading, for the 2S7 203 mm gun · 1975	**37.5–47.5 km** HE-frag to rocket-assisted, max	**NA**	312
240 mm mortar bombs (3F2 HE, 3O8 cluster)	–	3Ф2, 3О8 «Гагара», «Нерпа»	240 mm rocket-assisted mortar bombs · 1973	**18–19.69 km** 3F2 HE and 3O8 cluster, rocket-assisted, max	**NA**	312
Kitolov-2 and Kitolov-2M laser-guided rounds	–	3ВОФ112 «Китолов-2»	Laser-guided HE-fragmentation rounds · 2002	**9–12 km** Kitolov-2 and -2M, max	**NA**	313
KM-8 Gran	–	КМ-8 «Гранъ»	Laser-guided 120 mm mortar bomb for point targets, fired from 120 mm mortars · 2003	**1.5–9 km** KM-8 Gran guided bomb, min–max	**NA**	313
KM-8 Gran	–	КМ-8	120 mm guided mortar bomb (laser-homing)	**9 km** guided, max	–	*313*
Krasnopol, Krasnopol-M1, Krasnopol-M2	–	3ОФ39 «Краснополь»	Laser-guided 152/155 mm HE-fragmentation artillery round for point targets · 1986	**17–26 km** guided 152/155 mm rounds, max	**NA**	314
Santimetr (3OF38) and Santimetr-M (3OF75)	–	3ОФ38 «Сантиметр»	152 mm laser-guided, pulse-motor corrected HE-frag shell for gun-howitzers · 1985	**8–15 km** 3OF38/3OF75 HE-frag, max	**NA**	314
ROCKETS						
122 mm rockets (Grad, Tornado-G, Prima)	–	9М22	Unguided 122 mm rockets for Grad, Tornado-G, Prima and Grad-P rocket launchers · 1963	**5–40 km** 9M42 illumination to 9M521 HE, max	**NA**	315
220 mm rockets (Uragan)	–	9М27	Unguided 220 mm rockets · 1975	**13–35.8 km** 9M51 thermobaric to 9M27F HE, max	**NA**	315
220 mm thermobaric rockets (TOS-1A, TOS-2)	–	М0.1.01.04	Unguided 220 mm thermobaric rockets for the TOS-1, TOS-1A and TOS-2 launchers · 1988	**2.7–15 km** М0.1.01.04 to TBS-M3, max	**NA**	316
300 mm rockets (Smerch, Tornado-S)	–	9М55	Unguided 300 mm rockets · 1987	**70–90 km** 9M55 series to 9M528, max	**NA**	316
BALLISTIC AND CRUISE MISSILES						
3M14 Kalibr	SAGARIS	Калибр	ship- and submarine-launched land-attack cruise missile	**1,400–2,500 km** land attack, max	–	*317*
Kh-22 Burya	KITCHEN	Х-22 «Буря»	air-launched anti-ship missile	**140–600 km** launch range	–	*317*
Kh-32	–	Х-32	supersonic air-launched cruise missile	**600–1,000 km** launch range	–	*317*
Kh-47M2 Kinzhal	KILLJOY	Х-47М2	air-launched ballistic missile	**460–480 km** after launch, estimate	–	*318*
Kh-55	KENT	Х-55	air-launched cruise missile	**2,500–3,500 km** Kh-55 to Kh-55SM, max	–	*318*
Kh-59 Ovod	KINGBOLT, KAZOO	Х-59 «Овод»	air-launched cruise missile	**40–115 km** Kh-59 to Kh-59M, max	–	*318*
Kh-69	–	Х-69	air-launched cruise missile	**400 km** reported	–	*319*
Kh-101	KODIAK	Х-101	air-launched cruise missile	**2,500–5,500 km** max, by source	–	*319*
Oreshnik	–	Орешник	intermediate-range ballistic missile	**800–850 km** flown, Dnipro 2024	–	*319*

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	RANGE / KEY FIGURE	MOB.	PAGE
GLIDE BOMBS AND AIR-LAUNCHED WEAPONS						
UMPB D-30SN	–		jet-powered guided glide bomb	**80–95 km** max, estimate	–	*320*
UMPK	–	УМПК	glide and guidance kit for unguided bombs	**40–70 km** glide range, by bomb	–	*320*
UMPK glide kits and UMPB D-30SN glide bomb	–	УМПК Унифицированный модуль планирования и коррекции	Glide kit and glide bomb · 2023	**40–100 km** UMPK to UMPB D-30SN, max glide	**NA**	321
Vikhr	AT-16 SCALLION	9A4172 «Вихрь»	Air-launched laser-beam-riding anti-tank missile · 1992	**0.5–10 km** Vikhr, min–max, daytime	**NA**	321
MINES						
MON-50	–	МОН-50	Hand-laid directional fragmentation anti-personnel mine, command- or victim-fired · 1974	**50–85 m** cylinders/balls, casualty zone to fragment flight	**NA**	322
MON-50	–	МОН-50	directional fragmentation anti-personnel mine	–	–	*322*
MON-90	–	МОН-90	Command- or victim-fired directional fragmentation anti-personnel mine, hand-laid · 1981	**80–99 m** lethal fragment flight range	**NA**	322
MON-90	–	МОН-90	directional fragmentation anti-personnel mine	–	–	*323*
MON-100	–		directional fragmentation anti-personnel mine	–	–	*323*
MON-100 directional fragmentation mine	–	МОН-100	Hand-laid directional fragmentation mine against personnel and unarmoured vehicles · 1958	**0.1–0.16 km** fragments, lethal to flight	**NA**	323
MON-200	–		directional fragmentation anti-personnel mine	–	–	*324*
MON-200 directional mine	–	МОН-200	Command-fired directional fragmentation mine against personnel and unarmoured vehicles · 1958	**0.16–0.24 km** fragment beam, effective to max, personnel	**NA**	324
OZM-72 bounding fragmentation mine	–	ОЗМ-72	Bounding anti-personnel fragmentation mine, hand-laid, tripwire or command fired · 1974	**25 m** lethal radius	**NA**	324
OZM-72 Lyagushka	–	ОЗМ-72	bounding fragmentation anti-personnel mine	–	–	*325*
PDM-1	–		anti-landing blast mine (tilt-rod fuze) · legacy	–	–	*325*
PDM-1 anti-landing mine	–	ПДМ-1 противодесантная мина	Bottom-laid tilt-rod anti-landing mine for shallow water · 1956	**1.1–2 m** laying water depth, PDM-1M	**NA**	325
PFM-1 Lepestok	–	ПФМ-1	scatterable anti-personnel blast mine	–	–	*326*
PFM-1 Lepestok scatterable anti-personnel mine	–	ПФМ-1 «Лепесток»	Scatterable anti-personnel blast mine, laid by rocket, minelayer, helicopter or drone · 1980	**0.03–34 km** laid by PKM and UMZ up to 9M27K3 rocket, max	**NA**	326
PMN	–	ПМН	pressure-operated anti-personnel blast mine	–	–	*326*
PMN, PMN-2, PMN-4	–	ПМН	Pressure-operated anti-personnel blast mine, laid by hand or mechanically · 1950s	**50–200 g** explosive charge, PMN-4 to PMN	**NA**	327
POM-2	–	ПОМ-2	scatterable fragmentation anti-personnel mine	–	–	*327*
POM-2 and POM-2R scatterable anti-personnel mines	–	ПОМ-2, ПОМ-2Р «Отёк»	Scatterable tripwire fragmentation anti-personnel mine · 1980s	**13.4–70 km** 122 mm and 300 mm mine rockets, max	**NA**	327
POM-3 Medalyon	–		scatterable bounding anti-personnel mine (seismic fuze)	–	–	*328*
POM-3 Medalyon scatterable anti-personnel mine	–	ПОМ-3 «Медальон»	Scatterable seismic-fuzed bounding anti-personnel mine · 2019	**5–15 km** Zemledeliye delivery	**NA**	328
PTM-1	–	ПТМ-1	Scatterable anti-vehicle blast mine laid from rockets, helicopters, aircraft or trucks	**24 mines** per 9M27K2 rocket	**NA**	328
PTM-1	–	ПТМ-1	scatterable anti-tank blast mine	–	–	*329*
PTM-3	–	ПТМ-3	Scatterable antitank mine, magnetic fuze, self-destructing	**2.5–70 km** mine rockets 122, 220, 300 mm: min to max	**NA**	329
PTM-3	–	ПТМ-3	scatterable shaped-charge anti-tank mine (magnetic fuze)	–	–	*329*
PTM-4	–	ПТМ-4 «Нокаут-2»	Scatterable anti-tank mine, magnetic fuze · 2005	**8–48 h** self-destruct, set time	**NA**	330
PTM-4 Nokaut-2	–	ПТМ-4	scatterable shaped-charge anti-tank mine (magnetic fuze)	–	–	*330*
TM-46	–	ТМ-46	anti-tank blast mine · legacy	–	–	*330*
TM-46 anti-tank mine	–	ТМ-46	Anti-tank blast mine, hand- or machine-laid · 1946	**5.3–5.7 kg** charge, TNT or ammonite A-50	**NA**	331
TM-57	–	ТМ-57	Anti-tank blast mine, pressure or tilt-rod fuze · 1958	**6.5–7 kg** explosive charge (TNT, or MS/TGA fill)	**NA**	331
TM-57	–	ТМ-57	anti-tank blast mine · legacy	–	–	*331*
TM-62	–	ТМ-62	anti-tank blast mine	–	–	*332*
TM-62 anti-tank blast mine family	–	ТМ-62	Anti-tank blast mine family · 1963	**320 mm** diameter, M, P2, P3, T	**NA**	332
TM-83	–	ТМ-83	Side-attack anti-tank mine · 1983	**5–50 m** EFP, distance to target	**NA**	332
TM-83	–	ТМ-83	side-attack anti-tank mine (explosively formed penetrator)	–	–	*333*

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
9P162 Kornet-T	Tracked ATGM launcher vehicle on the BMP-3 chassis	2 Armoured vehicles	115
9K114 Shturm-S	Self-propelled radio-command anti-tank missile launcher on MT-LB, 12 missiles	2 Armoured vehicles	115
Khrizantema-S	Tracked tank destroyer on BMP-3 hull	2 Armoured vehicles	116
Bulsae-4 ATGM launcher vehicle (North Korea)	Non-line-of-sight ATGM launcher on a 6x6 armoured carrier, eight missiles	2 Armoured vehicles	116
Iskander-M	Army-level operational-tactical ballistic and cruise missile system for deep strike	3 Fires	143
9K79-1 Tochka-U	Tactical ballistic missile system, one missile per launcher, 120 km	3 Fires	141
KN-23 and KN-24 (Hwasong-11) (North Korea)	North Korean short-range ballistic missiles fired by Russian forces into Ukraine	3 Fires	144
Fath-360 short-range ballistic missile (Iran)	Iranian short-range ballistic missile on a truck launcher, 120 km claimed range	3 Fires	142
Bastion-P	Mobile coastal anti-ship missile system firing P-800 Oniks	3 Fires	146
Bal	Mobile coastal anti-ship missile system firing Kh-35/Kh-35U	3 Fires	145
Igla / Igla-1 / Igla-S	Shoulder-fired IR-homing SAMs against low-flying aircraft, helicopters and cruise missiles	4 Air defence	165

SYSTEM	WHAT IT IS	CHAPTER	PAGE
Verba	Man-portable infrared-homing SAM against aircraft, helicopters, UAVs and cruise missiles	4 Air defence	165
BM-21 Grad 122 mm MRL	Truck-mounted 40-tube 122 mm area-fire rocket launcher	3 Fires	122
Tornado-G	122 mm 40-tube truck MRL	3 Fires	124
BM-27 Uragan	220 mm 16-tube MRL on ZIL-135LM 8x8 for area fire and remote minelaying at 10-35 km	3 Fires	122
Uragan-1M	Heavy 220/300 mm MRL with swappable rocket pods	3 Fires	125
BM-30 Smerch	Heavy 300 mm 12-tube rocket launcher for deep area fire	3 Fires	123
TOS-1A Solntsepek	Tracked 220 mm thermobaric and incendiary rocket launcher of the RKhBZ troops	3 Fires	125
2S4 Tyulpan	240 mm self-propelled breech-loading heavy mortar for destroying fortified targets	3 Fires	128
2S9 Nona-S	Airborne 120 mm self-propelled gun-mortar	3 Fires	129

Anti-tank guided missiles

9A4172 Vikhr

NATO: Scallion

air-launched anti-tank guided missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

9K11 Malyutka 9K11

NATO: Sagger

anti-tank guided missile system legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

9K111 Fagot / 9K111-1 Konkurs 9K111-1 «Конкурс»

NATO: AT-5 Spandrel **MP+AD**

Wire-guided SACLOS anti-tank missiles on a common launcher: Fagot to 2 km, Konkurs to 4 km In service 1970

OPERATED BY **motor rifle battalion**, antitank platoon (BTR battalions), 4 Fagot teams, 6 in high-readiness battalions (1991) D 1991 H
motor rifle regiment, antitank missile battery, 9 BRDM-2 ATGM vehicles, AT-3 or AT-5 (1991) D 1991 H
motor rifle division, antitank battalion, ATGM battery, 9 BRDM-2 ATGM vehicles, AT-3 or AT-5 (1991) D 1991 H
GRU Spetsnaz and SSO subunits, team equipment (Fagot) D 2024 M
Airborne Forces (VDV), Fagot crews, dismounting from BTR-D O 2024-07 H
motor rifle brigade, 8-18 9P148 per brigade (2009) R 2009 L
NUMBERS **Holdings** 30+ 9P148 with Konkurs in Naval Infantry; Army lists no 9P148 (IISS estimate) (2024)
INDICATES *A tripod launcher points to a motor rifle antitank platoon (1991 pattern), airborne crew or Spetsnaz team. A 9P148 meant a regimental or divisional antitank battery in 1991 and motor rifle brigades in 2009; IISS lists it now only with Naval Infantry.*
RECOGNISE **Launcher** 9P135 folding tripod launcher; periscope sight and tracker unit on left side of launch rail, moving with the tube in elevation.
Vehicle 9P148: BRDM-2 hull without turret; five tubes on a raised mount behind the two front cupolas; sight on right front hatch. Some mix 2 Fagot, 3 Konkurs.
Carriers Single tube on BMP-2 turret roof rear; pintle mount on BMD-2 and on BMP-1P and BMD-1P turret roofs.
Missile Close only: tube, Fagot 1,098 mm long; Konkurs about 1,260 mm, with blow-out front cap and flared rear end.
CONFUSED WITH **9K115 Metis / Metis-M / Metis-M1** p. 308 Tripod, full view: the 9P135 periscope sight is attached to the left side of the tube; the Metis tube sits on top of its sighting unit.
9K135 Kornet p. 307 Tripod, full view: the 9P135 periscope sight is attached to the left side of the tube; Kornet's sight-guidance unit sits in a box under the tube.



9P135 launcher with 9M113 Konkurs tube. Mike1979 Russia, CC BY-SA 3.0



Dmitry Shutov, Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Fagot carried by two men. Konkurs is heavy; carry only short distances from vehicles. 9P148 is amphibious 4x4.

Weight, 9P135 launcher	**22.5 kg**
Weight, Fagot crew loads	**22.5 kg (No. 1 with launcher); 26.85 kg (No. 2 with two missiles)**
Weight, 9M113 in container	**25.2 kg**
Weight, 9M113M in container	**26.5 kg**
Weight, 9P148 combat	**7.0 t**

Range, 9M111 Fagot	**2,000 m** maximum, HEAT, day, optical sight
Minimum range, 9M111 Fagot	**70 m** HEAT
Range, 9M111M Faktoriya	**2,500 m** maximum, HEAT, day
Minimum range, 9M111M Faktoriya	**75 m** HEAT
Range, 9M113 Konkurs	**4,000 m** maximum, HEAT, day, optical sight
Minimum range, 9M113 Konkurs	**75 m** HEAT
Range, 9M113 Konkurs, night	**2,500 m** maximum, HEAT, night, 1PN86-1 Mulat or 1PN65 thermal sight
Range, 9M113M Konkurs-M	**4,000 m** maximum, tandem HEAT, day, claim
Minimum range, 9M113M Konkurs-M	**75 m** tandem HEAT, claim
Penetration, 9M111 Fagot	**400 mm RHA; 200 mm at 60 deg** HEAT
Penetration, 9M111M Faktoriya	**400 mm RHA; 230 mm at 60 deg** HEAT
Penetration, 9M113 Konkurs	**600 mm RHA; 250 mm at 60 deg** HEAT, no ERA
Penetration, 9M113M Konkurs-M	**750-800 mm RHA behind ERA** tandem HEAT, claim

SEEN WITH 9P135 / 9P135M / 9P135M1 portable launcher (1 per team); 9P148 combat vehicle (BRDM-2) (5 ready plus 10 internal Konkurs); BMP-2 (4 missiles on board); BMD-2; BTR-D

SOURCES ATP FM100 IISS25 IZV1 IZV24 JANESRG MISS14 MISS15 MISS16 MISS17 MISS18 MPER2 ORYX1 RG5 RWW WEG58 WEG2015 WP-RU122 WP-RU123 ZVEZ Updated 2026-10-13

9K112 Kobra

NATO: Songster

gun-launched anti-tank missile system legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

9K116 Kastet 9K116

NATO: Swinger

gun-launched anti-tank missile system

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

9K120 Svir / 9K119 Refleks / 9K119M Refleks-M 9K119 «Рефлекс»

NATO: AT-11 Sniper **NA**

Laser-guided ATGM fired from a tank's 125 mm smoothbore gun In service 1985

OPERATED BY **Tank units**, with T-72B/B3, T-80U or T-90 tanks, also in the tank battalions of motor rifle brigades D 2024 M

Units using T-72B3, T-80BVM, T-90M tanks in Ukraine, tank units in Ukraine using T-72B3/B3M, T-80BVM and T-90M R 2024-03 L

INDICATES *Fired from the main gun of T-72B/B3, T-80U/BVM and T-90 series tanks and from the 2A45M Sprut-B gun. A round found points to a unit holding these tanks or guns; reported in use in Ukraine in 2024.*

RECOGNISE **Launcher** No separate launcher; a missile shot looks like a gun round. Fired by 125 mm guns: tanks (2A46 series; 2A82-1M on T-14), 2S25 Sprut-SD, 2A45M Sprut-B.

Platform Svir: T-72B, gunner's night sight 1K13-49; T-72B1 lacks the missile and has TPN-3-49 instead. Refleks, Refleks-M: T-72B3/B3M, T-80U/BVM, T-90/A/M.

Round Close only: separate-loading 125 mm round, missile 9M119 plus ejection device 9Kh949; missile 695 mm long.

CONFUSED WITH **9K112 Kobra (AT-8 Songster)** Close only: the Kobra missile comes in two parts joined at loading; the 9M119 is one piece with a separate ejection device. Kobra fires from T-64B and early T-80B.



9M119F1 HE missile (3UBK14F1). Vitaly V. Kuzmin, CC BY-SA 4.0

MOBILITY Needs a clear line of sight to the target for the whole flight; fired only from compatible 125 mm gun tanks and the Sprut-B gun.

Weight, missile 9M119M	**17.2 kg** 9M119M Invar
Weight, complete round	**24 kg** 3UBK20 round; 28 kg for 3UBK20M
Length, missile	**695 mm** 9M119 missile, claim

Range, 9M119M Invar	**5,000 m** maximum, 9M119M/9M119M1, day, direct optical visibility of target
Range, 9M119M Invar night	**2,600 m** maximum, 9M119M, night
Minimum range, 9M119M Invar	**100 m** 3UBK20 round, ground target
Range, 9M119 Svir	**4,000 m** maximum, 9M119 fired by the 9K120 Svir complex of the T-72B

SOURCES AMAL3 ATP ODETIE RGAZ2 RIA5 RWW VPK24 WEG96 WEG2015 WP-EN174 WP-RU227 WP-RU228 WP-RU229

Updated 2026-10-13

Kornet 9K135 «Корнет»

NATO: AT-14 Spriggan MP

Laser beam-riding heavy ATGM, portable or vehicle-mounted, vs tanks and bunkers In service 1998

OPERATED BY **Anti-tank units of motor rifle brigades**, 9P162 Kornet-T or Khrizantema-S batteries D 2016 M
artillery regiment, anti-tank platoon (MoD claim via RT) O 2024-01 L seen with Guards Kostroma artillery regiment, VDV (Bakhmut/Artemovsk direction)
air assault division, reconnaissance troops, Kornet on buggies (RIA photo caption in RT; formation identified as 7th Gds Air Assault Div (Mountain) via WPVDV7) O 2024 L seen with Novorossiysk air assault mountain formation (Zaporizhzhia direction)
Ground Forces, 9K135, 9K128-1 Kornet-T and 9P163-3 listed R 2024 H
Airborne Forces (VDV), mobile ATGM crews working with UAV spotters (MoD claim via RG, Jun 2022) R 2024 H
Anti-tank units of divisions, Kornet-D being fielded R 2019 M
Spetsnaz brigade, Kornet-D1 on Tigr: small batches delivered, more planned for 2024 (MoD sources via Izvestia); also separate Spetsnaz companies of armies R 2024-01 M
anti-tank battalion, ATGM platoon; separate anti-tank artillery battalion, Dnepr group, Orikhiv direction, Oct 2024 (MoD claim via Izvestia) R 2024-10 L

NUMBERS **Losses** 2 BMP-3-based Kornet-T vehicles destroyed (Oryx, photo-confirmed; listed as 9P163M-1 Kornet-T) (2026-09); **Holdings** About 750 Kornet systems in Russian service (2009 figure, KBP via Russian Wikipedia) (2009)

INDICATES *Kornet-T (BMP-3 hull) points to a motor rifle brigade anti-tank battalion; Kornet-D/D1 (Tigr) to a division anti-tank battalion or Spetsnaz. A tripod crew is non-specific: Army, VDV and Naval Infantry hold it.*

RECOGNISE **Launcher** Tripod launcher 9P163M-1: single missile tube on a cradle on top; sight-guidance unit in a box under the cradle, periscope eyepiece low on the left.
Vehicle mounts 9P162: turretless BMP-3 hull with two launch arms that rise from the hull. 9P163-3 Kornet-D: Tigr-M 4x4 with two 4-round launchers raised through the roof.
Sight Thermal sight (1PN79M Metis-2 export, 1PN80 Kornet-TP Russian) mounted on the right side, gas-cooling cylinder behind it, folding lens cover.
Missile Close only: sealed tube with hinged end covers and a carrying handle; missile 152 mm calibre, 1.2 m long.

CONFUSED WITH **9K111 Fagot / 9K111-1 Konkurs** p. 305 Tripod, full view: the 9P135 periscope sight is attached to the left side of the tube; Kornet's sight-guidance unit sits in a box under the tube.
Metis-M / Metis-M1 p. 308 Tripod, full view: Kornet launcher 1.21 m long when firing, against 0.98 m for Metis-M. Both carry the tube on top of the sighting unit, so layout does not separate them.
9P157-2 Khrizantema-S p. 116 Launcher raised: Khrizantema-S has a radar antenna left of its two containers; Kornet-T a guidance block on each of two arms. Stowed, both are turretless BMP-3s.
9P149 Shturm-S p. 115 Full view: BMP-3 running gear has three return rollers, the MT-LB none. Chassis hidden: Kornet-T raises two launch arms, the 9P149 one missile on its arm.
Gibka-S on Tigr-M p. 157 Launcher raised: Kornet-D has two separate four-round launchers, each with its own sighting module; Gibka-S has one mount with one sighting station.


Homoatrox, CC BY-SA 3.0


Mil.ru, CC BY 4.0

MOBILITY Two-man team; launcher folds into a compact carry position; WEG 2015 rates Kornet-LR as portable for short-distance carry only.

Weight, firing unit with tripod	**63.7 kg** WEG figure; components not stated
Weight, 9P163M-1 launcher alone	**25 kg** launcher as stated by source; thermal sight (11 kg) and missile listed separately, claim *also 26 kg WP-RU124*
Weight, missile in tube	**29 kg** 9M133-1, claim
Time into action	**under 1 min** portable launcher, from travel to firing position, claim
Length, missile in tube	**1,210 mm** WEG 2015 'length, firing'; WEG Kornet-EM page 'length'; neither says in tube. Missile alone 1,200 mm (MISSIL, WPRU)
Reload time	**30 s** portable launcher, claim
Operating altitude	**0 to 4,500 m above sea level** claim

Range, 9M133 HEAT	**5,000 m** maximum, original 9M133 missile
Minimum range, 9M133 HEAT	**100 m** original 9M133 missile
Range, 9M133-1 tandem HEAT	**5,500 m** maximum, day, claim
Minimum range, 9M133-1 tandem HEAT	**100 m** day or night, claim
Range, 9M133-1 tandem HEAT (night)	**3,500 m** maximum, night, with thermal sight, claim *also 4,500 m RT24*
Range, 9M133F-1 thermobaric	**5,500 m** maximum, day
Range, 9M133M-2 tandem HEAT	**8,000 m** maximum, day; Kornet-D/EM launchers, claim
Minimum range, 9M133M-2 tandem HEAT	**150 m** Kornet-D/EM launchers
Range, 9M133FM-2 thermobaric	**8,000 m** maximum, day; Kornet-D/EM launchers, claim
Minimum range, 9M133FM-2 thermobaric	**150 m** Kornet-D/EM launchers
Range, 9M133FM-3 HE	**10,000 m** maximum, day; Kornet-D/D1 launchers; HE blast-frag, also for slow air targets; designation per WPRU, WEG writes 9M133F-3, claim
Range, Kornet HEAT, missile type not stated (observed)	**7,800 m** practical, MoD claims: BMP hit, Artemovsk direction, Jan 2024 (missile not stated); mast hit with a HEAT round, Orikhiv direction, Oct 2024, claim
Detection range, 1PN79M Metis-2 thermal sight	**4,000 m** MBT-type target; recognition 2,500 m; export sight, claim
Penetration, 9M133-1 tandem HEAT	**1,000-1,200 mm RHA behind ERA** Kornet-E, claim *also 1,100 mm WEG2015*
Penetration, 9M133M-2 tandem HEAT	**1,300 mm RHA behind ERA** Kornet-EM/D missile, claim *also 1,100-1,300 mm WP-RU124*
Penetration, concrete	**3-3.5 m** 9M133-1 tandem HEAT, monolithic concrete, claim
Warhead, 9M133F-1 thermobaric	**10 kg TNT equivalent** claim
Warhead weight, 9M133-1	**7 kg** explosive 4.6 kg, claim
Missile speed, 9M133-1	**250 m/s** WEG figure; WEG gives 300 m/s for 9M133M-2
Guidance	**semi-automatic, laser beam riding** operator keeps the sight on target until impact; newer launchers track automatically
Rate of fire	**2-3 rpm** portable launcher
Crew	**2** portable team and 9P162 *also 3 WEG2015*

SEEN WITH 9P163M-1 tripod launcher (1 per crew); 1PN79M Metis-2 or 1PN80 Kornet-TP thermal sight (1 per launcher); BMP-3 chassis (9P162 Kornet-T); Tigr-M (9P163-3 Kornet-D/D1); BMP-2M Berezhok, BMPT, Bumerang-BM/Epokha modules (4 missiles on Epokha); Reconnaissance UAV; Kliver turret (four Kornet launchers, 30 mm 2A72) (12 missiles, 8 in autoloader)

VARIANTS **9P162 Kornet-T** Turretless BMP-3 hull; two retractable launch arms with guidance units on top. Autoloader, 16 missiles carried; two missiles in one beam or at two targets; amphibious; 2 crew. **9P163-3 Kornet-D1** Tigr-M 4x4; two 4-round launchers rise through the roof, each with its own sight. 8 ready, 16 carried; automatic tracking; 9M133M-2 missiles to 8 km, HE to 10 km; remote firing from 50 m. **9M133F-1** None at a distance; same tube as the HEAT round. Thermobaric warhead, 10 kg TNT equivalent, for bunkers and buildings.

SOURCES AR63 ATP CNA DEF244 FM100 IISS25 IZ24 IZ24B JANESRG MISS14 MISS15 MPER2 ORYX1 RG22B RG225 RGAZ RT24 RWW WEG59 WEG2015 WP-RU118 WP-RU124 WP-RU125
Updated 2026-10-13

Metis 9K115 «Метис»

NATO: AT-7 Saxhorn **MP+AD**

Man-portable wire-guided (SACLOS) anti-tank missile, 1-2 km, infantry company/battalion In service 1978

OPERATED BY **motor rifle battalion**, antitank platoon of BTR/MT-LB-based battalions (some documents put the ATGM squads in the companies) D 2016 M

motor rifle battalion, motor rifle company, 3 per company D 1996 L

INDICATES *A Metis team points to dismounted motor rifle or airborne infantry at battalion level or below: RWW places it in the antitank platoon of BTR- and MT-LB-based battalions; IISS lists it with Ground and Airborne Forces but not with Naval Infantry.*

RECOGNISE **Launcher** Folding tripod (9P152 mount) carrying the 9S816 guidance unit, with one missile tube on top; about 0.87 m long and 0.53 m high when firing (Metis).

Complex Crew of two or three with two backpacks: one with launcher and a loaded tube, one with 2 (Metis-M) or 3 (Metis) spare tubes. Can fire from the shoulder.

Missile In flight: three thin trapezoid wings unfold at the tail; a tracer on one wing tip moves in a spiral.

Missile Close only: plain sealed tube; Metis 93 mm calibre, 768-784 mm long; Metis-M and M1 130 mm calibre, 980 mm long.

CONFUSED WITH **9K111 Fagot / 9K111-1 Konkurs (9P135 launcher)** p. 305 Tripod, full view: the 9P135 periscope sight is attached to the left side of the tube; the Metis tube sits on top of its sighting unit.

9K135 Kornet (AT-14 Spriggan) p. 307 Tripod, full view: Kornet launcher 1.21 m long when firing, against 0.98 m for Metis-M. Both carry the tube on top of the sighting unit, so layout does not separate them.

SEEN WITH 1PN86-VI (1PN86BVI) Mulat-115 thermal sight; 9V12M and 9V81M test equipment (Metis-M); 9V569M (Metis-M1); 9V569 test set, 9V871-2 test vehicle, 9F640 trainer (Metis); BMP, BTR or BMD it is fired from or fitted to

VARIANTS **9K115-1 or 9K115-2 Metis-M** Fatter 130 mm, 980 mm tube on the same 9P151 launcher. **9K115-2 Metis-M1** No visible difference stated; 9P151M launcher, same 130 mm tube.



Metis-M1 with 9M131M missile. Mike1979 Russia, CC BY-SA 3.0

MOBILITY Carried by a two-man team in two packs. Fires prone, from a trench, from the shoulder or from vehicles; from buildings needs about 6 m (Metis) or 2 m (Metis-M) clear behind.

Weight, 9P151 launcher	**10.2 kg** Metis and Metis-M
Weight, 9P151M launcher	**9.5 kg** Metis-M1, claim
Weight, pack 1 (launcher and one missile)	**16.5 kg** Metis
Weight, pack 2 (spare missiles)	**19 kg (3 missiles)** Metis
Range, 9M115 HEAT	**1,000 m** maximum, Metis, 9M115 single HEAT
Minimum range, 9M115 HEAT	**40 m** Metis, 9M115 single HEAT
Range, 9M131 tandem HEAT	**1,500 m** maximum, Metis-M, 9M131 tandem HEAT; day, or night with Mulat-115 sight; 9M131F thermobaric also fired
Minimum range, 9M131 tandem HEAT	**80 m** Metis-M, 9M131 tandem HEAT; day, or night with Mulat-115 sight; 9M131F thermobaric also fired
Range, 9M131M tandem HEAT	**2,000 m** maximum, Metis-M1, 9M131M tandem HEAT or 9M131FM thermobaric, day and night, claim
Minimum range, 9M131M tandem HEAT	**80 m** Metis-M1, 9M131M tandem HEAT or 9M131FM thermobaric, day and night, claim
Detection range, 1PN86-VI Mulat-115 thermal sight	**3.2 km** night; target type not stated; identification 1.6 km, claim
Armour penetration, 9M115 HEAT	**460 mm** Metis, 9M115
Average speed, 9M115	**180 m/s**

SOURCES AR73 FM100 IISS25 MISS14 MPER2 RBASE RBASEM RWW WEG66 WEG2015 WP-EN112 WP-EN113 WP-RU142 WWW1A8 WWW1B7 Updated 2026-10-13

Artillery rounds and mortar bombs

3OF38 Santimetr 3ОФ38

152 mm guided artillery round (course-corrected)

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

3OF39 Krasnopol 3ОФ39

152 mm guided artillery round (laser-homing)

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

3OF69 Kitolov-2 «Китолов-2»

120 mm guided gun-mortar round (laser-homing)

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

3OF75 Santimetr-M 30Ф75

152 mm guided artillery round (course-corrected)

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

3RB30 3Р530

152 mm communications jammer artillery round

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

3RB30 152 mm communications jammer round 3Р530

NA

152 mm round that lands a transmitter to jam HF/VHF radio

OPERATED BY **artillery brigade**, 152 mm artillery battalions with 2S19 self-propelled or 2A65 towed howitzers D 2024 L
artillery regiment, 152 mm self-propelled howitzers, 2S19 or 2S3 D 2024 L
self-propelled artillery battalion, battalion of a motor rifle brigade with 18 2S19 or 18 2S3 (152 mm) D 2024 L

INDICATES *Indicates a 152 mm gun or howitzer unit (2S19, 2S3, 2A65 or D-20) able to jam enemy tactical HF/VHF radio, by organisation as of 2024. Makers claim each landed jammer covers 1.5–120 MHz within 700 m for 1 hour.*

RECOGNISE **Round** Separate-loading 152 mm round: projectile 818 mm long, 43.56 kg, with a lacquered steel cartridge case holding the charge loaded behind it.
Projectile Long streamlined ogive on thin steel walls, one copper drive band, hollow boat-tail base unit; the same carrier body as the 3O23 cluster round.
Nose Mechanical time fuze in the nose; the jammer body leaves through the base at the set time.
Charge cases Three cases of different lengths for the reduced, full and long-range charges, lacquered steel, percussion primer in the base.

Range, 3RB30 reduced charge (3VRB36)	**13.5 km** maximum, Reduced charge Zh-546U; same figure from the 2A64 (2S19) and the 2A33 (2S3)
Range, 3RB30 full variable charge (3VRB37)	**18 km** maximum, Full variable charge ZhN-546; same figure from the 2A64 (2S19) and the 2A33 (2S3)
Range, 3RB30 long-range charge (3VRB38)	**22 km** maximum, Long-range charge, long-barrelled 152 mm guns (2S19, 2A65)
Jamming range, HF/VHF radio	**700 m** jamming radius, Radius around the landed jammer body, against tactical HF and VHF radio communications, claim
Calibre	**152 mm** Separate-loading round: projectile and propellant charge case are loaded separately
Projectile mass	**43.56 kg** Complete projectile; same mass as the 3OF45 HE projectile
Projectile length	**818 mm** Projectile only
Payload	**One jammer transmitter body, 8.2 kg** Cargo projectile; the body is ejected through the base at a preset time on the nose time fuze
Guidance	**None (unguided)** Conventional drive-band cargo projectile with time fuze

SEEN WITH 2S19 Msta-S 152 mm self-propelled gun; 2A65 Msta-B 152 mm towed gun; 2S3 Akatsiya 152 mm self-propelled howitzer
VARIANTS **3VRB36** Same 3RB30 projectile; reduced charge Zh-546U in the case.

SOURCES AG4 ATP CNA GRAU GS5 IISS25 JAH LJRSN WP-RU12 WP-RU23 WP-RU24 not in WEG

Updated 2026-10-21

120 mm gun-mortar rounds (3OF49, 3OF50, 3BK19) 3ОФ49, 3ОФ50, 3БК19 NA

120 mm HE-frag, rocket-assisted and HEAT rounds for the 2A51, 2A60 and 2A80 gun-mortars In service 1981

OPERATED BY **airborne division**, artillery regiment, self-propelled artillery battalion with 2S9 D 2024 M

INDICATES *These rounds point to a 120 mm gun-mortar nearby: 2S9 (airborne forces, naval infantry, border guards), 2S23 or 2B16 (army, naval infantry). The 2S9 was reported with an airborne regiment in 2026 (Russian MoD claim). Ukraine also fields the 2S9 and 2S23.*

RECOGNISE **Round** 120 mm rifled-gun shell; the propelling charge is stowed apart, two to a container, and fixed to the shell before loading; 3VOF54 is the 3OF49 shell with its charge.

3OF49 HE-frag Projectile 545 mm long, 620 mm with the 3V35 fuze, unfired length 828 mm; 19.8 kg, 4.9 kg explosive fill.

3OF50 rocket-assisted Projectile 550 mm long (545 mm for 3OF49), 625 mm with the 3V35 fuze; same 19.8 kg, but 3.25 kg explosive against 4.9 kg.

CONFUSED WITH **120 mm mortar bombs 53-OF-843B and 3OF36 (fired by the same guns)** p. 311 Close up: bomb is 674 mm (OF-843B) or 733.5 mm (OF36) with fuze against 620 mm for the 3OF49 shell; bombs are fin-stabilised, the shell has a pre-scored band.



Smell U Later, CC BY-SA 3.0

MOBILITY Not applicable: ammunition.

Range, HE-frag 3OF49	**8.8 km** maximum, round 3VOF54, indirect fire from the 2A51, 2A60 or 2A80 gun-mortar
Range, rocket-assisted HE-frag 3OF50	**12.8 km** maximum, round 3VOF55, indirect fire from the 2A51 or 2A60 gun-mortar; the longer 2A80 (2S31, 2S34) is printed at 13 km in those entries
Range, HEAT 3BK19	**1.0 km** maximum effective, round 3VBK14, direct fire from the 2A51, 2A60 or 2A80 gun-mortar (not listed for the 2S34); 500 m is the practical maximum against vehicles without modern fire control

SOURCES ACADEM ATP BTWB FAS4 FENIX3 GRAU IISS25 IZ7 ORYX1 RWW TO2S9 VPK1 WEG9 WEG2015 WP-RU8 WP-RU11 WP-RU13 WP-RU21 WP-RU204 WP-RU205 ZR2 not in WEG
Updated 2026-10-21

120 mm mortar bombs (OF-843B and Iranian HE bomb) 53-ОФ-843Б NA

120 mm HE mortar bombs for the 2B11/2S12 mortar and 2S9, 2S23, 2S31, 2S34 gun-mortars

OPERATED BY **motor rifle battalion**, mortar battery, 2B11 mortars on 2S12 Sani, 8 per battery; batteries may have 6, 8 or 9 mortars D 2024 M
motor rifle battalion, mortar battery with 2S9 Nona-S in place of the 2S12 Sani, in some battalions D 2016 M

INDICATES *OF-843B bombs go with 2B11/2S12 mortars, held in a motor rifle battalion's mortar battery, and with Nona, Vena and Khosta gun-mortars. Iranian 120 mm bombs were reported with Russian forces in 2024 (Ukrainian claim); Ukraine also fires Iranian 120 mm bombs.*

RECOGNISE **Round** Cast-iron finned 120 mm bomb, nose fuze, tail boom behind; complete round 16 kg. Bulgarian copy VOF-843B is 655 mm long and 16.5 kg.

Body Fuze-well adapter at the nose and five gas-check grooves round the widest part; light or dark grey with black markings.

Tail Tail boom with 18 flash holes and 10 fins. The older OF-843 and OF-843A have 12 fins and 6 gas-check grooves.

CONFUSED WITH **D-5 120 mm white phosphorus smoke bomb** Close only: D-5 has a black band and markings naming round and filler; if markings are unreadable, its nose fuze adapter has 3 spanner holes.



Smell U Later, CC BY-SA 3.0

Range, OF-843B 120 mm HE-frag	**7.1 km** maximum, Soviet-pattern bomb fired from the 2S9, 2B16 and 2S23 gun-mortars; the same 7.1 km is given for the bomb from the 2S31
Minimum range, OF-843B 120 mm HE-frag	**0.45 km** fired from the 2B16, 2S9-1, 2S9-1M and 2S12
Calibre	**120 mm** OF-843B and Iranian HE bomb alike
Weight, OF-843B 120 mm HE-frag	**16 kg** complete round, Soviet-pattern bomb
Warhead, OF-843B 120 mm HE-frag	**HE-fragmentation, cast-iron body, 1.4 kg explosive filler** filler 1.4-1.6 kg depending on maker and fill (TD-50 TNT/DNN or similar)

SOURCES ACADEM AR101 ARCUS ATP BSVT BTWIR BTWOF IISS25 MIL112 RWW WEG9 WEG2015 WP-RU11 WP-RU13 WP-RU21 ZR2 not in WEG
Updated 2026-10-21

122 mm howitzer rounds 3БК13, 3ОФ24, 3ОФ56 NA

122 mm HE-frag and HEAT howitzer rounds for the D-30 and 2S1 In service 1970s

OPERATED BY **self-propelled artillery battalion**, howitzer batteries; 2S1 is one of the guns shown in the six-gun battery, 6 2S1 per battery D 2016 M
airborne division, artillery regiment: one battalion of 12 D-30A in 2 batteries (Soviet organisation), 12 per battalion D 1991 M

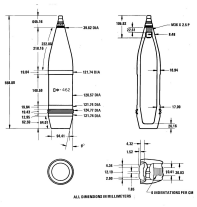
INDICATES *These rounds point to D-30 or 2S1 howitzers: Soviet-era regimental guns now held by airborne, naval infantry and some Army units (IISS 2024). In 2023 D-30 crews were reported with the 1st Guards Tank Army. Ukraine also fields both guns.*

RECOGNISE **Round** 3OF56: 122 mm nose-fuzed, boat-tailed steel shell, 501 mm long, 21.8 kg, copper driving band (iron-ceramic on 3OF56-1)

Complete round Separate loading: projectile and metal cartridge case with charge (case 4G5 or 4G24), loaded one after the other; hand-rammed on the D-30

HEAT 3BK13 is a fin-stabilised, non-rotating HEAT shell, 18.2 kg against 21.76 kg for 3OF24 and 3OF56, fuze V-15

CONFUSED WITH **53-OF-462 HE-frag** Paint in 2004 US guides: OF-462 dark grey, OF-56-1 light grey, both with black markings; not decisive for current stock, read the marked designation



Drawing: J. H. Morgan and J. Pittman, NGIC Projectile and Warhead Identification Guide-Foreign (1997), public domain

MOBILITY Ammunition, no mobility. Projectile and cased charge are loaded separately; on the D-30 the shell is hand-rammed.

Range, 3OF24 HE-frag	**15.2 km** maximum, HE-fragmentation shell, full charge, from D-30 or 2S1
Range, 3OF56 HE-frag	**15.2 km** maximum, HE-fragmentation shell, full charge, from D-30 or 2S1
Range, 3BK13 HEAT	**1 km** maximum, HEAT shell, from D-30 or 2S1
Calibre	**122 mm** All three members
Fired from	**D-30/D-30A (2A18/2A18M) towed howitzer, entry d30; 2S1 Gvozdika (2A31) self-propelled howitzer, entry 2s1** Same ballistics and ammunition in both guns

SOURCES BPICK1 BPICK22 BPICK32 CNA FENIX4 IISS25 IZRU2 IZV4 NEWSRU RAMB RG2 RWW SOVAMMO SPUT VM2 WP-EN52 WP-RU6 WP-RU73 WP-RU206 not in WEG Updated 2026-10-21

152 mm gun and howitzer rounds 30Ф45

NA

152 mm HE-frag, base-bleed and cluster rounds for howitzers and guns In service 1979

OPERATED BY **artillery brigade**, Howitzer battalions: 2S19 self-propelled or towed 2A65 D 2019 H

INDICATES *Rounds of this family indicate a 152 mm howitzer or gun unit (2S19, 2S3, 2S5, 2A65, 2A36, D-20) on either side: Ukraine holds the same guns, 2024. 3O13 cluster rounds are listed as used in Ukraine, 2022 to 2025, side not attributed.*

RECOGNISE **Round** Separate case loading: the 152 mm projectile and its propelling charge in a case are separate items; HE-frag and 3O23 projectiles 42.8 to 46 kg

Two-part body 3OF25 and 3OF29: two parts, a short fuze adapter-booster in the nose and the main body, boat-tailed; 3OF29 is 46 kg against 43.56 kg for 3OF25

Three-part body 3OF45, 3OF59, 3OF64: three parts, nose adapter, body and hollow-base assembly (3OF45 body with a single driving band); 3OF45 and 3OF64 43.56 kg, 3OF59 43.8 kg

CONFUSED WITH **OF-540 HE-frag (older 152 mm round)** Round in hand: stencil OF-540; same 43.56 kg as 3OF25 and fired by the same 2S3 and D-20, so mass does not separate them; 2004 US guides: grey, black stencils



Mil.ru, CC BY 4.0

Range, 3OF25 HE-frag	**17 km** maximum, Round 3VOF32, full charge, from 2A64/2A65
Range, 3OF25 HE-frag, reduced charge	**13.4 km** maximum, Round 3VOF33
Range, 3OF29 HE-frag	**28.5 km** maximum, Round 3VOF39, full charge, from 2A36/2A37
Range, 3OF29 HE-frag, reduced charge	**21.5 km** maximum, Round 3VOF40
Range, 3OF59 HE-frag	**30.5 km** maximum, Round 3VOF86, full charge, from 2A36/2A37
Range, 3OF59 HE-frag, reduced charge	**23 km** maximum, Round 3VOF87

SOURCES ATP BPICK4 CNA FNX13 FNX23 FNX25 FNX29 FNX45 FNX59 FNX61 FNX64 GS5 IISS25 IZ233 MIL113 MIL114 MONITOR2 REDSTAR RGPAR RWW WP-RU2 WP-RU3 WP-RU12 WP-RU16 WP-RU23 WP-RU207 not in WEG

Updated 2026-10-21

203 mm gun rounds (3OF43, 3OF44) 3ВОФ34, 3ВОФ35

NA

HE-frag and rocket-assisted rounds, separate loading, for the 2S7 203 mm gun In service 1975

OPERATED BY **high-power artillery brigade**, 2S7/2S7M gun battalions, 24 guns per brigade D 2024-02 H

artillery brigade, heavy artillery battery with 2S7 Pion/Malka, reintroduced after Syria R 2019 M

Ukrainian artillery (same 2S7 guns), 2S7 Pion; fired by the 43rd Artillery Brigade in 2022 R 2024 M

high-power artillery brigade, 2S7/2S7M battalions; 17th formed 2023 in 3rd Army Corps R 2023 L

INDICATES *These rounds mean a 2S7 Pion or 2S7M Malka gun, held by high-power artillery brigades (24 guns each in US Army doctrine, 2024). Russian press reported new brigades of this type forming in 2023. Ukraine's 43rd Artillery Brigade also fired the 2S7 in 2022.*

RECOGNISE **Round** Separate loading: 203 mm projectile and a bagged propellant charge handled apart, not a fixed cartridge

Projectile Spin-stabilised steel shell, nose fuze, truncated ogival nose; 3OF44 is the rocket-assisted shell

Members 3OF43: 110 kg HE-frag shell, 17.8 kg fill, fired as rounds 3VOF34 and 3VOF42. 3OF44: 102 kg rocket-assisted shell, 13.32 kg fill, fired as round 3VOF35

Charge Full charge 4-z-2 (43.2 kg) with 3VOF34 and 3VOF35; reduced charge 4-z-3 (25 kg) with 3VOF42

Range, HE-frag 3OF43	**37.5 km** maximum, 110 kg HE-frag shell, fired from 2S7/2S7M
Range, HE-frag 3OF43 reduced charge	**25.4 km** maximum, Round 3VOF42, charge 4-z-3
Range, HE rocket-assisted 3OF44	**47.5 km** maximum, Round 3VOF35, full charge
Minimum range, 2A44 gun	**8.4 km** Lower limit of the 2A44 gun's firing range
Calibre	**203 mm** Both members; gun 2A44
Projectile mass, 3OF43 HE-frag	**110 kg** Fired as 3VOF34 (full charge) or 3VOF42 (reduced charge)
Projectile mass, 3OF44 HE rocket-assisted	**102 kg** Fired as 3VOF35
Explosive fill, 3OF43	**17.8 kg** HE-frag
Explosive fill, 3OF44	**13.32 kg** Rocket-assisted
Propellant charge, full / reduced	**43.2 kg (4-z-2) / 25 kg (4-z-3)** Full charge in 3VOF34 and 3VOF35; reduced charge in 3VOF42
Muzzle velocity, 3OF43	**960 m/s** Full charge 4-z-2
Rounds carried on the gun	**4 (2S7) / 8 (2S7M)** Main load of 40 rounds travels in an attached transport vehicle

SEEN WITH 2S7 Pion / 2S7M Malka (entry 2s7) (carries 4 rounds (2S7) or 8 (2S7M)); Attached transport vehicle (40 rounds (main load))

VARIANTS **3VOF34 with 3OF43** 110 kg HE-frag shell with full charge 4-z-2 (43.2 kg). **3VOF42 with 3OF43** Same 110 kg shell with reduced charge 4-z-3 (25 kg). **3VOF35 with 3OF44** 102 kg rocket-assisted shell, 13.32 kg fill, full charge 4-z-2.

SOURCES ACONF2 ATP CNA DEF24 FENIX32 FENIX42 IISS25 IZ232 MIL115 UNIAN7 WP-EN18 WP-RU20 not in WEG

Updated 2026-10-21

240 mm mortar bombs (3F2 HE, 3O8 cluster) 3Ф2, 3О8 «Гарара», «Нерпа»

NA

240 mm rocket-assisted mortar bombs: 3F2 HE-fragmentation and 3O8 cluster In service 1973

OPERATED BY **artillery brigade**, One 2S4 battalion of 12 launchers per army-level brigade; Soviet battalions had three batteries of four, 12 2S4 launchers per brigade; bombs INA D 2019 M

high-power artillery brigade, 2S4 groups of six and four beside eight 2S7 D 2024 M

INDICATES *240 mm bombs point to a 2S4 Tyulpan, held in 2019 by army-level artillery brigades and in 2026 by high-power artillery brigades firing in Ukraine; the towed M-240 also fires them. 3O8 cluster bombs were reported used in Ukraine in 2022-2025.*

RECOGNISE **Round** Finned 240 mm mortar bomb with rocket motor; 3F2 is 2,348 mm long against 1,536 mm for the plain 53-F-864 bomb; 3F2 packed with its charge in a lattice cylinder 3Ya38

Warhead 3F2 Ogival nose on a cylindrical steel body; contact fuze M-17 in a bushing in the nose; one HE-fragmentation warhead 3F3

Warhead 3O8 Cylindrical steel cluster body 3O9 with a ballistic cap on the head; bomb 230 kg

Motor and fins Rocket motor 3M15 behind the warhead, ending in a nozzle block with six folding stabiliser blades wider than the body

CONFUSED WITH **53-F-864 HE bomb** Full view: shorter bomb, 1,536 mm long against 2,348 mm for the 3F2, which adds a rocket motor section behind the warhead

Range, 3F2 rocket-assisted HE bomb	**18 km** maximum, rocket-assisted HE-frag bomb, 228 kg, rocket motor fired
Minimum range, 3F2 rocket-assisted HE bomb	**7.5 km** 3F2 HE-frag bomb, rocket motor fired
Range, 3O8 rocket-assisted cluster bomb	**19.3 km** maximum, 3O8 cluster bomb, rocket motor fired, no brake rings
Minimum range, 3O8 rocket-assisted cluster bomb	**7.1 km** 3O8 cluster bomb, rocket motor fired
Range, 3O8 with brake rings fitted	**15 km** maximum, 3O8 cluster bomb with brake device 3Ch20 fitted
Rate of fire, 2S4	**1 round per 62 s** maximum, barrel at 60 degrees elevation, mid position
Calibre	**240 mm**
Bomb mass, 3F2	**228.1 kg** 3F2 rocket-assisted HE-frag bomb with fuze; complete round 239 kg
Bomb mass, 3O8	**230 kg** 3O8 rocket-assisted cluster bomb; warhead 112 kg
Warhead, 3F2	**HE-fragmentation 3F3, 46.5 kg TGAF-5M explosive** fuze M-17, contact with instant or delay setting

SEEN WITH 2S4 Tyulpan (12 per self-propelled mortar battalion (three batteries of four)); M-240 towed mortar

VARIANTS **3F2** One HE-fragmentation warhead 3F3 with fuze bushing in the nose; bomb 2,348 mm long, 228.1 kg with fuze.

SOURCES AMMO1 AMMO2 ATP CNA IISS25 IZ232 MK26 MONITOR2 PRIME26 RGRU14 STUDF2 WEG5 WP-EN16 WP-RU208 not in WEG

Updated 2026-10-21

Kitolov-2 and Kitolov-2M laser-guided rounds 3ВОФ112 «Китолов-2» NA

Laser-guided HE-fragmentation rounds: 120 mm Kitolov-2, 122 mm Kitolov-2M In service 2002

OPERATED BY **artillery regiment**, Battery of modernised 2S9 Nona-S, airborne artillery regiments; first Kitolov-2 firing, March 2013, one battery R 2013-03 M

INDICATES *Kitolov rounds may indicate a 120 mm 2S9 or 2S23 or a 122 mm 2S1 or D-30 battery working with a laser designator on the ground or on a drone. Airborne artillery regiments fired Kitolov-2 in 2013; filmed use in Ukraine was still rare in 2025.*

RECOGNISE **Round** Long projectile, 1,190 mm and 28 kg (Kitolov-2M), loaded separately from its cased charge: cylindrical body with a conical nose cap (from photograph of an exhibit round)

Control surfaces Small hinged flat surfaces on the forward body, folded on the exhibit round (from photograph); fins and rudders open in flight

Rear Black rear section with a perforated ring at the base, behind an olive-green body; white stencilled figures on the black band (from photograph)

CONFUSED WITH **Krasnopol (152 and 155 mm)** p. 314 Close view: calibre 152 or 155 mm, not 120 or 122 mm. Length alone does not separate them: Krasnopol-M2 is 1,200 mm and 54 kg against 1,190 mm and 28 kg for Kitolov-2M



Mike1979 Russia, CC BY-SA 3.0

MOBILITY Not a vehicle. Guided round: needs a laser designator on the target; battlefield smoke and low cloud limit its use, and it is not fired at the gun's maximum elevation.

Range, Kitolov-2 (120 mm)	**9 km** maximum, fired from the 2A51, 2A60 and 2A80 guns (2S9, 2B16, 2S23, 2S31, 2S34) at a target lit by a laser designator
Minimum range, Kitolov-2 (120 mm)	**1.5 km** effective, fired from the 2S9 Nona-S at a target lit by a laser designator, claim
Range, Kitolov-2M (122 mm)	**12 km** maximum, fired from the 2S1 Gvozdika or D-30 at a target lit by a laser designator, claim
Minimum range, Kitolov-2M (122 mm)	**2 km** effective, lower end of a 2 to 12 km effective band, target lit by a laser designator, claim

SOURCES AG7 GRAU MIL62 RGRU8 RGRU11 RIA2 RT3 U247 U248 VPK2 VZ WEG3 WEG2015 WMC11 WP-EN93 WP-EN94 WP-RU6 WP-RU11 WP-RU13 WP-RU22 WP-RU119 WP-RU120 not in WEG
Updated 2026-10-21

KM-8 Gran KM-8 «Гранъ» NA

Laser-guided 120 mm mortar bomb for point targets, fired from 120 mm mortars In service 2003

OPERATED BY **motor rifle battalion**, mortar battery; 2S12 Sani towed 120 mm mortar (entry 2s12); some battalions have 2S9 instead, 8 2S12 per battery; 6, 8 or 9 systems per mortar battery in later doctrine D 2024 L

Airborne Forces (VDV), 2S9 Nona-S self-propelled 120 mm gun-mortar (entry 2s9); 2B23 Nona-M1 towed 120 mm mortar R 2025 L

Naval Infantry, 2S9 Nona-S and 2S23 Nona-SVK (entries 2s9, 2s23) and towed 2B16 Nona-K 120 mm R 2025 L

Wagner PMC, Gran reported fired by Wagner PMC against Ukrainian supply routes near Bakhmut, 2023; launcher not named R 2023 L

INDICATES *Russian forces were reported firing Gran in Ukraine from 2022, on point targets lit by a laser designator, for example one on an Orlan-family drone. The round or its kit indicates a 120 mm mortar or gun-mortar subunit with a laser designator (2022).*

RECOGNISE **Round** 120 mm mortar bomb, length 1,200 mm, complete mass 27 kg; HE-fragmentation warhead of 11.2 kg

Seeker Laser seeker head of type 93430; the bomb homes on a spot lit by a separate laser designator

Issue Round made up of the guided bomb and a propelling charge; the kit adds a laser target designator-rangefinder



Smell U Later, CC BY-SA 3.0

MOBILITY Munition; no mobility. Fired from towed or self-propelled 120 mm mortars.

Range, KM-8 Gran	**9 km** maximum, guided bomb from a 120 mm mortar or gun-mortar (the same figure from the 2A51 and 2A80 guns), target lit by laser, claim
Minimum range, KM-8 Gran	**1.5 km** guided bomb from a 120 mm mortar, target lit by laser, claim
Calibre	**120 mm** smoothbore and rifled mortars
Mass, KM-8 Gran bomb	**27 kg** complete guided bomb; KBP and export-catalogue figure, claim
Length, KM-8 Gran bomb	**1,200 mm** KBP and export-catalogue figure, claim
Warhead, KM-8 Gran	**HE-fragmentation, 11.2 kg, of which 5.3 kg explosive** KBP and export-catalogue figure, claim
Guidance, KM-8 Gran	**Semi-active laser homing, seeker 93430** target lit by a laser designator-rangefinder or a UAV designator

SEEN WITH Malakhit fire-control set

SOURCES AG6 AMAL2 ATP IISS25 LJWV RAMBLER RGRU8 RWW TADV2 TASS5 VS WP-EN10 WP-EN70 WP-EN71 WP-RU8 WP-RU11 WP-RU94 not in WEG Updated 2026-10-21

KM-8 Gran KM-8

120 mm guided mortar bomb (laser-homing)

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Krasnopol, Krasnopol-M1, Krasnopol-M2 3ОФ39 «Краснополь» NA

Laser-guided 152/155 mm HE-fragmentation artillery round for point targets In service 1986

OPERATED BY **motor rifle brigade**, two self-propelled artillery battalions, each 18 2S19 Msta-S (msta-s) or 2S3 Akatsiya (2s3) 152 mm howitzers; the 2S19 is named as firing Krasnopol D 2024 M
self-propelled artillery battalion, Ukrainian user: captured rounds fired from 2S3 Akatsiya with Obolon-A fire control O 2023 M

INDICATES *Krasnopol fragments indicate a precision fire mission by 152 mm guns with ground or UAV laser designation, by Russian gunners in most reports 2022 to 2026; Ukraine also fired captured rounds (2023).*

RECOGNISE **Round** Fin-stabilised 152 mm guided shell, 1,305 mm long, 3OF39 in two parts screwed together before loading; Krasnopol-M 3OF39M one piece, 960 mm
Nose Laser seeker behind a protective cap thrown off in flight; time fuze mounted in the nose
Body Olive-green body with black stencilled markings; thin copper driving band behind the fins, which open once fired; band scored after firing

CONFUSED WITH **Kvitnyk (Ukrainian guided shell)** Fragments or fins: Krasnopol has triangular factory marks on the main fins, which Kvitnyk lacks; otherwise nearly indistinguishable



Mike1979 Russia, CC BY-SA 3.0

MOBILITY Guided round: needs a laser designator on the target in the last phase of flight; low cloud degrades guidance.

Range, Krasnopol 3OF39	**20 km** maximum, 3OF39 with rocket motor, full variable charge, 152 mm gun
Range, Krasnopol 3VOF93 (reduced charge)	**8 km** maximum, 3OF39 projectile in the 3VOF93 round, reduced charge Zh-546U
Minimum range, Krasnopol 3OF39	**3 km** effective, lower limit of the stated effective range 3 to 20 km
Range, Krasnopol-M 3OF39M	**25 km** maximum, 3OF39M Krasnopol-M1 with base-bleed gas generator, long-range charge; Rosoboronexport 2002 catalogue, claim

SOURCES AR65 ATP CALIB2 CNA DEFPOST4 DFRLAB4 EDR2 FAS14 GICHD IISS25 ISW2 JANESRG KYIVPST2 MAILRU3 MIL66 R3602 ROSTEC RUSI5 RWW TASS9 WP-EN94 WP-RU127 WP-RU128 WWW1B not in WEG

Updated 2026-10-21

Santimetr (3OF38) and Santimetr-M (3OF75) 3ОФ38 «Сантиметр» NA

152 mm laser-guided, pulse-motor corrected HE-frag shell for gun-howitzers In service 1985

OPERATED BY **Units with D-20 gun-howitzers (2K24)**, fire platoon: 3 D-20 gun-howitzers, 1 laser designator, 300 rounds (Soviet-era 2K24 organisation), 300 rounds per fire platoon D 1999 M
self-propelled artillery battalion, holds 2S3 (named for 3OF38) or 2S19 (named by the developer for 3OF75); no holding of the round reported, INA rounds; 18 howitzers per battalion D 2024 L

INDICATES *A 1980s round made in limited numbers; an analyst reports the Army neither orders nor produces it and stocks are past shelf life (autumn 2022). It lost out to Krasnopol (3OF39). Both need a forward laser designator crew.*

RECOGNISE **Round** 152 mm projectile fired with a separate charge, 1,195 mm long and 49.5 kg for 3OF38
Nose Vane-type laser seeker under a ballistic cap dropped in flight; on the sister 3F5 mine, of the same design principle, the vane unit has four surfaces
Aft body Block of 8 solid-fuel pulse motors; on the sister 3F5 mine the motor block sits behind the warhead, three nozzles 120 degrees apart behind the centre of mass

CONFUSED WITH **Krasnopol 3OF39 (rounds 3VOF64, 3VOF93)** p. 314 Close only: index 3OF39 against 3OF38; Krasnopol projectile longer, 1,300 to 1,305 mm against 1,195 mm

Range, 3VOF63 (3OF38, full charge)	**12 km** maximum, guided round, full variable charge No. 1; designator needed
Minimum range, 3OF38	**2 km** guided round; lower end of the 2 to 12 km span given for 3OF38
Range, 3VOF66 (3OF38, reduced charge)	**8 km** maximum, guided round, reduced charge; designator needed
Range, 3OF75 (Santimetr-M)	**15 km** maximum, guided round; designator needed; 1999 developer table, claim
Minimum range, 3OF75 (Santimetr-M)	**0.5 km** guided round, claim
Designator range, 1D15 (for 3OF38)	**0.2 to 5 km** designation range, laser designator-rangefinder; lights the target for 3 s
Designator range, 1D20M (for 3OF75)	**0.3 to 12 km** designation range, laser designator-rangefinder, 18 kg, illumination 1 to 3 s; 1999 developer figure for Santimetr-M, claim
Calibre	**152 mm** 3OF38 and 3OF75
Round mass, 3OF38	**49.5 kg** projectile

SEEN WITH 1D15 / 1D20 laser designator-rangefinder (1D20M with Santimetr-M) (1 per fire platoon); 1A35K and 1A35I synchronisation sets; D-20 152 mm gun-howitzer (entry d20) (3 per fire platoon)

VARIANTS **3OF38 Santimetr** Same projectile, 1,195 mm and 49.5 kg; round index 3VOF63 with full charge, 3VOF66 with reduced charge.

SOURCES ATP CNA GRAUIDX IISS25 NVO VPK19 WP-RU12 WP-RU23 WP-RU216 YAROVAN not in WEG

Updated 2026-10-21

Rockets

122 mm rockets (Grad, Tornado-G, Prima) 9M22

NA

Unguided 122 mm rockets for Grad, Tornado-G, Prima and Grad-P rocket launchers In service 1963

OPERATED BY **motor rifle brigade**, MRL battalion of the brigade artillery, three batteries of six launchers, 18 BM-21 per battalion D 2024 H

artillery regiment, MRL battalion; Grad, being replaced by Tornado-G, 1 battalion D 2019 M

INDICATES *Grad rockets point to the MRL battalion of a motor rifle brigade or a division artillery regiment (doctrine 2016-2024). Ukraine also fires them. 9M521, 9M522, 9M217 and 9M218 are made for Tornado-G, reported with a self-propelled artillery regiment in 2026.*

RECOGNISE **Round** Unguided 122 mm rocket: fuze at the nose, cylindrical warhead, motor tube, tail stabiliser block with folding fins.

Size 9M22 2.87 m, 66 kg; 9M22U 2.87 m, 66.6 kg. 9M522, 9M217, 9M218, 9M53F and 9M53K 3.04 m, 70 kg; 9M53S 3.02 m. 9M521 2.84 m, 66 kg.

Finish 9M22U: warhead light or dark grey, motor light or silver grey, black stencils, red stamped 9 on the forward motor.

CONFUSED WITH **220 mm Uragan rocket 9M27** p. 122 4,833 mm long and 220 mm across, against 2,729 mm and 122 mm for the 9M22.



MKFI, public domain

MOBILITY Munition; the launcher carries it

Range, 9M22U HE-frag	**20.4 km** maximum, Fired from BM-21 Grad or 9K51M Tornado-G; ground target; HE-frag
Minimum range, 9M22U HE-frag	**5 km** Fired from BM-21 Grad or 9K51M Tornado-G; ground target; HE-frag
Range, 9M22 HE-frag	**20.4 km** maximum, Fired from BM-21 Grad or 9K51M Tornado-G; ground target; HE-frag
Minimum range, 9M22 HE-frag	**5 km** Fired from BM-21 Grad or 9K51M Tornado-G; ground target; HE-frag
Range, 9M28F HE-frag	**15 km** maximum, Short-range HE-frag; BM-21 or 9P138 Grad-1
Minimum range, 9M28F HE-frag	**1.5 km** Short-range HE-frag; BM-21 or 9P138 Grad-1

SOURCES ATP BPICK3 CNA GICHD2 IISS25 MISS22 ORYX1 RIA4 RUSIPL RWW TASSMR WEG2015 WP-EN69 WP-RU93 WP-RU200 WP-RU201 ZVEZDA2 not in WEG Updated 2026-10-21

220 mm rockets (Uragan) 9M27

NA

Unguided 220 mm rockets: HE, cluster, mine, thermobaric, incendiary, leaflet In service 1975

OPERATED BY **artillery regiment**, 9P140 Uragan rocket artillery battalion or batteries in some division artillery regiments, 6 launchers per battery, 3 batteries per battalion D 2019 M

artillery brigade, 9P140 Uragan rocket artillery battalion (army artillery set), 1 battalion D 2017 M

Ukrainian Army and Marine Corps (same 9P140 launcher), 9P140 Uragan R 2024 M

artillery brigade, 9P140 Uragan R 2019 L

self-propelled artillery regiment, 9K512 Uragan-1M launchers (fire 220 mm and 300 mm rockets), 8 Uragan-1M at first delivery R 2017 L

INDICATES *Uragan rockets point to 9P140 Uragan or Uragan-1M batteries or battalions in artillery regiments and brigades (doctrine). 9M27K cluster rockets were documented at Mykolaiv in 2022. Ukraine also holds Uragan and its cluster rockets.*

RECOGNISE **Round** Unguided spin- and fin-stabilised rocket, 220 mm diameter: 4.83 m long with HE-fragmentation warhead, 5.18 to 5.2 m with cargo warheads.

Tail Four wrap-around fins at the tail, opening after launch. Tail is like the 300 mm 9M55 but smaller in diameter, with a different rear fin-slot shape or size.

Packing Carried and stored in 9Ya248 or 9Ya248M transport containers; 16 rockets load into the 9P140 in three tube banks of 6, 6 and 4.

After firing Cargo warheads open in flight and release their load; the motor and tail section falls on a separate ballistic path, so a find may show only one part.

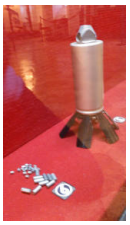
CONFUSED WITH **300 mm 9M55 Smerch rocket** p. 316 Full round: 220 mm and 4.83 to 5.2 m long, against 300 mm and 7.6 m. Tail only: diameter and rear fin-slot shape differ.

9M27F against cargo rockets of the 9M27K series Full round: 9M27F 4.83 m long against 5.178 m (9M27K3 5.2 m) for the cargo rockets. After firing: cargo rockets leave an opened cargo section and their load.

SEEN WITH 9P140 Uragan launcher (entry uragan) (6 per battery; 16 rockets each); 9K512 Uragan-1M launcher (entry uragan-1m); 9T452 transloader (1 per launcher)

VARIANTS **9M27F** Shortest of the series at 4.83 m; one-piece warhead with no cargo section.

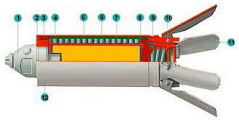
9M27K 5.178 m long; cargo warhead opens in flight and releases bomblets.



Андрей Хохлушин, CC BY-SA 4.0



State Emergency Service of Ukraine, CC BY 4.0



Drawing: Koswova, CC BY-SA 4.0

MOBILITY Munition carried on 9P140 and Uragan-1M launchers; no mobility data.

Range, 9M27F HE-fragmentation	**35 km** maximum, HE-fragmentation rocket, indirect fire
Minimum range, 9M27F HE-fragmentation	**10 km** HE-fragmentation rocket, indirect fire
Range, 9M27K, K1, K2 and 9M59 cargo	**35 km** maximum, cluster, PTM-1 and PTM-3 mine rockets, indirect fire
Minimum range, 9M27K, K1, K2 and 9M59 cargo	**10 km** cluster, PTM-1 and PTM-3 mine rockets
Range, 9M27K3 anti-personnel mines	**35 km** maximum, PFM-1 mine rocket
Minimum range, 9M27K3 anti-personnel mines	**10 km** PFM-1 mine rocket
Range, 9M51 thermobaric	**13 km** maximum, thermobaric rocket
Minimum range, 9M51 thermobaric	**5 km** thermobaric rocket

SOURCES BCAT4 CNA FAS18 GICHD2 GS28 IISS25 MIL110 RELIEF RUSIPL RWW WEG85 WEG2015 WP-EN6 WP-EN159 WP-RU183 WP-RU202 WSN9 not in WEG Updated 2026-10-21

220 mm thermobaric rockets (TOS-1A, TOS-2) M0.1.01.04 NA

Unguided 220 mm thermobaric rockets for the TOS-1, TOS-1A and TOS-2 launchers In service 1988

OPERATED BY **RKhBZ brigade**, Heavy flamethrower battalion: TOS-1A (BM-1) and TOS-2 launchers fire the rockets, 9 launchers per battalion; 24 rockets per BM-1, up to 72 per complex with two TZM-T D 2024 M

INDICATES *Fired from TOS-1, TOS-1A and TOS-2 launchers, held in RKhBZ brigade and regiment flame subunits, the flame platoon of the RKhBZ company supporting a brigade, and the Airborne Forces. A sighting in 2022 to 2024 points to RKhBZ fire support for assault units.*

RECOGNISE **Round** Single unguided 220 mm rocket in three parts: head with thermobaric fill, MRV-U fuze and solid-fuel motor; M0.1.01.04M is about 3.7 m long

Size M0.1.01.04: 3,300 mm, 173 kg. M0.1.01.04M: 3,723 mm, 217 kg, so 423 mm longer and 44 kg heavier

Against Uragan Uragan 220 mm rockets are longer: 9M27F 4,832 mm, 9M27K 5,178 mm, against 3,723 mm for M0.1.01.04M

CONFUSED WITH **9M27F and 9M27K Uragan rockets (220 mm)** p. 122 Round in full view: length 3,723 mm for M0.1.01.04M against 4,832 mm (9M27F) and 5,178 mm (9M27K); same calibre, so length is the cue.



Mil.ru, CC BY 4.0



State Emergency Service of Ukraine in Kharkiv Oblast, CC BY 4.0

Range, M0.1.01.04 thermobaric rocket	**2,700 m** maximum, Original TOS-1A rocket; TOS-1 and TOS-1A launchers
Minimum range, M0.1.01.04 thermobaric rocket	**400 m** TOS-1 and TOS-1A launchers; given as the TOS-1 launcher minimum and, by Russian state media, for both without naming a rocket
Range, M0.1.01.04M thermobaric rocket	**6,000 m** maximum, TOS-1A launcher; export data sheet, repeated by Russian press, claim
Minimum range, M0.1.01.04M thermobaric rocket	**600 m** TOS-1A launcher; export sheet row 'minimum vertical' (high-angle fire), claim
Range, M0.1.01.04M2 thermobaric rocket	**10,000 m** maximum, TOS-1A launcher; rocket introduced March 2020

SOURCES ATP BTWB CNA DEF245 DEFUA12 IISS25 IZ18 IZ242 MIL111 MISS25 RG9 RIA232 ROSTEC2 RWW TASS21 WEG87 WP-EN161 WP-EN162 WP-RU203 not in WEG Updated 2026-10-21

300 mm rockets (Smerch, Tornado-S) 9M55 NA

Unguided 300 mm rockets (HE, cluster, mine, thermobaric) for Smerch and Tornado-S In service 1987

OPERATED BY **rocket artillery brigade**, three groups of four 9A52-2 launchers in the army brigade diagram, 12 x 9A52-2 shown (3 groups of 4) D 2024 M

artillery brigade, BM-30 Smerch battalion; brigade also received BM-27 Uragan R 2021 M

INDICATES *Remains of a 300 mm rocket point to a Smerch or Tornado-S of an Army rocket artillery or artillery brigade (IISS: 70 launchers, 2025); Ukraine also holds Smerch. 9M55K cluster rockets were documented at Kharkiv in 2022.*

RECOGNISE **Round** Single fin-stabilised solid-fuel rocket, 7,600 mm long, 300 mm diameter, about 800 kg; 12 rounds per launcher

Tail Tail section resembles the 9M27 (Uragan): tell by diameter, 300 mm against 220 mm, and by the shape of the rear fin slots

Warhead Separating warhead on 9M55F, 9M55K and 9M528; warhead 258 kg on 9M55F and 9M528 (HE-fragmentation), 243 kg on 9M55K (cluster) and 9M55S (thermobaric)

CONFUSED WITH **220 mm 9M27 rockets (Uragan)** p. 122 Tails look alike: 300 mm calibre against 220 mm, different rear fin-slot shape; cluster containers show hole rows in different positions once opened



ShinePhantom, CC BY-SA 3.0



Андрей Хохлушин, CC BY-SA 4.0

Range, 9M55F, 9M55K, 9M55K1, 9M55K4, 9M55K5, 9M55S	**70 km** maximum, Standard-range rockets from the Smerch 9A52-2 launcher; ammunition as listed
Minimum range, 9M55F, 9M55K, 9M55K1, 9M55K4, 9M55K5, 9M55S	**20 km** Standard-range rockets from the Smerch launcher
CEP, 9M55F, 9M55K, 9M55K1, 9M55K4, 9M55K5, 9M55S	**150 m** Unguided, trajectory corrected in pitch and yaw early in flight; electronic time fuze
Range, 9M528	**90 km** maximum, Extended-range HE-fragmentation, separating warhead, claim
Minimum range, 9M528	**25 km** Extended-range HE-fragmentation
CEP, 9M528	**150 m** Unguided, electronic time fuze
Range, 9M525, 9M529, 9M531, 9M533	**Up to 90 km** maximum, 90 km series described as under development, most of which remained design work, claim

SOURCES ATP BCAT5 BCAT6 CNA21 GICHD2 IISS25 JANES4 MISS23 MISS24 RGRU13 RWW WEG86 WP-EN160 WP-RU184 not in WEG Updated 2026-10-21

Ballistic and cruise missiles

3M14 Kalibr Калибр

NATO: Sagaris

ship- and submarine-launched land-attack cruise missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Kh-22 Burya Х-22 «Буря»

NATO: Kitchen

air-launched anti-ship missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Kh-32 Х-32

supersonic air-launched cruise missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Kh-47M2 Kinzhal X-47M2

NATO: Killjoy

air-launched ballistic missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Kh-55 X-55

NATO: Kent

air-launched cruise missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Kh-59 Ovod X-59 «Овод»

NATO: Kingbolt, Kazoo

air-launched cruise missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Kh-69 X-69

air-launched cruise missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Kh-101 X-101

NATO: Kodiak

air-launched cruise missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Oreshnik Орешник

intermediate-range ballistic missile

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Glide bombs and air-launched weapons

UMPB D-30SN

jet-powered guided glide bomb

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

UMPK УМПК

glide and guidance kit for unguided bombs

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

UMPK glide kits and UMPB D-30SN glide bomb УМПК Унифицированный модуль планирования и коррекции

NA

Glide kit and glide bomb: air-dropped stand-off strike on fixed ground targets In service 2023

OPERATED BY **aviation regiment**, Su-34 ground-attack regiments (IISS: 3 with Su-34, 1 mixed Su-24M/Su-34); Su-34 is the main carrier of UMPK and UMPB, often 4 bombs per aircraft R 2025 M

aviation regiment, Fighter and fighter/ground-attack regiments with Su-35S or Su-30SM (IISS); both types also drop UMPK R 2025 L

Unidentified unit, S-70 Okhotnik-B UAV, shot down by a Russian Su-57 on 5 Oct 2024, crashed on the Ukrainian side of the front; UMPB nose cone in wreckage (bombing trials) R 2024-10 L

INDICATES *A Su-34 with four wing-kit bombs, or UMPK or UMPB debris, shows a Russian Aerospace Forces strike released from outside short-range air defence, in 2024 to 2025 typically 35 to 50 km behind the front line.*

RECOGNISE **UMPK** Module clamped to a FAB bomb: metal body, two fold-out wings, tail control surfaces; nose sometimes capped; fitted upside down, rolls upright on release

UMPB D-30SN One streamlined body, cruciform tail, one wing folded flush along the top, carried inverted; 30 cm diameter; off-white paint

Told apart UMPK shows a separate bomb body in a module; UMPB is a single smooth airframe. Su-34 carries UMPB on separate pylons, 3 or 4 seen

Sizes UMPK is fitted to FAB-250, -500, -1500 and -3000 classes; the FAB-3000 kit resembles the FAB-1500 kit but is larger

Markings Bomb type stencilled in Cyrillic on the body (e.g. FAB-500T); wreckage marked UMPB or UMPK-5R

CONFUSED WITH **FAB-250 with UMPK** Bomb body visible below the bolt-on module; the UMPB (warhead reportedly FAB-250-based) is one smooth airframe, its wing folded flush along the top.

UMPK, earlier kit (e.g. FAB-500 M-62) Long-range kit (on FAB-500T): body elongated, wings enlarged and rear fairings redesigned against the earlier kit. Seen on Su-34s in July 2026 video.

(Picture not available)

MOBILITY Air-dropped unpowered glide; reach set by release altitude and speed. Carried on Su-34 underwing pylons.

Range, UMPK (FAB-250, -500, -1500)	**40–70 km** maximum, unpowered glide; early models, set by release altitude and speed (TASS), claim
Range, UMPK (FAB-3000)	**50–60 km** maximum, unpowered glide; TASS citing a defence-industry source, July 2024, claim
Release distance behind front line, UMPK	**35–50 km** practical, Su-34 releases, 2024 and 2025, observed
Range, UMPK-PD / UMPK-5R (FAB-500T)	**95–100 km** claimed, no jet motor; release from 12,000 m at about 1,000 km/h (Kommersant press report, Oct 2025)
Range, UMPB D-30SN	**90 km** estimated, air-launched from Su-34; Ukrainian local officials' tentative estimate after a March 2024 Kharkiv strike, claim
CEP, UMPB D-30SN	**7–8 m** claimed, inertial and satellite; claimed accuracy relayed by Ukrainian analyst Oleksii Hetman, not stated as CEP
Guidance, UMPK	**Inertial plus GLONASS and GPS satellite; Kometa-M anti-jam antenna** tail control surfaces driven by servos; two batteries
Guidance, UMPB D-30SN	**Inertial and satellite; Kometa antenna reported** reported from wreckage and Ukrainian sources; exact method unconfirmed

SOURCES AVIAT5 DEFUA17 ESD2 IISS25 JAPCC LWJ2 LWJ3 TWZ35 TWZ36 WP-EN193 WP-EN194 WP-RU259 not in WEG

Updated 2026-10-21

Vikhr 9A4172 «Вихрь»

NATO: AT-16 Scallion NA

Air-launched laser-beam-riding anti-tank missile (helicopter, attack aircraft) In service 1992

OPERATED BY **army aviation brigade**, Ka-52A and Ka-52M attack helicopters (IISS estimate: ε62 Ka-52A, ε20 Ka-52M), launchers on wing pylons; Ka-52M crews fire Vikhr-1 (Kalashnikov, 2024) R 2024 M

INDICATES *Vikhr on a pylon or in launch footage points to Ka-52 attack-helicopter units of army aviation, the only type fielded in large numbers to fire it in 2023. Launches from about 8 km were recorded in 2023.*

RECOGNISE **Missile** Cylinder 2,750 mm long, 125–130 mm across, cruciform tail fins and forward canards, stabiliser span 380 mm, conical nose

Seeker Nose carries no seeker window (laser beam rider); laser detectors sit at the tail

Container Carried in a sealed launch container 2,870 mm long, 140 mm across; container and missile weigh 59 kg

CONFUSED WITH **9M120 Ataka / Ataka-1 (AT-9 Spiral-2)** p. 115 Ka-52 carries both. Launcher in view: six tubes per Vikhr pod on Ka-50/Ka-52, eight per Ataka pod; the Su-25T Vikhr pod also has eight, so count on helicopters only.

MOBILITY Air-launched from helicopter and aircraft launchers; no mobility of its own.

Range, 9A4172 Vikhr	**10 km** maximum, daytime launch, launch altitude 5 to 4,000 m; 1990s table figure for Vikhr and Vikhr-M, claim
Minimum range, 9A4172 Vikhr	**0.5 km** daytime launch, claim
Range, 9A4172 Vikhr, night	**5 km** maximum, night launch, claim
Practical range, 9A4172K Vikhr-1 from Ka-52	**about 8 km slant range** launches on Ukrainian vehicles seen in Russian MoD head-up display videos, 2023; flight time about 23 to 25 s, observed
Armour penetration, 9A4172 Vikhr	**1,000 mm** claimed, rolled homogeneous armour equivalent, claimed; includes targets with reactive armour, claim
Speed, 9A4172 Vikhr	**610 m/s** maximum, maximum; average about 600 m/s; flight time 28 s to 10 km, 23 s to 8 km, claim
Hit probability, 9A4172 Vikhr	**0.8 moving, 0.95 stationary target** claimed, claimed for a small tank-class target, automatic tracking, claim
Calibre, 9A4172 Vikhr	**125–130 mm** maximum body diameter of the missile, claim
Weight, missile	**40–45 kg** launch weight; 59 kg missile in its container, claim

SEEN WITH I-251 Shkval sight (Shkval-M on Su-25T) (1 per complex, with the launcher and missiles); APU-6 launcher (2 per Ka-50 (6 missiles each); up to 12 missiles on Ka-52); APU-8 launcher (2 per Su-25T/Su-39 (8 missiles each))

SOURCES AIRWAR2 AR128 AR129 IISS25 MIL134 MISS31 SZILV TASS36 TASS37 TASS38 TASS39 TWZ12 WP-EN199 WP-RU265 not in WEG

Updated 2026-10-21

Mines

MON-50 MOH-50

NA

Hand-laid directional fragmentation anti-personnel mine, command- or victim-fired In service 1974

OPERATED BY **Troops covering positions or guarding sites (kit purpose)**, VKPM-2 mine kit (4 mines) for covering positions and guarding troop sites, 4 per VKPM-2 kit D 2008 M
Spetsnaz brigade, GRU Spetsnaz or SSO team, mission-dependent basic kit D 2024 M
INDICATES *A VKPM-2 kit points to a hand-laid, wire-controlled barrier covering a troop position or site. Russia has used the MON-50 in Ukraine since 2022 (MON-series traps at Bucha). Ukraine makes a near-copy, the VNP-50, so a find alone does not show the side.*
RECOGNISE **Body** Rectangular plastic body, convex front face, concave rear face; 226 mm long, 66 mm wide, 155 mm high with legs folded.
Top Raised centre of the top carries a sighting slot with an aiming arrow, between two threaded fuze wells closed by plugs.
Underside Four hinged folding legs under the body; a threaded socket flange on the underside takes a clamp for trees and posts.
CONFUSED WITH **M18A1 Claymore** Close: «MOH-50» lettering, and «К ПРОТИВНИКУ» on Russian-made mines; MON-50 is 226 mm long against 216 mm for the M18A1.



Martin Olsson, CC BY-SA 3.0

MOBILITY Hand-carried mine; no mobility figures apply.

Range, fragments (cylinders / balls)	**50 m / 58 m** solid casualty zone, 54 degree horizontal sector, 15 cm to 4 m high at that range; zone 45 m (cylinders) or 54 m (balls) wide at 50-58 m; 485 steel cylinders (6 x 7 mm, 1.5 g) or 540 steel balls (6.35 mm), claim
Range, lethal fragment flight (cylinders / balls)	**80 m / 85 m** maximum, Maximum flight of lethal fragments, claim
Mass, mine / charge	**2.0 kg / 0.7 kg PVV-5A** Catalogue lists 2.0 kg as body mass, GICHD gives 2,000 g all-up; PVV-5A is an RDX-based plastic explosive, claim
Dimensions, length x width x height	**226 x 66 x 155 mm** Legs folded, claim

SOURCES ATP BPICK2 FM100 GICHD2 KAT MONIT SAPPERS2 WEG2015 WP-EN120 WP-RU150 WW2W ZGRIF not in WEG

Updated 2026-10-22

MON-50 MOH-50

directional fragmentation anti-personnel mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MON-90 MOH-90

NA

Command- or victim-fired directional fragmentation anti-personnel mine, hand-laid In service 1981

OPERATED BY **Engineer Troops sapper platoons and squads**, Sapper platoon or squad; the 1982 manual has a sapper platoon lay a controlled field D 1982 M
Russian forces in Ukraine, Hand-laid; no unit named R 2025 M
INDICATES *Points to a sapper-laid minefield or ambush on an approach, fired by wire from a control point or by tripwire; in 2024 also reported on a decoy car against drones. Reported with Russian forces in Ukraine, 2022 to 2025; no holding unit is named.*
RECOGNISE **Shape** Plastic body with one convex face, 345 mm long, 202 mm high, 153 mm thick; fragments behind the convex face; carrying handle and threaded flange underneath.
Top Two fuze wells closed by plastic plugs, with a sighting bar and arrow between them; no folding scissor legs.
Markings Stencilled MON-90 and batch number on the rear; «К ПРОТИВНИКУ» (towards the enemy) on the front.
CONFUSED WITH **MON-50** p. 322 Full view: 345 mm long and 12.1 kg against 226 mm and 2 kg; no scissor legs, stands on a rod on its box or on a tree spike.


Mil.ru, CC BY 4.0

MOBILITY Static munition; carried and emplaced by hand (12.1 kg).

Range, steel-cylinder fragments	**up to 80 m** flight range of lethal fragments, Flight range of lethal fragments; the continuous-effect zone is 60 m wide at 90 m range, claim
Charge	**6.2 kg PVV-5A; 2,000 steel cylinders, 7 mm diameter and 7 mm high, 2 g each** Fragments in two layers on the convex side, set in epoxy, claim
Mass and size	**12.1 kg; 345 x 153 x 202 mm** Length x width x height as the catalogue gives them; width is the thickness of the curved body. 23 kg with packing box, claim

SOURCES GICHD KAT MIL85 MON90IE MONIT UKRTDY WMC21 WP-RU150 WP-RU151 not in WEG

Updated 2026-10-22

MON-90 MOH-90

directional fragmentation anti-personnel mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MON-100

directional fragmentation anti-personnel mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MON-100 directional fragmentation mine MOH-100

NA

Hand-laid directional fragmentation mine against personnel and unarmoured vehicles In service 1958

OPERATED BY **Russian forces in Ukraine**, Hand-laid; no unit named R 2025 L

Unidentified unit, Ambush beside a decoy car against drones, place not named; video reported 2024-10 R 2024-10 L

INDICATES *Points to a hand-laid mine position, fired by wire on command or by tripwire, best sited in woods, hills or defiles; in 2024 also reported set beside a decoy car against drones. Reported with Russian forces in Ukraine, 2022 to 2025; no unit named.*

RECOGNISE **Body** Round steel body like a large bowl, 236 mm across and 82.5 mm thick

Face Concave face aimed at the target, with a single fuze well in its centre

Fittings Canvas carrying handle on the rim; U-shaped metal frame on two pivots, held by wing nuts, with a spike for trees or buildings

Laying Set on its own stake or on a fixed object such as a tree, above ground, with a firing cable or tripwire running from the fuze well

CONFUSED WITH **MON-200** p. 324 Full view: same round dished body with one central fuze well and canvas handle, but 434 mm across and 130 mm thick against 236 mm and 83 mm



US Government ORDATA database, public domain

MOBILITY Hand-carried and hand-laid; not self-propelled and not scatterable.

Range, fragments	**100 m** effective, 400 steel fragments; kill zone 6.5 to 9.5 m wide at 100 m
Fragment spread to rear and sides	**30 m** up to, behind and beside the mine
Type	**Directional fragmentation anti-personnel mine, steel case**
Charge	**2 kg TNT**
Weight	**5 kg** mine body
Dimensions	**Diameter 236 mm, thickness 82.5 mm** Diameter by height of the body
Fragments	**400 steel rollers, 10 mm x 10 mm**

SEEN WITH PN manual inductor with EDP-R electric detonator

SOURCES BPICK GICHD KAT MIL85 MONIT UKRTDY WEG2015 WP-EN119 WP-RU149 not in WEG

Updated 2026-10-22

MON-200

directional fragmentation anti-personnel mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

MON-200 directional mine MOH-200

NA

Command-fired directional fragmentation mine against personnel and unarmoured vehicles In service 1958

OPERATED BY **Russian forces in Ukraine**, Hand-laid; no unit named R 2025 M

Wagner Group (Russia-based private military contractor), Libya, Tripoli, Libya, 2019-2020: MON-200 among mines laid; Wagner Group reported responsible R 2020 L

INDICATES *MON-200 is meant to be laid in groups, command-detonated, at narrow places such as defiles, narrow streets and passages; Russian forces have used it in Ukraine since 2022.*

RECOGNISE **Body** Steel disc with one dished face and a single fuze well in its centre; canvas carrying handle on the side; the MON-100 design in a larger size

Size Diameter 434 mm, thickness 130 mm; mass 25 kg (MON-100: 236 mm, 82.5 mm, 5 kg)

Mounting Bracket with aiming rings, driven into a fixed object or set on the ground; firing wire led away to a control point

Markings Black paint on the side wall: MON-200, factory code with lot and year, T for TNT filling

CONFUSED WITH **MON-100** p. 323 Full view: same dished disc, smaller: 236 mm across and 82.5 mm thick against 434 mm and 130 mm; side marking reads MON-100



NATO Training Mission-Afghanistan, CC BY-SA 2.0

MOBILITY Static mine; no mobility.

Range, fragment beam	**200 m** effective, Directional fragments, against personnel; kill zone 10.5 to 14.5 m wide at 200 m
Type and emplacement	**Directional fragmentation anti-personnel mine, command-detonated; placed by hand on the ground or on a fixed object**
Mass, total	**25 kg**
Charge	**12 kg TNT**
Dimensions	**Diameter 434 mm, thickness 130 mm**
Fragments	**900 steel rollers, 10 mm diameter, 12 mm long**
Fuze and initiation	**Electric detonator EDP-r by command wire; or MUV or MUV-2 fuze with tripwire; or MVE-72 fuze with breakwire (65 m or 40 m)**

SEEN WITH EDP-r electric detonator

SOURCES GICHD KAT MONIT SAPPERS SAPPERS1 TELETYPE WEG2015 not in WEG

Updated 2026-10-22

OZM-72 bounding fragmentation mine O3M-72

NA

Bounding anti-personnel fragmentation mine, hand-laid, tripwire or command fired In service 1974

INDICATES *Found in Ukraine from 2022 as a Russian-laid mine, hand-laid with tripwire or command firing. A May 2025 video claims Ukrainian forces also drop it by drone, so the mine alone does not show who laid it.*

RECOGNISE **Shape** Upright steel cylinder, 108 mm across and 172 mm high without fuze; top lid with an offset threaded fuze well, a central plugged detonator well and two filler plugs.

Fuze MUV-series pull fuze screwed into the offset well on top; a short cable with snap-links joins its pull pin to the tripwire.

Laid Buried under no more than 2-3 cm of soil in summer, or on the surface tied to a stake in winter; issued with wire on spools, metal and wooden stakes.

Markings Close only: green body; side stencil O3M-72, lot and year code (912-278-80), filling letter; black per handbook, white on displayed specimens (from photograph).

CONFUSED WITH **OZM-4** Close only: cast-iron body 90 mm across and 170 mm high, against 108 mm across and 172 mm high for the steel-bodied OZM-72; stencil reads O3M-4 (from photograph).
OZM-3 Close only: cast-iron body 75 mm across and 130 mm high, against 108 mm across and 172 mm high for OZM-72; stencil reads O3M-3 (from photograph).



Sergeev Pavel, CC0

Charge and fragments	**0.66 kg TNT; 2,400 preformed steel fragments (rollers or balls)**
Weight and size	**5 kg; 108 mm diameter; 172 mm high** Height is without the MUV-3 fuze
Fuzes; self-destruct	**MUV, MUV-2, MUV-3, MUV-4 pull fuzes (tripwire); MVE-72, MVE-NS and MVE-92 electric fuzes; command firing possible; no self-destruct** Standard fuze MUV-4
Laying	**By hand, buried or tied to a stake on the surface; also fired by the NVU-P (Okhota) seismic fuze device, five mines per device; used in the VKPM-1 wire-controlled kit and the UMP-3 and UMP-4 controlled-minefield kits**
Burst height	**0.6–0.9 m above ground after bounding**

SOURCES GICHD KAT LMM25 MVSUA SAPORG TERRO WEG2015 WMC23 WMC24 WMC25 WP-EN133 WP-RU166 ZGRIF not in WEG

Updated 2026-10-21

OZM-72 Lyagushka 03M-72

bounding fragmentation anti-personnel mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PDM-1

anti-landing blast mine (tilt-rod fuze) legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PDM-1 anti-landing mine ПДМ-1 противодесантная мина

NA

Bottom-laid tilt-rod anti-landing mine for shallow water In service 1956

OPERATED BY **Russian Engineer Troops** D 2009 M
Unidentified unit, Crew of a BL-680 boat laying PDM-1M along the Kherson coast, photographs reported Feb 2023 R 2023-02 L

INDICATES *Laid at a river or sea shore it indicates a water line prepared in advance against landing or crossing. Reported laid from a boat by Russian troops on the Kherson coast in February 2023; Russian state media say Ukrainian troops laid it on the Dnipro too.*

RECOGNISE **Shape** Steel hemispherical body welded to a 35 cm square base, bolted to a cast-iron ballast plate; two handles on the body
Fuze Fuze in the central top opening, one target-sensor rod rising from the fuze head; 1 m high with rod (PDM-1M)
Size Plate 0.8 m across; PDM-1M weighs 55–60 kg with plate, 21 kg without
Markings Green body, black stencil on the side: mark ПДМ-1М, lot code, filling letter T (TNT). Museum PDM-1 from photograph: olive dome, stencil ПДМ-1 with year
Packing Two to a crate: 54 kg gross with fuzes and plates packed apart (Veremeev); 134 kg, crate 935 by 430 mm (Russian engineer catalogue)
CONFUSED WITH **PDM-2** Spherical case on a pole with four suspension wires over a 2 m by 2 m stand, 1.4 m high (low stand), against the PDM-1M dome on a 0.8 m plate
PDM-6 Three fuze wells on top for tilt rods, against one central rod mounting on the PDM-1M

MOBILITY Static bottom mine, laid in water 1.1–2 m deep and left in place

Type	**Bottom, contact (tilt-rod), blast anti-landing mine, steel body** PDM-1M; same type given for the PDM-1
Charge	**10 kg TNT, plus 150 g pressed-TNT booster** PDM-1M; the PDM-1 has no booster
Weight	**55–60 kg with ballast plate; 21 kg without** PDM-1M
Dimensions	**Plate 0.8 m diameter; 1 m high with rod** PDM-1M
Fuze	**VPDM-1M mechanical tilt-rod, MD-10 igniter; fires at 10–15 degrees tilt (18–26 kgf); no self-destruct, unlimited life** PDM-1M; arming 8 min at +30 C to 2.5 h at 0 C after immersion
Laying	**By hand from shore or boat; from a Mi-8T helicopter (entry mi8-family) with the OUPDM kit; water 1.1–2 m deep** PDM-1M; withstands a neighbouring mine's blast at 6 m

SEEN WITH VPDM-1M tilt-rod fuze with MD-10 igniter (1 per mine); BL-680 high-speed boat; OUPDM mine-laying kit on Mi-8T helicopter (16 mines per load)
VARIANTS **PDM-1M** Side stencil reads ПДМ-1М; the booster and fuze are inside the body and fuze head. **PDM-1** Side stencil reads ПДМ-1; same dome and plate layout as the PDM-1M.

SOURCES ALLMINES BTWB EADAILY KAT METISM SAPPERS3 SMITODAY WEAPLAND WMC27 WP-EN136 WP-EN137 WP-RU170 not in WEG Updated 2026-10-21

PFM-1 Lepestok ПФМ-1

scatterable anti-personnel blast mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PFM-1 Lepestok scatterable anti-personnel mine ПФМ-1 «Лепесток»

NA

Scatterable anti-personnel blast mine, laid by rocket, minelayer, helicopter or drone In service 1980

OPERATED BY **artillery regiment**, Uragan (BM-27) rocket batteries or battalions; 9M27K3 mine rocket D 2019 M
Ground Forces (SV) units with the UMZ minelayer, UMZ truck-mounted remote minelayer D 2024 L

INDICATES *PFM-1 on the ground shows a remotely laid field: Uragan rocket, UMZ, PKM, helicopter, aircraft dispenser or, in 2023-2025, drone. Both sides stock it; a UN inquiry found Ukraine likely rocket-laid it at Izium in 2022, so the type does not show who laid it.*

RECOGNISE **Mine** Flat plastic body, 120 x 61 x 20 mm (119 x 64 x 20 mm in other sources); small thick wing holds the liquid explosive, larger wing is a stabilising fin
Casing Polyethylene; green and tan (US Army, 1991); green or brown (Ukrainian police, Kherson 2025); khaki (Russian state media, 2022)
Markings Training mine U-PFM-1 has «У» stencilled on the wing. A letter «С» is reported on the PFM-1S wing, but other sources call the two almost impossible to tell apart

CONFUSED WITH **U-PFM-1 training mine** Close up: same shape and size; a Cyrillic «У» stencilled on the wing marks the training mine

MOBILITY Munition: no mobility. Hand-laying is not possible; it is laid by remote systems only.

Self-destruct, PFM-1S	**85% within 40 hours** nominal, nominal; 1-40 hours depending on temperature
Range, 9M27K3 mine rocket (PFM-1S)	**34 km** maximum, scatterable-mine warhead; Uragan launcher
Minimum range, 9M27K3 mine rocket (PFM-1S)	**8 km** scatterable-mine warhead; Uragan launcher
Type	**Scatterable blast mine, hydraulic pressure fuze**
Charge	**37 g VS-6D liquid explosive; 40 g in WEG 2015**
Weight, mine	**70–80 g: 70 g WEG 2015, 75 g GICHD guide, 80 g Russian Wikipedia** complete mine
Dimensions, mine	**120 x 61 x 20 mm (GICHD guide; WEG 2015 gives 120 x 61); 119 x 64 x 20 mm (Wikipedia, Ukrainian ID guide)** length x width x thickness
Fuze	**Functions at 5–25 kg on the mine body; arms 1–10 minutes after laying** VGM-6 fuze, worked by the hydraulic pressure of the liquid explosive

SEEN WITH UMZ truck-mounted remote minelayer (entry umz) (180 launch tubes; up to 11,520 PFM-1S per load)

SOURCES ATP BTWB BULLET CNA FM100 GICHD2 IISS25 LMM25 MIL99 MONIT2 RWW TASS20 TSN3 UAOTT UKRINF10 WEG2015 WP-EN140 WP-EN141 WP-EN142 WP-RU173 not in WEG
Updated 2026-10-22

PMN ПМН

pressure-operated anti-personnel blast mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PMN, PMN-2, PMN-4 ПМН

NA

Pressure-operated anti-personnel blast mine, laid by hand or mechanically In service 1950s

OPERATED BY **Russian-supported separatists, eastern Ukraine (PMN-1, PMN-2)**, Donetsk and Luhansk, from 2014; mines with 1980s and 2000s production markings R 2014 M

INDICATES *PMN-2 or PMN-4 in Ukraine points to Russian laying (2022–2025): Ukraine destroyed its PMN-2 stock in 2003 and never held PMN-4. Russian forces also dropped PMN-4 from drones (reported late 2023 to 2025).*

RECOGNISE **Shape** Palm-sized flat cylinder with a rubber-capped top: PMN 112 x 56 mm, PMN-2 120 x 54 mm, PMN-4 95 x 42 mm (diameter x height)

Pressure plate Black rubber cap over the top; PMN-2 plate is cruciform (X-shaped); PMN-4 has a neoprene cover over an alloy plate

Body PMN bakelite, mostly brown, also black or green; PMN-2 plastic, usually green, also dark green or brown; PMN-4 plastic, reddish-brown or khaki

CONFUSED WITH **MS-3** Close up: protruding blister in the centre of the rubber cover, 'MC-3' marked on the cover; otherwise almost identical to the PMN



Reedhawk, CC BY-SA 4.0

Type, fuze	**Pressure-operated blast mine; PMN: MD-9 stab fuze with lead-shear arming delay; PMN-2 and PMN-4: integral fuze with delay-arming mechanism**
Explosive charge	**PMN 200 g TNT; PMN-2 100 g TG-40; PMN-4 50 g** Per member
Weight	**PMN 0.55 kg; PMN-2 0.4 kg; PMN-4 0.3 kg** Whole mine
Dimensions, diameter x height	**PMN 112 x 56 mm; PMN-2 120 x 54 mm; PMN-4 95 x 42 mm** Per member
Arming delay	**PMN 2–12 min (temperature dependent); PMN-2 30–300 s; PMN-4 1–40 min (temperature dependent)** After pin is pulled

SOURCES GICHD MONIT2 NOLAND SAPPER2 SAPPER4 WEG2015 WP-EN143 WP-RU174 Updated 2026-10-22

POM-2 ПОМ-2

scatterable fragmentation anti-personnel mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

POM-2 and POM-2R scatterable anti-personnel mines ПОМ-2, ПОМ-2Р «Отёк»

NA

Scatterable tripwire fragmentation anti-personnel mine In service 1980s

OPERATED BY **Ground Forces units with UMZ remote minelayers**, UMZ truck-mounted remote minelayers (take KPOM-2 cassettes) D 2024 L

Regiments with UMZ minelayers (1996 organisation), three UMZ remote minelayers per full-strength regiment (1996 organisation), 3 UMZ per regiment D 1996 L

INDICATES *POM-2 or spent KPOM-2 cassettes point to remote mining (UMZ, UGMZ, helicopter, aircraft, rocket, hand or drone), not one unit type. Russia stockpiles POM-2; Ukraine destroyed its stock (2018), but Ukrainian use of a POM-2-derived drone mine was reported, 2025.*

RECOGNISE **Mine body** Upright steel cylinder 63 mm across and 180 mm high, tripwire housing on top, six spring-loaded legs folded out round the base; legs flat and perforated, from photograph.

Tripwires Four thin tripwires 9.5 m long run out in four directions from the top once the mine has armed; anchor weights on the ends.

Cassette KPOM-2 cassette: cylinder 140 mm across and 480 mm long holding four mines; spent KPOM-2 dispensers were photographed beside mines near Kyiv in April 2022.

CONFUSED WITH **POM-3 (entry pom-3)** p. 328 Armed: POM-2 shows four tripwires, POM-3 none (seismic fuze). Cassettes: KPOM-3 150 x 500 mm against KPOM-2 140 x 480 mm. Bodies too close in size to separate.

Range, 3M16 (122 mm Grad, five POM-2)	**13.4 km** maximum, 3M16 cassette rocket from BM-21 Grad (entry grad); also called 9M18
Minimum range, 3M16 (122 mm Grad, five POM-2)	**2.5–4 km** 3M16 cassette rocket from BM-21 Grad; figures differ between sources
Range, 9M55K3 (300 mm Smerch, 64 POM-2)	**70 km** maximum, 9M55K3 cassette rocket from 9A52 Smerch (entry smerch), standard-range rocket set
Minimum range, 9M55K3 (300 mm Smerch, 64 POM-2)	**20–25 km** Smerch system figure, not given for the 9M55K3 itself
Type	**Scatterable circular-fragmentation anti-personnel mine, mechanical tripwire fuze**
Target sensors	**four tripwires, 9.5 m each; fires at a pull of about 0.2 to 0.45 kg** pull force on one wire; figures differ between sources
Explosive charge	**140 g TNT**
Mass	**1.6 kg** complete mine
Dimensions	**63 mm diameter x 180 mm high**
Lethal radius	**up to 16 m** continuous lethal radius, fragments

SEEN WITH UMZ truck minelayer (entry umz) (180 cassettes, 720 mines per full load); UGMZ minelayer (no entry); Mi-8 with VSM-1 minelayer (entry mi8-family) (116 cassettes, 464 mines per full load); PKM portable minelaying set (4 mines per cassette)

VARIANTS **POM-2S** S suffix used in US references for the self-destruct version; Russian texts use plain POM-2.

SOURCES ATP BTWB FFI GICHD HI INSTO LMM25 RWW SAPPERS4 TOPWAR11 WEG2015 WMC29 WP-EN141 WP-EN147 WP-RU178 WP-RU179 WPLAND WW2W not in WEG Updated 2026-10-22

POM-3 Medalyon

scatterable bounding anti-personnel mine (seismic fuze)

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

POM-3 Medalyon scatterable anti-personnel mine ПОМ-3 «Медальон»

NA

Scatterable seismic-fuzed bounding anti-personnel mine Introduced 2019

OPERATED BY **engineer-sapper brigade**, Zemledeliye battalion (divizion), remote-mining launchers R 2022-02 L
engineer-sapper regiment, mine-laying vehicles: GMZ tracked layers (obstacle platoon) or UMZ; both types are listed for the KPOM-3 cassette R 2019 L

INDICATES *Scattered POM-3 mines point to a remote-laying engineer system, most likely Zemledeliye rockets fired from 5 to 15 km away. First documented near Kharkiv in March 2022; Ukraine does not hold the mine.*

RECOGNISE **Body** Upright cylinder 183 mm long and 60 mm across, mass 1.2 kg; stands on the ground after landing
Feet Six spring-loaded supports on the outside of the body, folded along it in transport and opened out to stand it upright or slightly tilted
Sensor Tubular housing on the outside of the body for the seismic sensor spike, driven into the ground beneath the mine; no tripwires
Finish Olive-green body and legs on the cutaway display example, from photograph

CONFUSED WITH **POM-2 and POM-2S scatterable mine** p. 327 Tripwires: POM-2 puts out four 9.5 m tripwires, POM-3 none; bodies 180 x 63 mm and 183 x 60 mm, too close to separate by size

Range, Zemledeliye rocket	**5-15 km** flight range, Distance from the launcher to the minefield; the system's range, not the mine's, claim
Fuze	**Microprocessor seismic sensor, no tripwires; senses footsteps through a spike driven into the ground** Non-contact; target selection against vehicle noise is a developer claim, claim
Explosive fill	**100 g A-IX-1** Bounding fragmentation warhead, thrown 1 to 1.5 m up before it fires
Mass	**1.2 kg** All-up weight
Dimensions	**183 mm x 60 mm** Body, length x diameter
Self-destruct time	**Five fixed times, set before the cassette is loaded; values not published** Developer statement; time is set automatically and can be reset, claim
Fragment radius	**8 to 12 m** Wounds guaranteed to 12 m against an unprotected person, to 8 m against one in body armour, claim
Delivery means	**Zemledeliye rockets; KPOM-3 cassette for UMZ, GMZ-K, VSM-1 helicopter system and PKM kit** Only Zemledeliye use is documented in Ukraine (HRW names the launcher ISDM Zemledelie-I); the other means are the developer's list (2019); HRW adds short-range scattering by other truck-mounted launchers, claim

SEEN WITH KPOM-3 cassette (КПОМ-3); ISDM Zemledeliye (entry zemledeliye) (2 packs of 25 rockets per launcher; mines per rocket INA); UMZ remote mine-layer (entry umz) (180 firing tubes (6 modules of 30)); GMZ-K tracked mine-layer

SOURCES ARES ATP GAZETA GICHD HRW IZVEST MIL101 MONITOR RGRU12 RIA19 WMC30 WP-EN148 WP-RU180 ZVEZDA17 ZVEZDA19 not in WEG Updated 2026-10-22

PTM-1 ПТМ-1

NA

Scatterable anti-vehicle blast mine laid from rockets, helicopters, aircraft or trucks

OPERATED BY **Engineer troops (UMZ and PKM minelaying crews)**, UMZ truck minelayers and PKM portable sets firing KPTM-1 cassettes D 2024 L
Units with 9P140 Uragan rocket launchers, 9P140 Uragan launchers firing the 9M27K2 mine rocket, 16 rockets per salvo D 2024 L

INDICATES *PTM-1 on the ground shows scatter laying by rocket, helicopter, aircraft container, truck minelayer or portable set. One 9M27K2 rocket of the BM-27 Uragan carries 24. Self-destruct timers make the field temporary. Reported in Kharkiv in April 2022.*

RECOGNISE **Body** Elongated polyethylene bar 320-337 mm long, 65-70 mm wide and 66-75 mm high; the whole body surface is the pressure surface
Section Cross-section a circular sector, quoted as 44 or 56 degrees; three mines fill one 48 cm KPTM-1 cassette
Ends Fuze in one end of the body, its cylindrical housing holding the self-destruct timer; a cap fitted over the body end strengthens it

CONFUSED WITH **PTM-3** p. 329 Close up: 330 mm long with an 84 x 84 mm section against 337 mm and a sector-shaped section 70 mm wide, 69 mm high; two mines per KPTM-3 canister, not three

MOBILITY Not applicable: a mine, laid by dispenser and not moved by its user after landing.

Type and fuze	**Anti-track blast mine, polyethylene body; hydromechanical pressure fuze, armed 60-100 s after ejection** Pressure on any part of the body fires it; cannot be set safe once armed
Charge	**1.1 kg PVV-12S-1**
Operating force	**150-400 kg** pressure on any part of the body
Mass, mine	**1.4 kg (WEG 2015) or 1.6 kg (Russian handbook texts)** Complete mine
Dimensions (L x W x H)	**320 x 65 x 75 mm (WEG 2015) or 337 x 70 x 66-69 mm (Russian handbook texts)**
Self-destruct time	**6, 12 or 20 h, factory set (GICHD); 3-40 h by temperature (Russian handbook texts); WEG 2015: self-neutralises within 0-24 h** 3-40 h for the PTM-1G hydromechanical timer, longer in cold; clockwork timer in the MVDM fuze
Mines per 9M27K2 rocket	**24** 220 mm cassette rocket of the BM-27 Uragan; 16 rockets per launcher
Mines per cassette	**1 per PKM canister (WEG 2015) or 3 per 48 cm KPTM-1 cassette for PKM-1, VSM-1 and UMZ (Russian handbook texts)** Ground and helicopter dispenser cassettes

SEEN WITH BM-27 Uragan (16 rockets per launcher, 24 mines each); UMZ (180 firing tubes per vehicle)

SOURCES ARTGUNS ATP GICHD IISS25 RWW SAPPERS5 TOPWAR11 WEAPONL WEG2015 WP-EN141 WP-EN149 WP-EN150 WP-EN151 not in WEG Updated 2026-10-22

PTM-1 ПТМ-1

scatterable anti-tank blast mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PTM-3 ПТМ-3

NA

Scatterable antitank mine, magnetic fuze, self-destructing; laid remotely

OPERATED BY **Engineer units with UMZ mine-layer trucks**, UMZ remote mine-layer trucks (PTM-3 is in the UMZ mine load) D 2024 M

rocket artillery brigade, 9A52-2 Smerch battalions firing 300 mm 9M55K4 mine rockets (25 PTM-3 each) D 2025 L

INDICATES *PTM-3 on the ground means remote laying (UMZ truck, PKM portable tube, MLRS rocket, Mi-8 helicopter set or drone), not hand-laying. Russian forces reported drone-laying PTM-3 in 2023 to 2025, so a find alone does not point to one unit type.*

RECOGNISE **Mine** Rectangular steel bar, square section, 330 mm long and 84 mm each side; shaped-charge hollows on the four long faces; case thick-walled

Cassette KPTM-3 canister, round in section, ejected from the launcher; one mine inside (two per GICHD); a rope joins canister and mine pin

On the ground Lies on any of its four long faces, scattered without a pattern, on the surface or sunk in soft ground (helicopter or rocket drop); arms about 60 s after ejection

CONFUSED WITH **PTM-4** p. 330 Close up: half-round section, round underside and flat top, against four flat faces on PTM-3. Its fabric chute on a wire frame is often thrown aside after landing.

Range, 9M28K (122 mm)	**13.4 km** firing range, 122 mm rocket with 3 PTM-3; Grad family launchers
Minimum range, 9M28K (122 mm)	**2.5 km** firing range, 122 mm rocket with 3 PTM-3; Grad family launchers
Range, 9M59 (220 mm)	**35 km** maximum, 220 mm rocket with 9 PTM-3; 9P140 Uragan
Minimum range, 9M59 (220 mm)	**10 km** 220 mm rocket with 9 PTM-3; 9P140 Uragan
Range, 9M55K4 (300 mm)	**70 km** maximum, 300 mm rocket with 25 PTM-3; Smerch family launchers
Minimum range, 9M55K4 (300 mm)	**20 km** 300 mm rocket with 25 PTM-3; Smerch family launchers
Fuze	**VT-06 (BT-06) magnetic influence fuze, battery powered (printed BT-06 in the GICHD guide); arms about 60 s after ejection** Reaction to change in magnetic field; battery RTs-53U
Charge	**1.8 kg TG-40 (RDX/TNT 60/40), shaped**
Weight, mine	**4.9 kg**
Dimensions, mine	**330 x 84 x 84 mm**

SEEN WITH UMZ (180 mines per basic load (180 tubes, one mine each)); 9M28K (3 mines per 122 mm Grad rocket (ru-Wikipedia table); the GICHD guide and en-Wikipedia name the 122 mm carrier 9M22K); 9M59 (9 mines per 220 mm rocket (Uragan)); 9M55K4 (25 mines per 300 mm rocket (Smerch, Tornado))

SOURCES ARTGUNS ATP GICHD2 HI IISS25 INSTO MONIT2 TELETYP WEG77 WEG78 WEG2015 WP-EN141 WP-EN152 WP-RU93 WP-RU182 WP-RU183 WP-RU184 not in WEG Updated 2026-10-22

PTM-3 ПТМ-3

scatterable shaped-charge anti-tank mine (magnetic fuze)

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

PTM-4 ПТМ-4 «Нокаут-2»

NA

Scatterable anti-tank mine, magnetic fuze; laid by rocket, launcher, helicopter or hand In service 2005

OPERATED BY **engineer-sapper brigade**, ISDM Zemledeliye battalion (a layer of this mine) R 2022 L
engineer-sapper regiment, Separate ISDM Zemledeliye battery (a layer of this mine), planned 2022 R 2022 L

INDICATES *Mines or KPTM-4 canisters on the ground show remote or hand laying by Russian forces (2022-2025), by drone since late 2023. A rocket-laid field may point to ISDM Zemledeliye, reported with engineer brigades in 2022.*

RECOGNISE **Body** Steel half-cylinder, 350 x 110 x 55 mm: flat top with a gutter-shaped liner, rounded underside
Stabiliser Spring wire frame with fabric cover on the flat face; opens on leaving the canister and may stay on or lie beside the mine
Cassette KPTM-4: hollow cylinder holding two mines folded together; a stencil on the canister gives the production year (2021 on a PTM-4M canister)
Fuze end VT-14 fuze on one end face: PTM-4 has an elongated 3-contact module, PTM-4M a round 5-contact module (close only)

CONFUSED WITH **PTM-3** p. 329 Close up: PTM-3 is a square-section steel bar with a liner recess on each of four faces, no fabric cover; PTM-4 is half-round with one liner face

MOBILITY Munition: no mobility. Carries are by the cassette, rocket, launcher, helicopter set, drone or hand kit.

Self-destruct	**8, 12, 24 or 48 h (set before laying); self-deactivation after 120 days** programmed, Set time programmed before laying; 120 days if not programmed (Russian blog) or if self-destruct fails (Ukrainian MoD media); times reported, not confirmed
Type, fuze	**Shaped-charge bottom-attack mine; VT-14 battery-powered magnetic influence fuze** PTM-4; gutter-shaped liner, two-point initiation
Charge	**1.4 kg TG-40 (RDX-TNT); mine weight 3.25 kg** PTM-4; 1,400 g fill, 3,250 g all-up weight; stencil reads TG-40; Ukrainian MoD media give a TNT-RDX mix
Dimensions	**350 x 110 x 55 mm** length x width x height of the body
Arming delay after release	**40 to 80 s (about 50 s)** after ejection from the cassette
Mines per cassette	**2** KPTM-4

SOURCES ARMINF3 FENIX2 GICHD2 IZV223 MIL105 MONIT2 SAPPERS6 TELETYP TOPWAR13 WP-UK3 not in WEG

Updated 2026-10-22

PTM-4 Nokaut-2 ПТМ-4

scatterable shaped-charge anti-tank mine (magnetic fuze)

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

TM-46 ТМ-46

anti-tank blast mine legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

TM-46 anti-tank mine TM-46

NA

Anti-tank blast mine, hand- or machine-laid In service 1946

OPERATED BY **engineer-sapper regiment**, obstacle platoon, three GMZ-3 minelayers; TM-46 holdings since 2022 unconfirmed D 2024 L

motor rifle brigade, engineer-sapper company, mobile obstacle detachment with its mine-laying vehicles; TM-46 holdings since 2022 unconfirmed D 2024 L

INDICATES *A Soviet-era mine of 1946, not among Russian anti-tank mines in service about 2009. Russian stocks or laying since 2022 are unconfirmed, so a find does not by itself indicate a current Russian unit type.*

RECOGNISE **Shape** Flat round steel case, stamped, with a slightly domed, ridged top and a filling neck; fuze screwed into the top

Size Diameter 300 to 306 mm, pressure plate 200 mm; body 94 mm high without fuze; complete mine 8.6 kg

Fuze MVM pressure fuze in the top, mine 108 mm high; or MVSh-46 tilt-rod fuze, mine 260 to 261 mm high

Markings Usually olive green with black stencilled lettering

Members TM-46 and TMN-46 identical from above; TMN-46 has a second fuze well in the base, seen only from underneath

MOBILITY Static mine; not mobile.

Type	**Anti-tank blast mine, steel case, pressure or tilt-rod fuze; TMN-46 adds a base fuze well**
Charge	**5.3 to 5.7 kg TNT; 5.7 kg cast TNT or ammonite A-50** 5.7 kg in the Soviet manual; 5.3 kg TNT in US FM 100-2-3 (1991)
Weight	**8.6 kg complete**
Dimensions	**Diameter 300 to 306 mm; height 94 mm without fuze, 108 mm with MVM, 260 to 261 mm with MVSh-46** Diameter 300 mm Soviet manual, 305 mm US FM 100-2-3, 306 mm US WEG 2015, 304.8 mm Ukraine identification guide
Fuzes; self-destruct	**MVM pressure, 140 kgf (Soviet manual) or 180 kg (US); MVSh-46 tilt rod, 25 to 30 degrees under 120 to 450 kgf, or 132 kg (US); no self-destruct** TMN-46 also takes MUV, MUV-2 or MUV-3 pull fuze in the base
Laying means	**By hand; PMR-1, PMR-2 and PMR-3 trailers; GMZ, PMZ-3 and PMZ-4 minelayers; VMR-2 helicopter system** Russian 2009 catalogue names the TM-46 for the PMR, PMR-2 and PMR-3 only; US guides also list GMZ-3 and PMZ-4

SEEN WITH GMZ-3 tracked minelayer (3 per obstacle platoon); PMR-3 and PMZ-4 towed minelayers

VARIANTS **TMN-46** Identical from above; second fuze well in the base, offset from the centre. Takes a pull-type anti-handling fuze (MUV, MUV-2 or MUV-3) in the base well.

SOURCES ATP BTWB FENIX6 FM100 KAT NOLAND2 RWW WEG2015 WP-EN180 WP-RU239 not in WEG

Updated 2026-10-21

TM-57 TM-57

NA

Anti-tank blast mine, pressure or tilt-rod fuze Introduced 1958

OPERATED BY **Unidentified unit**, Found, rarely, in minefields of the northern Black Sea coast (undated blog, autumn 2023 or later); which side laid them is not stated R 2023 L

Engineer units with mine-layers (inferred; no source names a unit), Laid by hand or by layers PMR-3, PMZ-4, GMZ-2 and GMZ-3; engineer units and subunits hold the PMZ-4, GMZ-2 and GMZ-3 (Russian catalogue); brigade engineer-sapper companies and engineer regiments and brigades hold mine-layers R 2024 L

INDICATES *Soviet-era mine, rare since 2022: a Russian-side blog (2023 or later) reports it in southern Ukrainian minefields and shows one it says Ukrainian forces laid in Donbas. A find does not show which side laid it.*

RECOGNISE **Shape** Flat round steel box 320 mm across, 110 mm high with MV-57 fuze; stepped pressure lid with a fuze well at the centre

Finish Olive drab case and MVZ-57 fuze; designation and maker data embossed on the base and stencilled black on the lid

Fuze MV-57 or MVZ-57 pressure fuze sits in the lid well; MVSh-57 tilt-rod fuze head stands 215 mm above the lid

Side well Second fuze well plugged in the side wall; folding wire carrying handle on the base (close only)

CONFUSED WITH **TM-62M** p. 332 Full view: TM-57 has a stepped pressure lid 22 cm across; TM-62M has no lid, and its fuze face of about 12 cm is the only target sensor. Both are 32 cm across.

Type	**Anti-tank blast mine, pressure and tilt-rod fuzes**
Mass	**9.0–9.5 kg** Complete mine; Soviet manual 9.0 kg, Russian engineer catalogue 9.0–9.5 kg, US Army (1979) 9.5 kg, claim
Charge	**6.5 kg TNT or 7.0 kg MS/TGA** By fill: cast TNT 6.5 kg (Soviet manual, Russian catalogue); MS or TGA mixture 7.0 kg (Russian catalogue), claim
Dimensions	**320 mm diameter, 110 mm high** Height with MV-57 fuze fitted, claim
Fuzes	**MV-57 and MVZ-57 pressure, MVSh-57 tilt-rod** Actuating force of the mine 200-500 kgf (tilt rod: at 25-30 degrees of deflection), claim
Laying means	**By hand; towed layers PMR-3 and PMZ-4; tracked layers GMZ-2 and GMZ-3 (entry zemledeliye)** Mechanical laying uses the MVZ-57 fuze

SEEN WITH PMR-3 towed mine-layer; PMZ-4 towed mine-layer; GMZ-3 tracked mine-layer (entry zemledeliye); GMZ-2 tracked mine-layer; MV-57, MVZ-57 and MVSh-57 fuzes (1 per mine)

VARIANTS **TM-57 with MV-57 or MVZ-57** Pressure fuze in the lid well; mine 110 mm high with MV-57. **TM-57 with MVSh-57** Tilt rod 215 mm high above the lid, left above the ground when buried.

SOURCES ARMCON ATP BOCN BTWB BULLET2 KAT TELE TMMAN WEG2015 WP-EN181 WP-RU240 not in WEG

Updated 2026-10-21

TM-57 TM-57

anti-tank blast mine legacy

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

TM-62 TM-62

anti-tank blast mine

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

TM-62 anti-tank blast mine family TM-62

NA

Anti-tank blast mine family; laid by hand, by minelayers or from helicopters In service 1963

OPERATED BY **engineer-sapper brigade**, obstacle platoon with GMZ-3 tracked layers, which carry TM-62M and P3; engineer regiments hold GMZ too (inferred), 3 GMZ-3 per obstacle platoon
D 2024 L

INDICATES *Rows of TM-62 may be the work of engineer layers: each GMZ-3 carries TM-62M or P3, three to an obstacle platoon. Russia and Ukraine both hold the type, so a find alone does not show whose field it is. Russian MoD claimed drone drops in 2026.*

RECOGNISE **Shape and size** Flat round box 320 mm across, 128 mm high with fuze fitted (one EOD guide: 102 mm); one fuze well at the centre of the top; no pressure plate on the case.

Fuze Usual fuze MVCh-62, 135 mm across and 60 mm high, with an arming button; rod fuze MVSh-62 (tilt rod) gives 330 mm overall height.

Colour and markings TM-62M dark or olive green, black paint on side and top: designation, lot code (factory-lot-year, e.g. A98-13-86), fill code TGA. P3 marked by embossing.

CONFUSED WITH **TM-57** p. 331 TM-57 has a side fuze well for a second fuze; no TM-62 member has one. Diameter 312 mm against 320 mm, a small gap.

MOBILITY A mine: laid by hand, by towed or tracked minelayers or from helicopter systems; no self-destruct.

Charge, TM-62M	**7–7.5 kg** TNT 7.0 kg; MS or TGA mixture (RDX, TNT, aluminium) 7.5 kg, claim
Weight, TM-62M	**9.5–10 kg** complete mine, by fuze fitted, claim
Dimensions, TM-62M	**320 mm diameter; 128 mm or 101.8–102 mm high** 128 mm with MV-62, MVZ-62, MVCh-62, MVP-62, MVP-62M, MVK-62 or MVD-62 fitted (Soviet manual, Russian catalogue, Ukrainian handbook); 102 mm in a Ukrainian EOD guide, 101.8 mm in US WEG 2015, claim
Weight, TM-62P3	**7.5–8.7 kg** complete mine: 8–8.7 kg by the Soviet manual summary, 7.5 or 8.2 kg by a Ukrainian handbook (charge 6.5–7.7 kg), claim
Size and weight, TM-62D	**340 x 290–295 x 178 mm; 11.3–13 kg** wooden box, height with fuze; charge 5.8–11.1 kg; 290 mm in the Soviet manual summary, 295 mm in Ukrainian EOD guides, claim
Size and weight, TM-62B	**315 mm diameter, 125 mm high; 8.6 kg** no case; charge 8.2 kg, claim
Fuzes, as fitted	**MVCh-62 (standard); also MVZ-62, MVP-62, MVP-62M, MVK-62, MVD-62, MVSh-62, MVN-72, MVN-80** MVCh-62 and MVZ-62 standard on TM-62M; MVP-62 standard on P, P2, D and B; MVK-62 standard on P, P2, P3 and T (Soviet manual); MVN-72 and MVN-80 magnetic; MVSh-62 tilt-rod, claim

SEEN WITH GMZ-3 tracked minelayer (entry zemledeliye) (3 GMZ-3 per obstacle platoon)

SOURCES AIF17 ARMOR ATP BPICK2 KAT MONITOR3 RAMBLER3 SAPPERS7 TASSM WEG2015 WP-EN182 WP-RU241 WW2W not in WEG

Updated 2026-10-22

TM-83 TM-83

NA

Side-attack anti-tank mine; hand-laid beside a route, seismic and infrared fuze In service 1983

OPERATED BY **Engineer troops (sapper subunits)**, sapper squads and platoons laying in two-man teams, one mine kit per team
D 2010 L

Unidentified unit, unit not named; one mine laid beside a road in Ukraine, documented 23 March 2023, place not given, 1
R 2023-03 L

INDICATES *A TM-83 beside a route indicates hand-laid off-route mining by sapper subunits; Russian use in Ukraine was reported in 2023. The mine stands 5 to 50 m to the side of the route it covers.*

RECOGNISE **Body** Steel cylinder, concave copper-lined face towards the route; lid with igniter socket and carrying handle at the rear; two side trunnions with grips

Size Body 250 mm in diameter; stands 440 mm high on the crate lid, 670 mm on the crate, up to 950 mm on a stake

Mount Stands on its own wooden crate (footprint 455 x 377 mm) or the crate lid, or on a stake driven into a tree, post or wall

Sensors Infrared sensor with sight bar and bead on top; separate aluminium cylinder (seismic sensor) on a spike nearby, linked by cable; fuze unit at the rear

Cover Khaki-and-white fabric cover over the body, leaving the liner face and the infrared sensor open

MOBILITY Static once laid; hand emplacement only. Not used on marsh or in fog under 50 m visibility.

Range, EFP	**30–50 m** range of destruction (дальность поражения); WEG: effective, Against a tank from the side, 100 mm armour pierced, 80 mm hole: 50 m in the Belarusian manual, Veremeev and WEG 2015; 30 m at 30 degrees in Jane's via English Wikipedia
Minimum range, EFP	**5 m** Same conditions as the range row
Weight, mine and charge	**20.4 kg fully equipped (Belarusian manual, Russian encyclopedia, WEG 2015); 28.1 kg full assembly (Veremeev 2013, English Wikipedia); fuze 2.7 kg; charge 9.6 kg TG 40/60** Mine with fuze, without crate (20.4 kg)
Dimensions, in position	**455 x 377 mm; height 440 mm on crate lid, 670 mm on crate, up to 950 mm on stake** Battle position, mine on crate lid, crate or stake
Fuze and operating life	**Non-contact, two-channel: seismic and infrared sensors; MD-5M detonator; works at least 30 days on its batteries, no self-destruct (Russian sources); WEG 2015 gives self-destruct 30 days** Sensor reach against a tank: seismic 200 to 250 m, infrared 90 to 120 m; -30 to +50 C; arming delay 1 to 30 min; alternative breakwire fuzes MVE-72 (60 m wire) or MVE-NS
Laying means	**By hand only; two-man team, up to 15 to 20 min; the crate or its lid is the base** Mine stands beside the route, aimed with a sight

SOURCES BNTU NSI TERRO2 WEG2015 WLAND WMC46 WP-EN183 WP-RU242 WWIKI not in WEG

Updated 2026-10-21

TM-83 TM-83

side-attack anti-tank mine (explosively formed penetrator)

No entry yet. Its designations are in Table 1; this space is reserved for the entry.

Source register

Codes are printed at the foot of each entry and are links to the lines below. Web sources are coded by publisher and numbered: AFT Airforce Technology, APA Air Power Australia, AR Army Recognition, ARMADA Armada International, BCAT Bellingcat, BMPD bmpd blog, CSIS CSIS Missile Threat, FAS Federation of American Scientists, GS GlobalSecurity, MIL Militarnyi, MISS missilery.info, ORYX Oryx, RDP Russian Defense Policy, RUSI RUSI web, TASS TASS, TOPWAR Topwar, TWZ The War Zone, VPK VPK, VRF Vooruzhenie Rossii, WEG WEG online (ODIN), WMC Wikimedia Commons, WP Wikipedia (language after the hyphen), WSPOT WarSpotting. Other codes name a single document. Each web address is a link; "read" gives the date the page was last read for this guide, where it was recorded.

3G Russian Electronic Warfare Systems, Analytic Insight Report, pp. 42-44. 3GIMBALS, 2023-06-07.
https://sprotyvg7.com.ua/wp-content/uploads/2023/11/COGINT_Analytic_Insight_Report_Russian_EW_Systems__231119_114942.pdf

360RU Тысяча километров и 50 килограммов боевой части. Как устроена экспортная «Гарпия». 360.ru, 2026-08-23.
https://360.ru/tekst/army/kak-ustroena-eksportnaja-garpija/

AB Russian 'Blyatmobile' - The Turtle Tank. The Armourers Bench, 2024-04-14.
https://armoursersbench.com/2024/04/14/russian-blyatmobile-the-turtle-tank/

ACA Ukraine Strikes Russian Early-Warning Radars. Arms Control Association, 2024-07.
https://www.armscontrol.org/act/2024-07/news/ukraine-strikes-russian-early-warning-radars

ACADEM Многоликая «НОНА» (Энциклопедия танков, from Oruzhie no. 7, 1999). dic.academic.ru, 1999/2010.
https://dic.academic.ru/dic.nsf/enc_tech/4376/Многоликая

ACONF Russian Command Staff Vehicle R-149MA1. armedconflicts.com.
https://www.armedconflicts.com/Russian-Command-Staff-Vehicle-R-149MA1-t252192

ACONF2 SOV - 203 mm 3VOF34 (203 mm trieštivo trhavá munícia). armedconflicts.com.
https://www.armedconflicts.com/-t70932

ACONF145 R-145BM (armedconflicts.com). Armed Conflicts, 2005.
https://www.armedconflicts.com/topic/view/28534

ACW Possible Oreshnik Deployment in Belarus (Duitsman, Eveleth, Lewis). Arms Control Wonk, 2025-12-26.
https://www.armscontrolwonk.com/archive/1221212/possible-oreshnik-deployment-in-belarus/

ADU Aleut snow and swamp-going vehicle will be demonstrated for the first time at the Army 2021 forum in Ulan-Ude. Aviation & Defence Universe, 2021-08-19.
https://aviation-defence-universe.com/aleut-snow-and-swamp-going-vehicle-will-be-demonstrated-for-the-first-time-at-the-army-2021-forum-in-ulan-ude

AEX17 V podrazdeleniia REB postupili novye kompleksy Krasukha-2O i Moskva-1. AEX.RU (relaying Russian MoD), 2017-08-31.
https://www.aex.ru/news/2017/8/31/174451/

AFT1 Ka-52 Alligator Attack Helicopter. Airforce Technology. Read 2026-09-29.
https://www.airforce-technology.com/projects/ka52-alligator-attack-helicopter-russia/

AFT2 Mi-28A/N Havoc Combat Helicopter. Airforce Technology. Read 2026-09-29.
https://www.airforce-technology.com/projects/mi-28a-n-havoc/

AFT3 Mi-24P (Mi-25 and Mi-35) Hind. Airforce Technology. Read 2026-09-29.
https://www.airforce-technology.com/projects/hind/

AG1 1B12, Командная машина. Army Guide. Read 2026-09-29.
http://www.army-guide.com/rus/product4755.html

AG2 2C43 Мальва, Самоходная гаубица. Army Guide. Read 2026-09-29.
https://www.army-guide.com/rus/product.php?prodID=6099&printmode=1

AG3 2S4 Tyulpan (Samokhodnyy minomet). Army Guide. Read 2026-09-29.
http://www.army-guide.com/rus/product1805.html

AG4 2S19 MSTA-S self-propelled howitzer. Army-Guide.com, 2026. Read 2026-10-20.
https://www.army-guide.com/eng/product1216.html

AG5 BRDM-2 (Reconnaissance Vehicle). army-guide.com. Read 2026-10-04.
http://www.army-guide.com/eng/product952.html

AG6 Грань (Army Guide). Army Guide. Read 2026-10-20.
http://www.army-guide.com/rus/product.php?prodID=3552&printmode=1

AG7 2C9 Нона-С (Самоходный миномет). army-guide.com. Read 2026-10-20.
http://www.army-guide.com/rus/product1785.html

AG8 Kapustnik-B, Command vehicle. Army Guide. Read 2026-09-29.
https://www.army-guide.com/eng//product.php?prodID=2383&printmode=1

AI Russia Plans to Deploy Six Launchers and 120 North Korean Missiles in Voronezh Region. ArmyInform (Ukrainian MoD news agency), 2026-08-14.
https://armyinform.com.ua/en/2026/08/14/russia-plans-to-deploy-six-launchers-and-120-north-korean-missiles-in-voronezh-region-defence-intelligence-representative/

AI26 $50 Million Explosion: Drone Operators Burn Expensive Occupier Radar in Luhansk Region. ArmyInform (Ukrainian MoD), 2026-03-12.
https://armyinform.com.ua/en/2026/03/12/50-million-explosion-drone-operators-burn-expensive-occupier-radar-in-luhansk-region

AIBUS Russia deploys mine-clearing robots in eastern Ukraine. AI Business, 2022-05.
https://aibusiness.com/verticals/russia-deploys-mine-clearing-robots-in-eastern-ukraine

AIF Что за новейшую машину разминирования БМР-3М «Вепрь» применили в Мариуполе? Argumenty i Fakty, 2022-09-07.
https://aif.ru/politics/world/chto_za_noveyshuyu_mashinu_razminirovaniya_bmr-3m_vepr_primenili_v_mariupole

AIF1 Боевая работа артиллерии ВДВ в зоне СВО. Argumenty i Fakty (MoD video).
https://aif.ru/politics/gallery/boevaya_rabota_artillerii_vdv_v_zone_svo

AIF2 Chto za kompleks REB Palantin primenyayut na Ukraine. Argumenty i Fakty.
https://aif.ru/society/army/chto_za_kompleks_reb_palantin_primenyayut_na_Ukraine

AIF3 «Смерть на поводке». Жуткое оружие устроило кровавое побоище под Курском. Argumenty i Fakty, 2025.
https://aif.ru/politics/russia/smert-na-povodke-zhutkoe-oruzhie-ustroilo-krovavoe-poboishche-pod-kurskom

AIF4 Что за ружье РЭБ ЛПД-801 применили на Украине. Argumenty i Fakty (from TASS), 2022-07.
https://aif.ru/society/army/chto_za_ruzhe_radioelektronnoy_borby_lpd-801_primenili_na_ukraine

AIF5 Что представляет собой сверхзвуковая крылатая ракета Х-32? Argumenty i Fakty.
https://aif.ru/dontknows/file/chto_predstavlyaet_soboy_sverhzvukovaya_krylataya_raketa_h-32

AIF6 Что за вертолёты РЭБ Ми-8МТПР-1 применяют на Украине? Argumenty i Fakty (aif.ru).
https://aif.ru/politics/world/chto_za_vertolyoty_reb_mi-8mtpr-1_primenyayut_na_ukraine

AIF7 Chto za novye nizkovysotnye RLS Podlet-K1 postupili v VKS RF? Argumenty i Fakty, 2022-07-06.
https://aif.ru/society/army/chto_za_novye_nizkovysotnye_rls_podlet-k1_postupili_v_vks_rf

AIF8 Что за перспективные РЛС «Ниобий» задействовали на Украине? Argumenty i Fakty (aif.ru), 2022-06-10.
https://aif.ru/society/army/chto_za_perspektivnye_rls_niobiy_zadeystvovali_na_ukraine

AIF9 Что за «Аистёнок» ведёт контрбатарейную борьбу на Украине? Argumenty i Fakty, 2022.
https://aif.ru/society/army/chto_za_aistyonok_vedyot_kontrbatareynuyu_borbu_na_ukraine

AIF10 Вода — не преграда. Бойцы «Центра» отработали наведение понтонной переправы. Аргументы и факты, 2025-02-26.
https://aif.ru/politics/russia/voda-ne-pregrada-boycy-centra-otrabotali-navedenie-pontonnoy-perepravy

AIF11 Chto izvestno o nepronitsaemom kupole zashchity ot dronov Pole-21? Argumenty i Fakty, 2021-04-17.
https://aif.ru/society/army/chto_izvestno_o_nepronicaemom_kupole_zashchity_ot_dronov_pole_21

AIF12 Что представляет собой зенитный ракетный комплекс С-350 «Витязь»? Argumenty i Fakty.
https://aif.ru/dontknows/file/chto_predstavlyaet_soboy_zenitnyy_raketnyy_kompleks_s-350_vityaz

AIF13 В Тверскую область поступили семь новых РСЗО «Смерч». AiF Tver, 2017-04-18.
https://tver.aif.ru/society/army/v_tverskuyu_oblast_postupili_sem_novyh_rszo_smerch

AIF14 Rabota bespilotnikov Superkam na yuzhnodonetskom napravlenii. Argumenty i Fakty, 2024-01-24.
https://aif.ru/politics/gallery/rabota_bespilotnikov_superkam_na_yuzhnodoneckom_napravlenii

AIF15 Chto za rossiyskaya sistema REB Tirada-2S otklyuchila Starlink na Ukraine? Argumenty i Fakty, 2022-10.
https://aif.ru/society/army/chto_za_rossiyskaya_sistema_reb_tirada-2s_otklyuchila_starlink_na_ukraine

AIF16 Что представляет собой ракетный комплекс «Бал»? Argumenty i Fakty (aif.ru), 2016-11-22.
https://aif.ru/dontknows/file/chto_predstavlyaet_soboy_raketnyy_kompleks_bal

AIF17 ВС РФ применили переделанные мины ТМ-62 для подрыва «опорников» противника. AiF, citing Russian MoD, 2024-08-02.
https://aif.ru/society/army/vs-rf-primenili-peredelannye-miny-tm-62-dlya-podryva-opornikov-protivnika

AIF18 Что за роботы-саперы «Уран-6» проводят разминирование на Украине? Argumenty i Fakty, 2022-05.
https://aif.ru/society/army/chto_za_roboty-sapery_uran-6_provodyat_razminirovanie_na_ukraine

AIF19 Даже коптер не пролетит: зенитчики «Днепра» пачками отстреливают дроны ВСУ. Argumenty i Fakty, 2024-05.
https://aif.ru/politics/russia/dazhe-kopter-ne-proletit-zenitchiki-dnepra-pachkami-otstrelivayut-drony-vsu

AIF22 Что за противокорабельные комплексы «Бал» впервые применили на Украине? Argumenty i Fakty (aif.ru), 2022-04-21.
https://aif.ru/politics/russia/chto_za_protivokorabelnye_kompleksy_bal_vpervye_primenili_na_ukraine

AIF35 Вертолет Ми-35. Argumenty i Fakty (aif.ru).
https://aif.ru/politics/gallery/vertolet_mi-35

AIFRU Подарок для десанта. Новая самоходка «Вена» громит натовскую броню на СВО. Argumenty i Fakty, 2023.
https://aif.ru/society/army/podarok_dlya_desanta_novaya_samohodka_vena_gromit_natovskuyu_bronyu_na_svo

AIFSVO Боевая работа вертолетчиков Ми-35М неуправляемыми ракетами в зоне СВО. Argumenty i Fakty (aif.ru).
https://aif.ru/politics/gallery/boevaya-rabota-vertoletchikov-mi-35m-neupravlyaemymi-raketami-v-zone-svo

AIN Latest Russian Strikes on Syria Employ New Cruise Missile. AIN Online, 2015-11-20.
https://backend.ainonline.com/aviation-news/defense/2015-11-20/latest-russian-strikes-syria-employ-new-cruise-missile

AIN2 Russian army receive Rychag-AVM helicopters (title from URL). AIN Online, 2019-06-15.
https://backend.ainonline.com/aviation-news/defense/2019-06-15/russian-army-receive-rychag-avm-helicopters

AINF Syly oborony urazyly desantnyi kater BK-16, punkt upravlinnia BpLA ta inshi vorozhi tsili. ArmyInform (Ukrainian MoD), 2026-09-03.
https://armyinform.com.ua/2026/09/03/syly-oborony-urazyly-desantnyj-kater-bk-16-punkt-upravlinnya-bpla-ta-inshi-vorozhi-czili/

AINF1 Raid operators destroyed valuable counter-drone radars of the occupiers. ArmyInform (Ukrainian MoD), 2026-01-04.
https://armyinform.com.ua/en/2026/01/04/raid-operators-destroyed-valuable-counter-drone-radars-of-the-occupiers

AINF2 «Борисоглебск-2»: про ворожий комплекс радіоелектронної боротьби. ArmyInform (Ukrainian MoD), 2022-04-26.
https://armyinform.com.ua/2022/04/26/borysoglebsk-2-pro-vorozhyj-kompleks-radioelektronnoyi-borotby/

AINF3 R-60 missile on a Geran: DIU unveils a new modification of a Russian strike UAV. ArmyInform (Ukrainian MoD), 2025-12-15.
https://armyinform.com.ua/en/2025/12/15/r-60-missile-on-a-geran-diu-unveils-a-new-modification-of-a-russian-strike-uav

AINF4 ЗРК С-350 «Витязь»: що про нього відомо. ArmyInform (Ukrainian MoD), 2022-08-17.
https://armyinform.com.ua/2022/08/17/zrk-s-350-vytyaz-shho-pro-nogo-vidomo/

AINF5 How the Shilka has changed: its history and current role in the war. ArmyInform (Ukrainian MoD), 2025-11-20.
https://armyinform.com.ua/en/2025/11/20/how-the-shilka-has-changed-its-history-and-current-role-in-the-war/

AINF6 FPV Drones Destroyed Two New Russian Electronic Warfare Systems in Kharkiv Region. ArmyInform (Ukrainian MoD), 2026-01-29.
https://armyinform.com.ua/en/2026/01/29/fpv-drones-destroyed-two-new-russian-electronic-warfare-systems-in-kharkiv-region/

AINF22 ZSU destroyed Aleut in artillery strike (Ukr.). ArmyInform (Ukrainian MoD), 2022-04-01.
https://armyinform.com.ua/2022/04/01/zsu-pid-chas-tochnogo-artuderu-po-tehniczi-okupantiv-znyshhyly-eksklyuzyv-bojovyj-arktychnyj-vsyudyhid/

AINF23 Another Russian tracked novelty burned in Zaporizhzhia (Ukr.). ArmyInform (Ukrainian MoD), 2023-11-23.
https://armyinform.com.ua/2023/11/23/shhe-odnu-rosijsku-gusenychnu-novynku-spalyly-na-zaporizhzhi/

AINF24 In Kursk Region, Paratroopers Destroy Russian Radar That Tracked Aircraft and UAVs. ArmyInform (Ukrainian MoD), 2026-03-09.
https://armyinform.com.ua/en/2026/03/09/in-kursk-region-paratroopers-destroy-russian-radar-that-tracked-aircraft-and-uavs/

AINF25 Знищено два російські катери типу «Раптор» біля острова Зміїний. ArmyInform (Ukrainian MoD news agency), 2022-05-02.
https://armyinform.com.ua/2022/05/02/znyshheno-dva-rosijski-katery-typu-raptor-bilya-ostrova-zmiyinyj-cze-robota-bayraktar-golovnokomanduvach-zsu/

AINF222 «Раптор»: що відомо про катери окупантів, які знищив турецький «Прапороносець». ArmyInform (Ukrainian MoD news agency), 2022-05-02.
https://armyinform.com.ua/2022/05/02/raptor-shho-vidomo-pro-katery-okupantiv-yaki-znyshhyv-turechchyj-praporonosecz/

AINF232 Ukrainian soldiers hunted down Russian Svet-KU and Predel-E. ArmyInform (Ukrainian MoD), 2023-08-28.
https://armyinform.com.ua/2023/08/28/ukrayinski-voyiny-vpolyuvaly-rosijsku-svet-ku-ta-lyshyly-okupantiv-bez-predel-a/

AINF242 Rare Russian Svet-KU complex turned into scrap. ArmyInform (Ukrainian MoD), 2024-06-04.
https://armyinform.com.ua/2024/06/04/ridkisnyj-kompleks-rosiyan-svyet-ka-peretvoryvsya-na-bruht/

AIRBASE Sredstva REB i RTR podrazdelenii VDV (forum thread, MoD press quotes, 2012-14). forums.airbase.ru, 2014-05-23.
https://forums.airbase.ru/2014/05/t89725--sredstva-reb-i-rtr-podrazdelenij-vdv.html

AIRW35 Ми-35М. airwar.ru (Уголок неба), undated (text of the late 1990s).
http://www.airwar.ru/enc/ah/mi35m.html

AIRWAR Ка-27ПЛ. airwar.ru (Уголок неба).
http://www.airwar.ru/enc/sh/ka27.html

AIRWAR2 9K121 Vikhr (M) (Уголок неба). airwar.ru, after Karpenko and Ganin, Bastion 2000, 2004.
http://www.airwar.ru/weapon/aat/vichr.html

AIRWAR29 Ка-29. airwar.ru (Уголок неба).
http://www.airwar.ru/enc/sh/ka29.html

AIRWAR31 Ка-31. airwar.ru (Уголок неба).
http://www.airwar.ru/enc/sh/ka31.html

AIRWARPS Ка-27ПС. airwar.ru (Уголок неба).
http://www.airwar.ru/enc/sh/ka27ps.html

AIRWP Ми-24П. airwar.ru (Уголок неба), 2004.
http://www.airwar.ru/enc/ah/mi24p.html

AIRWV Ми-24В. airwar.ru (Уголок неба), 2004.
http://www.airwar.ru/enc/ah/mi24v.html

AIRWVM Ми-24ВМ. airwar.ru (Уголок неба), undated (text of about 2000).
http://www.airwar.ru/enc/ah/mi24vm.html

ALLMINES Противодесантная мина ПДМ-1М. Allmines (allmines.net).
https://allmines.net/catalog/russia/mines/pdm1/

ALT 7-й отдельный мотострелковый полк получил более тридцати боевых машин БМП-3. altyn73 blog (LiveJournal), 2021.
https://altyn73.livejournal.com/1452802.html

AMAL 26-й полк РХБЗ: участие в спецоперации, структура и вооружение. amalantra.ru, 2025.
https://amalantra.ru/26-polk-rhbz/

AMAL2 Мина «Грань»: ЧВК «Вагнер» применяет управляемый боеприпас в Бахмуте. amalantra.ru, undated (spring 2023).
https://amalantra.ru/mina-gran/

AMAL3 ПТРК "Рефлекс-М" с ракетами "Инвар": более 30 лет без аналогов. amalantra.ru, 2025.
https://amalantra.ru/ptrk-refleks-s-raketami-invar/

AMAL4 Новый НРТК «Омич-2» испытывается российским десантом. Amalantra (blog), 2025.
https://amalantra.ru/novyy-nrtk-omich-2-ispytyvayetsya-rossiyskim-desantom-v-boyevykh-usloviyakh/

AMAL5 РЭБ «Волнорез»: характеристики, частоты, установка, применение в СВО. amalantra.ru, 2023-11.
https://amalantra.ru/rab-volnorez/

AMIC Минобороны отказалось от легендарной гаубицы Д-30. IA Amitel (amic.ru), relaying Izvestia, 2013-02-27.
https://www.amic.ru/news/minoborony-otkazalos-ot-legendarnoy-gaubicy-d-30-210058

AMLN 217-й полк ВДВ: участие в СВО, состав, вооружение и боевой путь. amalantra.ru, 2025.
https://amalantra.ru/217-polk-vdv/

AMMO1 240-мм выстрел 3ВФ2 с активно-реактивной миной АРМ-0 «Гагара» (3Ф2) и зарядом 4БН56. Боеприпасник (soviet-ammo.ucoz.ru), quoting 2S4 technical description part 3 (1983).
http://soviet-ammo.ucoz.ru/index/240_3vf2/0-210

AMMO2 240-мм выстрел 3В011 с активно-реактивной миной 308 «Нерпа». Боеприпасник (soviet-ammo.ucoz.ru).
http://soviet-ammo.ucoz.ru/index/240_3o8/0-160

AMR Russia unveils its Orion-E MALE drone in attack configuration. Asian Military Review, 2021-03.
https://www.asianmilitaryreview.com/2021/03/russia-unveils-its-orion-e-male-drone-in-attack-configuration/

ANNA RLS Nebo-M razvernuli pod gorodom Naryan-Mar (citing Izvestia, 17 Nov 2020). ANNA News, 2020-11-17.
https://anna-news.info/rls-nebo-m-razvernuli-pod-gorodom-naryan-mar/

ANTIKOR Новый комплекс радиоэлектронной борьбы "Силок 01" стал трофеем ВСУ. Antikor (Ukrainian news site), 2022-09-04.
https://antikor.info/ru/articles/571781-novyj_kompleks_radioelektronnoj_borjby_silok_01_stal_trofeem_vsu

AP Research expert tells UN it has 'irrefutably' established missile debris in Ukraine is North Korean. Associated Press via WSLS, 2024-06-29.
https://www.wsls.com/news/world/2024/06/29/research-expert-tells-un-it-has-irrefutably-established-missile-debris-in-ukraine-is-north-korean/

APA1 Almaz-Antey 40R6 / S-400 Triumf Self Propelled Air Defence System / SA-21 (Kopp). Air Power Australia, 2009-05, updated 2012-04. Read 2026-09-29.
https://www.ausairpower.net/APA-S-400-Triumf.html

APA2 Almaz S-300P/PT/PS/PMU/PMU1/PMU2 Self Propelled Air Defence System / SA-10/20 (Kopp). Air Power Australia, 2012-04. Read 2026-10-07.
http://www.ausairpower.net/APA-Grumble-Gargoyle.html

APA3 Soviet/Russian Acquisition and GCI Radars (Kopp). Air Power Australia. Read 2026-09-29.
https://www.ausairpower.net/APA-Acquisition-GCI.html

APA4 Warsaw Pact / Russian Air Defence Command Posts. Air Power Australia. Read 2026-09-29.
https://www.ausairpower.net/APA-Rus-ADCP-CP.html

APA5 Russian EW systems: R-330B/T, R-934B/BM. Air Power Australia, 2014. Read 2026-10-07.
https://www.ausairpower.net/APA-REB-Systems.html

APA6 9K35 Strela-10 / SA-13 Gopher. Air Power Australia (C. Kopp), 2012-04. Read 2026-10-07.
https://www.ausairpower.net/APA-9K35-Strela-10.html

APA7 Russian / PLA Low Band Surveillance Radar Systems. Air Power Australia. Read 2026-10-06.
https://www.ausairpower.net/APA-Rus-Low-Band-Radars.html

APA8 NNIIRT Nebo SVU / RLM-M Nebo M annex (Kopp). Air Power Australia, 2012-10-03. Read 2026-09-29.
https://www.ausairpower.net/APA-Nebo-M-Annex.html

APA9 NNIIRT 1L119 Nebo SVU / RLM-M Nebo M: Assessing Russia's First Mobile VHF AESAs (APA-TR-2008-0402). Air Power Australia (C. Kopp), 2008, updated 2012. Read 2026-10-06.
https://www.ausairpower.net/APA-Nebo-SVU-Analysis.html

APA10 KBP 2K22 Tunguska / 96K6 Pantsir S1 SPAAGM, APA-TR-2009-0703 (Kopp). Air Power Australia, 2012 (page updated 2014-01-27). Read 2026-09-29.
https://www.ausairpower.net/APA-96K6-Pantsir-2K22-Tunguska.html

APA11 S-300V: 202nd Air Defence Brigade, Naro-Fominsk, APA-PE-2011-0501. Air Power Australia, 2011. Read 2026-09-29.
https://www.ausairpower.net/APA-202nd-AD-Brigade.html

APA12 Soviet/Russian SAM Site Configuration Part 2: S-300P/S-400 / SA-10/20/21, S-300V/SA-12, 2K11/SA-4, 2K12/SA-6, 9K37/317/SA-11/17, Technical Report APA-TR-2009-1205-B (O'Connor). Air Power Australia, 2012-04. Read 2026-10-20.
https://www.ausairpower.net/APA-Rus-SAM-Site-Configs-B.html

APA13 S-300V 9K81/9K81-1/9K81M Self Propelled Air Defence System / SA-12/SA-23 Giant/Gladiator (Kopp), APA-TR-2006-1202. Air Power Australia, 2012-04 (page updated 2014-01). Read 2026-09-29.
https://www.ausairpower.net/APA-Giant-Gladiator.html

APA14 NIEMI 9K33 Osa/Romb Self Propelled Air Defence System / SA-8 Gecko, APA-TR-2009-0704. Air Power Australia (Kopp), 2012. Read 2026-09-29.
https://www.ausairpower.net/APA-9K33-Osa.html

AR1 2S34 Hosta, 120 mm tracked self-propelled mortar carrier. Army Recognition. Read 2026-10-06.
https://www.armyrecognition.com/military-products/army/artillery-vehicles-and-weapons/mortar-carrier/2s34-russia-uk

AR2 Russian army Southern Military District to receive Sani 2S12A 120mm mortar. Army Recognition, 2018. Read 2026-10-06.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/russian-army-southern-military-district-to-receive-sani-2s12a-120mm-mortar

AR3 Russian Central MD forces are being armed with 2S12A Sani modernized 120mm mortars. Army Recognition, 2015. Read 2026-10-06.
https://armyrecognition.com/archives/archives-land-defense/land-defense-2015/russian-central-md-forces-are-being-armed-with-2s12a-sani-modernized-120mm-mortars

AR4 Rostec delivers new batch of mobile mortars 2S12A Sani to Russian forces in Ukraine. Army Recognition, 2024-07. Read 2026-10-06.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2024/rostec-delivers-new-batch-of-mobile-mortars-to-russian-forces-in-ukraine

AR5 2S23 Nona-SVK. Army Recognition. Read 2026-10-06.
https://www.armyrecognition.com/military-products/army/artillery-vehicles-and-weapons/mortar-carrier/2s23-nona-svk-russia-uk

AR6 Russia deploys 2S31 Vena 120mm self-propelled mortar in Ukraine. Army Recognition, 2023-09. Read 2026-10-06.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russia-deploys-2s31-vena-120mm-self-propelled-mortar-in-ukraine

AR7 2S40 Phlox. Army Recognition. Read 2026-10-06.
https://www.armyrecognition.com/military-products/army/artillery-vehicles-and-weapons/mortar-carrier/phlox-flox-120mm-self-propelled-howitzer-mortar-carrier-technical-data-sheet-specifications-pictures-video-12409163

AR8 Russian Army Receives New 2S3M 152mm Howitzers to Compensate for Losses in Ukraine. Army Recognition, 2024-04. Read 2026-10-06.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2024/russian-army-receives-new-2s3m-152mm-howitzers-to-compensate-for-losses-in-ukraine

AR9 Uraltransmash upgrades Russian 2S3M Akatsiya self-propelled howitzers. Army Recognition / TASS, 2020-06. Read 2026-10-06.
https://armyrecognition.com/archives/archives-land-defense/land-defense-2020/uraltransmash-upgrades-russian-2s3m-akatsiya-self-propelled-howitzers

AR10 Russian army uses in Ukraine 2S34 Hosta. Army Recognition, 2023-02. Read 2026-10-06.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russian-army-uses-in-ukraine-2s34-hosta-latest-generation-of-120mm-self-propelled-mortar

AR11 2S35 Koalitsiya-SV. Army Recognition. Read 2026-09-29.
https://www.armyrecognition.com/military-products/army/artillery-vehicles-and-weapons/self-propelled-howitzers/2s35-koalitsiya-sv

AR12 Russia deploys new 2S40 Phlox 120mm self-propelled mortars in Ukraine. Army Recognition, 2023-10. Read 2026-10-07.
https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russia-deploys-new-2s40-phlox-120mm-self-propelled-mortar-in-ukraine

AR13 Russian All-Terrain Tracked Vehicle GAZ-3344-20 at BIDEC 2017. Army Recognition, 2017. Read 2026-10-03.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2017/russian-all-terrain-tracked-vehicle-gaz-334-20-at-bidec-2017

AR14 Russian tank unit in Buryatia receive Aleut articulated amphibious vehicles. Army Recognition, 2021. Read 2026-10-03.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2021/russian-tank-unit-in-buryatia-receive-aleut-articulated-amphibious-vehicles

AR15 Eastern district tests GAZ-3344-20 Aleut in low temperatures. Army Recognition, 2021. Read 2026-10-03.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2021/russian-eastern-district-tests-gaz-3344-20-aleut-snow-and-swamp-going-vehicles-in-low-temperatures

AR16 Ukraine forces capture Russian 1V119 Reostat artillery fire direction vehicle. Army Recognition, 2022. Read 2026-10-04.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukraine-forces-capture-russian-1v119-reostat-artillery-fire-direction-vehicle

AR17 Ukrainian army captured Russian 1V1003 artillery command and observation vehicle. Army Recognition, 2022-09. Read 2026-10-04.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-army-captured-russian-1v1003-artillery-command-and-observation-vehicle

AR18 Russia's Northern Fleet to receive 3K60 Bal coastal defense missile system. Army Recognition (TASS text), 2016. Read 2026-10-06.
https://www.armyrecognition.com/archives/archives-naval-defense/naval-defense-2016/russia-s-northern-fleet-to-receive-3k60-bal-coastal-defense-missile-system

AR19 Russian Kh-35 Bal coastal missiles deployed in the Arctic. Army Recognition, relaying Izvestia, 2021. Read 2026-10-06.
https://armyrecognition.com/archives/archives-land-defense/land-defense-2021/russian-kh-35-bal-coastal-missiles-deployed-in-the-arctic

AR20 Russia deploys Bastion coastal missile systems in Kuril islands near Japan. Army Recognition (relays TASS 7 Dec 2022), 2022-12. Read 2026-10-06.
https://www.armyrecognition.com/archives/archives-naval-defense/naval-defense-2022/russia-deploys-bastion-coastal-missile-systems-in-kuril-islands-near-japan

AR21 The Soviet-era BAT-2 Engineering Bulldozer still defends Ukraine's frontline. Army Recognition (from ArmyInform), 2023-08. Read 2026-10-04.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/the-soviet-era-bat-2-engineering-bulldozer-stills-defends-ukraine-s-frontline

AR22 Kalashnikov Group showcased new BK-16 FAC and BK-10 RHIB at Army-2017. Army Recognition (TASS text), 2017-08. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-naval-defense/naval-defense-2017/kalashnikov-group-showcased-new-bk-16-fac-and-bk-10-rhib-at-army-2017

AR23 Rybinsk Shipyard holds keel laying ceremony of BK-16 Project 02510 speed landing boat for Russian Guard. Army Recognition (TASS text), 2021-02-08. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-naval-defense/naval-defense-2021/rybinsk-shipyard-holds-keel-laying-ceremony-of-bk-16-project-02510-speed-landing-boat-for-russian-guard

AR24 BK-16 and BK-10 boats enhance Russia's Black Sea defense against unmanned threats. Army Recognition, 2024-08-23 (date in page text). Read 2026-10-16.
https://armyrecognition.com/news/navy-news/2024/bk-16-and-bk-10-boats-enhance-russias-black-sea-defense-against-unmanned-threats

AR25 Russian paratroopers receive refurbished BMD-2 and BTR-RD armored vehicles. Army Recognition, 2023-10. Read 2026-10-03.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russian-paratroopers-receive-refurbished-bmd-2-and-btr-rd-armored-vehicles

AR26 BMD-4M airborne tracked armored infantry fighting vehicle. Army Recognition. Read 2026-10-07.
https://armyrecognition.com/military-products/army/infantry-fighting-vehicles/airborne-vehicles/bmd-4m-russia-uk

AR27 Russian Bakhcha-U combat turret from KBP will increase firepower of IFV (TASS text). Army Recognition / TASS, 2017. Read 2026-10-03.
https://armyrecognition.com/focus-analysis-conflicts/army/defence-security-industry-technology/russian-bakhcha-u-combat-turret-from-kbp-will-increase-firepower-of-ifv-infantry-fighting-vehicle-tass-10404171

AR28 Russian army in Siberia received first BMP-2M IFV armed with Berezhok combat module. Army Recognition, 2018. Read 2026-10-02.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/russian-army-in-siberia-received-first-bmp-2m-ifv-armed-with-berezhok-combat-module

AR29 Russia's BMP-3 role in Ukraine is shifting to indirect fire support vehicle. Army Recognition, 2024-01. Read 2026-09-29.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russia-s-bmp-3-role-in-ukraine-is-shifting-to-indirect-fire-support-vehicle

AR30 Deployment of new Russian BMR-3MA Vepr armored mine-clearing vehicles in Ukraine. Army Recognition, 2024-04. Read 2026-10-04.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2024/deployment-of-new-russian-bmr-3ma-vepr-armored-mine-clearing-vehicles-in-ukraine

AR31 Borisoglebsk-2 EW system delivered to a Russian military base in Tajikistan. Army Recognition, 2018. Read 2026-09-29.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/borisoglebsk-2-ew-system-delivered-to-a-russian-military-base-in-tajikistan

AR32 Ukrainian army recuperates abandonned Russian MTLB-mounted Borisoglebsk-2 jamming system. Army Recognition, 2022-09-16. Read 2026-09-29.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-army-recuperates-abandonned-russian-mtlb-mounted-borisoglebsk-2-jamming-system

AR33 R-330ZH Zhitel. Army Recognition, 2025-11-23. Read 2026-09-29.
https://www.armyrecognition.com/military-products/army/electronic-warfare/r-330zh-jamming-station-russia-uik

AR34 Russia receives new batch of BREM-1M armored recovery vehicles. Army Recognition, 2023-09. Read 2026-10-03.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2023/russia-receives-new-batch-of-brem-1m-armored-recovery-vehicles

AR35 BRM-1K Model 2021 BRM-1KM reconnaissance tracked armored vehicle. Army Recognition. Read 2026-10-03.
https://www.armyrecognition.com/military-products/army/armored-vehicles/reconnaissance-vehicles/brm-1k-model-2021-brm-1km-reconnaissance-tracked-armored-vehicle-data

AR36 Russia transfers experimental BTR-90 'Rostok' IFV from museum to Ukraine. Army Recognition, 2023-10-16. Read 2026-10-03.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russia-transfer-experimental-btr-90-rostok-ifv-from-museum-to-ukraine

AR37 Russia Delivers New Batch of BTR-MDM Armored Personnel Carriers. Army Recognition, 2024-10. Read 2026-10-03.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/ukraine-russia-conflict/russia-delivers-new-batch-of-btr-mdm-armored-personnel-carriers-to-its-armed-forces-in-ukraine

AR38 BTR-82A / BTR-82AM APC. Army Recognition. Read 2026-10-02.
https://www.armyrecognition.com/military-products/army/armoured-personnel-carriers/wheeled-vehicles/btr-82a-russia-uk

AR39 Bulsae-4 M-2018 (wheeled anti-tank vehicles). Army Recognition. Read 2026-10-08.
https://www.armyrecognition.com/military-products/army/anti-tank-systems-and-vehicles/wheeled-anti-tank-vehicles/bulsae-4-m-2018

AR40 Ukrainian Forces Destroy Rare Russian EW Vehicle RB-109A Bylina with US-donated HIMARS Rockets. Army Recognition, 2024-01. Read 2026-10-06.
https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-forces-destroy-rare-russian-ew-vehicle-rb-109a-bylina-with-us-donated-himars-rockets

AR41 Bradley M2A2 ODS. Army Recognition. Read 2026-10-08.
https://www.armyrecognition.com/military-products/army/infantry-fighting-vehicles/tracked-vehicles/bradley-m2a2-ods

AR42 MaxxPro M1224 - MRAP. Army Recognition. Read 2026-10-08.
https://www.armyrecognition.com/military-products/army/armoured-personnel-carriers/mrap/maxxpro-united-states

AR43 Army-2019: New RKhM-8 wheeled CBRN reconnaissance armored vehicle. Army Recognition, 2019. Read 2026-10-04.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/army-2019-new-rkhm-8-wheeled-cbrn-reconnaissance-armored-vehicle

AR44 D-20 Canon obusier (Description, Identification, Détails à observer). Army Recognition. Read 2026-10-07.
https://armyrecognition.com/military-products/army/artillery-vehicles-and-weapons/towed-howitzer-guns/d-20-howitzer-russia

AR45 D-30 Canon obusier tracté (Description, Identification, Détails à observer). Army Recognition. Read 2026-10-07.
https://www.armyrecognition.com/military-products/army/artillery-vehicles-and-weapons/towed-howitzer-guns/d-30-howitzer-russia

AR46 Rostec Pushes to Accelerate Delivery of 2S38. Army Recognition, 2025-01-03. Read 2026-10-07.
https://armyrecognition.com/news/army-news/2025/breaking-news-rostec-pushes-to-accelerate-delivery-of-2s38-anti-aircraft-vehicle-to-russian-forces-for-ukraine-deployment

AR47 First two Chinese Desertcross all-terrain vehicles confirmed destroyed in Ukraine. Army Recognition, 2023-12. Read 2026-10-08.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2023/first-two-chinese-desertcross-all-terrain-vehicles-confirmed-destroyed-in-ukraine

AR48 Ukrainian Forces Captures first Latest-Generation Russian Eleron T-16 UAV. Army Recognition, 2023-08. Read 2026-10-02.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-forces-captures-first-latest-generation-russian-eleron-t-16-uav

AR49 Western Military District of Russian army to receive Granat and Eleron-3 UAVs. Army Recognition (TASS text), 2016. Read 2026-10-02.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2016/western-military-district-of-russian-army-to-receive-granat-and-eleron-3-unmanned-aerial-vehicles-11112164

AR50 Russia: R-149MA1 command and staff vehicle adopted for service in Southern Military District. Army Recognition (SMD press service), 2018. Read 2026-10-02.
https://www.armyrecognition.com/archives/archives-land-defense/2018/russia-r-149ma1-command-and-staff-vehicle-adopted-for-service-in-southern-military-district

AR51 Fath 360 (product page). Army Recognition. Read 2026-10-08.
https://www.armyrecognition.com/military-products/army/missiles/ballistic-missiles/fath-360

AR52 Russia intensifies use of armed FPV drones to strike Ukrainian positions. Army Recognition, 2024-03-18. Read 2026-10-02.
https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russia-intensifies-use-of-armed-fpv-first-person-view-drones-to-strike-ukrainian-positions

AR53 Russian Company Develops AI-Powered Combat Drone Capable of Autonomous Target Engagement. Army Recognition, 2024-04. Read 2026-10-02.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2024/russian-company-develops-ai-powered-combat-drone-capable-of-autonomous-target-engagement

AR54 Russian Gibka-S Air Defense System undergoes evaluation on Ukraine frontline. Army Recognition, 2023-2024. Read 2026-10-07.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russian-gibka-s-air-defense-system-undergoes-evaluation-on-ukraine-frontline

AR55 SA-25 Verba 9K333 MANPADS technical data sheet. Army Recognition. Read 2026-10-07.
https://www.armyrecognition.com/military-products/army/air-defense-systems/man-portable-air-defense-systems/verba-9k333-manpads-man-portable-air-defense-missile-system-9m336-technical-data-sheet-pictures-video-12410155

AR56 Infauna K1Sh1 UNSh-12. Army Recognition. Read 2026-10-07.
https://armyrecognition.com/military-products/army/electronic-warfare/infauna-russia-uk

AR57 Iskander-K 9K728. Army Recognition. Read 2026-09-29.
https://www.armyrecognition.com/military-products/army/missiles/ballistic-missiles/iskander-k-mobile-short-range-cruise-missile-system-russia-data

AR58 Russian company Aeroscan unveils Product 54 Italmas long-range loitering munition. Army Recognition, 2023-09. Read 2026-10-02.
https://armyrecognition.com/archives/archives-land-defense/land-defense-2023/russian-company-aeroscan-unveils-product-54-italmas-long-range-loitering-munition

AR59 Russian Navy about to receive its first eight upgraded Ka-27M helicopters. Army Recognition (TASS reprint), 2016. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-naval-defense/naval-defense-2016/russian-navy-about-ot-receive-its-first-eight-upgraded-ka-27m-helicopters

AR60 Russia creates new generation of shipborne helicopter radars. Army Recognition (TASS reprint), 2020. Read 2026-10-16.
https://www.armyrecognition.com/focus-analysis-conflicts/air/aviation-defence-industry-technology/russia-creates-new-generation-of-shipborne-helicopter-radars

AR61 Russian army widens range of targets for Shturm-S SPATGM. Army Recognition (TASS copy), 2021-03. Read 2026-10-07.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2021/russian-army-widens-range-of-targets-for-shturm-s-spatgm

AR62 Russia deploys 9P162 Kornet-T anti-tank missile armored vehicles to Belarus. Army Recognition, 2022-01. Read 2026-10-20.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2022/russia-deploys-9p162-kornet-t-anti-tank-missile-armored-vehicles-to-belarus

AR63 New Russian Kornet-D anti-tank armored vehicle set to challenge Ukraine's armored might. Army Recognition, 2023-06. Read 2026-10-07.
https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/new-russian-kornet-d-anti-tank-armored-vehicle-set-to-challenge-ukraine-s-armored-might

AR64 Eleron-3 and upgraded Korsar UAVs for Russian army. Army Recognition, 2018. Read 2026-10-02.
https://armyrecognition.com/news/army-news/2018/eleron-3-and-upgraded-korsar-uavs-for-russian-army

AR65 Analysis Ukraine: Orlan-30 UAVs boosting precision of Russian Msta-B howitzer and Krasnopol munition. Army Recognition, 2023. Read 2026-10-20.
https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/analysis-ukraine-orlan-30-uavs-boosting-precision-of-russian-msta-b-howitzer-and-krasnopol-munition

AR66 1RL257 or Krasukha-4 Jamming Station. Army Recognition, 2026-01-02. Read 2026-09-29.
https://www.armyrecognition.com/military-products/army/electronic-warfare/1rl257-or-krasukha-4-jamming-station

AR67 Russia confirms deployment in Ukraine of new KUB loitering munition able to reach target at 50 km. Army Recognition, 2024-04. Read 2026-10-02.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russia-confirms-deployement-in-ukraine-of-new-kub-loitering-munition-able-to-reach-target-at-50-km

AR68 Russian army uses a very rare Ladoga autonomous armored vehicle for combat operations in Ukraine. Army Recognition, 2024-03. Read 2026-10-04.
https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russian-army-uses-a-very-rare-ladoga-autonomous-armored-vehicle-for-combat-operations-in-ukraine

AR69 Ukraine destroys Russian Leer-2 electronic warfare system. Army Recognition, 2023-11. Read 2026-09-29.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2023/ukraine-destroy-a-russian-leer-2-electronic-warfare-system

AR70 Ukrainian Forces Destroy Two Chechen Z-STS Akhmat Armored Vehicles in Kursk region. Army Recognition, 2024-10. Read 2026-10-03.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-forces-destroy-two-chechen-z-sts-akhmat-armored-vehicles-in-kursk-region

AR71 Buran 4x4 armoured vehicle Russia Russian defense industry MAKS 2017. Army Recognition, 2017-07. Read 2026-10-03.
https://www.armyrecognition.com/focus-analysis-conflicts/army/defence-security-industry-technology/buran-4x4-armoured-vehicle-russia-russian-defense-industry-maks-2017-12007172

AR72 ROSTEC began the deliver of ISDM 8x8 truck mine laying system to Russian army. Army Recognition, 2020-12-27. Read 2026-10-08.
https://armyrecognition.com/archives/archives-land-defense/land-defense-2020/rostec-began-the-deliver-of-isdm-8x8-truck-mine-laying-system-to-russian-army

AR73 Russian armed forces to receive Kornet-M and 9K115 Metis-M1 anti-tank guided missiles (TASS). Army Recognition, 2016. Read 2026-10-07.
https://www.armyrecognition.com/focus-analysis-conflicts/army/defence-security-industry-technology/russian-armed-forces-to-receive-kornet-m-and-9k115-metis-m1-anti-tank-guided-missiles-tass-12605161

AR74 Pakistan officially inducts new Mi-35M helicopters. Army Recognition, 2018-12. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-aerospace-defense/aerospace-defense-2018/pakistan-officially-inducts-new-mi-35m-helicopters

AR75 Mil Mi-26 Halo. Army Recognition. Read 2026-10-16.
https://www.armyrecognition.com/military-products/air/helicopters/transport-helicopters/mil-mi-26-halo

AR76 Mil Mi-28A/N Havoc. Army Recognition. Read 2026-10-16.
https://armyrecognition.com/military-products/air/helicopters/attack-helicopters/mil-mi-28a-n-havoc

AR77 Mi-8MTV-5 Mi-17-V5. Army Recognition. Read 2026-10-23.
https://armyrecognition.com/military-products/air/helicopters/transport-helicopters/mi-8mtv-5-mi-17-v5

AR78 Russian Helicopters delivers four new Mi-8AMTSh Terminator helicopters to Russian Armed Forces. Army Recognition, 2014. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-aerospace-defense/aerospace-defense-2014/russian-helicopters-delivers-four-new-mi-8amtsh-terminator-helicopters-to-russian-armed-forces

AR79 Russian Eastern district receives Mi-8MTPR-1 electronic warfare helicopters. Army Recognition (TASS text), 2021. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-aerospace-defense/aerospace-defense-2021/russian-eastern-district-receives-mi-8mtpr-1-electronic-warfare-helicopters

AR80 OmskTransmash's new MMK bridge layer makes first appearance at Army 2016. Army Recognition, 2016-09-08. Read 2026-10-20.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2016/omsktrasnmash-s-new-mmk-bridge-layer-makes-first-appearance-at-army-2016-20809163

AR81 OmskTransMash from Russia ready to export new MMK 8x8 truck bridge layer system (TASS). Army Recognition (TASS-credited item), 2016. Read 2026-10-20.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2016/omsktransmash-from-russia-ready-to-export-new-mmk-8x8-truck-bridge-layer-system-tass-10706164

AR82 Russian Eastern Military District to receive TMM-3M2 heavy mechanized bridge. Army Recognition (relaying the Russian MoD press office), 2019. Read 2026-10-21.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/russian-eastern-military-district-to-receive-tmm-3m2-heavy-mechanized-bridge

AR83 Analysis: New Russian army combat engineer vehicles deployed in Ukraine. Army Recognition (relaying the Russian MoD), 2022. Read 2026-10-20.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/analysis-new-russian-combat-engineer-vehicles-deployed-in-ukraine

AR84 First armed Iranian-made Mohajer-6 UAV used by Russia crashes near Kursk. Army Recognition, 2024-05. Read 2026-10-02.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/first-armed-iranian-made-mohajer-6-uav-used-by-russia-in-ukraine-crashes-near-kursk

AR85 Russia Uses Old MT-12 Rapira 100mm Anti-Tank Gun to Target Camouflaged Ukrainian Positions. Army Recognition, 2024-08. Read 2026-10-06.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/ukraine-russia-conflict/russia-uses-old-mt-12-rapira-100mm-anti-tank-gun-to-target-camouflaged-ukrainian-positions

AR86 Ukraine Destroys Russian Buk M3 Launcher and Nebo-SVU Radars in Coordinated Strikes. Army Recognition, 2025-10. Read 2026-10-06.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukraine-destroys-russian-buk-m3-launcher-and-nebo-svu-radars-in-coordinated-strikes

AR87 Russian Central Military District take delivery of new Communications System. Army Recognition (reproducing district press release), 2015. Read 2026-10-04.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2015/russian-central-military-district-take-delivery-of-new-communications-system

AR88 Russian Army deploys first Pantsir SM SV air defense system. Army Recognition, 2025-03. Read 2026-09-29.
https://armyrecognition.com/news/army-news/2025/russian-army-deploys-first-pantsir-sm-sv-air-defense-system-to-improve-coverage-in-off-road-conditions

AR89 Russia's use of Belarusian-made Pantsir-S1 on MZKT chassis in Ukraine confirmed. Army Recognition, 2026-04. Read 2026-09-29.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russias-use-of-belarusian-made-pantsir-s1-on-mzkt-chassis-in-ukraine-confirmed-after-new-analysis

AR90 Russian artillery learn to use Aistyonok radar (TASS text). Army Recognition, reprinting TASS, 2017. Read 2026-09-29.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2017/russian-artillery-learn-to-use-aistyonok-radar-81708173

AR91 PRP-4A Argus artillery fire control posts for Russian army. Army Recognition, 2018-06. Read 2026-09-29.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/prp-4a-argus-artillery-fire-control-posts-for-russian-army

AR92 Russian Defense Ministry plans to buy new amphibious tracked armoured vehicle PTS-4 in 2014. Army Recognition, 2013-07-24. Read 2026-10-01.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2013/russia-24-july-2013-news-uk

AR93 Russia has deployed PMM-2M amphibious bridging ferry in Syria. Army Recognition, 2017-09. Read 2026-10-01.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2017/russia-has-deployed-pmm-2m-amphibious-bridging-ferry-in-syria

AR94 Russian Central Military District signal units receive advanced hardware. Army Recognition, 2019-12. Read 2026-09-29.
https://armyrecognition.com/news/army-news/army-news-2019/russian-central-military-district-signal-units-receive-advanced-hardware

AR95 Russian communications units to receive R-149MA1 unified command and staff vehicle. Army Recognition (TASS text), 2017. Read 2026-10-03.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2017/russia-communication-units-receive-r-149ma1-vehicle-80806171

AR96 Russian Army to get new radio stations. Army Recognition (Zvezda weekly text), 2019. Read 2026-10-03.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/russian-army-to-get-new-radio-stations

AR97 Ukraine forces strike Russian patrol boat in Dnipro River. Army Recognition, 2023-01. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-naval-defense/naval-defense-2023/ukraine-forces-strikes-russian-patrol-boat-in-dnipro-river

AR98 Russian Navy to receive Attack Variant of Project 03160 Raptor Patrol Boat. Army Recognition (TASS text, citing Izvestia and the Pella catalogue), 2017. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-naval-defense/naval-defense-2017/russian-navy-to-receive-attack-variant-of-project-03160-raptor-patrol-boat

AR99 6,000 new military communication equipment for Western Military District of Russian army. Army Recognition, 2015. Read 2026-10-04.
https://armyrecognition.com/focus-analysis-conflicts/army/defence-security-industry-technology/6-000-new-military-communication-equipment-for-western-military-district-of-russian-army

AR100 Russia unveils new UMZ-K multipurpose mine-laying vehicle at Army-2015. Army Recognition, 2015. Read 2026-10-04.
https://armyrecognition.com/focus-analysis-conflicts/army/defence-security-industry-technology/russia-defense-industry-unveils-new-umz-k-multipurpose-mine-laying-vehicle-at-army-2015-12706155

AR101 Iran provides Russia with Iranian-made 122mm mortar shells. Army Recognition, 2024-04. Read 2026-10-20.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2024/iran-provides-russia-with-iran-made-122mm-mortar-shells

AR102 5P85SE TEL S-300 PMU1. Army Recognition. Read 2026-10-07.
https://armyrecognition.com/military-products/army/air-defense-systems/air-defense-vehicles/5p85se-s-300-pmu1-russia-uk

AR103 5P85T TEL S-300 PM. Army Recognition. Read 2026-10-07.
https://www.armyrecognition.com/military-products/army/air-defense-systems/air-defense-vehicles/5p85t-s-300-pm-russia-uk

AR104 S-300V 9K81 Antey-300 SA-12 Gladiator. Army Recognition. Read 2026-10-07.
https://www.armyrecognition.com/military-products/army/air-defense-systems/air-defense-vehicles/s-300v-russia-uk

AR105 Russian Southern district to receive S-350 Vityaz air defense system in 2021. Army Recognition (TASS text), 2020. Read 2026-09-29.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2020/russian-southern-district-to-receive-s-350-vityaz-air-defense-system-in-2021

AR106 Russian troops use Soviet-era S-60 anti-aircraft gun. Army Recognition, 2023-10. Read 2026-10-06.
https://armyrecognition.com/news/army-news/army-news-2023/russian-troops-use-soviet-era-s-60-anti-aircraft-gun-for-rapid-fire-on-ukrainian-targets

AR107 Russia has completed the repair of a Serna-class landing craft allegedly destroyed by the Ukrainians. Army Recognition (Navy Recognition), 2022-10 (from page content). Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-naval-defense/naval-defense-2022/russia-has-completed-the-repair-of-a-serna-class-landing-craft-allegedly-destroyed-by-the-ukrainians

AR108 Iran strengthens deep strike operations on high-value targets with new Shahed-107 suicide drone. Army Recognition, 2025-06. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-land-defense/defense-news-army-2025/iran-strengthens-deep-strike-operations-on-high-value-targets-with-new-shahed-107-suicide-drone

AR109 Russian Southern Military District receives Shturm-S antitank missiles. Army Recognition / TASS, 2019. Read 2026-10-07.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/russian-southern-military-district-receives-shturm-s-antitank-missiles

AR110 Russian army CBRN unit receives TDA-3 mobile smokescreen generators (quoting TASS). Army Recognition, 2017. Read 2026-10-04.
https://armyrecognition.com/news/army-news/2017/russian-army-southern-military-district-cbrn-unit-receives-tda-3-mobile-smokescreen-generators-tass-82103173

AR111 SNAR-10 M1 self-propelled antitank radar enters service in Russian Central Military District. Army Recognition, 2019-01. Read 2026-10-01.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/snar-10-m1-self-propelled-antitank-radar-enters-service-in-russian-central-military-district

AR112 Russia counters Ukrainian drones with Sobolyatnik reconnaissance systems. Army Recognition, 2024-01-10. Read 2026-10-06.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russian-counters-ukrainian-drones-with-sobolyatnik-reconnaissance-systems

AR113 Rostec showcases new Sprut-SDM1 light tank with upgraded armor kit at Army-2024. Army Recognition, 2024-08. Read 2026-10-06.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2024/rostec-showcases-new-sprut-sdm1-light-tank-with-upgraded-armor-kit-at-army-2024

AR114 Russia upgrades Strelets reconnaissance system - Part 1. Army Recognition (from TASS / Nezavisimoye Voennoye Obozreniye), 2021. Read 2026-10-04.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2021/russia-upgrades-strelets-reconnaissance-system-part-1

AR115 T-72B3M T-72B4 main battle tank technical data sheet. Army Recognition. Read 2026-10-16.
https://www.armyrecognition.com/military-products/army/main-battle-tanks/main-battle-tanks/t-72b3m-t-72b4-main-battle-tank-technical-data-sheet-specifications-pictures-video-12003163

AR116 T-90M Model 2017 Proryv-3 MBT technical data sheet. Army Recognition, 2026-01. Read 2026-10-02.
https://www.armyrecognition.com/military-products/army/main-battle-tanks/main-battle-tanks/t-90m-model-2017-mbt-main-battle-tank-technical-data-sheet

AR117 Russian army integrates Orlan-10 and Takhion UAVs with Msta-B howitzers. Army Recognition (from TASS/MoD), 2021. Read 2026-10-02.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2021/russian-army-integrates-orlan-10-and-takhion-uavs-with-msta-b-howitzers

AR118 Ukrainian soldiers seize extremely rare Russian GAZ-3937 Vodnik armored vehicle. Army Recognition, 2023-03. Read 2026-10-03.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-soldiers-seize-extremely-rare-russian-gaz-3937-vodnik-armored-vehicle

AR119 Russia up-armored 'Mad Max' Tigr-M SpN spotted in Ukraine. Army Recognition, 2023-10. Read 2026-10-03.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russia-up-armored-mad-max-tigr-m-spn-spotted-in-ukraine

AR120 Analysis: Russian airborne troops armored vehicles used in combat in Ukraine. Army Recognition, 2022. Read 2026-10-03.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/analysis-russian-airborne-troops-armored-vehicles-used-in-combat-in-ukraine

AR121 Ukrainian soldiers destroy Russian TOR-M2DT new air defense missile system. Army Recognition, 2023-02. Read 2026-09-29.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-soldiers-destroy-russian-tor-m2dt-new-air-defense-missile-system

AR122 More heavy flamethrower units to appear in Russian armies. Army Recognition (citing Izvestia, 27 Feb 2018), 2018-02-27. Read 2026-09-29.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/more-heavy-flamethrower-units-to-appear-in-russian-armies

AR123 Each Russian military district to have TOS-1A flamethrower battalion. Army Recognition (citing Izvestia), 2019-10-22. Read 2026-09-29.
https://www.armyrecognition.com/focus-analysis-conflicts/army/analysis-defense-and-security-industry/each-russian-military-district-to-have-tos-1a-flamethrower-battalion

AR124 Russian engineering units receive robotized UMZ-K and UMZ-T minelayers. Army Recognition, 2019. Read 2026-10-04.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/russian-engineering-units-receive-robotized-umz-k-and-umz-t-minelayers

AR125 Is Russia secretly deploying Uragan-1M bi-caliber MLRS in Ukraine? Army Recognition, 2024-01. Read 2026-09-29.
https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/is-russia-secretly-deploying-uragan-1m-bi-caliber-mlrs-in-ukraine

AR126 Development of Russian Ural Tornado-U truck is at final stage. Army Recognition (TASS text), 2017. Read 2026-10-04.
https://www.armyrecognition.com/focus-analysis-conflicts/army/defence-security-industry-technology/development-of-russian-ural-tornado-u-truck-is-at-final-stage

AR127 Russian Uran-6 robotic demining UGV undergoing modernization following Ukraine war experience. Army Recognition, 2023-06. Read 2026-10-04.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2023/russian-uran-6-robotic-demining-ugv-undergoing-modernization-following-ukraine-war-experience

AR128 Russia Strengthens Ka-52 Attack Helicopter Arsenal With Updated Vikhr-1 Missile Integration. Army Recognition, 2025-11. Read 2026-10-21.
https://www.armyrecognition.com/news/aerospace-news/2025/russia-strengthens-ka-52-attack-helicopter-arsenal-with-updated-vikhr-1-missile-integration

AR129 Russia Turns Ka-52 Attack Helicopter Into Mobile Drone Interceptor With Modified Vikhr Missiles. Army Recognition, 2026-08. Read 2026-10-21.
https://www.armyrecognition.com/news/aerospace-news/2026/russia-turns-ka-52-attack-helicopter-into-mobile-drone-interceptor-with-modified-vikhr-missiles

AR130 Russian military beefs up all-terrain capabilities. Army Recognition, 2018. Read 2026-10-19.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/russian-military-beefs-up-all-terrain-capabilities

AR131 Russian army Arctic brigade will be equipped with Grad & Smerch MLRS on DT-30PM. Army Recognition, 2018-02. Read 2026-10-19.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/russian-arctic-brigade-will-be-equipped-with-grad-and-smerch-mlrs-on-dt-30pm

AR132 DT-30 all-terrain tracked carrier vehicle. Army Recognition. Read 2026-10-19.
https://www.armyrecognition.com/military-products/army/armored-vehicles/amphibious-all-terrain-vehicles/dt-30-all-terrain-tracked-carrier-vehicle-technical-data-sheet-specifications-pictures-video-10708163

AR133 Russian World War 2-era D-44 howitzer destroyed by Ukrainian drone. Army Recognition, 2023-09. Read 2026-10-07.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russian-world-war-2-era-d-44-howitzer-destroyed-by-ukrainian-drone

AR134 Ukraine releases video showing first destruction of Russia's high-tech 1K148 Yastreb-AV radar. Army Recognition, 2024-04. Read 2026-10-06.
https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukraine-releases-video-showing-first-destruction-of-russia-s-high-tech-1k148-yastreb-av-radar

AR135 Ukrainian sniper downs Russian ZALA 421-16Ev2 surveillance drone. Army Recognition, 2024-03. Read 2026-10-02.
https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-sniper-downs-russian-zala-421-16ev2-surveillance-drone

AR136 ZFB05 APC (FR). Army Recognition, date not given. Read 2026-10-16.
https://www.armyrecognition.com/military-products/army/armoured-personnel-carriers/wheeled-vehicles/zfb05-chine-fr

AR137 China supplies Chechen troops with Tiger 4x4 armored vehicles for Ukraine war. Army Recognition, 2023-06. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2023/china-supplies-chechen-troops-with-tiger-4x4-armored-vehicles-for-ukraine-war

AR138 China donates Tiger 4x4 armored vehicles to Kyrgyz special battalion. Army Recognition, 2019-06. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/china-donates-tiger-4x4-armored-vehicles-to-kyrgyz-special-battalion

AR139 China donates 27 Tiger 4x4 armoured vehicles and 4 anti-riot vehicles to Bolivian armed forces. Army Recognition, 2016-07. Read 2026-10-16.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2016/china-donates-27-tiger-4x4-armoured-vehicles-and-4-anti-riot-vehicles-to-bolivian-armed-forces-10108161

AR140 Zoopark-1M 1L260 artillery counter-battery radar system data. Army Recognition. Read 2026-09-29.
https://www.armyrecognition.com/military-products/army/radars/counter-battery-radars/zoopark-1m-1l260-artillery-counter-battery-radar-system-data

AR141 Zoopark-1 1L219 counter-battery radar system data. Army Recognition. Read 2026-09-29.
https://www.armyrecognition.com/military-products/army/radars/counter-battery-radars/zoopark-1-1l-219-counter-battery-radar-system-russia-data

AR142 Russian Central Military District inducts Zoopark-1M counterbattery radars. Army Recognition (TASS text), 2018-03-01. Read 2026-09-29.
https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/russian-central-military-district-inducts-zoopark-1m-counterbattery-radars

ARCH36 BMD-4m Tanker, 5th Air Assault Company, 2nd Air Assault Battalion, 31st Air Assault Brigade. The 36th Division Archive, 2023.
https://www.36thdivisionarchive.com/bmd4m-tanker/pa-ru-bmd4m-tanker

ARCUS 120mm HE Mortar Bomb VOF-843B. Arcus JSC (Bulgaria).
https://arcus.bg/120mm-he-mortar-bomb-vof-843b/

ARES Russian POM-3 anti-personnel landmines documented in Ukraine (2022). Armament Research Services, 2022-04-15.
https://armamentresearch.com/russian-pom-3-anti-personnel-landmines-documented-in-ukraine-2022/

ARINF Ukrainian defenders captured rare command-staff Tigr. Armyinform (Ukrainian MoD), 2022-09-30.
https://armyinform.com.ua/2022/09/30/ukrayinski-zahysnyky-zahopyly-ridkisnyj-komandno-shtabnyj-tygr/

ARMADA1 Russian IADS Redux Part-7: The Effectors (Withington). Armada International, 2023-09-07. Read 2026-09-29.
https://www.armadainternational.com/2023/09/russian-air-force-sam-systems/

ARMADA2 Russia's Rapid UAV Expansion. Armada International, 2019-03. Read 2026-10-02.
https://www.armadainternational.com/2019/03/russias-rapid-uav-expansion/

ARMADA3 All Yours. Krasukha, Krasukha, Krasukha, Ja, Ja! Armada International (Thomas Withington), 2022-03-24. Read 2026-09-29.
https://www.armadainternational.com/2022/03/ukraine-forces-capture-russian-electronic-warfare-system/

ARMADA4 Russian Radiation (Withington). Armada International, 2022-01. Read 2026-09-29.
https://www.armadainternational.com/2022/01/ukraine-russia-electronic-warfare/

ARMADA5 Russian IADS Redux Part-8: Shocking Behaviour (Withington). Armada International, 2023-09. Read 2026-09-29.
https://www.armadainternational.com/2023/09/russian-air-defence-electronic-warfare/

ARMADA6 Murmurs of Murmansk (Withington). Armada International, 2024-09. Read 2026-09-29.
https://www.armadainternational.com/2024/09/murmansk-electronic-warfare-system-iran/

ARMADA7 Russian IADS Redux Part 3: Strategic Skywatchers. Armada International, 2023-05. Read 2026-10-06.
https://www.armadainternational.com/2023/05/russian-air-defence-analysis-part-3/

ARMADA8 To Kill a Pantsir (Withington). Armada International, 2024-07. Read 2026-09-29.
https://www.armadainternational.com/2024/07/to-kill-a-pantsir-electronic-warfare/

ARMADA9 Exaggerated Russian electronic warfare capabilities. Armada International, 2022-05. Read 2026-09-29.
https://www.armadainternational.com/2022/05/exaggerated-russian-electronic-warfare-capabilities/

ARMADA10 From Russia with Hertz. Armada International, 2020-05. Read 2026-10-06.
https://www.armadainternational.com/2020/05/from-russia-with-hertz/

ARMADA11 Torn Asunder (Withington). Armada International, 2022-06-02. Read 2026-10-06.
https://www.armadainternational.com/2022/06/torn-electronic-warfare-system/

ARMADA12 The Art of Countering Artillery Fires in Ukraine (Withington). Armada International, 2022-12-30. Read 2026-09-29.
https://www.armadainternational.com/2022/12/the-art-of-countering-artillery-fires-in-ukraine/

ARMCON TM-57 (Soviet anti-tank mine). armedconflicts.com (valka.cz).
https://www.armedconflicts.com/TM-57-t236951

ARMED Kupol Garpija A1. Armed Conflicts (armedconflicts.com).
https://origin.armedconflicts.com/Harpy-A1-t289246

ARMEDC 2S34 Khosta (120 mm self-propelled mortar). armedconflicts.com.
https://www.armedconflicts.com/2S34-Khosta-120-mm-self-propelled-mortar-t206918

ARMEDM 100-мм противотанковая пушка Т-12 / МТ-12 «Рапира» (2А19, 2А29). armedman.ru.
https://armedman.ru/artilleriya/1961-1990-artilleriya/100-mm-protivotankovaya-pushka-t-12-mt-12-rapira-2a19-2a29.html

ARMF PU-12 (9S482) mobile control post. armforc.su.
https://armforc.su/srk_pu12.htm

ARMF13 Машина старшего офицера батареи 1В13; Машина командира батареи 1В14; Машина начальника штаба дивизиона 1В16. armforc.su.
https://armforc.su/rva_1v13.htm ; https://armforc.su/rva_1v14.htm ; https://armforc.su/rva_1v16.htm

ARMF14 Машина командира батареи 1В14. armforc.su.
https://armforc.su/rva_1v14.htm

ARMF15 Машина командира дивизиона 1В15. armforc.su.
https://armforc.su/rva_1v15.htm

ARMF16 Машина начальника штаба дивизиона 1В16. armforc.su.
https://armforc.su/rva_1v16.htm

ARMFORC Inzhenernaya razvedyvatelnaya mashina IMR Zhuk. armforc.su.
https://armforc.su/isv_irm.htm

ARMINF У Покровську FPV-дрони пробралися у приміщення і знищили артустановку російських десантників. ArmyInform (Ukrainian MoD), 2026-02-08.
https://armyinform.com.ua/2026/02/08/u-pokrovsku-fpv-drony-probralysya-u-prymishhennya-i-znyshhyly-artustanovku-rosijskyh-desantnykiv/

ARMINF2 Сім мільйонів доларів у морі: що відомо про збитий російський БПЛА «Форпост-Р». ArmyInform (Ukrainian MoD news agency), 2024-04-05.
https://armyinform.com.ua/2024/04/05/sim-miljoniv-dolariv-u-more-shho-vidomo-pro-zbytyj-rosijskyj-bpla-forpost-r/

ARMINF3 Enemy weapons: PTM-4 anti-tank mines. ArmyInform (Ukrainian MoD media), 2022-09-08.
https://armyinform.com.ua/2022/09/08/zbroya-voroga-protytankovi-miny-ptm-4/

ARMINF4 ZSU vidzhaly v rashystiv minnyi zahorodzhuvach GMZ-3. ArmyInform (Ukrainian MoD), 2022-10-10.
https://armyinform.com.ua/2022/10/10/zsu-vidzhaly-v-rashystiv-minnyj-zagorodzhuvach-gmz-3/

ARMOR Семейство противотанковых мин ТМ-62 (Инженерные боеприпасы Советской Армии). army.armor.kiev.ua (amateur site summarising the 1976 MoD manual 'Инженерные боеприпасы').
https://army.armor.kiev.ua/engenear/tm-62.shtml

ARMOUR More Russian and Ukrainian MT-LB Adaptations. The Armourers Bench, 2023-10-29.
https://armourersbench.com/2023/10/29/more-russian-ukrainian-mt-lb-adaptations/

ARMSNET Deimos-NSA Russian 6x6 Command and Control Vehicle, R-142 NSA. armsnet (mirror of US Army ODIN/WEG data format).
https://armsnet.duckdns.org/equipment/fc51a371-0c5e-4687-ee78-08de6e3c1543

ARMY22 Ukrainian troops hunted down a Russian Merlin (Armyinform, 2022-06-17). Armyinform (Ukrainian MoD), 2022-06-17.
https://armyinform.com.ua/2022/06/17/ukrayinski-vijskovi-vpolyuvaly-rosijskogo-merlyna/

ARMYIN Бойова машина вогнеметників БМО-Т: що відомо. ArmyInform (Ukrainian MoD), 2022-04-17.
https://armyinform.com.ua/2022/04/17/bojova-mashyna-vognemetnykiv-bmo-t-shho-vidomo-pro-ridkisnyj-ekzemplyar-vazhkoyi-tehniky-agresora/

ARMYINF Очі ворога: що відомо про безпілотники комплексу «Елерон-3СВ». ArmyInform (Ukrainian MoD), 2022-04-21.
https://armyinform.com.ua/2022/04/21/ochi-voroga-shho-vidomo-pro-bezpilotnyky-kompleksu-eleron-3sv/

ARMYINF2 Destroyed a Russian Gerbera on wheels: struck the car carrying it. ArmyInform (Ukrainian MoD news agency), 2025-12-25.
https://armyinform.com.ua/2025/12/25/znyshhyly-z-kolesamy-rosijsku-gerberu-vrazyly-z-avto-yake-yiyi-perevozylo/

ARMYINF3 Рідкісний самохідний ПТРК «Хризантема-С». ArmyInform (Ukrainian MoD news agency), 2022-09-04.
https://armyinform.com.ua/2022/09/04/ridkisnyj-samohidnyj-ptrk-hryzantema-s/

ARMYINF4 Українські захисники знищили сучасний ворожий самохідний ПТРК «Корнет-Т». ArmyInform (Ukrainian MoD news agency), 2022-04-20.
https://armyinform.com.ua/2022/04/20/ukrayinski-zahysnyky-znyshhyly-suchasnyj-vorozhyj-samohidnyj-ptrk-kornet-t/

ARMYINF5 Ukrainian soldiers captured the Russian Lesochek. ArmyInform (Ukrainian MoD news agency), 2022-09-12.
https://armyinform.com.ua/2022/09/12/ukrayinski-voyiny-zahopyly-rosijskyj-lesochek/

ARMYINF6 North Korean "Hurricane" destroyed at its combat-use distance: Nemesis strikes rare enemy equipment. ArmyInform (Ukrainian Ministry of Defence news agency), 2026-02-11.
https://armyinform.com.ua/en/2026/02/11/north-korean-hurricane-destroyed-at-its-combat-use-distance-nemesis-strikes-rare-enemy-equipment/

ARMYINF7 Rare catch for the Defence Forces: station to replace Starlink hit. ArmyInform (Ukrainian MoD), 2026-03-26.
https://armyinform.com.ua/2026/03/26/vkraj-ridkisnyj-dlya-syl-oborony-ulov-unikalnu-stanciyu-dlya-zaminy-starlink-urazyly-novitnim-midlstrajkom/

ARMYINF8 Komandno-shtabna mashyna R-149MA1 vdruge . ArmyInform (Ukrainian MoD news agency), 2022-09-12.
https://armyinform.com.ua/2022/09/12/komandno-shtabna-mashyna-r-149ma1/

ARMYINF9 Repellent-1: shcho vidomo pro znyshchenyi rosiiskyi kompleks REB. ArmyInform (Ukrainian MoD), 2022-06-08.
https://armyinform.com.ua/2022/06/08/repellent-1-shho-vidomo-pro-znyshhenyj-rosijskyj-kompleks-reb/

ARMYINF10 «Серна» не доплила до Зміїного, або про знищений десантний катер. ArmyInform (Ukrainian MoD news agency), 2022-05-12.
https://armyinform.com.ua/2022/05/12/serna-ne-doplyvla-do-zmiyinogo-abo-pro-znyshhenyj-desantnyj-kater/

ARMYINF11 Ukrainian Intelligence reveals the structure of new Iranian Shahed-107 drones used by Russia to strike Ukraine. ArmyInform (Ukrainian Ministry of Defence), 2025-11-25.
https://armyinform.com.ua/en/2025/11/25/ukrainian-intelligence-reveals-the-structure-of-new-iranian-shahed-107-drones-used-by-russia-to-strike-ukraine/

ARMYINF12 Українські воїни захопили станцію радіолокаційної розвідки російської армії CHAP-10M1. ArmyInform, 2022-04-05.
https://armyinform.com.ua/2022/04/05/ukrayinski-voyiny-zahopyly-stanciyu-radiolokaczijnoyi-rozvidky-rosijskoyi-armiyi-snar-10m1/

ARMYINF13 Російський БПЛА «Тахіон»: що відомо про чергову здобич українських воїнів. ArmyInform (Ukrainian MoD news agency), 2022-05-03.
https://armyinform.com.ua/2022/05/03/rosijskyj-bpla-tahion-shho-vidomo-pro-chergovu-zdobych-ukrayinskyh-voyiniv/

ARMYINF14 Wanted to build a crossing, but MTU-72 hit earlier (Army Inform). Army Inform (Ukrainian MoD), 2024-10-31.
https://armyinform.com.ua/2024/10/31/hotily-zvesty-perepravu-ale-rosijskyj-mostoukladach-nashi-urazyly-ranishe/

ARMYINF15 Torn-MDM: what is known about the captured Russian radio reconnaissance complex. ArmyInform (Ukrainian MoD), 2022-06-11.
https://armyinform.com.ua/2022/06/11/torn-mdm-shho-vidomo-pro-zahoplenyj-rosijskyj-kompleks-radiorozvidky/

ARMYINF16 На Харківщині військові знищили рідкісний всюдихід армії окупантів ДТ-30 «Витязь». ArmyInform (Ukrainian MoD news agency), 2022-03-31.
https://armyinform.com.ua/2022/03/31/na-harkivshhyni-vijskovi-znyshhyly-ridkisnyj-vsyudyhid-armiyi-okupantiv-dt-30-vytyaz/

ARMYRAD Zil Radio Truck (R161-A2M article by Joe Bell, translated Russian manual). Army Radio Sales Co. / VMARS, 2003-01-03.
https://armyradio.com/Zil_Radio_Truck.html

ARMYT MSTA-S 2S19 152mm Self-Propelled Howitzer. Army Technology, 2000-10-03. Read 2026-09-29.
https://www.army-technology.com/projects/mstas/

ARTECH URAN 6: El robot para desminado de Rusia (copy of Army Technology page). FIE UNDEF.
https://www.fie.undef.edu.ar/ceptm/?p=1370

ARTGUNS Protivotankovaya mina PTM-1G (SSSR) on artguns.ru, credited to dogswar.ru. artguns.ru.
https://artguns.ru/boepripasy/4008-protivotankovaya-mina-ptm-1g-sssr.html

ASIA Iran's new Fath 360 looks and acts like a HIMARS. Asia Times, 2022-09-16.
https://asiatimes.com/2022/09/irans-new-fath-360-looks-and-acts-like-a-himars/

AT North Korean missile unit deploys to Russia with up to 120 missiles: Reuters. AeroTime, 2026-08.
https://www.aerotime.aero/articles/north-korean-missile-unit-russia-120-ballistic-missiles/amp

ATO S-350 out in the open at MAKS. ATO.ru (Russia Aviation Insider), 2013-08.
https://www.ato.ru/content/s-350-out-open-maks

ATP ATP 7-100.1 Russian Tactics, table E-2 and para A-6. US Army, 2024-02.
https://archive.org/details/atp-7-100.1-russian-tactics-2024

AV21 БПЛА Гранат-4, как новый стандарт тактической эффективности. aviation21.ru, 2025.
https://aviation21.ru/bpla-granat-4-kak-novyj-standart-taktycheskoj-effektivnosti/

AVIA Застава. Технические характеристики. Фото. avia.pro.
https://avia.pro/blog/zastava-tehnicheskie-harakteristiki-foto

AVIAROS Тепловая машина ТМС-65. aviaros.narod.ru.
https://aviaros.narod.ru/tms-65.htm

AVIAST Mil Mi-26 (Aviastar helicopter encyclopedia). aviastar.org.
http://www.aviastar.org/helicopters_eng/mi-26.php

AVIAT Portugal Transfers its Inoperable Ka-32 Firefighting Helicopters to Ukraine. The Aviationist, 2024-09-13.
https://theaviationist.com/2024/09/13/portugal-transfers-its-inoperable-ka-32-firefighting-helicopters-to-ukraine/

AVIAT2 Russian Helicopter Destroys Ukrainian USV. The Aviationist, 2024-05-06.
https://theaviationist.com/2024/05/06/russian-helicopter-destroys-ukrainian-usv/

AVIAT3 Rare Video Shows A Russian Tu-22M3 Firing A Kh-32 Supersonic Air-Launched Cruise Missile. The Aviationist, 2024-05-12.
https://theaviationist.com/2024/05/12/tu-22m3-kh-32/

AVIAT4 Ukrainian Surface Drone Equipped with R-73 Air-to-Air Missiles Shot Down Russian Mi-8 Helicopter. The Aviationist, 2024-12-31.
https://theaviationist.com/2024/12/31/ukrainian-magura-usv-r-73-vs-mi-8-helicopter/

AVIAT5 Russia Shows Su-34s Carrying Four Jet-Capable UMPK Glide Bombs. The Aviationist, 2026-07-25.
https://theaviationist.com/2026/07/25/russia-su-34s-jet-capable-umpk-glide-bombs/

AVIAT6 Russia mounts MANPADS on Geran-2 attack drone. The Aviationist, 2026-01-05.
https://theaviationist.com/2026/01/05/manpads-russia-geran-2-attack-drone/

AVIAT22 Kinzhal Hypersonic Aero-Ballistic Missile Used By Su-34 In Ukraine For The First Time – Reports. The Aviationist, 2023-09-04.
https://theaviationist.com/2023/09/04/su-34-kinzhal/

BAB Defense Express: Russia launched ballistic missiles from the DPRK both in the direction of Zaporizhzhia and Kharkiv. Babel (summarising Defense Express), 2024-01.
https://babel.ua/en/news/102536-defense-express-russia-launched-ballistic-missiles-from-the-dprk-both-in-the-direction-of-zaporizhzhia-and-kharkiv-debris-indicated-this

BABEL Ukrainian units hit a Russian anti-sabotage boat in Dagestan. Babel (Ukrainian outlet), 2026-05-18.
https://babel.ua/en/news/127059-ukrainian-units-hit-a-russian-anti-sabotage-boat-in-dagestan

BABEL2 The Navy told how they shot down a Russian helicopter: they attacked a drilling rig in the Black Sea. Babel, 2026-03.
https://babel.ua/en/news/125363-the-navy-told-how-they-shot-down-a-russian-helicopter-they-attacked-a-drilling-rig-in-the-black-sea

BABEL3 CIT: Russia has started de-canning old Soviet T-55 tanks. Babel, 2023-03.
https://babel.ua/en/news/91852-cit-russia-has-started-de-canning-old-soviet-t-55-tanks-and-sending-them-to-ukraine

BAIRD Russian Navy commissions new anti-saboteur boat. Baird Maritime, 2025-01-03.
https://www.bairdmaritime.com/security/naval/naval-ships/russian-navy-commissions-new-anti-saboteur-boat

BAIRD2 Baltic Fleet to receive new patrol boat. Baird Maritime, 2018-09-11.
https://www.bairdmaritime.com/security/naval/naval-ships/baltic-fleet-to-receive-new-patrol-boat

BAR15 Russian Arctic brigades put off to 2015. Barents Observer, undated (about 2011-2012).
https://www.thebarentsobserver.com/security/russian-arctic-brigades-put-off-to-2015/385007

BARENTS Arctic brigade severely weakened. The Barents Observer, 2022-12.
https://thebarentsobserver.com/en/security/2022/12/arctic-brigade-severely-weakened

BAROBS Arctic Brigade on snow. The Barents Observer, 2016-02.
https://thebarentsobserver.com/en/security/2016/02/arctic-brigade-snow

BCAT1 Exclusive Access to the Russian Forpost Drone Shot Down in Ukraine. Bellingcat, 2015-06-13. Read 2026-10-02.
https://www.bellingcat.com/news/uk-and-europe/2015/06/13/the-russian-forpost-drone-shot-down-in-ukraine

BCAT2 The Remote Control Killers Behind Russia's Cruise Missile Strikes on Ukraine. Bellingcat, 2022-10-24. Read 2026-10-20.
https://bellingcat.com/news/uk-and-europe/2022/10/24/the-remote-control-killers-behind-russias-cruise-missile-strikes-on-ukraine/

BCAT3 Novye rossiyskie sistemy radioelektronnoy borby na vostoke Ukrainy. Bellingcat (Russian edition of DFRLab), 2018-09-10. Read 2026-10-01.
https://ru.bellingcat.com/novosti/russia/2018/09/10/new-russian-ew-donbas/

BCAT4 These are the Cluster Munitions Documented by Ukrainian Civilians. Bellingcat, 2022-03-11. Read 2026-10-20.
https://www.bellingcat.com/news/rest-of-world/2022/03/11/these-are-the-cluster-munitions-documented-by-ukrainian-civilians/

BCAT5 These are the cluster munitions documented by Ukrainian civilians. Bellingcat, 2022-03-11. Read 2026-10-20.
https://www.bellingcat.com/news/2022/03/11/these-are-the-cluster-munitions-documented-by-ukrainian-civilians/

BCAT6 Anatomy of a shelling: how Russian rocket artillery struck Mykolaiv. Bellingcat, 2023-01-27. Read 2026-10-20.
https://www.bellingcat.com/news/2023/01/27/anatomy-of-a-shelling-how-russian-rocket-artillery-struck-mykolaiv/

BCAT7 Tankspotting: How to Identify the T-72B3. Bellingcat, 2015-05-28 (updated 2017). Read 2026-10-16.
https://www.bellingcat.com/resources/2015/05/28/tankspotting-how-to-identify-the-t-72b3/

BCAT8 Tankspotting: T-90As in the Donbass. Bellingcat, 2017-04-02. Read 2026-10-16.
https://www.bellingcat.com/news/uk-and-europe/2017/04/02/tankspotting-t-90as-donbass/

BCAT9 Tankspotting: T-90As in the Donbass. Bellingcat, 2017-04-02. Read 2026-10-07.
https://www.bellingcat.com/news/europe/2017/04/02/tankspotting-t-90as-donbass/

BCAT10 Russia's Kramatorsk 'Facts' Versus the Evidence. Bellingcat, 2022-04-14. Read 2026-10-06.
https://www.bellingcat.com/news/2022/04/14/russias-kramatorsk-facts-versus-the-evidence/

BG «Рычаг» для авиации: на КОМЗе сдали три вертолета РЭБ (title paraphrased; page prints no headline in the fetched text). BIZNES Online (business-gazeta.ru), 2015-03 (no dateline in the fetched text; reports the 4 March 2015 handover of the first three as 'today').
https://www.business-gazeta.ru/article/127113

BG69 И полярники, и военные, и спецслужбы (ENICS Eleron). Business Online (business-gazeta.ru), с. 2011.
https://www.business-gazeta.ru/article/69375

BG137 «...И попасть в него очень трудно» (Eleron-3SV downed in Syria). Business Online (business-gazeta.ru), 2015.
https://m.business-gazeta.ru/article/137067/

BI Ukrainian soldiers say Russian strike drones are flying smaller drones into battle like an 'aircraft carrier'. Business Insider (via AOL), 2025-11-28.
https://www.aol.com/articles/ukrainian-soldiers-russian-strike-drones-122011876.html

BMPD1 Самоходное артиллерийское орудие 2С31 «Вена» в зоне СВО. bmpd (LiveJournal), 2023-09. Read 2026-10-06.
https://bmpd.livejournal.com/4751381.html

BMPD2 Вооруженные Силы России получили первые серийные самоходные гаубицы 2С35 «Коалиция-СВ». bmpd (CAST blog), 2024-01-05. Read 2026-09-29.
https://bmpd.livejournal.com/4792565.html

BMPD3 Самоходное орудие 2С44 «Гиацинт-К». bmpd (CAST blog), 2025-02. Read 2026-09-29.
https://bmpd.livejournal.com/4895454.html

BMPD4 102-й мотострелковый полк 150-й мотострелковой дивизии получил БМП-3. bmpd blog (CAST), 2018-04. Read 2026-09-29.
https://bmpd.livejournal.com/3153377.html

BMPD5 53-я зенитная ракетная бригада в Курске перевооружается на ЗРК «Бук-М3». bmpd blog (CAST), 2017-12-04. Read 2026-09-29.
https://bmpd.livejournal.com/2985151.html

BMPD6 61-я зенитная ракетная бригада в Центральном военном округе получает ЗРК «Бук-М3». bmpd blog (CAST), 2019-11-22. Read 2026-09-29.
https://bmpd.livejournal.com/3847762.html

BMPD7 Самоходный зенитный артиллерийский комплекс по ОКР Деривация-ПВО с боевой машиной 2С38. bmpd (LiveJournal), 2017. Read 2026-10-07.
https://bmpd.livejournal.com/2809618.html

BMPD8 Boevaya mashina Gibka-S (KBM press release, Army-2016). bmpd LiveJournal / KBM, 2016-09-06. Read 2026-10-07.
https://bmpd.livejournal.com/2115282.html

BMPD9 Uchenie 21-i otdelnoi gvardeiskoi tyazheloi motostrelkovoi brigady (quoting Krasnaya Zvezda). bmpd (CAST blog), 2019-07. Read 2026-10-16.
https://bmpd.livejournal.com/3718239.html

BMPD10 Комплекс звукотепловой разведки 1Б75 «Пенициллин» на форуме «Армия-2021». bmpd (CAST blog), quoting Rossiyskaya Gazeta, 2021-08. Read 2026-09-29.
https://bmpd.livejournal.com/4383315.html

BMPD11 РЛС «Аистенок» в Донецке. bmpd (CAST blog), 2015-01. Read 2026-09-29.
https://bmpd.livejournal.com/1136931.html

BMPD12 Zenitnaya raketnaya sistema S-300V4 v Krymu. bmpd (CAST blog), 2016-11. Read 2026-09-29.
https://bmpd.livejournal.com/2296725.html

BMPD13 Деятельность Концерна ПВО «Алмаз-Антей» в 2013 году: НПО «Стрела». bmpd (CAST blog), 2014. Read 2026-10-01.
https://bmpd.livejournal.com/905167.html

BMPD14 Зенитный ракетный комплекс Сосна в серийном исполнении на шасси БМП-3. bmpd (LiveJournal), citing Zvezda TV, 2019-06. Read 2026-10-07.
https://bmpd.livejournal.com/3675175.html

BMPD15 Po dannym razvedki SShA, Rossiya ispolzuet kompleksy Tobol (incl. Russian translation of Hendrickx, The Space Review, Nov 2020). bmpd (LiveJournal), 2023-04-19. Read 2026-10-06.
https://bmpd.livejournal.com/4688329.html

BMPD16 Зенитный ракетный полк 150-й мотострелковой дивизии вооружен зенитными ракетными системами Тор-М2. bmpd (CAST blog), 2017-11-10. Read 2026-09-29.
https://bmpd.livejournal.com/2946915.html

BMPD17 Защищенный автомобиль К-53949 «Тайфун-К» в бригаде спецназа ЮВО. bmpd (LiveJournal), CAST, 2018. Read 2026-10-03.
https://bmpd.livejournal.com/3207846.html

BMPD18 Радиолокационный комплекс «Зоопарк-1М» под Пальмирой. bmpd blog (CAST), 2016-04-04. Read 2026-09-29.
https://bmpd.livejournal.com/1827333.html

BNTU Protivotankovaya protivobortovaya mina TM-83 (teaching manual, Belarusian National Technical University, 2010). BNTU Military-Technical Faculty (Mazur, Grigorenko); copy on dokumen.pub, 2010.
https://dokumen.pub/83.html

BO New Barnaul-T air defense system comes to motorized rifle brigade in Pechenga. The Barents Observer, 2021-12-17.
https://thebarentsobserver.com/en/security/2021/12/new-barnaul-t-air-defense-system-comes-motorized-rifle-brigade-pechenga

BO2 Russia exercises long-range radio-electronic warfare on Kola. The Barents Observer, undated (after spring 2019).
https://www.thebarentsobserver.com/security/russia-exercises-longrange-radioelectronic-warfare-on-kola/158114

BOCN TM-57 Anti-tank blast mine, Russia. bocn.co.uk collectors forum.
https://www.bocn.co.uk/threads/tm-57-anti-tank-blast-mine-russia.111089/

BORG ЗСУ знищили комунікаційний вузол окупантів полкового рівня (відео). Borg Expert (citing InformNapalm).
https://borgexpert.com/news/zsu-znyshchyly-komunikatsijnyj-vuzol-okupantiv-polkovoho-rivnia-video

BPICK Landmine, APERS, MON-100. Bulletpicker (cites Explosive Ordnance Guide for Ukraine 2022), 2022.
https://bulletpicker.com/landmine_-apers_-mon-100.html

BPICK1 Projectile, 122mm HE Frag, OF-462. Bulletpicker (from US Iraq and Afghanistan Ordnance ID Guides, 2004), 2004.
https://www.bulletpicker.com/projectile_-122mm-he-frag_-of3.html

BPICK2 Basic Identification of Ammunition in Ukraine v6.0, antipersonnel land mines p. 60. bulletpicker.com, 2025.
https://www.bulletpicker.com/pdf/Basic-Identification-of-Ammunition-in-Ukraine-6-0-English.pdf

BPICK3 Rocket, 122mm HE Frag, 9M22U (bulletpicker.com). bulletpicker.com, 2026.
https://bulletpicker.com/rocket_-122mm-he-frag_-9m22u.html

BPICK4 Projectile, 152mm, HE-frag, OF-540 (BulletPicker). BulletPicker, quoting Iraq and Afghanistan Ordnance ID Guides (2004), 2004.
https://www.bulletpicker.com/projectile_-152mm-he-frag_-of-.html

BPICK22 Projectile, 122mm HE, OF-56-1. Bulletpicker (from US Iraq Ordnance ID Guide, 2004), 2004.
https://www.bulletpicker.com/projectile_-122mm-he_-of-56-1.html

BPICK32 Projectile, 122mm HEAT-FS, BK-13. Bulletpicker (from US Iraq and Afghanistan Ordnance ID Guides, 2004), 2004.
https://www.bulletpicker.com/projectile_-122mm-heat-fs_-bk3.html

BPSZ Small portable and vehicle jammers RP-377VM1 (product page). BPSZ (Bryansk), manufacturer site, 2019.
http://www.bpsz.su/index.php/reklamnyj-rolik/11-produktsiya-oao-bpsz/14-malogabaritnye-nosimye-i-vozimye-peredatchiki-pomekh-rp-377vm1

BRKDEF What is the Fath-360, Iran's ballistic missile now arming Russia? Breaking Defense (R. Savelsberg, Netherlands Defence Academy), 2024-10.
https://breakingdefense.com/2024/10/what-is-the-fath-360-irans-ballistic-missile-now-arming-russia/

BSUT Stroitelstvo i vosstanovlenie iskusstvennykh sooruzhenij zheleznodorozhnymi vojskami VS RF na sovremennom etape (K. A. Bystrov, Main Directorate of the Railway Troops). Belarusian State University of Transport repository, c. 2018.
http://elib.bsut.by/bitstream/handle/123456789/11388/10-26.pdf?sequence=1&isAllowed=y

BSVT 120-мм минометные выстрелы с осколочно-фугасной миной ВОФ-843Б и зарядом полным переменным. Belspetsvneshtechnika (Belarus state export agency).
https://bsvt.by/ru/strelkovoe-vooruzhenie-i-boepripasy/artillery-rounds/120mm-minometnye-vystrely-s-oskolochnofugasnoj-minoj-vof843b-i-zaryadom-polnym-peremennym

BTR Russian T-72B3 receive armor upgrades. Below The Turret Ring (blog), 2017-04.
https://below-the-turret-ring.blogspot.com/2017/04/russian-t-72b3-receive-armor-upgrades.html

BTVT Боевая машина огнеметчиков-тяжелая (БМО-Т). btvt.narod.ru.
http://btvt.narod.ru/4/bmot/bmot.htm

BTWB Basic Identification of Ammunition in Ukraine, version 7.0. Bomb Techs Without Borders (dokumen.pub copy), 2024.
https://dokumen.pub/basic-identification-of-ammunition-in-ukraine-v70-7-english-edition.html

BTWIR Ordnance of the Week: Iranian Mortars. Bomb Techs Without Borders, undated (c. 2023).
https://www.btwob.org/updates/ordnance-of-the-week-iranian-mortars

BTWOF Ordnance of the Week: OF-843B 120mm Mortar. Bomb Techs Without Borders, undated (post-April 2022).
https://www.btwob.org/updates/ordnance-of-the-week-of-843b-120mm-mortar

BULLET Landmine, APERS, PFM-1 Birdmine. Bullet Picker (reference site).
https://bulletpicker.com/landmine_-apers_-pfm-1-birdmin.html

BULLET2 Landmine, AT, TM-57. bulletpicker.com (quotes Afghanistan and Iraq Ordnance ID Guides, 2004), 2004 guides.
https://bulletpicker.com/landmine_-at_-tm-57.html

CALIB Forpost-R enters service with Russian navy. Calibre Defence, 2025-06-09.
https://www.calibredefence.co.uk/forpost-r-enters-service-with-russian-navy/

CALIB2 Russian forces receive Krasnopol-M2 delivery (Sam Cranny-Evans). Calibre Defence, 2026-04-03.
https://www.calibredefence.co.uk/?p=6391

CAMTO Новейшие цифровые радиорелейные станции-аппаратные поступили на вооружение соединения связи ВВО в Забайкалье. ЦАМТО / armstrade.org (relaying Eastern MD press service), 2021-11-24.
https://armstrade.org/includes/periodics/news/2021/1124/102065386/detail.shtml

CAPSS Low-Cost Gerbera Drones (CAPSS InFocus). Centre for Air Power Studies, India, 2025-09-16.
https://capssindia.org/wp-content/uploads/2025/09/CAPSS_InFocus_DPK_16_9_25.pdf

CAR1 Documenting a North Korean missile in Ukraine (Ukraine Field Dispatch, Jan 2024; public page storymaps.arcgis.com/stories/3a4e9d713f59426d9d1ea3881abecbf3). Conflict Armament Research, 2024-01.
https://www.arcgis.com/sharing/rest/content/items/3a4e9d713f59426d9d1ea3881abecbf3/data?f=json

CAR2 North Korean missiles produced in 2024 used in Ukraine (Ukraine Field Dispatch, Sep 2024). Conflict Armament Research, 2024-09.
https://www.arcgis.com/sharing/rest/content/items/15ae6ca767bc46a1b536ac7e2d962b66/data?f=json

CH97 VSU unichtozhili REB Moskva-1 stoimostiu 57 millionov. Charter97 (citing Censor.net), 2022-09-09.
https://charter97.org/ru/news/2022/9/9/514866/

CHARTER Russian Drone Granat-4 Was Shot Down In Ukraine. Charter97, 2025-11-27.
https://charter97.org/en/news/2025/11/27/664600/

CHNEWS □□□□□□□□□□□□□□ □□□□□□□(8). China News Service, 2013-08-08.
https://www.chinanews.com.cn/mil/2013/08-08/5137748_8.shtml

CMH 130-mm. M-46 Field Gun. US Army Center of Military History (mirror), 2001-06.
https://webdoc.gwdg.de/ebook/p/2005/CMH_2/www.army.mil/cmh-pg/books/www/279a.htm

CNA The Russian Army: Organization and Modernization, p. 13. CNA, 2019-10.
https://www.cna.org/reports/2019/10/IOP-2019-U-021801-Final.pdf

CNA The Russian Army: Organization and Modernization (Ramm), p. 45. CNA, 2019-10.
https://www.cna.org/

CNA21 Russian Forces in the Western Military District, p. 31. CNA, 2021-06.
https://www.cna.org/reports/2021/06/Russian-Forces-in-the-Western-Military-District.pdf

CNA23 Russia's Use of Uncrewed Systems in Ukraine (Edmonds, Bendett), DRM-2022-U-034223-Final. CNA, 2023-03.
https://www.cna.org/reports/2023/03/Russian-Uncrewed-Systems-Ukraine.pdf

CNEWS Россия начала использовать в зоне СВО портативный анти-БПЛА комплекс «Чистюля». CNews, 2024-08-26.
https://www.cnews.ru/news/top/2024-08-26_rossiya_nachala_ispolzovat

CNN What is Russia's Oreshnik ballistic missile and what can it do? CNN, 2026-01-09.
https://www.cnn.com/2026/01/09/europe/russia-oreshnik-missile-ukraine-explainer-intl-cmd

CNN23 Russian helicopter pilot who defected to Ukraine describes the operation (interview published by Ukraine's Defense Intelligence). CNN, 2023-09-04.
https://amp.cnn.com/cnn/2023/09/04/europe/russian-helicopter-pilot-defects-ukraine-intl

CRFS Hertz and Minds (Withington), p. 6 and note 12. CRFS, 2024.
https://www.crfs.com/hubfs/whitepapers/Hertz_and_Minds_Report.pdf

CRYPTO R-142 Mobile HF/VHF radio station. Crypto Museum, 2024-01-04.
https://cryptomuseum.com/radio/ussr/r142

CSIS1 SS-N-26 Strobile (P-800 Oniks). CSIS Missile Threat. Read 2026-10-06.
https://missilethreat.csis.org/missile/ss-n-26/

CSIS2 Shahed-131 and 136. CSIS Missile Defense Project, 2026. Read 2026-10-16.
https://missilethreat.csis.org/missile/shahed-131-and-136/

CSIS3 Shahed-238. CSIS Missile Defense Project, 2026. Read 2026-10-02.
https://missilethreat.csis.org/missile/shahed-238/

CSIS4 9K720 Iskander (SS-26). CSIS Missile Threat, 2024-04-23. Read 2026-09-29.
https://missilethreat.csis.org/missile/ss-26-2/

CSIS5 9M729 (SSC-8). CSIS Missile Threat, 2024-04-23. Read 2026-09-29.
https://missilethreat.csis.org/missile/ssc-8-novator-9m729/

CSIS6 OTR-21 Tochka (SS-21). CSIS Missile Threat, 2024-04-23. Read 2026-10-06.
https://missilethreat.csis.org/missile/ss-21/

CSIS7 SS-N-30A (Kalibr). CSIS Missile Threat, 2026-10. Read 2026-10-20.
https://missilethreat.csis.org/missile/ss-n-30a-kalibr/

CSIS8 Kh-101 / Kh-102 (Missile Threat). CSIS Missile Threat, 2022. Read 2026-10-20.
https://missilethreat.csis.org/missile/kh-101-kh-102/

CSIS9 Kh-55 (AS-15 Kent) (Missile Threat). CSIS Missile Threat, 2022. Read 2026-10-20.
https://missilethreat.csis.org/?p=358

CSIS10 Kh-47M2 Kinzhal (Missile Threat). CSIS Missile Threat, n.d. (2022 archive). Read 2026-10-21.
https://missilethreat.csis.org/missile/kinzhal/

CSIS11 KN-23 (Missile Threat). CSIS Missile Defense Project, 2019-07. Read 2026-10-08.
https://missilethreat.csis.org/missile/kn-23/

CSIS12 KN-24 (Missile Threat). CSIS Missile Defense Project, 2020-04. Read 2026-10-08.
https://missilethreat.csis.org/missile/kn-24/

CSIS13 Koksan M1978. CSIS Missile Threat, 2024-04-23. Read 2026-10-08.
https://missilethreat.csis.org/missile/koksan-m1978/

CSIS14 M1985/M1991. CSIS Missile Defense Project (Missile Threat), 2024-04-23 (last modified). Read 2026-10-08.
https://missilethreat.csis.org/missile/m1985m1991-mlrs/

CSIS15 Oreshnik. CSIS Missile Threat, 2026. Read 2026-10-21.
https://missilethreat.csis.org/?p=10853

CSIS16 Pantsir S-1. CSIS Missile Threat, undated (after 2021). Read 2026-09-29.
https://missilethreat.csis.org/defsys/pantsir-s-1/

CSIS17 S-300 (Missile Defense Project). CSIS Missile Threat, 2021. Read 2026-10-07.
https://missilethreat.csis.org/defsys/s-300/

CSIS18 S-400 Triumf. CSIS Missile Threat, undated (c. 2017–2022). Read 2026-09-29.
https://missilethreat.csis.org/defsys/s-400-triumf/

CSIS19 Tor (SA-15 Gauntlet). CSIS Missile Defense Project, undated (cites to 2020). Read 2026-09-29.
https://missilethreat.csis.org/defsys/tor/

CSIS20 Russia Tests Surface-To-Air Missile for Arctic. CSIS Missile Threat, 2019-07. Read 2026-10-19.
https://missilethreat.csis.org/russia-tests-surface-to-air-missile-for-arctic/

CULT Samokhodnyy minomyot 2S4 Tyulpan. ar.culture.ru (Russian Ministry of Culture portal).
https://ar.culture.ru/ru/subject/samohodnyy-minomyot-2s4-tyulpan

CURTIME Reuters: Иран передаст России пусковые установки для баллистических ракет малой дальности «Фатх-360». Current Time (RFE/RL Russian-language service), 2025-05.
https://www.currenttime.tv/a/reuters-iran-russia-raketi-fath-360/33410081.html

CYBER Предназначение, организация, вооружение отдельного инженерно-саперного батальона. cyberpediasu.com (copied course text), 2017-06-19.
https://cyberpediasu.com/5x393c.html

CYCLO APC-14KM. Циклопедия, 2024.
https://cyclowiki.org/wiki/APC-14KM

CYCLO2 BT-40. Cyclopedia (cyclowiki.org), 2026.
https://cyclowiki.org/wiki/BT-40

CZMOD Mil Mi-8 - NATO code: HIP. Army of the Czech Republic (Ministry of Defence).
https://acr.mo.gov.cz/scripts/detail.php?id=6304

D24 Rosjanie dopancerzyli dopancerzony BMP-2. Defence24, 2023-05.
https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosjanie-dopancerzyli-dopancerzony-bmp-2

D24A Rosjanie prezentują nową wersję BRDM-2. Defence24, undated, after Sep 2022.
https://defence24.pl/przemysl/rosjanie-prezentuja-nowa-wersje-brdm-2

D24A2 Rosja: Rusza seryjna produkcja nastepcy wyrzutni Grad, Uragan i Smiercz. Defence24, 2021-08.
https://defence24.pl/rosja-rusza-seryjna-produkcja-nastepcy-wyrzutni-grad-uragan-i-smiercz

D24B Rosjanie wysyłają zmodernizowane BRDM-2 na front. Defence24, 2023 (embeds post of 27 Mar 2023).
https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosjanie-wysylaja-zmodernizowane-brdm-2-na-front

D24B2 Rosjanie wyslali na Ukraine ulepszona artylerie rakietowa. Defence24, 2024.
https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosjanie-wyslali-na-ukraine-ulepszona-artylerie-rakietowa

D242 Rosyjski predator w cieniu Bayraktara. Bezzałogowiec Orion uderza w Ukraińców. Defence24, 2026.
https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosyjski-predator-w-cieniu-bayraktara-bezzalogowiec-orion-uderza-w-ukraincow

D243 Rosjanie wprowadzaja opancerzone Mustangi. Defence24, 2018-03-15.
https://defence24.pl/sily-zbrojne/rosjanie-wprowadzaja-opancerzone-mustangi

D244 Rosjanie ostrzeliwuja ukrainskie pozycje Koksanem. Defence24, 2025-07-25.
https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosjanie-ostrzeliwuja-ukrainskie-pozycje-koksanem

D245 Rosyjskie rakietowe niszczyciele czołgów na Białorusi. Defence24, 2022-02-04.
https://defence24.pl/sily-zbrojne/rosyjskie-rakietowe-niszczyciele-czolgow-na-bialorusi

D246 Electronic Warfare: Russian Response to the NATO's Advantage [ANALYSIS]. Defence24, undated (content from about 2017).
https://defence24.com/electronic-warfare-russian-response-to-the-natos-advantage-analysis

D247 Wyrzutnie Tornado-G dostarczane rosyjskiej armii. Defence24, 2019.
https://defence24.pl/przemysl/wyrzutnie-tornado-g-dostarczane-rosyjskiej-armii

D248 Rosyjski ulepszony Uragan trafił do WDW. Defence24, 2025-03-16.
https://defence24.pl/sily-zbrojne/rosyjski-ulepszony-uragan-trafil-do-wdw

DB Russian Airborne Troops received modern Barnaul-T air defence control systems. Defence Blog, 2018-06.
https://defence-blog.com/russian-airborne-troops-received-modern-barnaul-t-air-defence-control-systems/

DB17 Russia modernises batch of 2S4 Tyulpan self-propelled nuclear mortars. Defence Blog, 2017-11-13.
https://defence-blog.com/russia-modernises-batch-of-2s4-tyulpan-self-propelled-nuclear-mortars/

DBLOG Ukraine claims it shot down Russia's newest drone. Defence Blog, 2023-08.
https://defence-blog.com/ukraine-claims-it-shot-down-russias-newest-drone/

DBLOG2 A Syrian Journalist Has Posted Photos of Russian Radio station R-166-0,5. Defence Blog, 2015-09.
https://defence-blog.com/a-syrian-journalist-has-posted-photos-of-russian-radio-station-r-166-05/

DBSAR Russian new armored vehicle spotted on Ukraine battlefield. Defence Blog, 2024-10-21.
https://defence-blog.com/russian-new-armored-vehicle-spotted-on-ukraine-battlefield/

DE1 DPRK Sent a 240mm MLRSs to russia In Addition to Earlier Sent Koksan Self-propelled Guns. Defense Express, 2024-11-16.
https://en.defence-ua.com/analysis/dprk_sent_a_240_mm_mlrss_to_russia_in_addition_to_earlier_sent_koksan_self_propelled_guns-12553.html

DE2 Russia to Receive 240 Koksan Self-Propelled Guns and 240mm M-1991 Systems Along With 150 KN-23 Missiles From North Korea. Defense Express, 2025-01-23.
https://en.defence-ua.com/news/russia_to_receive_240_koksan_self_propelled_guns_and_240mm_m_1991_systems_along_with_150_kn_23_missiles_from_north_korea-13292.html

DE3 Newly Published Footage Captures the First Appearance of North Korean M-1991 System in Combat Service With russian Units on Ukrainian Soil (Video). Defense Express, 2025-05-08.
https://en.defence-ua.com/weapon_and_tech/newly_published_footage_captures_the_first_appearance_of_north_korean_m_1991_system_in_combat_service_with_russian_units_on_ukrainian_soil_video-14436.html

DE4 First Video of North Korean M1991 MLRS in russian Service, Outfitted with Anti-Drone Protection. Defense Express, 2025-04-21.
https://en.defence-ua.com/weapon_and_tech/first_video_of_north_korean_m1991_mlrs_in_russian_service_outfitted_with_anti_drone_protection-14251.html

DE5 North Korean Launcher Goes Up in Flames After Ukrainian Hit. Defense Express, 2025-06-28.
https://en.defence-ua.com/video/north_korean_launcher_goes_up_in_flames_after_ukrainian_hit-44.html

DEF24 Bog wojny wagi ciezkiej - 2S7 w dzialaniach na Ukrainie. Defence24, 2022-03.
https://defence24.pl/polityka-obronna/bog-wojny-wagi-ciezkiej-2s7-w-dzialaniach-na-ukrainie

DEF242 IMDS Sankt Petersburg: nowa wersja rosyjskiego kutra patrolowego Mangust. Defence24, 2013-07-06.
https://defence24.pl/sily-zbrojne/imds-sankt-petersburg-nowa-wersja-rosyjskiego-kutra-patrolowego-mangust

DEF243 Russian Airborne Early Warning Helicopters in Crimea. Missile Threat in Black Sea. Defence24, 2020-02.
https://defence24.com/russian-airborne-early-warning-helicopters-in-crimea-missile-threat-in-black-sea

DEF244 Rosyjskie rakietowe niszczyciele czołgów na Ukrainie. Defence24, 2022-08.
https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosyjskie-rakietowe-niszczyciele-czolgow-na-ukrainie

DEF245 Ukraina: rosyjska amunicja termobaryczna zdobyta. Defence24, 2022-03.
https://defence24.pl/polityka-obronna/ukraina-rosyjska-amunicja-termobaryczna-zdobyta

DEF246 Zimnowojenna artyleria wyciagnieta ze skladnic. Defence24, 2025.
https://defence24.pl/sily-zbrojne/zimnowojenna-artyleria-wyciagnieta-ze-skladnic

DEFBLOG Russia's rare BTR-90 troop carrier spotted in Ukraine. Defence Blog, 2023-10.
https://defence-blog.com/russias-rare-btr-90-troop-carrier-spotted-in-ukraine/

DEFBLOG2 Rare Russian Gibka-S launcher seen near front line. Defence Blog.
https://defence-blog.com/rare-russian-gibka-s-launcher-seen-near-front-line/

DEFBLOG3 Belarus receives first Groza R-934UM2 jamming stations. Defence Blog, 2017-12-18.
https://defence-blog.com/belarus-receives-first-groza-r-934um2-jamming-stations/

DEFBLOG4 Russian electronic warfare units competed using new hardware. Defence Blog.
https://defence-blog.com/russian-electronic-warfare-units-competed-using-new-hardware/

DEFBLOG5 Russian Army's new heavy trucks fell into the hands of Ukrainian Soldiers. Defence Blog, 2022-03-27.
https://defence-blog.com/russian-armys-new-heavy-trucks-fell-into-the-hands-of-ukrainian-soldiers/

DEFEX Ukraine's Security Service confirms first destruction of russian Mi-26 heavy transport helicopter. Defense Express, undated (page prints no date; events of 27-28 Jun 2025).
https://en.defence-ua.com/news/ukraines_security_service_confirms_first_destruction_of_russian_mi_26_heavy_transport_helicopter_video-16751.html

DEFEX2 Two russia's amphibious boats were destroyed and this is a historic event for Ukraine's fleet of kamikaze boats. Defense Express, 2023-11-10.
https://en.defence-ua.com/analysis/two_russias_amphibious_boats_were_destroyed_and_this_is_a_historic_event_for_ukraines_fleet_of_kamikaze_boats-8524.html

DEFEX3 The russians could lose the extremely rare Penicillin system in Ukraine. Defense Express, 2023-05.
https://en.defence-ua.com/weapon_and_tech/the_russians_could_lose_the_extremely_rare_the_penicillin_artillery_reconnaissance_system_in_ukraine-6952.html

DEFM Russia Announces Deployment of its First Self-Propelled VSHORAD. Defense Mirror, 2022-12.
https://defensemirror.com/news/33350/Russia_Announces_Deployment_of_its_First_Self_Propelled_VSHORAD

DEFMAG Captured american Bradley IFV appears in Russian service near Kursk. Defense Magazine.
https://www.defensemagazine.com/article/captured-american-bradley-ifv-appears-in-russian-service-near-kursk

DEFML20 Russia's desperation on display: Ukraine destroys 1930s ML-20 gun (video). Defence Express (defence-ua.com), 2025-10.
https://en.defence-ua.com/news/russias_desperation_on_display_ukraine_destroys_1930s_ml_20_gun_video-16083.html

DEFNDR Sting interceptor by Wild Hornets downs costly Russian Granat-4. Defender Media, 2026-03.
https://thedefender.media/en/2026/03/sting-intercepted-rare-target/

DEFPOST Ukraine Says Destroyed N. Korean Bulsae-4 Missile Used by Russia. The Defense Post, 2024-12-03.
https://thedefensepost.com/2024/12/03/ukraine-destroyed-bulsae-missile/

DEFPOST2 Russia uses 1960s UAZ-452 loaf van as troop carrier in Ukraine. The Defense Post, 2024-06-17.
https://thedefensepost.com/2024/06/17/russia-loaf-van-ukraine/

DEFPOST3 Russia Claims Use of Electromagnetic Weapon Against Ukrainian Drones. The Defense Post (from TASS), 2022-07-07.
https://thedefensepost.com/2022/07/07/russia-electromagnetic-weapon/

DEFPOST4 Russia to ramp up production of Krasnopol-M2 guided artillery shells. The Defense Post, 2023-08-24.
https://www.thedefensepost.com/2023/08/24/russia-increased-artillery-shell-production/

DEFPOST5 Russian Electronic Warfare Drone Shot Down in Ukraine: Report. The Defense Post, 2022-06-21.
https://www.thedefensepost.com/2022/06/21/russia-electronic-warfare-drone-ukraine

DEFUA New russian 2S40 Floks Howitzer Just Delivered, Next Day First One Gets Hit. Defense Express, 2023-10.
https://en.defence-ua.com/weapon_and_tech/new_russian_2s40_floks_howitzer_just_delivered_next_day_first_one_gets_hit_in_ukraine_video-8180.html

DEFUA1 Ukrainian Military Destroy a Rare russian BTR-90 Rostok APC Near Avdiivka. Defense Express, 2023-12.
https://en.defence-ua.com/weapon_and_tech/ukrainian_military_destroy_a_rare_russian_btr_90_rostok_apc_near_avdiivka-8838.html

DEFUA2 For New Assaults in the East, the russians are Even Using Rare BTR-90. Defense Express, 2023-10.
https://en.defence-ua.com/news/for_new_assaults_in_the_east_the_russians_are_even_using_rare_btr_90-8242.html

DEFUA3 North Koreans Fighting on russia's Side Seen Using Bulsae-4 ATGMs for the First Time. Defence-UA, 2025-08-23.
https://en.defence-ua.com/news/north_koreans_fighting_on_russias_side_seen_using_bulsae_4_atgms_for_the_first_time-15577.html

DEFUA4 Russian invaders are crushing their comrades on Chinese-made Desertcross vehicles. Defence Express, 2023-11.
https://en.defence-ua.com/news/russian_invaders_are_crushing_their_comrades_on_chinese_made_desertcross_all_terrain_vehicles_video-8634.html

DEFUA5 Phoenix unit destroys R-330M1P Diabazol EW station. Defense Express, 2025-05.
https://en.defence-ua.com/news/ukrainian_phoenix_unit_destroys_russian_r_330m1p_diabazol_ew_station_in_targeted_drone_strike_video-14616.html

DEFUA6 After Friday's russia's Massive Missile Attack on Ukraine, It Became Known That Kinzhal is Not a High-Precision Missile. Defence-UA (Defense Express), 2023-08 (page undated; launches on 11 August).
https://en.defence-ua.com/news/after_fridays_russias_massive_missile_attack_on_ukraine_it_became_known_that_kinzhal_is_not_a_high_precision_missile-7601.html

DEFUA7 First Photo of a Kh-69 Missile With New Warhead, Downed By Ukraine's Air Defenses. Defense Express (en.defence-ua.com), 2024-10.
https://en.defence-ua.com/weapon_and_tech/first_photo_of_a_kh_69_missile_with_new_warhead_downed_by_ukraines_air_defenses-12252.html

DEFUA8 Ukraine's Military Destroyed Another Z-STS Akhmat. Defence-UA, 2022-11.
https://en.defence-ua.com/weapon_and_tech/ukraines_military_destroyed_another_z_sts_akhmat_which_was_manufactured_in_25_days_for_kadyrov_mercenaries-4843.html

DEFUA9 1Л119 Небо-СВУ: чим особлива, які характеристики та недоліки. Defence Express.
https://defence-ua.com/weapon_and_tech/1l119_nebo_svu_chim_osobliva_jaki_harakteristiki_ta_nedoliki_u_tsijeji_rls_scho_znischili_ukrajinski_droni-17748.html

DEFUA10 Ukrainian Prymary Unit Destroy russian 48Ya6-K1, 55Zh6U, 1L119 Radars and Arctic Tor-M2DT. Defence Express (defence-ua), 2026-02.
https://en.defence-ua.com/news/ukrainian_prymary_unit_destroy_russian_48ya6_k1_55zh6u_1l119_radars_and_arctic_tor_m2dt_system_video-17459.html

DEFUA11 Ukrainian Troops Captured russian Silok-01 EW Station. Defence-UA, 2022.
https://en.defence-ua.com/news/ukrainian_troops_captured_russian_silok_01_ew_station_photo-4112.html

DEFUA12 The russian TOS-2 Tosochka Flamethrower System was First Observed on the Front. Defense Express (en.defence-ua.com), 2023.
https://en.defence-ua.com/weapon_and_tech/the_russian_tos_2_tosochka_flamethrower_system_was_first_observed_on_the_front-9207.html

DEFUA13 Ukraine's Military Captured Rtut-BM EW System. Defence-UA (Defense Express), 2022.
https://en.defence-ua.com/weapon_and_tech/yet_another_rare_trophy_rtut_bm_ew_system_of_which_russia_only_has_a_couple_dozens-2328.html

DEFUA14 Russia's tank stocks are running out (Defence Express). Defence Express, 2024-03.
https://en.defence-ua.com/analysis/russias_tank_stocks_are_running_out_more_and_more_outdated_equipment_is_being_used_by_invaders_against_ukraine-9619.html

DEFUA15 Tobol System in Russian Kaliningrad Jams GPS Over Europe. Defence Express (defence-ua.com), 2024-01.
https://en.defence-ua.com/weapon_and_tech/tobol_system_in_russian_kaliningrad_jams_gps_over_europe_and_it_does_cause_problems-9283.html

DEFUA16 What we know about captured Russia's Torn-MDM EW system. Defense Express, 2022-06-12.
https://en.defence-ua.com/weapon_and_tech/what_we_know_abut_captured_russias_torn_mdm_electronic_warfare_system_and_how_far_it_detects_ukrainian_fighters_mobile_phones_on_the_front_line-3259.html

DEFUA17 UMPK dismantled and analyzed: what's inside the Russian kit. Defense Express, 2025.
https://en.defence-ua.com/weapon_and_tech/umpk_dismantled_and_analyzed_whats_inside_the_russian_kit_turning_dumb_fab_into_a_guided_bomb_video-12219.html

DEFUA18 Ukrainian landmine finds a rare Russian vehicle (UMZ on BTR-80). Defense Express, 2023.
https://en.defence-ua.com/news/ukrainian_landmine_finds_a_rare_russian_vehicle_that_hindered_counteroffensive_video-7330.html

DEFUA19 M-30 howitzers fought in WW2, so why Russians actively bring them back to service. Defence Express (defence-ua.com), 2025.
https://en.defence-ua.com/news/m_30_howitzers_fought_in_ww2_so_why_russians_actively_bring_them_back_to_service-14080.html

DEFUA22 Defense Intelligence of Ukraine neutralizes Russian Garmon radar in Zaporizhzhia region. Defense Express (en.defence-ua.com).
https://en.defence-ua.com/news/the_defense_intelligence_of_ukraine_neutralizes_russian_garmon_radar_in_zaporizhzhia_region_video-13306.html

DETSYS Подавитель БПЛА ЛПД-801. Detector Systems (retailer), 2026.
https://detsys.ru/catalog/zashchita_ot_dronov/podavitel_bpla_lpd_801/

DETSYS2 Система защиты от дронов и БПЛА Стриж-3. Detector Systems (retailer), 2026.
https://detsys.ru/catalog/zashchita_ot_dronov/sistema_zashchity_ot_dronov_i_bpla_strizh_3/

DEVUA На российские танки начали устанавливать новый РЭБ «Сания». Dev.ua (citing Militarnyi, Defense Express), 2024-01.
https://dev.ua/ru/news/reb-sanyia-proty-fpv-1705389593

DEX Russia retrieves rare Stalin-era M-46 guns - Defense Express. Espreso (citing Defense Express), 2024-01.
https://global.espreso.tv/russia-ukraine-war-russians-restore-rare-stalin-era-m-46-guns-defense-express

DEXP North Korean Koksan self-propelled gun was spotted in russian positions near Kreminna. Defense Express, 2025-06-04.
https://en.defence-ua.com/news/north_korean_koksan_self_propelled_gun_was_spotted_in_russian_positions_near_kreminna_luhansk_region_video-14739.html

DEXP2 Database and video overview of the Russian weaponry in the Donbas. Defense Express, 2017-10-25.
https://old.defence-ua.com/index.php/en/publications/partners-publication/3611-database-and-video-overview-of-the-russian-weaponry-in-the-donbas

DFNC Обзор современных российских средств РЭБ. dfnc.ru.
https://dfnc.ru/spec_zashita/obzor-sovremennyh-rossijskih-sredstv-reb/

DFNC2 Rossijskie sredstva borby s BPLA: radioelektronnoe podavlenie. Dalnevostochnyj/DFNC journal, 2021.
https://dfnc.ru/arhiv-zhurnalov/2021-3-68/rossijskie-sredstva-borby-s-bpla-radioelektronnoe-podavlenie/

DFR Electronic Warfare by Drone and SMS. DFRLab (Atlantic Council), 2017-05-18.
https://dfrlab.org/2017/05/18/electronic-warfare-by-drone-and-sms/

DFR2 Tirada-2 Likely Not Spotted in Ukraine. Atlantic Council DFRLab, 2019-07-17.
https://dfrlab.org/2019/07/17/tirada-2-likely-not-spotted-in-ukraine/

DFRLAB Having a Bal. Atlantic Council DFRLab, 2016-11-26.
https://dfrlab.org/2016/11/26/having-a-bal/

DFRLAB2 #MinskMonitor: New Russian Electronic Warfare Systems in Eastern Ukraine. Atlantic Council DFRLab, 2018-08-23.
https://dfrlab.org/2018/08/23/minskmonitor-new-russian-electronic-warfare-systems-in-eastern-ukraine/

DFRLAB3 #MinskMonitor: New Russian Electronic Warfare in Horlivka? DFRLab, 2018-04-27.
https://dfrlab.org/2018/04/27/minskmonitor-new-russian-electronic-warfare-in-horlivka/

DFRLAB4 The Use of Krasnopol Artillery Shells in Ukraine. Atlantic Council DFRLab, 2019.
https://dfrlab.org/?p=225

DIND BTR-82A Armoured Personnel Carrier (Military Industrial Company LLC product page). defence-industries.com.
https://www.defence-industries.com/products/military-industrial-company-llc/btr-82a-armoured-personnel-carrier

DJIAIR DJI Air 2S specs and FAQ. DJI, 2021.
https://www.dji.com/support/product/air-2s

DJIM2 DJI Mavic 2 specs and FAQ. DJI, 2018.
https://www.dji.com/support/product/mavic-2

DJIM2EA DJI Mavic 2 Enterprise Advanced specs and FAQ. DJI, 2020.
https://www.dji.com/support/product/mavic-2-enterprise-advanced

DJIM3 DJI Mavic 3 specs and FAQ. DJI, 2021-2022.
https://www.dji.com/support/product/mavic-3

DJIM3M DJI Mavic 3 User Manual v2.3. DJI (copy hosted by Lensrentals), 2022.
https://lensrentals.com/product-assets/63fa7e7a-932b-4d5d-99c6-4722b9321105/DJI_Mavic_3_User_Manual_v2.3_en.pdf

DJIM30 DJI Matrice 30 series specs and FAQ. DJI, 2022.
https://www.dji.com/support/product/matrice-30

DJIM300 DJI Matrice 300 RTK specs and FAQ. DJI, 2020.
https://www.dji.com/support/product/matrice-300

DJIM300M Matrice 300 RTK Manual de usuario v3.2. DJI, 2022-06.
https://dl.djicdn.com/downloads/matrice-300/20220620/M300_RTK_User_Manual_ES_v3.2.pdf

DJIMINI DJI Mini 3 Pro specs and FAQ. DJI, 2022.
https://www.dji.com/support/product/mini-3-pro

DLG22 Noveishii rossiiskii kompleks REB Moskva-1 otpravilsia vsled za odnoimennym kreiserom. Dialog.ua (citing Censor.net), 2022-09-09.
https://www.dialog.ua/war/258422_1662714543

DMNTV Легенду пехоты «зушку» ЗУ-23-2 на мотолыге МТ-ЛБ назвали ключевой при защите от «Бабы-Яги». www1.ru, 2025-01-03.
https://www1.ru/en/articles/2025/01/03/legendu-pexoty-zusku-zu-23-2-na-motolyge-mt-lb-nazvali-kliucevoi-pri-zashhite-ot-baby-iagi-v-liuboe.amp.html

DOCK Specification - CB 90 H. Dockstavarvet (builder).
https://www.dockstavarvet.se/products/combat-and-patrol-boats/combat-boat-90-h/specification/

DOGS РЛС контрбатарейной борьбы 1Л260 «Зоопарк-1М». dogswar.ru, 2022-09-22.
http://www.dogswar.ru/specsredstva/58-specsredstva/8955-rls-kontrbatareinoi-.html

DONM «Богомол-7» вышел на учения. Donetsk Media, 2026-10-02.
https://donetskmedia.ru/20261002-bogomol-7-vyshel-na-uchenija-voennye-otrabatyvajut-dostavku-gruzov-i-jevakuaciju.media

DP North Korean Unit in Western Russia Could Operate 120 Ballistic Missiles: Report. The Defense Post, 2026-08-07.
https://thedefensepost.com/2026/08/07/north-korean-russia-missiles/

DPOST Ukraine Video Shows Russia Operating North Korean Rocket Launchers. The Defense Post, 2025-04-22.
https://thedefensepost.com/2025/04/22/russia-north-korea-rocket-launcher/

DPOST2 Russia Offers Orion-E Combat Drone for Export. The Defense Post, 2021-06-29.
https://www.thedefensepost.com/2021/06/29/russia-orion-e-drone-export/

DPSU Border guards in Kharkiv region destroyed the latest Russian EW system. State Border Guard Service of Ukraine, 2024-04-12.
https://dpsu.gov.ua/en/news/ video -border-guards-in-kharkiv-region-destroyed-the-latest-russian-electronic-warfare-system

DRDRONE Autel Robotics EVO Max 4T technical specifications. Dr. Drone (Canadian drone reseller).
https://drdrone.ca/pages/autel-robotics-evo-max-4t-technical-specifications

DTALK Russian paratroopers test new portable radar. DefenceTalk (relaying Russian MoD), 2012-04.
https://defencetalk.com/russian-paratroopers-test-new-portable-radar-41945

DUA BMPT Terminator Reappears on Ukrainian Frontline for Midnight Missions. Defense Express, 2023-07.
https://en.defence-ua.com/weapon_and_tech/bmpt_terminator_reappears_on_ukrainian_frontline_for_midnight_missions-7262.html

DUA2 Photo of destroyed russian modern satellite communication vehicle appeared. Defence Express (en.defence-ua.com), 2022.
https://en.defence-ua.com/weapon_and_tech/photo_of_destroyed_russian_modern_satellite_communication_vehicle_appeared-3792.html

DUDAK Ustroistvo i ekspluatatsiya sredstv svyazi (Dudak, Fedorenko, Gorovenko), ch. 5 KShM R-142N, pp. 34-37, 64-84. Belarusian State University of Informatics and Radioelectronics, Military Faculty, 2020.
https://libeldoc.bsuir.by/bitstream/123456789/40729/1/Dudak_2020.pdf

DX2 Fath-360 and Ababil from Iran for Russia: What Are These Missiles and What Are the Main Differences from the Fateh-110? Defense Express, 2024-08.
https://en.defence-ua.com/weapon_and_tech/fath_360_and_ababil_from_iran_for_russia_what_are_these_missiles_and_what_are_the_main_differences_from_the_fateh_110-11474.html

DXL22 DJI Mavic 3 saves life of Russian soldier. DroneXL, 2022-06-16.
https://dronexl.co/2022/06/16/dji-mavic-3-saves-life-of-russian-soldier/

DXLAUN Iran Handed Fath-360 Missiles to russia Without Launchers: Will That Be an Issue For Their Usage? Defense Express, 2024-09.
https://en.defence-ua.com/analysis/iran_handed_fath_360_missiles_to_russia_without_launchers_will_that_be_an_issue_for_their_usage-11936.html

E24 Putins Schrotthaufen: Russland reaktiviert Uralt-Panzer - Regiment verrät heikle Details. echo24.de, 2023-11.
https://www.echo24.de/welt/wladimir-putin-armee-russland-panzer-t72b-ukraine-krieg-region-luhansk-front-zr-92675797.html

EADAILY Российская армия устанавливает противодесантные мины на южном фронте СВО — СМИ. EADaily, 2023-02-20.
https://eadaily.com/ru/news/2023/02/20/rossiyskaya-armiya-ustanavlivaet-protivodesantnye-miny-na-yuzhnom-fronte-svo-smi

EAN Екатеринбургский авиазавод представил новый ударный БПЛА. EAN (Yekaterinburg), 2025-05-27.
https://eanews.ru/ekaterinburg/20250527150057/ekaterinburgskiy-aviazavod-predstavil-novyy-udarnyy-bpla

EDR Russia exhibits the latest version of its Orion-E MALE UAV. EDR On-Line, 2021-11.
https://www.edrmagazine.eu/russia-exhibits-the-latest-version-of-its-orion-e-male-uav

EDR2 Army-2024: KBP unveils its Krasnopol-M2 155 mm guided weapons system. European Defence Review, 2024-08-16.
https://www.edrmagazine.eu/kbp-unveils-its-krasnopol-m^2-155-mm-guided-weapons-system

EDR3 Russian Heavyweight 'Halo' makes its Debut. EDR Magazine, 2018.
https://www.edrmagazine.eu/russian-heavyweight-halo-makes-its-debut

EDR4 Serial production Sosna short-range air defence system unveiled. European Defence Review, 2018-08.
https://www.edrmagazine.eu/serial-production-sosna-short-range-air-defence-system-unveiled

EDR5 IDEX 2019: Tornado-G MRL system makes international debut. European Defence Review, 2019-02.
https://www.edrmagazine.eu/idex-2019-tornado-g-mrl-system-makes-international-debut

EDR19 IDEX 2019: Uralvagonzavod promotes RCWS with 57 mm cannon. European Defence Review, 2019-02.
https://www.edrmagazine.eu/idex-2019-uralvagonzavod-promotes-rcws-with-57-mm-cannon

EDR22 UMEX 2026 - Zala unveils new KPU 51E disposable launcher (Novichkov). EDR Magazine, 2026-01-20.
https://www.edrmagazine.eu/umex-2026-zala-unveils-new-kpu-51e-disposable-launcher

EDR23 Russia receives improved KUB-BLA loitering munition. EDR Magazine, 2023-12.
https://www.edrmagazine.eu/russia-receives-improved-kub-bla-loitering-munition

EDR24 ADEX 2024 - Rosoboronexport showcases the Orlan-30 UAV for the first time in the Caspian region. EDR Magazine, 2024-09.
https://www.edrmagazine.eu/rosoboronexport-showcases-the-orlan-30-uav-for-the-first-time-in-the-caspian-region

EDR25 IDEX 2025: Kalashnikov presents its latest attack UAVs. EDR Magazine, 2025-02.
https://www.edrmagazine.eu/?p=42207

EDRL Army-2024: Lancet loitering munitions offered for export. EDR Magazine, 2024-08.
https://www.edrmagazine.eu/?p=38441

ELSIG Unified command and staff vehicle R-149MA1 (catalogue sheet, pp. 20-21). Elektrosignal (Sozvezdie group), 2018.
http://elektrosignal.ru/wp-content/uploads/2018/06/R-149MA1.pdf

EMP1 Russian troops assembles 300 boats on islands near Kherson, trying to gain foothold there. Euromaidan Press, 2024-12-04. Read 2026-10-17.
https://euromaidanpress.com/wp-json/wp/v2/posts/307527

EMP2 Ukrainian forces destroy six Russian boats in Kherson Oblast. Euromaidan Press, 2023-09-11. Read 2026-10-17.
https://euromaidanpress.com/wp-json/wp/v2/posts?slug=ukrainian-forces-destroy-six-russian-boats-in-kherson-oblast

EMP3 Russia's thermobaric launchers used to just drive up and fire (new TOS-1As). Euromaidan Press, 2026-08-23. Read 2026-09-29.
https://euromaidanpress.com/2026/08/23/new-tos-1as/

ENG SBS znyshchyly ridkisnu KNDR-shnu SAU na Luhanshchyni (Russian-language page). Engage (relaying Ukrainian Unmanned Systems Forces press service), 2026-02-16.
https://engage.org.ua/ru/sbs-znyshchyly-ridkisnu-kndr-shnu-sau-na-luhanshchyni/

ESD New Russian ISKANDER Missile Brigade. European Security & Defence, 2022-02-08.
https://euro-sd.com/2022/02/articles/exclusive/25236/iskander-missile/

ESD2 Blood and dust: The rise of Russia's glide bombs (Cranny-Evans). European Security & Defence, 2025-07.
https://euro-sd.com/2025/07/articles/armament/45382/blood-and-dust-the-rise-of-russias-glide-bombs/

ESDEF Dagger Fallen: Assessing Ukraine's Downing of the Kinzhal Missile (Cazalet). European Security & Defence, 2023-05.
https://euro-sd.com/2023/05/news/31497/dagger-fallen-assessing-ukraines-downing-of-the-kinzhal-missile/

ESP What is Podlet radar. Espreso TV, 2024-12.
https://global.espreso.tv/russia-ukraine-war-what-is-podlet-radar-latest-russian-radar-ukrainians-keep-destroying-but-cant-capture

ESP2 Fiber-optic drones: can they change Russian-Ukrainian war? Espreso Global, 2025-01-02.
https://global.espreso.tv/military-news-fiber-optic-drones-can-they-change-russian-ukrainian-war

ESP3 Ukrainski voiny vpershe urazyly pivnichnokoreisku SAU Koksan. Espreso, 2025-02-18.
https://espreso.tv/viyna-z-rosiyeyu-ukrainski-voini-vpershe-urazili-pivnichnokoreysku-sau-koksan

ESP23 Russia relocates Bal coastal missile systems to Bryansk region. Espreso Global, 2023-06-12.
https://global.espreso.tv/russia-relocates-bal-coastal-missile-systems-to-bryansk-region-resistance-warns-of-possible-shelling

ESP24 Low accuracy, inevitable civilian casualties: what are Kh-35U missiles Russia used to strike Kharkiv? Espreso Global, 2024-08-05.
https://global.espreso.tv/military-news-low-accuracy-inevitable-civilian-casualties-what-are-kh-35u-missiles-russia-used-to-strike-kharkiv

ESPR Russian Kh-59 missiles strike Ukraine: lethality and why it is difficult to intercept them. Espreso (Defense Express), 2023.
https://global.espreso.tv/russian-kh-59-missiles-strike-ukraine-their-lethality-and-challenges-in-defense

ESPR2 Navy Commander Neizhpapa names Russian ships, boats destroyed during full-scale war. Espreso, 2023-05-31 (page metadata).
https://global.espreso.tv/navy-commander-neizhpapa-names-russian-ships-boats-destroyed-during-full-scale-war

ESPR3 Russia loses 2 rare electronic warfare systems over several months. Espreso Global, 2023-11.
https://global.espreso.tv/russia-loses-2-rare-electronic-warfare-systems-over-several-months

ESPR4 Ukrainian Armed Forces destroy Russian Meteorit demining system in Kharkiv region. Espreso, 2024.
https://global.espreso.tv/ukrainian-armed-forces-destroy-russian-meteorit-demining-system-in-kharkiv-region-the-10th-since-war-started

ESPR7 Ukrainian defenders destroy 7 boats of Russian saboteurs. Espreso Global, 2023-03-10 (page metadata, datePublished).
https://global.espreso.tv/ukrainian-defenders-destroy-7-boats-of-russian-saboteurs

ESPRESO T-62MV with mineplow, drone protection: media show latest version of Russian tank. Espreso Global, citing Forbes and analyst Naalsio26, 2024-02.
https://global.espreso.tv/russia-ukraine-war-t-62mv-with-mineplow-and-drone-protection-media-show-video-of-latest-version-of-russian-tank

EXK UMG ЗОВ-3523: технические характеристики. exkavator.ru.
https://exkavator.ru/excapedia/technic/eksmash_eov-3523

F45 Russia attacked U.S. supplied howitzers in Ukraine with kamikaze drones and rockets. 19FortyFive, 2022-05-19.
https://www.19fortyfive.com/2022/05/russia-attacked-u-s-supplied-howitzers-in-ukraine-with-kamikaze-drones-and-rockets/

FAKTY Gerbery z fanery: GUR on what Russians make Shahed imitations from. Fakty (fakty.com.ua), 2024-11-18.
https://fakty.com.ua/ru/ukraine/20241118-gerbery-z-fanery-u-gur-rozpovily-z-chogo-rosiyany-vygotovlyayut-imitacziyu-shahediv/amp/

FAKTY2 Дальность полета до 2 600 км: что известно о крылатых ракетах Калибр. Fakty (Ukrainian news), 2026-07-30.
https://fakty.com.ua/ru/ukraine/20260730-vrazhaye-czili-za-sotni-kilometriv-shho-vidomo-pro-rakety-kalibr-yakymy-rf-bombyt-ukrayinu/amp/

FAKTY3 Российская ракета Х-59: технические характеристики, особенности и дальность пуска. Fakty ICTV, 2023-12-01.
https://fakty.com.ua/ru/ukraine/suspilstvo/20231201-rosijska-raketa-h-59-tehnichni-harakterystyky-osoblyvosti-ta-dalnist-pusku/

FAKTY4 Ракета Х-69: что известно о новом оружии, которое Россия применяет против Украины. Fakty ICTV (Ukraine), 2025-04-27.
https://fakty.com.ua/ru/ukraine/20250427-raketa-h-69-shho-vidomo-pro-novu-zbroyu-yaku-rosiya-zastosovuye-proty-ukrayiny/

FAS1 MT-LBu (1V12 series) ACRV M1974 Artillery Command and Reconnaissance Vehicle. Federation of American Scientists, 1999-08-21. Read 2026-09-29.
https://man.fas.org/dod-101/sys/land/row/mt-lbu.htm

FAS2 2S23 Nona-SVK Self-Propelled Gun-Mortar. Federation of American Scientists, 1999. Read 2026-10-06.
https://man.fas.org/dod-101/sys/land/row/2s23.htm

FAS3 2S5 Giatsint-S 152-mm Self-Propelled Gun. Federation of American Scientists, 1999-06-19. Read 2026-09-29.
https://man.fas.org/dod-101/sys/land/row/2s5.htm

FAS4 2S9 120-mm SP Howitzer-Mortar. FAS Military Analysis Network, 1999-10-16. Read 2026-10-21.
https://man.fas.org/dod-101/sys/land/row/2s9.htm

FAS5 2S7 203-mm Self-Propelled Gun. Federation of American Scientists, 1999-10-16. Read 2026-09-29.
https://man.fas.org/dod-101/sys/land/row/2s7.htm

FAS6 BMP-3 Fighting Vehicle. Federation of American Scientists, 1999-06-19. Read 2026-09-29.
https://man.fas.org/dod-101/sys/land/row/bmp-3.htm

FAS7 BRDM-2 Armored Reconnaissance Vehicle. Federation of American Scientists (Military Analysis Network), c. 1999. Read 2026-10-03.
https://man.fas.org/dod-101/sys/land/row/brdm-2.htm

FAS8 BTR-D BMD M1979. Federation of American Scientists, 1999-06-19. Read 2026-10-03.
https://man.fas.org/dod-101/sys/land/row/btr-d.htm

FAS9 M88A1E1 Improved Recovery Vehicle / M88A2 HERCULES. Federation of American Scientists, DOD 101, 2000-02-06. Read 2026-10-08.
https://man.fas.org/dod-101/sys/land/m88a1e1.htm

FAS10 D-20 152mm Towed Gun-Howitzer. FAS Military Analysis Network, 1999-06-19. Read 2026-10-06.
https://man.fas.org/dod-101/sys/land/row/d-20.htm

FAS11 D-30 122-mm Towed Howitzer. Federation of American Scientists (FAS), 1999-06-19. Read 2026-10-06.
https://man.fas.org/dod-101/sys/land/row/d-30.htm

FAS12 Kh-55 Granat / AS-15 Kent. Federation of American Scientists. Read 2026-10-20.
https://nuke.fas.org/guide/russia/bomber/as-15.htm

FAS13 Raduga Kh-22 (AS-4 Kitchen). Federation of American Scientists, 2000-08. Read 2026-10-21.
https://nuke.fas.org/guide/russia/bomber/as-4.htm

FAS14 Threat Update: Krasnopol, a laser-guided projectile for tube artillery (Walter Williams). US Army TRADOC Threat Support Directorate, via FAS, c. 1998. Read 2026-10-20.
https://fas.org/man/dod-101/sys/land/row/krasnopol.htm

FAS15 240mm Rocket Launcher M-1985 / M-1991. Federation of American Scientists (DOD 101), 1999-09-19. Read 2026-10-08.
https://man.fas.org/dod-101/sys/land/row/m-1985-mrl.htm

FAS16 M-46 130-mm Towed Gun (Type 59 130mm Field Gun). Federation of American Scientists, 1999-06. Read 2026-10-06.
https://man.fas.org/dod-101/sys/land/row/m-46.htm

FAS17 MT-LB (DoD 101 Systems). Federation of American Scientists, about 2000. Read 2026-10-03.
https://man.fas.org/dod-101/sys/land/row/mt-lb.htm

FAS18 9P140 220-mm Multiple Rocket Launcher. Federation of American Scientists, 1999. Read 2026-10-20.
https://man.fas.org/dod-101/sys/land/row/9p140.htm

FAS19 SA-10 GRUMBLE (S-300PMU). Federation of American Scientists, 2000-06. Read 2026-10-07.
https://nuke.fas.org/guide/russia/airdef/s-300pmu.htm

FAS20 S-60 / Type 59 57mm Anti-Aircraft Artillery. Federation of American Scientists, 1999-06. Read 2026-10-06.
https://man.fas.org/dod-101/sys/land/row/s-60.htm

FAS21 9P149 (DoD 101, ROW land systems). Federation of American Scientists, 1999-06-19. Read 2026-10-07.
https://man.fas.org/dod-101/sys/land/row/9p149.htm

FAS22 T-62 Main Battle Tank. Federation of American Scientists (FAS) Military Analysis Network, c. 2000. Read 2026-10-07.
https://man.fas.org/dod-101/sys/land/row/t62tank.htm

FAS23 AT-12 SWINGER (DoD 101 Systems). Federation of American Scientists, 1999-06-19. Read 2026-10-03.
https://man.fas.org/dod-101/sys/land/row/at-12.htm

FAS24 T-64 Tank. Federation of American Scientists (FAS) Military Analysis Network, c. 2000. Read 2026-10-07.
https://man.fas.org/dod-101/sys/land/row/t64tank.htm

FAS25 T-72 Tank Characteristics. Federation of American Scientists (FAS) Military Analysis Network, 2000-01-16. Read 2026-10-16.
https://man.fas.org/dod-101/sys/land/row/t72tank.htm

FAS26 T-80 Tank. Federation of American Scientists (FAS) Military Analysis Network, c. 2000. Read 2026-10-07.
https://man.fas.org/dod-101/sys/land/row/t80tank.htm

FAS27 ZU-23 23MM Antiaircraft Gun. Federation of American Scientists, 2000-04-27. Read 2026-10-07.
https://man.fas.org/dod-101/sys/land/row/zu-23.htm

FENIX Possible Garpiya-A1 OWA UAV in Mali. Fenix Insight, 2026-05-27.
https://www.fenixinsight.com/blog/bulletins/possible-garpiya-a1-owa-uav-in-mali

FENIX2 Munition, mine, PTM-4M. Fenix Insight METIS.
https://metis.fenixinsight.com/munition/mine/ptm-4m

FENIX3 METIS munition records 3VOF54, 3VOF55, 3VOF75, 3VBK14 and 3OF49 (public summaries). Fenix Insight, 2026.
https://fenixinsight.com/munition/mortarBomb/3vof54

FENIX4 Munition, projectile, 3OF56 and 3OF56-1 (METIS public pages). Fenix Insight.
https://fenixinsight.com/munition/projectile/3of56

FENIX5 Possible Shahed-107 in Ukraine. Fenix Insight, 2025-11.
https://www.fenixinsight.com/blog/bulletins/possible-shahed-107-in-ukraine

FENIX6 TMN-46 and TM-46 munition records. Fenix Insight (METIS), 2026.
https://fenixinsight.com/munition/mine/tmn-46

FENIX32 METIS Fenix Insight: 3OF43 projectile (public summary). Fenix Insight.
https://fenixinsight.com/munition/projectile/3of43

FENIX42 METIS Fenix Insight: 3OF44 projectile (public summary). Fenix Insight.
https://fenixinsight.com/munition/projectile/3of44

FERG Russian base in Tajikistan to be fitted with Pole-21 electronic countermeasures system. Fergana News, 2019-11-26.
https://en.fergana.agency/news/112784/

FERG2 Russian Electronic Warfare System Is Capable Of Neutralizing GPS, Galileo and BeiDou Systems (Sputnik, 1 Feb 2021, reposted). Resilient Navigation and Timing Foundation (rntfnd.org), 2021-02-01.
https://rntfnd.org/?p=35483

FFI The Rocket Artillery Reference Book, FFI-rapport 2009/00179. Norwegian Defence Research Establishment (FFI), 2009.
http://www.iqytechnicalcollege.com/The Rocket Artillery Reference Book.pdf

FISH 1Л260 Зоопарк-1М. fishki.net (repost of militaryrussia.ru material).
https://fishki.net/anti/2340561-1l260-zoopark-1m.html

FIVETV Polzuemsya v svoikh interesakh: rossiiskie voennye modernizirovali trofeinuyu BMP Bradley. 5-tv.ru (Izvestia reporter, RIA Novosti photo), 2024-11-13.
https://www.5-tv.ru/news/5005823/polzuemsa-vsvoih-interesah-rossijskie-voennye-modernizirovali-trofejnuu-bmp-bradley/

FM3 FM 100-2-3 The Soviet Army: Troops, Organization and Equipment (pp. 4-120, 4-135, 5-69). US Army, 1991.
https://archive.org/details/FM_100_2_3_T_S_A_T_O_E_1991

FM23 FM 100-2-3 The Soviet Army: Troops, Organization, and Equipment, pp. 4-11 (regimental HQ table, PDF p. 43), 5-34 to 5-35 (BMP variants, PDF p. 223), battalion HQ table (PDF p. 58). US Army, 1991.
https://www.bits.de/NRANEU/others/amd-us-archive/fm100-2-3(91).pdf

FM100 FM 100-2-3 The Soviet Army: Troops, Organization and Equipment, pp. 5-77 to 5-78. US Army, 1991-06.
https://archive.org/download/FM_100_2_3_T_S_A_T_O_E_1991/FM 100-2-3 The Soviet Army-Troops, Organization and Equipment (1991)_djvu.txt

FM4480 FM 44-80 Visual Aircraft Recognition. Department of the Army, 1996-09-30.
https://archive.org/download/MManuals/VisualAircraftRecognition.pdf

FN New Russian Ka-52 attack helicopters inflicting heavy cost on Ukraine, defence intelligence reports. Forces News, 2023-07-27.
https://www.forcesnews.com/ukraine/russian-helicopters-fitted-anti-tank-missiles-key-battle-south-ukraine

FN2 Molniya: The wooden FPV drone that's made in Russia and copied in Ukraine. Forces News (BFBS), 2024-10-29.
https://www.forcesnews.com/ukraine/molniya-wooden-fpv-drone-thats-made-russia-and-copied-ukraine

FNX13 3O13 projectile record (METIS). Fenix Insight.
https://metis.fenixinsight.com/munition/projectile/3-o-13

FNX23 3O23 projectile record (METIS). Fenix Insight.
https://metis.fenixinsight.com/munition/projectile/3-o-23

FNX25 3OF25 projectile record (METIS). Fenix Insight.
https://metis.fenixinsight.com/munition/projectile/3of25

FNX29 3OF29 projectile record (METIS). Fenix Insight.
https://metis.fenixinsight.com/munition/projectile/3of29

FNX45 3OF45 projectile record (METIS). Fenix Insight.
https://metis.fenixinsight.com/munition/projectile/3of45

FNX59 3OF59 projectile record (METIS). Fenix Insight.
https://metis.fenixinsight.com/munition/projectile/3of59

FNX61 3OF61 projectile record (METIS). Fenix Insight.
https://metis.fenixinsight.com/munition/projectile/3of61

FNX64 3OF64 projectile record (METIS). Fenix Insight.
https://metis.fenixinsight.com/munition/projectile/3of64

FOC2 Vdale poliuvannia: SSO vystezhyly pid Bakhmutom rosiisku Triadu. Focus.ua, 2023-07.
https://focus.ua/uk/amp/voennye-novosti/581006-udachnaya-ohota-sso-vysledili-pod-bahmutom-rossiyskuyu-triadu-i-eshche-8-celey-video

FOCUS Upor na mobilnost: voyska RF poluchat 2S40 Floks. Focus.ua, 2023-10-05.
https://focus.ua/voennye-novosti/597382-upor-na-mobilnost-voyska-rf-poluchat-noveyshuyu-120-mm-samohodku-2s40-floks-video

FOCUS2 У РФ на 30% скоротились запаси САУ «Нона-С» на складах – OSINT-аналіз. Focus.ua, с. 2023-10.
https://focus.ua/uk/voennye-novosti/600523-u-rf-na-30-skorotilis-zapasi-sau-nona-s-na-skladah-osint-analiz-foto

FOCUS3 ВС РФ перебрасывают советские гаубицы Д-20 в Крым: Атеш рассказал подробности. Focus.ua, 2023-10-06.
https://focus.ua/voennye-novosti/597489-vs-rf-perebrasyvayut-sovetskie-gaubicy-d-20-v-krym-atesh-rasskazal-podrobnosti-foto-video

FOCUS4 Силы обороны уничтожили станцию РЭБ Житель. Focus.ua, 2023.
https://focus.ua/digital/586101-sily-oborony-unichtozhili-stanciyu-reb-zhitel-kak-oni-meshayut-vsu-na-pole-boya-video

FOCUS5 10 машин на всю Украину: в ВСУ заметили редкий инженерный БТМ-3. Focus.ua (relaying Forbes), 2023-08.
https://focus.ua/voennye-novosti/585223-10-mashin-na-vsyu-ukrainu-v-vsu-zametili-redkiy-inzhenernyy-btm-3-chto-izvestno

FOCUS6 На катере «Соболь» РФ погиб весь экипаж: морские дроны ВСУ vs корпус из алюминия, — OSINT. Focus (focus.ua), 2026-05-04 (page metadata; event of 30 April 2026).
https://focus.ua/voennye-novosti/752940-vzryvy-v-krymu-na-katere-sobol-pogib-ves-ekipazh-detali

FOCUS7 БПЛА уничтожил российскую антидроновую пушку ЛПД-801. Focus.ua (Ukrainian press), 2023-02-27.
https://focus.ua/digital/552019-bpla-unichtozhil-rossiyskuyu-antidronovuyu-pushku-lpd-801-okkupanty-ostalis-bezzashchitnymi

FOCUS8 Zashchita ot yadernogo dozhdya NATO: VSU podorvali eshche odnu mashinu RF (Forbes). Focus.ua, 2024-07-01.
https://focus.ua/voennye-novosti/655273-zashchita-ot-yadernogo-dozhdya-nato-vsu-podorvali-eshche-odnu-mashinu-rf-dlya-yadernoy-voyny-forbes

FOCUS9 VS RF ustanavlivayut moduli REB Pole-21 na domakh i vyshkakh svyazi. Focus.ua, 2023-03-28.
https://focus.ua/digital/557429-vs-rf-ustanavlivayut-moduli-reb-pole-21-na-domah-i-vyshkah-svyazi-zachem-eto-im-nuzhno

FOCUS10 Продается на AliExpress: штурмовики ВС РФ получили комплексы РЭБ «Чистюля». Focus.ua, 2024-08.
https://focus.ua/digital/665035-prodaetsya-na-aliexpress-shturmoviki-vs-rf-poluchili-kompleksy-reb-chistyulya-foto

FOCUS11 Forbes via Focus: Ukraine destroyed R-416GM. Focus.ua (citing Forbes), 2024-06.
https://focus.ua/voennye-novosti/652373-u-rf-ogranichen-dostup-k-sputnikam-vsu-unichtozhili-r-4116gm-otsylavshuyu-signaly-v-troposferu-forbes

FOCUS12 VS RF primenyayut v boyakh dymovye mashiny TDM-2K. Focus.ua, 2024-05.
https://focus.ua/voennye-novosti/644074-vs-rf-primenyayut-v-boyah-dymovye-mashiny-tdm-2k-kak-s-nimi-borotsya-analiz-ekspertov

FOCUS13 ВСУ уничтожили станцию разведки CHAP-10 "Леопард", которая различает человека за 15 км. Focus.ua, 2023-08.
https://focus.ua/voennye-novosti/583806-vsu-unichtozhili-stanciyu-razvedki-snar-10-leopard-kotoraya-razlichaet-cheloveka-za-15-km-foto-video

FOCUS14 Vpervye na fronte: ukrainskie voennye unichtozhili rossiyskiy ZRK Sosna-R. Focus.ua, 2023.
https://focus.ua/voennye-novosti/585650-vpervye-na-fronte-ukrainskie-voennye-unichtozhili-rossiyskiy-zrk-sosna-r-analitiki-video

FOCUS15 В Украине затрофеили российский комплекс Стрелец. Focus.ua, 2024 (undated on page).
https://focus.ua/digital/674075-v-ukraine-zatrofeili-rossiyskiy-kompleks-strelec-zachem-on-nuzhen-razvedchikam-vs-rf-foto

FOCUS16 Very rare beast: AFU drone disabled Russian Svet-KU EW station. Focus.ua, 2023-08-28.
https://focus.ua/uk/digital/588680-duzhe-ridkisnij-zvir-dron-zsu-viviv-z-ladu-rosijsku-stanciyu-reb-svet-ku-video

FOCUS17 ЗСУ захопили рідкісний російський дрон «Тахіон» під Харковом. Focus.ua, 2022.
https://focus.ua/uk/digital/532547-vsu-zahvatili-redkiy-rossiyskiy-dron-tahion-pod-harkovom-chem-on-opasen-foto

FOCUS18 V seti poyavilis kadry pervogo porazheniya rossiiskoi RLS Yastreb-AV. Focus.ua, 2024-04.
https://focus.ua/voennye-novosti/640343-v-seti-poyavilis-kadry-pervogo-porazheniya-rossiyskoy-rls-yastreb-av-video

FOI Russian Electronic Warfare (Kjellen), FOI-R--4625--SE, pp. 36, 43-45. FOI, 2018-09.
https://www.foi.se/rest-api/report/FOI-R--4625--SE

FORCES Soviet-era Loaf van becomes Russia's main battlefield resupply vehicle in Ukraine. Forces News, 2024-06-10.
https://www.forcesnews.com/russia/soviet-era-loaf-van-becomes-russias-main-battlefield-resupply-vehicle-ukraine

FORSS Modular mechanised bridge TMM-7: general layout (project page). FORSS Consulting.
https://forssconsulting.ru/проекты/перспективные-проекты/модульный-механизированный-мост-тмм-7/

FUTZ Ukraine zerstört erstmals Russlands modernste Funkstation. futurezone.at, 2024-06.
https://futurezone.at/amp/digital-life/ukraine-zerstoert-russlands-modernste-funkstation-drohnen-angriff-r-416gm-granit-m/402913219

GAGA A drone of Ukrainian counterintelligence officers threw grenades at the Russian EW station Silok-01. Gagadget, 2022-10-30.
https://gagadget.com/en/182153-a-drone-of-ukrainian-counterintelligence-officers-threw-grenades-at-the-russian-electronic-warfare-station-silok-01-desig/

GAGA2 The Ukrainian armed forces seized a Russian command and control vehicle R-149AKSh-1. gagadget.com, 2022-09-09.
https://gagadget.com/en/165185-the-ukrainian-armed-forces-seized-a-russian-command-and-control-vehicle-r-149aksh-1-to-ensure-communication-via-closed-in/

GAGADG The Ukrainian Defense Forces destroyed the Russian Leer-2 ... for the first time. Gagadget, 2022-08-01.
https://gagadget.com/en/152749-the-ukrainian-defense-forces-destroyed-the-russian-leer-2-electronic-warfare-station-based-on-the-tiger-m-armored-vehicle/

GARP Garpun-3 product page. Manufacturer site garpun3.ru, 2026-10-06.
https://garpun3.ru/

GAZETA Zablokiruet liubye popytki vtorzheniia. Kak rabotaet sistema minirovaniia Zemledeliye. Gazeta.Ru, 2022-02-16.
https://www.gazeta.ru/amp/army/2022/02/16/14542531.shtml

GICHD Ukraine Guide 2022, second edition: 152MM 30F39 KRASNOPOL (p. 125). GICHD, 2022.
https://www.gichd.org/fileadmin/uploads/gichd/Publications/GICHD_Ukraine_Guide_2022_Second_Edition_web.pdf

GICHD2 Explosive Ordnance Guide for Ukraine 2022 (v18), MON-50 p. 10, MON-90 p. 11, MON-100 p. 12. GICHD, 2022.
https://www.gichd.org/fileadmin/uploads/gichd/Publications/GICHD_Explosive_Ordnance_Guide_for_Ukraine_2022_v18.pdf

GLAVCOM Російські десантні катери, уражені Силами оборони у Криму, пішли на дно — розвідка. Glavcom, 2023-11-10 (events; war day 625 in text).
https://glavcom.ua/country/incidents/rosijski-desantni-kateri-urazheni-silami-oboroni-u-krimu-pishli-na-dno-rozvidka-967794.html

GOGIN Landing craft, Project 1176E (Yemen), ship data. Ivan Gogin, 'Russian Ships' (mirror site), 2019.
https://myownonpmirror.com/ships/yemen_north/yen_ls_13.html

GRAU Индексы ГРАУ МО (SALIS3 GRAU indexes ver. 329). SALIS3 compilation (Russian Ministry of Defence GRAU indexes), 2011-06-11.
https://ia601607.us.archive.org/30/items/SALIS3_GRAU_indexes__ver329__2011-06-11/SALIS3_GRAU_indexes__ver329__2011_06_11.pdf

GRAUIDX Indeksy GRAU MO (GRAU index list). Cartridge Collectors forum upload (PDF).
https://cdck-file-uploads-us1.s3.dualstack.us-west-2.amazonaws.com/flex016/uploads/cartridgecollectors/original/3X/a/6/a6eb80e6c6e78ae788fd11e38e3344a9b06a6f87.pdf

GRROBO1 Гранат-1 (Robotrends catalogue). Robotrends.
https://robotrends.ru/robopedia/granat-1

GS1 2A36 Giatsint-B (M1976) 152-mm Towed Gun. GlobalSecurity. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/2a36-specs.htm

GS2 2A65 (M1987) 152-mm Towed Gun-Howitzer. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/2a65-specs.htm

GS3 2S4 M-1975 240-mm Tulpan self-propelled mortar. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/2s4.htm

GS4 2S5 Giatsint-S 152-mm Self-Propelled Gun. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/2s5.htm

GS5 2S19 MSTA-S 152-mm Self-Propelled Howitzer. GlobalSecurity.org, 2026. Read 2026-10-20.
https://www.globalsecurity.org/military/world/russia/2s19.htm

GS6 96L6 / 96L6E - CHEESE BOARD Radar. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/96l6.htm

GS7 1L122 Garmon / Harmonium. GlobalSecurity.org. Read 2026-10-06.
https://www.globalsecurity.org/military/world/russia/garmon.htm

GS8 Airborne Assault Troops [VDV] - Organization. GlobalSecurity.org, undated (Soviet-era text, later additions). Read 2026-10-03.
https://www.globalsecurity.org/military/world/russia/vdv-org.htm

GS9 Russian Defense Ministry to receive 250 BMD-4M, Rakushka vehicles (TASS, reproduced by GlobalSecurity). TASS, 2015-05-13. Read 2026-10-03.
https://www.globalsecurity.org/wmd/library/news/russia/2015/russia-150513-tass04.htm

GS10 Modernized BMD-4M (Boyevaya Mashina Desanta). GlobalSecurity.org. Read 2026-10-03.
https://www.globalsecurity.org/military/world/russia/bmd-4m.htm

GS11 BMO-T (Object 564) Firebug. GlobalSecurity.org, undated (c. 2012). Read 2026-10-03.
https://www.globalsecurity.org/military/world/russia/bmo-t.htm

GS12 BMP-1 Fighting Vehicle - Variants. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/bmp-1-var.htm

GS13 Airborne Assault Troops [VDV] - Order of Battle. GlobalSecurity, 2020. Read 2026-10-03.
https://www.globalsecurity.org/military/world/russia/vdv-orbat.htm

GS14 BTR-MD Rakushka (Ob'yekt 955). GlobalSecurity, 2015. Read 2026-10-03.
https://www.globalsecurity.org/military/world/russia/btr-md.htm

GS15 BTR-82 specs. GlobalSecurity.org. Read 2026-10-02.
https://www.globalsecurity.org/military/world/russia/btr-82-specs.htm

GS16 BTR-82A 8x8 infantry fighting vehicle - Program. GlobalSecurity.org. Read 2026-10-02.
https://www.globalsecurity.org/military/world/russia/btr-82-program.htm

GS17 BTR-70 Armored Personnel Carrier. GlobalSecurity.org. Read 2026-10-02.
https://www.globalsecurity.org/military/world/russia/btr-70.htm

GS18 Orlan-10. GlobalSecurity.org, undated, after 2023-08. Read 2026-10-02.
https://www.globalsecurity.org/military/world/russia/orlan-10.htm

GS19 Russian Airborne Gets New ECM System (RIA Novosti, 6 Jul 2012). GlobalSecurity.org, 2012-07-06. Read 2026-09-29.
https://www.globalsecurity.org/wmd/library/news/russia/2012/russia-120706-rianovosti01.htm

GS20 Ka-52 HOKUM B Alligator. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/ka-52.htm

GS21 Ka-50 HOKUM Black Shark / Werewolf. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/ka-50.htm

GS22 Lancet specs. GlobalSecurity.org. Read 2026-10-02.
https://www.globalsecurity.org/military/world/russia/lancet-specs.htm

GS23 Lancet. GlobalSecurity.org, undated (quotes TASS of 2023-09-22). Read 2026-10-03.
https://www.globalsecurity.org/military/world/russia/lancet.htm

GS24 Engineers - River Crossings. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/engineer-river.htm

GS25 55ZH6M Nebo-M TALL RACK Mobile multi-band radar complex. GlobalSecurity.org. Read 2026-10-06.
https://www.globalsecurity.org/military/world/russia/nebo-m.htm

GS26 Orion UAV / Inokhodets [Pacer]. GlobalSecurity. Read 2026-10-02.
https://www.globalsecurity.org/military/world/russia/orion.htm

GS27 1B75 Penicillin Automated Sound-Thermal Artillery Reconnaissance Complex. GlobalSecurity. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/penicillin.htm

GS28 9P140 Uragan (Hurricane) 220-mm Multiple Rocket Launcher. GlobalSecurity. Read 2026-10-20.
https://www.globalsecurity.org/military/world/russia/9p140.htm

GS29 S-350E Vityaz / SA-28 - Specifications. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/s-350-specs.htm

GS30 S-350 Vityaz [Knight / Hero] (50R6) / SA-28. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/s-350.htm

GS31 S-350E Vityaz / SA-28 - Design. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/s-350-design.htm

GS32 Tank Troops. GlobalSecurity.org. Read 2026-10-16.
https://www.globalsecurity.org/military/world/russia/tank.htm

GS33 T-90M Proryv-3. GlobalSecurity.org. Read 2026-10-16.
https://www.globalsecurity.org/military/world/russia/t-90m-proryv-3.htm

GS34 Ten T-80 Tanks Deployed to Russian Pacific Fleet to Bolster Marines (Sputnik, reposted by GlobalSecurity). Sputnik / GlobalSecurity.org, 2019-09-10. Read 2026-10-02.
https://www.globalsecurity.org/wmd/library/news/russia/2019/russia-190910-sputnik01.htm

GS35 Contract on Delivering T-80BMV Tanks to Russian Army Fulfilled - Rostec (Sputnik, reposted by GlobalSecurity). Sputnik / GlobalSecurity.org, 2019-12-12. Read 2026-10-02.
https://www.globalsecurity.org/wmd/library/news/russia/2019/russia-191212-sputnik04.htm

GS36 T-90 specifications. GlobalSecurity.org. Read 2026-10-02.
https://www.globalsecurity.org/military/world/russia/t-90-specs.htm

GS37 Tachyon, GlobalSecurity. GlobalSecurity, 2022. Read 2026-10-02.
https://www.globalsecurity.org/military/world/russia/takhion.htm

GS38 Russia's Western Military District gets newest Tornado-G multiple rocket launchers. TASS (reproduced by GlobalSecurity.org), 2015-07-22. Read 2026-09-29.
https://www.globalsecurity.org/wmd/library/news/russia/2015/russia-150722-tass02.htm

GS39 TOS-1A Solntsepek (Sun) 220mm Multiple Rocket Launcher. GlobalSecurity.org. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/tos-1a.htm

GS40 UR-77 Meteorit. GlobalSecurity. Read 2026-09-29.
https://www.globalsecurity.org/military/world/russia/ur-77.htm

GS41 ZALA421-16E5. GlobalSecurity.org. Read 2026-10-02.
https://www.globalsecurity.org/military/world/russia/zala421-16e5.htm

GWARA Russia equips Molniya drones with Starlink terminals, ISW says. Gwara Media, 2026-01-14.
https://gwaramedia.com/en/russia-equips-molniya-drones-with-starlink-terminals-isw-says/

GWARA2 Kharkiv Oblast in ruins: identification of Russian servicemen, part 2. Gwara Media, 2022-12.
https://gwaramedia.com/en/kharkiv-oblast-in-ruins-identification-of-russian-servicemen-part-2/

HABR habr.com article 501800 (review of Russian military radio news, citing Zvezda May 2019). Habr, 2020.
https://habr.com/en/articles/501800

HI Landmine use in Ukraine factsheet 2026. Handicap International (Humanity and Inclusion), 2026.
https://www.hi.org/sn_uploads/document/HI-Factsheet-Landmine-use-in-Ukraine-2026-final-ENG-V2_1.pdf

HISTNET Mil Mi-24 Hind: A Russian gunship with attitude. HistoryNet (Aviation History).
https://historynet.com/mil-mi-24-hind-a-russian-gunship-with-attitude/

HOTNEWS FOTO Rușii au aruncat în luptă o dronă extrem de rară. HotNews.ro, 2022-11.
https://hotnews.ro/?p=98013

HRW Ukraine: Russia Uses Banned Antipersonnel Landmines (ecoi.net copy of the HRW release of 29 March 2022). Human Rights Watch, 2022-03-29.
https://www.ecoi.net/en/document/2070652.html

HSCHL Russia's heavy equipment transporters (Henry Schlottman, Substack). Substack (personal blog), 2023.
https://henryschlottman.substack.com/p/russias-heavy-equipment-transporter

HVY Ukrainian intelligence destroys Zircon missile launcher in Crimea. Hvylya, 2026-03-24.
https://en.hvylya.net/news/1577-ukrainian-intelligence-destroys-zircon-missile-launcher-in-crimea

ICDS Russia's Electronic Warfare Capabilities to 2025 (McDermott), pp. 15, 17, 23, 24, A-2. ICDS, 2017-09.
https://icds.ee/wp-content/uploads/2018/ICDS_Report_Russias_Electronic_Warfare_to_2025.pdf

IEEE22 The Fall and Rise of Russian Electronic Warfare (Clark). IEEE Spectrum, 2022.
https://spectrum.ieee.org/the-fall-and-rise-of-russian-electronic-warfare

IFAX Serial delivery of Forpost-R reconnaissance drone to begin in 2020. Interfax, 2019-08-24.
https://interfax.com/newsroom/top-stories/19316/

IFAX2 Vzlom bespilotnika zajmet u kompleksa REB Shipovnik-AERO sekundu. Interfax, 2016-09-14.
https://www.interfax.ru/russia/527997

IFX Rossiya nachala rabotu nad oruzhiyem dlya porazheniya sputnikov. Interfax, 2017-11-30.
https://www.interfax.ru/russia/589740

IISS25 The Military Balance 2025, chapter 4, extract pp. 31, 36, 38 (printed pp. 182, 187, 189). IISS, 2025-02.
https://www.iiss.org/publications/the-military-balance/

INDRA Russia Unveils New 1L122E-series Air-Defense radars. IndraStra Global, 2018-07-09.
https://www.indrastra.com/2018/07/Russia-Unveils-New-1L122-Series-Air-Defense-Radars-004-07-2018-0012.html

INSTO Instant Obstacles: Russian Remotely Delivered Mines (D'Aria, Grau), Red Thrust Star, Jan 1996. FMSO, 1996-01.
https://archive.org/download/1996_01_01_Instant_Obstacles_Russian_Remotely_Delivered_Mines_D_Aria_and_Grau/1996-01-01 Instant Obstacles-Russian Remotely Delivered Mines (D-Aria and Grau)_djvu.txt

INTERFAX В РФ создан отдельный авиаполк, вооруженный ракетами «Кинжал». Interfax, 2021-12-21.
https://www.interfax.ru/russia/811660

INTFAX В России сформирована бригада, оснащенная ракетным комплексом «Орешник». Interfax, 2025-12-18.
https://www.interfax.ru/russia/1064011

INTFX В российской армии появилось первое подразделение боевых машин "Терминатор". Interfax, 2021-12-01.
https://www.interfax.ru/russia/806008

IRINTL Iran Smuggles Drones To Russia By Boat, Airliners: Guardian. Iran International, 2023-02-13.
https://iranintl.com/en/202302131788

ISIS Russian Decoy Drones that Depend on Western Parts Pose a Great Challenge to Ukrainian Defenses (Anokhin, Faragasso). Institute for Science and International Security, 2024-12-18.
https://isis-online.org/isis-reports/russian-decoy-drones-that-depend-on-western-parts-pose-a-great-challenge/

ISIS2 Alabuga's Shahed 136 (Geran 2) Warheads: A Dangerous Escalation. Institute for Science and International Security, 2024-05-09.
https://isis-online.org/isis-reports/alabugas-shahed-136-geran-2-warheads-a-dangerous-escalation

ISTOR Украинские военные атаковали десантные катера ЧФ РФ в оккупированном Крыму. iStories (Важные истории), 2023-11-10.
https://istories.media/news/2023/11/10/ukrainskie-voennie-nochyu-atakovali-desantnie-katera-chf-rf-v-okkupirovannom-krimu/

ISW1 Russian Offensive Campaign Assessment, December 26, 2025. Institute for the Study of War, 2025-12-26. Read 2026-10-03.
https://www.understandingwar.org/backgrounder/russian-offensive-campaign-assessment-december-26-2025

ISW2 Russian Offensive Campaign Assessment, January 13, 2026. Institute for the Study of War, 2026-01-13. Read 2026-10-20. https://understandingwar.org/research/russia-ukraine/russian-offensive-campaign-assessment-january-13-2026/

IUS Drone war accelerates over Ukraine (Roblin). Inside Unmanned Systems, 2022-11-14. https://insideunmannedsystems.com/drone-war-accelerates-over-ukraine/

IZ Расчеты FPV-дронов уничтожили гаубицы «Богдана-Б» и Д-30 ВСУ в зоне СВО. Izvestia (citing Russian MoD), 2026-05-19. https://iz.ru/2099591/2026-05-19/raschety-fpv-dronov-unichtozhili-gaubitcy-bogdana-b-i-d-30-vsu-v-zone-svo

IZ2 В НПЦ «Ушкуйник» назвали «Князь Вандал» результативным массовым дроном на СВО. Izvestia (citing TASS), 2026-08-30. https://iz.ru/2157676/v-nptc-ushkuinik-nazvali-kniaz-vandal-rezultativnym-massovym-dronom-na-svo-izi

IZ3 Ружье ЛПД-801 впервые использовали против дронов ВСУ. Izvestia (from TASS), 2022-07-09. https://iz.ru/1362166/2022-07-09/ruzhe-lpd-801-vpervye-ispolzovali-protiv-dronov-vsu

IZ4 M-46 crews destroyed ammunition depots and temporary deployment points of the AFU. Izvestia (citing Russian MoD), 2026-04-09. https://iz.ru/en/2075505/2026-04-09/m-46-crews-destroyed-ammunition-depots-and-temporary-deployment-points-armed-forces-ukraine

IZ5 Glushitelnyi uspekh: kompleks REB nakroet Evropu iz-pod Kaliningrada. Izvestia, 2019-04-26. https://iz.ru/871450/aleksei-ramm-aleksei-kozachenko-bogdan-stepovoi/glushitelnyi-uspekh-kompleks-reb-nakroet-evropu-iz-pod-kaliningrada

IZ6 Военные показали работу радиолокационных станций «Ниобий». Izvestia (iz.ru), 2022-05-03. https://iz.ru/1329392/2022-05-03/voennye-pokazali-rabotu-radiolokatcionnykh-stantcii-niobii

IZ7 The crew of the self-propelled gun 2S9 'Nona-S' destroyed the AFU UAV control center in the Kherson region. Izvestia (en.iz.ru), citing the Russian Ministry of Defence, 2026-01-14. https://en.iz.ru/en/2024289/2026-01-14/crew-self-propelled-gun-2s9-nona-s-destroyed-afu-uav-control-center-kherson-region

IZ8 Minoborony ispytaet kompleks REB Shipovnik-AERO (Izvestia). Izvestia, 2016-09. https://iz.ru/export/google/amp/188092

IZ9 Удар РСЗО «Смерч» уничтожил артрасчет ВСУ на границе с Белгородской областью. Izvestia, 2024-03-21. https://iz.ru/1668950/2024-03-21/vs-rf-s-pomoshchiu-rszo-smerch-razgromili-artraschet-vsu-na-granitce-belgorodskoi-oblasti

IZ10 Raschet Supercam S350 vskryl punkt upravleniya BPLA VSU v Khersonskoi oblasti. Izvestia, 2026-03-01. https://iz.ru/2051080/2026-03-01/raschet-supercam-s350-vskryl-punkt-upravleniia-bpla-vsu-v-khersonskoi-oblasti

IZ11 Артиллеристы рассказали об особенностях комплекса разведки «Зоопарк-1М». Izvestia (relaying Russian MoD video), 2023-07-27. https://iz.ru/1550170/2023-07-27/artilleristy-rasskazali-ob-osobennostiakh-kompleksa-razvedki-zoopark-1m

IZ17 Artilleriya narashchivaet moshch. Izvestia, 2017-12-14. https://iz.ru/675176/evgenii-andreev-bogdan-stepovoi-aleksei-ramm/artilleriia-narashchivaet-moshch

IZ18 По «Солнцепеку» — в каждую армию. Izvestia, 2018-02-27. https://iz.ru/709319/aleksandr-kruglov-bogdan-stepovoi-aleksei-ramm/po-solntcepeku-v-kazhduiu-armiiu

IZ19 Охотники за невидимками: юг России усилят сверхмощными радарами. Izvestia (iz.ru), 2019-10 (page undated; relayed by Tech Insider 2019-10-09). https://iz.ru/929957/aleksei-ramm-aleksei-kozachenko-bogdan-stepovoi/okhotniki-za-nevidimkami-iug-rossii-usiliat-sverkhmoshchnymi-radarami

IZ20 В Нагорном Карабахе появились российские комплексы «Леер-3». Izvestia, 2020-11-25. https://iz.ru/1092202/2020-11-25/v-nagornom-karabakhe-poiavilis-rossiiskie-kompleksy-leer-3

IZ21 Командующий армией ЮВО сообщил о скором поступлении С-350 «Витязь». Izvestia, 2021-08-12. https://iz.ru/1206053/2021-08-12/komanduiushchii-armiei-iuvo-soobshchil-o-skorom-postuplenii-s-350-vitiaz

IZ22 В Западном округе создадут батальоны радиоэлектронной борьбы. Izvestia, 2022-02-02. https://iz.ru/1285489/2022-02-02/v-zapadnom-okruge-sozdaiut-batalony-radioelektronnoi-borby

IZ23 Правящая «Коалиция»: в зоне спецоперации появилась самая дальнобойная САУ. Izvestia, 2023-12. https://iz.ru/1624356/roman-kretcul-iuliia-leonova-bogdan-stepovoi/praviashchaia-koalitciia-v-zone-spetcoperatcii-poiavilas-samaia-dalnoboinaia-sau

IZ23B Dali nam samye krutye pushki iz tekh, chto est v mire. Izvestia, 2023-02. https://iz.ru/1618422/dmitrii-astrakhan/dali-nam-samye-krutye-pushki-iz-tekh-chto-est-v-mire

IZ24 Поразительные средства: как усилят боевую мощь сил спецназа. Izvestia, 2024-01-25. https://iz.ru/1639340/aleksei-mikhailov-iuliia-leonova-andrei-fedorov/porazitelnye-sredstva-kak-usiliat-boevuiu-moshch-sil-spetcnaza

IZ24B Расчет ПТРК «Корнет» уничтожил вышку с аппаратурой ВСУ в Запорожской области. Izvestia, citing Russian MoD, 2024-10-02. https://iz.ru/1768176/2024-10-02/raschet-ptrk-kornet-unichtozhil-vyshku-s-apparaturoi-vsu-v-zaporozhskoi-oblasti

IZ25A The sharp-sighted "Eye": how new firing systems are being introduced into the troops (Astrakhan). Izvestia (English edition, machine translation), 2025-08-28. https://en.iz.ru/en/1944003/dmitrii-astrahan/sharp-sighted-eye-how-new-firing-systems-are-being-introduced-troops

IZ25AR Зоркий «Глаз»: как в войска внедряются новые огневые комплексы. Izvestia (Russian original of IZ25A), 2025-08-28. https://iz.ru/1944003

IZ25B Soldiers of the Russian Armed Forces UAV unit told about their work in the Red Army area. Izvestia (English edition, machine translation), 2025-11-25. https://en.iz.ru/en/1996436/2025-11-25/soldiers-russian-armed-forces-uav-unit-told-about-their-work-red-army-area

IZ26 Расчет САУ «Гиацинт-С» уничтожил пункт управления вражеских беспилотников. Izvestia (citing Russian MoD), 2026-09-23. https://iz.ru/2171815/2026-09-23/raschet-sau-giatcint-s-unichtozhil-punkt-upravleniia-vrazheskikh-bespilotnikov

IZ202 Минобороны РФ назвало дислокацию первой ЗРС С-350 «Витязь». Izvestia, 2020-01-14. https://iz.ru/964166/2020-01-14/minoborony-rf-nazvalo-dislokatciiu-pervoi-zrs-s-350-vitiaz

IZ212 «Вербное» оснащение: стрелков-зенитчиков защитят новые броневики. Izvestia, 2021. https://iz.ru/1179657/anton-lavrov-anna-cherepanova/verbnoe-osnashchenie-strelkov-zenitchikov-zashchitiat-novye-broneviki

IZ222 Появились кадры работы комплекса «Леер-3» по подавлению сотовой связи в зоне СВО. Izvestia, 2022-11-30. https://iz.ru/1433400/2022-11-30/poiavilis-kadry-raboty-kompleksa-leer-3-po-podavleniiu-sotovoi-sviazi-v-zone-svo

IZ232 Brigady podryad: VS RF usilyat artilleriyskie soedineniya bolshoy moshchnosti. Izvestia, 2023. https://iz.ru/1612479/aleksei-ramm-bogdan-stepovoi/brigady-podriad-vs-rf-usiliat-artilleriiskie-soedineniia-bolshoi-moshchnosti

IZ233 Гаубицы «Мста-С» и пушки «Гиацинт-С» поразили живую силу и технику ВСУ. Izvestia (citing Russian MoD), 2023-02-28. https://iz.ru/1476303/2023-02-28/gaubitcy-msta-s-i-pushki-giatcint-s-porazili-zhivuiu-silu-i-tekhniku-vsu

IZ234 MO pokazalo boevuiu rabotu spetsialistov REB ZVO na kupianskom napravlenii SVO. Izvestiia, 2023-12-17. https://iz.ru/1621743/2023-12-17/mo-pokazalo-boevuiu-rabotu-spetcialistov-reb-zvo-na-kupianskom-napravlenii-svo

IZ242 Расчет ТОС-1А «Солнцепек» Южной группировки войск поразил опорный пункт ВСУ. Izvestia, 2024-10-15. https://iz.ru/1774640/2024-10-15/rascet-tos-1a-solncepek-uznoi-gruppirovki-voisk-porazil-opornyi-punkt-vsu

IZ243 Расчет ПЗРК «Верба» уничтожил беспилотник ВСУ на артемовском направлении. Izvestia, 2024-01-16. https://iz.ru/1634850/2024-01-16/raschet-pzrk-verba-unichtozhil-bespilotnik-vsu-na-artemovskom-napravlenii

IZK Противовоздушная обстановка: какие ПЗРК защищают войска РФ на передовой. Izvestia (with D. Kornev, Military Russia), 2023. https://iz.ru/1567825/dmitrii-kornev/protivovozdushnaia-obstanovka-kakie-pzrk-zashchishchaiut-voiska-rf-na-peredovoi

IZMAL Новейшая гаубица «Мальва» выдержала попадание из HIMARS в зоне СВО. Izvestia, 2024-07-16. https://iz.ru/1728408/2024-07-16/noveishaia-gaubitca-malva-vyderzhala-popadanie-iz-himars-v-zone-svo

IZOM Пилотный проект: на что способен робокомплекс «Омич». Izvestia, 2025. https://iz.ru/2073682/dmitrii-astrakhan/pilotnyi-proekt-na-chto-sposoben-robokompleks-omich

IZRU Minoborony zaglushit GPS s vyshek sotovoi svyazi. Izvestiya, 2016-08-25. https://iz.ru/news/628766

IZRU2 Расчеты гаубицы Д-30 уничтожили опорный пункт ВСУ на артемовском направлении. Izvestia, 2023-06-28. https://iz.ru/1535908/2023-06-28/raschety-gaubitcy-d-30-unichtozhili-opornyi-punkt-vsu-na-artemovskom-napravlenii

IZRU3 В эпицентре «Торнадо»: новые бронегрузовики поступят на Северный Кавказ. Izvestia, 2020-06-17. https://iz.ru/1024825/aleksei-ramm-bogdan-stepovoi/v-epitcentre-tornado-novye-bronegruzoviki-postupiat-na-severnyi-kavkaz

IZV Расчеты САУ 2С1 «Гвоздика» уничтожили блиндажи ВСУ в Запорожской области. Izvestia, quoting Russian MoD, 2026-04-25. https://iz.ru/2085649/2026-04-25/raschety-sau-2s1-gvozdika-unichtozhili-blindazhi-vsu-v-zaporozhskoi-oblasti

IZV1 Расчет ПТРК «Фагот» уничтожил американский БТР на сватовском направлении. Izvestia, 2024-06-18. https://iz.ru/1714079/2024-06-18/raschet-ptrk-fagot-unichtozhil-amerikanskii-btr-na-svatovskom-napravlenii

IZV2 Уралвагонзавод переименовал БМПТ «Терминатор» в «Спиридон». Izvestia, 2026-06-02. https://iz.ru/2107613/na-uralvagonzavode-bmpt-terminator-pereimenovali-v-spiridona-izi

IZV3 Расчеты гаубиц Д-20 уничтожили живую силу ВСУ в районе Часова Яра. Izvestia, citing Russian MoD, 2025-09-23. https://iz.ru/1959668/2025-09-23/rascety-gaubic-d-20-unictozili-zivuu-silu-vsu-v-raione-casova-ara

IZV4 Расчет Д-30 уничтожил живую силу ВСУ на красноармейском направлении спецоперации. Izvestia, 2025-07-19. https://iz.ru/1923138/2025-07-19/raschet-d-30-unichtozhil-zhivuiu-silu-vsu-na-krasnoarmeiskom-napravlenii-spetcoperatcii

IZV5 «Форпост» принял: ВМФ начал осваивать дроны дальнего радиуса действия. Izvestia, 2025-06-05. https://iz.ru/export/google/amp/1898170

IZV6 S ostrotoy Lantseta: kakie novshestva primenyayutsya v kontrbatareynoy borbe. Izvestia, 2024-12 (inferred from a 2024-12-06 derivative). https://iz.ru/1802349/bogdan-stepovoi-vladimir-matveev/s-ostrotoi-lantceta-kakie-novsestva-primenautsa-v-kontrbatareinoi-borbe

IZV7 Контроль за воздушным пространством в Заполярье усилили радарами 1Л119 «Небо-СВУ». Izvestia, 2021-04-15. https://iz.ru/1152170/2021-04-15/kontrol-za-vozdushnym-prostranstvom-v-zapoliare-usilili-radarami-1l119-nebo-svu

IZV8 Russia Integrates Military Capabilities into Civil Communications Infrastructure (OE Watch, quoting Izvestiya 25 Aug 2016). US Army FMSO / OE Watch, 2016-10. https://rntfnd.org/wp-content/uploads/Cell-Tower-Jammers-Russia.pdf

IZV9 Vrazheskie bespilotniki ubyut 'Repellentom'. Izvestia, 2016-12-29. https://iz.ru/news/653954

IZV10 Kozachenko A., Ramm A., 'Severnoe vliyanie: v Arktike razvernut sverkhdalnoboinye S-300V4'. Izvestia, 2019-08-19. https://iz.ru/904692/aleksei-kozachenko-aleksei-ramm/severnoe-vliianie-v-arktike-razvernut-sverkhdalnoboinye-s-300v4

IZV11 Танковый «Прорыв»: войска в Центральной России укомплектуют Т-90М. Izvestia, 2020-03. https://iz.ru/export/google/amp/989082

IZV12 Зенитчики рассказали об особенностях работы ЗРК Тор-М2 в зоне СВО. Izvestia, 2024-05-02. https://iz.ru/1690614/2024-05-02/zenitchiki-rasskazali-ob-osobennostiakh-raboty-zrk-tor-m^2-v-zone-svo

IZV13 Колесить по тылам: армейский спецназ получит новый бронеавтомобиль. Izvestia, 2021. https://iz.ru/1164819/roman-kretcul-anna-cherepanova/kolesit-po-tylam-armeiskii-spetcnaz-poluchit-novyi-broneavtomobil

IZV14 Войска ВДВ на учениях «Центр-2026» впервые десантировали НРТК из самолетов. Izvestia, 2026-10-02. https://iz.ru/2177678/voiska-vdv-na-ucheniiakh-tcentr-2026-vpervye-desantirovali-nrtk-iz-samoletov-izi

IZV15 В общевойсковых армиях создадут мобильные группы по борьбе с дронами. Izvestia, 2024-03-29. https://iz.ru/1673674/2024-03-29/v-obshchevoiskovykh-armiiakh-sozdadut-mobilnye-gruppy-po-borbe-s-dronami

IZV17 Танки повезут на «велосипедах» (Izvestia, Ramm and Litovkin, 21 Jun 2017). Izvestia, 2017-06-21. https://iz.ru/608113/aleksei-ramm-dmitrii-litovkin/tankisty-peresiadut-na-tiazhelye-velosipedy

IZV19 Ekspress-dostavka: voennye vodolazy stanut bystrokhodnymi. Izvestia, 2019-01-04. https://iz.ru/export/google/amp/766639

IZV20 «Пенициллин» идёт в разведку. Izvestia, 2020-04. https://iz.ru/1007743/bogdan-stepovoi-anton-lavrov/penitcillin-idet-v-razvedku-artilleriiu-navedut-na-tcel-elektronnye-kompleksy

IZV21 Оснащение Сибири: восток России защитят от гиперзвукового оружия. Izvestia, 2021-07-12. https://iz.ru/1191673/roman-kretcul-anna-cherepanova/osnashchenie-sibiri-vostok-rossii-zashchitiat-ot-giperzvukovogo-oruzhiia

IZV22 «Хризантемы» в цвету: юг страны прикроют высокоточные ракетные комплексы. Izvestia, 2022 (early; undated in fetched text). https://iz.ru/1284311/aleksei-ramm-bogdan-stepovoi/khrizantemy-v-tcvetu-iug-strany-prikroiut-vysokotochnye-raketnye-kompleksy

IZV23 Оглушительный эффект: когда войска получат системы РЭБ «Былина». Izvestia, 2023-10-06. https://iz.ru/1584777/aleksei-ramm-bogdan-stepovoi/oglushitelnyi-effekt-kogda-voiska-poluchat-sistemy-reb-bylina

IZV24 Расчет ПТРК «Фагот» уничтожил тяжелую бронетехнику ВСУ в районе Работино. Izvestia, 2024-07-11. https://iz.ru/1725788/2024-07-11/raschet-ptrk-fagot-unichtozhil-tiazheluiu-bronetekhniku-vsu-v-raione-rabotino

IZV192 На пляж с «Хризантемами»: береговые бригады усиливают артсистемами. Izvestia, 2019-01-15. https://iz.ru/832205/aleksei-ramm-aleksandr-kruglov/na-pliazh-s-khrizantemami-beregovye-brigady-usilivaiut-artsistemami

IZV222 ВС РФ получили комплексы разведки «Пенициллин» для применения в зоне СВО. Izvestia, 2022-12-17. https://iz.ru/1442261/2022-12-17/vs-rf-poluchili-kompleksy-razvedki-penitcillin-dlia-primeneniia-v-zone-svo

IZV223 Course of Zemledeliye: southern Russia to get rocket minefields. Izvestia, 2022.
https://iz.ru/1291330/roman-kretcul-bogdan-stepovoi/kurs-zemledeliia-iug-rossii-usiliat-reaktivnymi-minnymi-poliami

IZV224 Сибирь защитят модернизированные комплексы «Фаворит». Izvestia, 2022-07-20.
https://iz.ru/1367354/2022-07-20/sibir-zashchitiat-modernizirovannye-kompleksy-favorit

IZV232 Российские военные сбили украинский Ми-8 из «Иглы» в районе Лозовой. Izvestia, citing RIA Novosti, 2023-05-24.
https://iz.ru/1517508/2023-05-24/rossiiskie-voennye-sbili-ukrainskii-mi-8-iz-igly-v-raione-lozovoi

IZV233 В Минобороны РФ рассказали о боевой работе ПТРК «Штурм-С» в зоне СВО. Izvestia, 2023-01-26.
https://iz.ru/1460236/2023-01-26/v-minoborony-rf-rasskazali-o-boevoi-rabote-ptrk-shturm-s-v-zone-svo

IZV242 Малые с силами: на что способны новые быстроходные бронекатера. Izvestia, 2024-06-27.
https://iz.ru/1718667/andrei-krasnobaev-roman-kretcul-vladimir-matveev/malye-s-silami-na-chto-sposobny-novye-bystrokhodnye-bronekatera

IZVEST Intensivnoe Zemledeliye: novaia sistema minirovaniia postupaet v voiska. Izvestia, 2023.
https://iz.ru/1491154/aleksei-ramm-roman-kretcul/intensivnoe-zemledelie-novaia-sistema-minirovaniia-postupaet-v-voiska

JAH Jane's Ammunition Handbook 2001-2002: 152 mm 3RB30 VHF Radio Jammer Cargo Projectile (and 152 mm ICM 3023). Jane's Information Group (T J Gander, C Q Cutshaw), 2001-06-08.
https://index.crashjb.site.nfoservers.com/Boogaloo2020/Marksmanship & Ballistics/Ballistics/Jane's Ammunition Handbook.pdf

JAMES Russia's Unmanned Systems Forces Become Wildcard in Moscow's Military Modernization. Jamestown Foundation, Eurasia Daily Monitor, 2026.
https://jamestown.org/russias-unmanned-systems-forces-become-wildcard-in-moscows-military-modernization/

JAMES2 Russia Plans to Turn Belarus Into Launching Pad for Intermediate-Range Ballistic Missiles. Jamestown Foundation, 2025.
https://jamestown.org/russia-plans-to-turn-belarus-into-launching-pad-for-intermediate-range-ballistic-missiles/

JANES Ukraine conflict: Russia employs Forpost-R UCAV. Janes, 2022-03-15.
https://www.janes.com/defence-news/air-platforms/latest/ukraine-conflict-russia-employs-forpost-r-ucav

JANES2 Russian Navy moves large landing ships to Black Sea as exercise deployments continue. Janes, 2022-02.
https://janes.com/defence-news/russian-navy-moves-large-landing-ships-to-black-sea-as-exercise-deployments-continue

JANES3 Ukraine conflict: Russia's attack helicopter forces transition from 'easy target' to 'worst nightmare'. Janes, 2025-02.
https://janes.com/osint-insights/defence-news/defence/ukraine-conflict-russias-attack-helicopter-forces-transition-from-easy-target-to-worst-nightmare

JANES4 Ukraine conflict: Russian forces employ guided rockets. Janes, 2022-03-11.
https://www.janes.com/osint-insights/defence-news/weapons/ukraine-conflict-russian-forces-employ-guided-rockets

JANES5 Ukraine conflict: Russian mine-laying system makes combat debut. Janes, 2022-03-30.
https://www.janes.com/defence-news/news-detail/ukraine-conflict-russian-mine-laying-system-makes-combat-debut

JANES19 Russia's Palantin electronic warfare system makes training debut. Janes, 2019-09-19.
https://www.janes.com/osint-insights/defence-news/russias-palantin-electronic-warfare-system-makes-training-debut

JANES25 Analysis: Russia regenerates its tank force. Janes, 2025-09.
https://www.janes.com/osint-insights/defence-and-national-security-analysis/russia-regenerates-tank-force

JANESAW Jane's All the World's Aircraft 1999-00: Kamov Ka-29 and Ka-31. Jane's Information Group, 1999-07-22.
https://www.web3d.org/x3d/content/examples/Savage/AircraftHelicopters/HelixRussia/HelixQueryJanesOnline.pdf

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed. (Foss), 2S1 entry, variants, p. 439; MT-LB entry, key recognition features. HarperCollins / Jane's, 2000.

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed. (Foss): 122mm self-propelled gun M1974 (2S1). HarperCollins / Jane's, 2000.

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed., 120mm 2S23 entry, pp. 412-413. HarperCollins / Jane's, 2000.

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed. HarperCollins / Jane's, 2000.

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, BMD-1 entry variants, p. 179. HarperCollins / Jane's, 2000.

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed., 122mm self-propelled gun M1974 (2S1). HarperCollins / Jane's, 2000.

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2S19 entry. HarperCollins / Jane's, 2000.

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed., T-54/T-55 and T-62 entries (pp. 71-75). HarperCollins / Jane's, 2000.

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed., T-72 key recognition features. HarperCollins / Jane's, 2000.

JAPCC Countering Russia's Glide Bomb Warfare in Ukraine. Joint Air Power Competence Centre (NATO), 2025.
https://www.japcc.org/articles/countering-russias-glide-bomb-warfare-in-ukraine/

JF18 Russian CMD receives Tornado-G MLRS. Joint Forces News (reproducing Russian MoD release of 25 Oct 2018), 2018-10.
https://www.joint-forces.com/world-news/18989-russian-cmd-receives-tornado-g-mlrs

JFOR Engineering troops of the CAA of the Western MD received URAN-6 (MoD release 24 Jan 2021). joint-forces.com, 2021-01-24.
https://www.joint-forces.com/?p=39843

JFORCES Russian Northern Fleet Temporary River Bridging Exercise. Joint Forces News (Russian Northern Fleet press service release), 2020-11-02.
https://www.joint-forces.com/exercise-news/37305-russian-northern-fleet-temporary-river-bridging-exercise

JIT Update investigation JIT MH17, speaker's text press meeting 24 May 2018. Netherlands Public Prosecution Service (JIT), 2018-05-24.
https://www.prosecutionservice.nl/topics/mh17-plane-crash/criminal-investigation-jit-mh17/speakers-text-jit-mh17-press-meeting-24-5-2018

JOONG North Korean troops return to Russian front lines - with new tactics. Korea JoongAng Daily, 2025-02-21.
https://www.koreajoongangdaily.com/korea/north-korean-troops-return-to-russian-front-lines-with-new-tactics/11175621

JREW02 Jane's Radar and EW Systems 2001-2002 extract: ARK-1M Rys (JREW-p1781, PDF pp. 1781-1782); Zoopark-1 (JREW-p1766, PDF pp. 1766-1767). Jane's Information Group, 2001.

JREW02 Jane's Radar and EW Systems 2001-2003, Russian/CIS entries (fact extract). Jane's Information Group, 2000-10.

JREW02 Jane's Radar and EW Systems 2001-2003, entries 39N6E Casta-2E2 (JREW-p1886) and 51U6 Casta-2E1 (JREW-p1884); also P-15 Flat Face (JREW-p1966) and P-15M Squat Eye (JREW-p1964). Jane's Information Group, 2001-07.

JREW02 Jane's Radar and EW Systems, entry JREW-p1882 55G6-UE Nebo-U, PDF pp. 1882-1883; also 1L13-3 (JREW-p1956). Jane's Information Group, 2001-07.

JREW02 Jane's Radar and EW Systems, Oborona-14 entry (JREW-p1847), PDF pp. 1847-1848; also Lena (JREW-p1849) and Furgon (JREW-p1853). Jane's Information Group, 2001-07.

JREW02 Jane's Radar and Electronic Warfare Systems 2001-2002 and 2002-2003, Russian/CIS entries (fact extract). Jane's Information Group, 2001.

JREW02 Jane's Radar and Electronic Warfare Systems 2002-2003, entry JREW-p2000 Flap Wheel fire-control radar, PDF pp. 2000-2001. Jane's Information Group, 2001-07.

JREW02 Jane's Radar and EW Systems 2002-2003: TOR-M1 surface-to-air missile radar system. Jane's Information Group, 2001-11-09.

JREW02 Jane's Radar and EW Systems 2001-2003, entry JREW-p2011 (1RL144M), PDF pp. 2011-2012. Jane's Information Group, 2001-07.

JT21 Russia's Military Boosts Electromagnetic Spectrum Capability (McDermott). Jamestown Foundation, 2021-09-22.
https://jamestown.org/program/russias-military-boosts-electromagnetic-spectrum-capability/

JTOWN Russia's Armed Forces Test and Refine Electronic Warfare Capability. Jamestown Foundation, 2020.
https://jamestown.org/program/russias-armed-forces-test-and-refine-electronic-warfare-capability/

KALCLUB БПЛА «Тахион» - круглосуточный разведчик. kalashnikov.club, 2022-12.
https://kalashnikov.club/a/bpla-takhion-kruglosutochnyy-razvedchik-

KAT Sredstva inzhenernogo vooruzheniya, Katalog, Kniga 1, 2nd ed. (Russian engineer troops, for official use). Engineer Troops of the Russian Armed Forces (copy hosted by sprotyvg7.com.ua), after 2008, undated.
https://sprotyvg7.com.ua/wp-content/uploads/2023/12/Katalog_Sredstva_inzhenernogo_vooruzhenia_Kniga_1.pdf

KI1 Ukraine claims strike on Onyx and Zircon missile launcher in occupied Crimea. Kyiv Independent, 2026-08-16. Read 2026-10-06.
https://kyivindependent.com/ukraine-strikes-onyx-and-zircon-launcher-in-occupied-crimea-military-says/

KI2 Russia gathers 300 boats to cross Dnipro River amid attempted attacks in Kherson Oblast, military says. Kyiv Independent, 2024-12-04 (dateline 'Dec. 4' and 'Throughout 2024' in text). Read 2026-10-17.
https://kyivindependent.com/russia-gathers-300-boats-to-cross-dnipro-river-amid-attempted-attacks-in-kherson-oblast-officials-say/

KI3 Opinion: A look at the drone arsenal Russia uses against Ukraine (Kharuk). Kyiv Independent, 2024-04-16. Read 2026-10-02.
https://kyivindependent.com/opinion-a-look-at-the-drone-arsenal-russia-uses-against-ukraine/

KI4 Russia now has Iran's Fath-360 ballistic missile - here's what it means for Ukraine. Kyiv Independent, 2024-09. Read 2026-10-08.
https://kyivindependent.com/irans-fath-360-ballistic-missile-what-we-know-about-the-weapon-now-in-russias-hands/

KI5 Exclusive: Iran gave Russia over 350 Fath-360 missiles. Ukraine has yet to see one launched. Kyiv Independent, 2026-01. Read 2026-10-08.
https://kyivindependent.com/exclusive-iran-gave-russia-over-350-fath-missiles/

KI6 Iran to send Russia short-range ballistic missile launchers, Reuters reports. Kyiv Independent, 2025-05-09. Read 2026-10-08.
https://kyivindependent.com/iran-to-send-russia-short-range-ballistic-missile-launchers-reuters-reports/

KI7 As Russia's fiber optic drones flood the battlefield, Ukraine is racing to catch up (F. Farrell). The Kyiv Independent, 2025-05-20. Read 2026-10-02.
https://kyivindependent.com/as-russias-fiber-optic-drones-flood-the-battlefield-ukraine-is-racing-to-catch-up/

KI8 Ukraine's intelligence reveals Russian brigades responsible for Sumy attack. Kyiv Independent, 2025-04-13. Read 2026-09-29.
https://kyivindependent.com/ukraines-intelligence-reveals-russian-brigades-responsible-for-sumy-attack/

KI9 Russian military helicopter crashes in Black Sea after explosion, Ukrainian Navy says. Kyiv Independent, 2024-04-10. Read 2026-10-16.
https://kyivindependent.com/russian-military-helicopter-downed-in-crimea

KI10 Russia's Kinzhal missile is not hypersonic. Nor is it invincible. Kyiv Independent, 2023-05-24. Read 2026-10-20.
https://kyivindependent.com/russias-kinzhal-missile-is-not-hypersonic-nor-is-it-invincible/

KI11 ISW: Russia deploying new Kh-69 cruise missile in escalating attacks on Ukraine. Kyiv Independent, 2024-04. Read 2026-10-21.
https://kyivindependent.com/isw-russia-deploying-new-kh-69-cruise-missile-in-escalating-attacks-on-ukraine/

KI12 Exclusive: Majority of companies involved in Russian Molniya drone production unsanctioned. Kyiv Independent, 2026-09-25. Read 2026-10-02.
https://kyivindependent.com/exclusive-majority-of-companies-involved-in-russian-molniya-drone-production-unsanctioned-research-shows/

KI13 Ukraine struck $100 million Russian Nebo-U radar system in occupied Crimea, General Staff claims. Kyiv Independent, 2026-02-13. Read 2026-10-06.
https://kyivindependent.com/ukraine-says-it-struck-100-million-russian-nebo-u-radar-system-in-occupied-crimea/

KI14 Hundreds of Russian vehicles, weapon systems seized during Kharkiv counterattack. Kyiv Independent, 2022-09. Read 2026-09-29.
https://kyivindependent.com/hundreds-of-russian-vehicles-weapon-systems-seized-during-kharkiv-counterattack/

KOLESA Переживет ли БТР-82А американского «Страйкера»? Kolesa.ru, 2015-06-18.
https://www.kolesa.ru/article/perezhivet-li-btr82a-amerikanskogo-strajkera-2015-06-18

KOLESA2 Мостоукладчик, сваезабиватель и даже гигантский пылесос: военные профессии КрАЗ-255. Kolesa.ru.
https://www.kolesa.ru/article/mostoukladchik-svaezabivatel-i-dazhe-gigantskiy-pylesos-voennye-professii-kraz-255

KOLESA3 Радиотехнические, десантируемые, для космической связи и не только: спецверсии ГАЗ-66. Kolesa.ru.
https://www.kolesa.ru/article/radiotekhnicheskie-desantiruemye-dlya-kosmicheskoy-svyazi-i-ne-tolko-spetsversii-gaz-66

KOLESA4 Четырехосный МАЗ-543М: колеса комплекса С-300. Kolesa.ru.
https://www.kolesa.ru/article/chetyrehosnyj-maz-543m-kolesa-kompleksa-s-300

KOM25 255-му мотострелковому полку присвоено почетное звание гвардейского. Kommersant, 2025-11-20.
https://www.kommersant.ru/doc/8212982

KP Russia's 'Vandal' Fiber Optic FPV Drone Is Probably Another Chinese Import. Kyiv Post, 2024, after August.
https://www.kyivpost.com/post/38831

KP1 Ukraine strikes Russian missile unit, logistics sites in Crimea, Donetsk, Mykolaiv. Kyiv Post, 2026-02-23.
https://www.kyivpost.com/post/70596

KP2 Ukraine strikes Bastion missile launcher, command posts in occupied territories. Kyiv Post, 2026-03-24.
https://www.kyivpost.com/post/72496

KP3 North Korean 'Koksan' Artillery Guns Spotted in Crimea. Kyiv Post, 2025-04-04.
https://www.kyivpost.com/post/50196

KP4 Ukraine Strikes Russian Fuel Trains, Destroys Rare 'Inokhodets' Drones in Crimea. Kyiv Post, 2026-04-04.
https://www.kyivpost.com/amp/post/73228

KP5 Ukrainian Special Ops Report Destruction of Russian 'Tirada-2' Satcom Jamming System. Kyiv Post, 2024-01-08.
https://www.kyivpost.com/amp/post/26469

KP12 Video Gives First Confirmation of North Korean MLRS Deployment by Russia. Kyiv Post, 2025-04-21.
https://www.kyivpost.com/post/51170

KP13 North Korean Ammo Keeps 70-Year-Old Russian Guns Firing. Kyiv Post, 2024-06-30.
https://www.kyivpost.com/post/35075

KP22 AFU Destroys Another North Korean 'Koksan' Artillery in Donetsk Region. Kyiv Post, 2025-03-25.
https://www.kyivpost.com/post/49572

KP23 Pyongyang Delivered More Artillery, Rocket Launchers to Moscow, Seoul Says. Kyiv Post, 2024-11-21.
https://www.kyivpost.com/post/42587

KP24 Russia Releases Video of Shahed Drones' 'Little Sister'. Kyiv Post, 2024-07.
https://www.kyivpost.com/post/36577

KP25 Russia Turns Cheap Decoy Drones Into Kamikaze Weapons. Kyiv Post, 2025-02-06.
https://www.kyivpost.com/post/46692

KP26 Russia Repurposes Gerbera Drone as FPV Carrier for First Time. Kyiv Post, 2026-02.
https://www.kyivpost.com/post/69364

KP27 Russian Defense Ministry Showcases 1950s Howitzers in Kursk to Boost Recruitment. Kyiv Post, 2024-08.
https://kyivpost.com/post/38045

KP242 Chinese Manufactured Armored Vehicles Seen in Ukraine and Moscow. Kyiv Post, 2024-09 (date not printed).
https://www.kyivpost.com/amp/post/39487

KP262 Operatory Orlan-30 ... porazhayut tseli vysokotochnymi snaryadami. Komsomolskaya Pravda, 2026-07-09.
https://www.kp.ru/daily/277796/5274528/

KP55918 Aero-HIT supply network with Chinese partners (summary of Bloomberg report). Kyiv Post, 2025.
https://www.kyivpost.com/amp/post/55918

KPAJ1 M-1978 and M-1989 170 mm Self-Propelled Guns, Part I. KPA Journal (Bermudez), vol. 2 no. 6, 2011-06.
http://static1.1.sqspcdn.com/static/f/716134/15291676/1322255860447/KPAJ-2-06.pdf

KPAJ2 M-1978 and M-1989 170 mm Self-Propelled Guns, Part II. KPA Journal (Bermudez), vol. 2 no. 7, 2011-07.
http://www.kpajournal.com/storage/KPAJ-2-07.pdf

KPEN Ukrainian Army Destroys Huge Russian Complex in Mykolaiv Region. Kyiv Post, 2022-08-18.
https://www.kyivpost.com/russias-war/ukrainian-army-destroys-huge-russian-complex-in-mykolaiv-region.html

KPOST Special Ops Hit Russian Radar Network in Crimea, Including $100M Nebo-U. Kyiv Post, 2026-03.
https://www.kyivpost.com/post/71543

KPOST2 Prykordonnyky pokazaly, yak znyshchyly novitnii rosiiskyi kompleks REB R-340RP Pole-21. Kyiv Post (Ukrainian edition), 2024-04.
https://www.kyivpost.com/uk/amp/post/30942

KREM Statement by the President of the Russian Federation, 21 Nov 2024. Kremlin (en.kremlin.ru), 2024-11-21.
http://en.kremlin.ru/events/president/news/75614

KUBNEWS Разведчики получили партию РЛС Соболятник и станций разведки Фара. Kubanskie Novosti (quotes Southern MD press service, TASS), 2021-03-05.
https://kubnews.ru/obshchestvo/2021/03/05/razvedchiki-poluchili-partiyu-rls-sobolyatnik-i-stantsiy-razvedki-fara/

KYIV Russian armored vehicles crash on Crimean Bridge. Kyiv Post, 2023.
https://kyivpost.com/post/15010

KYIV2 What is the Lancet? Kyiv Post, 2023-11.
https://www.kyivpost.com/analysis/23923

KYIVP North Korean Self-Propelled Anti-Tank Missile System Spotted Near Kharkiv. Kyiv Post, 2024-07-31.
https://www.kyivpost.com/post/36640

KYIVP1 Chinese ATVs spotted in occupied Zaporizhzhia (Desertcross-1000-3). Kyiv Post, 2023-11.
https://www.kyivpost.com/amp/post/24113

KYIVP2 Russia Reportedly Deploys New, Domestically Developed Drones With Chinese Engines. Kyiv Post, 2024-09.
https://www.kyivpost.com/amp/post/38955

KYIVP3 SBU Special Forces Strike Three Russian Warships in Occupied Crimea. Kyiv Post, 2026-04-18.
https://www.kyivpost.com/post/74224

KYIVP4 $600K in 30 Minutes: Ukraine Downs Two of Russia's Most Expensive Recon Drones. Kyiv Post, 2025.
https://www.kyivpost.com/post/51783

KYIVP5 EXPLAINED: What We Know About Russia's Oreshnik Missile Fired on Ukraine. Kyiv Post (AFP), 2024-11-21.
https://kyivpost.com/post/42674

KYIVP6 Ukrainian Special-Ops Pick Off Russia's Cutting-Edge Radio Relay Station. Kyiv Post, 2024-06-13.
https://www.kyivpost.com/amp/post/34226

KYIVP7 Ukraine Uses Hummers as Improvised Remote Anti-Tank Mine Layers. Kyiv Post, c. 2024 (undated page).
https://www.kyivpost.com/post/43317

KYIVPOS2 Ukraine Blows Up One S-400 Division, Two S-300s in Crimea. Kyiv Post, 2024-06-10.
https://www.kyivpost.com/amp/post/34045

KYIVPOST Russian MiG-31s With Kinzhal Missiles Over the Black Sea: What You Need to Know. Kyiv Post, n.d. (2023-24).
https://www.kyivpost.com/analysis/23444

KYIVPST Why Did Russia Use Nuclear-Capable Missiles as Decoys in Latest Attacks? Kyiv Post, 2025-01.
https://www.kyivpost.com/analysis/45546

KYIVPST2 Russia claims new, improved precision-guided artillery shell fielded. Kyiv Post, 2023-07-05.
https://www.kyivpost.com/post/19123

KZ Оборона под управлением системы «Барнаул-Т». Krasnaya Zvezda (Russian MoD), 2018-06-18.
http://redstar.ru/oborona-pod-upravleniem-sistemy-barnaul-t/

KZ1 Воюющие на САУ «Мальва» бойцы называют ее снайперской винтовкой. Mail.ru V fokuse, reprinting Krasnaya Zvezda (MoD newspaper), 2026-06-05.
https://vfokuse.mail.ru/news/69624868-voyuyuschie-na-sau-malva-bojtsyi-nazyivayut-ee-snajperskoj-vintovkoj/

KZ2 Самоходки «Мальва» ведут непрерывную огневую работу по позициям ВСУ. Mail.ru V fokuse, reprinting Krasnaya Zvezda (MoD newspaper), 2026-08-14.
https://vfokuse.mail.ru/news/69636296-samohodki-malva-vedut-nepreryivnuyu-ognevuyu-rabotu-po-pozitsiyam-vsu/

KZ3 Na Kamchatke uspeshno osvoili kompleks Murmansk-BN (Krasnaya Zvezda, reposted on LiveJournal). Krasnaya Zvezda (repost by starcom68), 2016-01.
https://starcom68.livejournal.com/1959794.html

KZ2019 Войска надёжно прикрыты от ударов с воздуха (interview, Lt Gen A. Leonov). Krasnaya Zvezda, 2019-12.
http://redstar.ru/vojska-nadyozhno-prikryty-ot-udarov-s-vozduha/

KZ2021 Небо над войсками надёжно защищено (interview, Lt Gen A. Leonov, chief of troop air defence). Krasnaya Zvezda, 2021-12.
http://redstar.ru/nebo-nad-vojskami-nadyozhno-zashhishheno/

LB Russia demothballs rare 130mm M-46. LB.ua (citing Defense Express), 2024-01-28.
https://en.lb.ua/news/2024/01/28/26272_russia_demothballs_rare_130mm_m46.html

LBUA Defence Forces first hit Russian newest EW system Bylina. LB.ua, 2024-01-13.
https://en.lb.ua/news/2024/01/13/25796_defence_forces_first_hit_russian.html

LBUA2 Ukrainian intelligence releases footage of Project 12150 Mangust boat destroyed in Crimea (6 May 2024). LB.ua (English edition), 2024-05-06.
https://en.lb.ua/news/2024/05/06/28940_ukrainian_intelligence_releases.html

LBUA3 What is known about jet-powered Shaheds. LB.ua, 2025-08-01.
https://en.lb.ua/news/2025/08/01/36522_reactive_shaheds_when.html

LENTA Минобороны получило первую в 2023 году партию БМП-3. Lenta.ru, 2023-02-03.
https://lenta.ru/news/2023/02/03/bmp3/

LENTA2 V Rossii vosstanovili trofeinyi amerikanskii bronetransporter MaxxPro. Lenta.ru, quoting TASS, 2024-10-14.
https://lenta.ru/news/2024/10/14/v-rossii-vosstanovili-trofeynyy-amerikanskiy-bronetransporter-maxxpro/

LENTA3 Rossiyskim desantnikam pomogut Dzyudoisty. Lenta.ru, 2012-07-06.
https://lenta.ru/news/2012/07/06/judoka/

LENTA4 «Князь Вандал» разбил колонну ВСУ под Курском. Lenta.ru, 2024-10-30.
https://lenta.ru/news/2024/10/30/knyaz-vandal-razbil-kolonnu-vsu-pod-kurskom-chto-iz-sebya-predstavlyaet-revolyutsionnoe-oruzhie-rossii/

LENTA5 Катера «Грачонок» пресекли диверсию условного противника. Lenta.ru (relaying TASS and Pacific Fleet press service), 2024-04-17.
https://lenta.ru/news/2024/04/17/katera-grachonok-presekli-diversiyu-uslovnogo-protivnika/amp/

LENTA6 Комплексы Гарпун-3 применили против дронов. Lenta.ru (from TASS), 2022-10-17.
https://lenta.ru/news/2022/10/17/harpoon/

LENTA7 Ka-27, Ka-28, Ka-29 i Ka-32 (Lentapedia). Lenta.ru.
https://lenta.ru/lib/ka27/

LENTA8 Ми-28Н (Лентапедия). Lenta.ru, undated, about 2005 (says trials last until early 2006).
https://lenta.ru/lib/mi28n

LENTA9 Na vooruzhenie armii postupit novejshij naplavnoj zheleznodorozhnyj most MLZh-VT. Lenta.ru, quoting RIA Novosti and Col-Gen Kogatko, 2005-08-04.
https://lenta.ru/news/2005/08/04/bridge/

LENTA10 Polk sistem S-400 na Kamchatke poluchil Pantsiri. Lenta.ru (citing Interfax, Eastern MD press service), 2015-12-02.
https://lenta.ru/news/2015/12/02/pantsir/

LENTA11 KRET handed MoD ten 1L262E Rtut-BM complexes (Lenta.ru news). Lenta.ru, 2013-11-25.
https://lenta.ru/news/2013/11/25/mercury/

LENTA12 Vostochnyy voyennyy okrug poluchil polkovoy komplekt S-400. Lenta.ru (citing RIA Novosti and MoD press service), 2012-06-09.
https://lenta.ru/news/2012/06/09/s400

LENTA13 V SShA obespokoilis rossiyskimi unichtozhitelyami Starlink. Lenta.ru, 2025-04-03.
https://lenta.ru/news/2025/04/03/v-ssha-obespokoilis-rossiyskimi-unichtozhitelyami-starlink/

LENTA14 Российская армия перевооружилась на «Искандеры». Lenta.ru, citing Russian MoD, 2019-11-22.
https://lenta.ru/news/2019/11/22/iskander/

LENTA15 Российский «Омич» разогнался до 60 километров в час. Lenta.ru, 2026-07-21.
https://lenta.ru/news/2026/07/21/rossiyskiy-omich-razognalsya-do-60-kilometrov-v-chas/

LENTA16 Lenta.ru: first Malka firing in an Eastern MD artillery brigade, Amur oblast. Lenta.ru, 2016-04-04.
https://lenta.ru/news/2016/04/04/malka/

LENTA17 В России рассказали о применении незаметных для украинских войск беспилотников. Lenta.ru, 2022-04-27.
https://lenta.ru/news/2022/04/27/bespilotniki/

LENTA22 В районе проведения спецоперации заметили БМП «Басурманин». Lenta.ru, 2022-04-27.
https://lenta.ru/news/2022/04/27/bmp1am/

LENTA23 Artilleristy TsVO ... Zoopark-1M. Lenta.ru, 2023-07-27.
https://lenta.ru/news/2023/07/27/zoopark/

LEXCN Lexicon records vystrel, vpk-ural, patrul-7020, sarmat, z-sts-akhmat, gusar, buran-asv, toros. Project lexicon (pilot/lexicon/lexicon_final.json), 2026-09-30.

LIFE Unikalnyj mobilnyj most dlya poezdov i mashin postupil v vojska. Life.ru, quoting Col Aleksej Nalejkin, 2016-08 (from the 165th anniversary of the Railway Troops).
https://life.ru/p/887366

LIFERU Minoborony pokazalo video remonta trofeinoi amerikanskoi BMP M2 Bradley. Life.ru, quoting the Russian MoD Telegram, 2024-09-14.
https://life.ru/p/1687439

LIGA Ukrainians strike newly introduced Russian Floks howitzer. Liga.net, 2023-10.
https://news.liga.net/en/politics/video/vsu-vpervye-porazili-noveyshuyu-rossiyskuyu-sau-floks

LIGA2 V Donbasse OBSE zafiksirovala noveyshiy rossiyskiy kompleks REB. LIGA.net, 2019-04.
https://news.liga.net/incidents/news/v-donbasse-obse-zafiksirovala-noveyshiy-rossiyskiy-kompleks-reb

LIGA3 Ukrainian intelligence destroys Russian Garmon radar station in occupied Zaporizhzhia Oblast. LIGA.net, 2025-01-24.
https://news.liga.net/en/politics/video/ukrainian-intelligence-destroys-russian-garmon-radar-station-in-occupied-zaporizhzhia-oblast

LIGA4 В Николаевской области уничтожили российскую ракету Х-59. LIGA.net, 2024.
https://news.liga.net/politics/news/v-nikolaevskoy-oblasti-unichtozhili-rossiyskuyu-raketu-h-59

LIGA5 Unmanned systems forces destroy a rare North Korean MLRS: video of the destruction. LIGA.net, 2025-06-27.
https://news.liga.net/en/politics/news/unmanned-systems-forces-destroy-a-rare-north-korean-mlrs-video-of-the-destruction

LIGA6 Контрразведчики СБУ уничтожили с дрона российскую систему борьбы с дронами. Liga.net, 2022-10.
https://news.liga.net/politics/news/kontrrazvedchiki-sbu-unichtojili-s-drona-rossiyskuyu-sistemu-broby-s-dronami-video

LIGA7 Ukraine's Special Operations Forces hit Russia's newest communication station R-416GM - video. Liga.net, 2024-06-13.
https://news.liga.net/en/all/video/ukraines-special-operations-forces-hit-russias-newest-communication-station-r-416gM-video

LIGA8 «Азов» показал поражение российского катера: видео попадания и непечатный комментарий. LIGA.net, 2022-03-22 (from the text: 'yesterday, 21 March').
https://news.liga.net/politics/news/azov-pokazal-porajenie-rossiyskogo-katera-video-popadaniya-i-nepechatnyy-kommentariy

LIGA9 Rossiya ispytyvaet v Donbasse noveyshie kompleksy REB (Bellingcat/DFRLab summary). Liga.net, 2018-09.
https://news.liga.net/politics/news/rossiya-ispytyvaet-v-donbasse-noveyshie-kompleksy-reb---bellingcat

LIGA10 Russia has started actively attacking Ukraine with a new Shahed-107: the DIU disclosed the drone's structure. Liga.net, 2025-11.
https://news.liga.net/en/politics/news/russia-has-started-actively-attacking-ukraine-with-a-new-shahed-107-the-diu-disclosed-the-drones-structure

LIGA11 Interesting trophy: Ukrainian forces dismantled Russian SuperCam drone. LIGA.net, 2023-09.
https://news.liga.net/politics/news/interesnyy-trofey-vsu-razobrali-rossiyskiy-dron-supercam-foto

LJRSN Радиоснаряд (post quoting the handbook Системы управления, связи и РЭБ). tri-tire-tochka, LiveJournal, 2026.
https://tri-tire-tochka.livejournal.com/96123.html

LJRU Армия-2017. РЛС 1Л119 «Небо-СВУ». LiveJournal (dambiev, repost of saidpvo), 2017.
https://dambiev.livejournal.com/969311.html

LJWV Российская система управляемого вооружения КМ-8 «Грань». weaponvideo_ru, LiveJournal.
https://weaponvideo-ru.livejournal.com/526570.html

LMM25 Landmine Monitor 2025, online reader (Ukraine section). ICBL-CMC The Monitor, 2025.
https://the-monitor.org/online-reader/landmine-monitor-2025

LOL54 ТМС-65У - армейская дымовуха. lol54.ru.
https://lol54.ru/army/137248-tms-65u-armejjskaja-dymovukha.html

LUFT The Missile That Came in from the Cold. Luftlage (Substack), 2026.
https://luftlage.substack.com/p/the-missile-that-came-in-from-the

LWJ2 Photos offer insights on Russia's new UMPB D-30SN glide bomb (Hardie). FDD's Long War Journal, 2024-06-05.
https://www.longwarjournal.org/archives/2024/06/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb.php

LWJ3 What we know about Russia's new 3-ton glide bomb (Hardie). FDD's Long War Journal, 2024-07-19.
https://www.longwarjournal.org/archives/2024/07/analysis-what-we-know-about-russias-new-3-ton-glide-bomb.php

M360 «Umnye» minnye polya ustanovili na Avdeevskom napravlenii. 360.ru citing RIA Novosti and Russian MoD, 2024-09-16.
https://360.ru/news/ukrainian-crisis/umnye-minnye-polja-ustanovili-na-avdeevskom-napravlenii/

MAILRU Расчет гаубицы Д-30 группировки «Центр» уничтожил миномет ВСУ в ДНР. news.mail.ru, INA (2024-2025).
https://news.mail.ru/svo/65906041/

MAILRU2 Беспилотник «Форпост-РЭ» покажут на Dubai Airshow 2025. Hi-Tech Mail.ru, 2025-11.
https://hi-tech.mail.ru/news/137458-bespilotnik-forpost-re-pokazhut-na-dubai-airshow-2025/

MAILRU3 Msta-S crews destroyed Ukrainian strongpoints with Krasnopol near Zaporizhzhia (TASS via news.mail.ru). TASS / Mail.ru, 2026-05-25.
https://news.mail.ru/politics/71008673/

MAILRU4 Расчет «Торнадо-С» уничтожил подземные укрытия (232nd Gds Rocket Artillery Brigade). Mail.ru News, citing Russian MoD, 2026-09-09.
https://news.mail.ru/politics/72289828/

MAILRU5 Российский реактивный снаряд для «Торнадо-Г» впервые показали за рубежом. Hi-Tech Mail.ru, 2018-11.
https://hi-tech.mail.ru/news/40544-tornado-g-za-rubezhom/

MAREX Ukraine Hits Two Russian Landing Ships at Port of Sevastopol. The Maritime Executive, 2026-04-20 (from a Wikipedia citation; page prints 'Saturday' and 'Monday').
https://maritime-executive.com/article/ukraine-hits-two-russian-landing-ships-at-port-of-sevastopol

MASH Специалисты РЭБ успешно применяют комплексы «Леер-3» и БПЛА «Орлан-10» в зоне СВО. Mashnews, undated (c. 2022).
https://mashnews.ru/speczialistyi-reb-uspeshno-primenyayut-kompleksyi-leer-3-i-bpla-orlan-10-v-zone-svo.html

MCHS Многоцелевой поисково-спасательный катер «Мангуст». MChS of Russia (Emergencies Ministry), undated (page as fetched).
https://mchs.gov.ru/ministerstvo/o-ministerstve/tehnika/avariyno-spasatelnye-tehnika/mnogocelevoy-poiskovo-spasatelnyy-kater-mangust

MDB Iskander the Great (Barabanov), Moscow Defense Brief 4/2008. CAST, 2008.
https://www.files.ethz.ch/isn/94687/2008_4.pdf

MEDUZA Photos show Russian troops with Western military equipment, captured in Ukraine. Meduza, 2024-10-28.
https://meduza.io/en/feature/2024/10/28/photos-show-russian-troops-with-western-military-equipment-captured-in-ukraine

MEDUZA2 Putin visited the Southern Military District HQ in Rostov-on-Don and was shown an all-terrain vehicle. Meduza, 2023-11-10.
https://meduza.io/news/2023/11/10/putin-posetil-shtab-yuzhnogo-voennogo-okruga-v-rostove-na-donu

MEDUZA3 Eight-year-old boy killed in Russian missile attack on Ukraine's Ivano-Frankivsk region. Meduza, 2023-08-11.
https://meduza.io/en/news/2023/08/11/eight-year-old-boy-killed-in-russian-missile-attack-on-ukraine-s-ivano-frankivsk-region

MEDUZA4 Sky News: Iran develops new attack drone for Russia to use in Ukraine. Meduza, 2024-01-10.
https://plugin-frontend.meduza.io/en/news/2024/01/10/sky-news-iran-develops-new-attack-drone-for-russia-to-use-in-ukraine

MEDUZA5 Supercam S350, one of the drones the Russian army uses in Ukraine (photos). Meduza, 2025-02-18.
https://meduza.io/feature/2025/02/18/supercam-s350-odin-iz-bespilotnikov-kotorye-rossiyskaya-armiya-ispolzuet-v-ukraine-fotografii

METISM PDM-1M (METIS munition record). Fenix Insight.
https://metis.fenixinsight.com/munition/mine/pdm-1m

MEZHA Ukrainian forces struck fuel trains in Luhansk and shot down Russian Inokhodets drone in Crimea. Mezha, 2026-04.
https://mezha.net/eng/bukvy/ukrainian_forces_struck-23/

MEZHA2 Lasar's Group destroyed Russian Palantine EW system on Zaporizhzhia front. Mezha, 2026-04.
https://mezha.net/eng/bukvy/lasar-s_group_destroyed-2/

MF1 2S5 Giatsint-S (Hyacinth) (M1981) Self-Propelled Artillery. MilitaryFactory.com, 2014. Read 2026-09-29.
https://www.militaryfactory.com/armor/detail.php?armor_id=704

MF2 BMP-3 (Boyevaya Mashina Pekhoty) Infantry Fighting Vehicle. Military Factory. Read 2026-09-29.
https://www.militaryfactory.com/armor/detail.php?armor_id=12

MF3 Kalashnikov Takhion (Tachyon) Mini-UAV. Military Factory, 2022-04. Read 2026-10-02.
https://www.militaryfactory.com/aircraft/detail.php?aircraft_id=2466

MFRAB About the company. GK Bespilotnye sistemy, undated, read 2026-10.
https://supercam.aero/about

MIL Ukrainian Forces Score a Victory with Destruction of Russian Dzjudoist EW System. Militarnyi (mil.in.ua), 2023-04-25.
https://mil.in.ua/en/news/ukrainian-forces-score-a-victory-with-destruction-of-russian-dzjudoist-ew-system/

MIL1 82-мм автоматичний міномет 2Б9 «Васильок». Militarnyi. Read 2026-10-06.
https://militarnyi.com/uk/articles/82-mm-avtomatychnyj-minomet-2b9-vasylok/

MIL2 Росіяни заявляють про збільшення випуску снарядів «Китолов». Militarnyi, 2025. Read 2026-10-06.
https://militarnyi.com/uk/news/rosiyany-zayavlyayut-pro-zbilshennya-vypusku-snaryadiv-kytolov-yakyh-navit-ne-bachyly-na-fronti/

MIL3 Russians use extremely rare 2S31 Vena ACS. Militarnyi, 2023-09. Read 2026-10-06.
https://militarnyi.com/en/news/russians-use-extremely-rare-2s31-vena-acs/

MIL4 The destruction of a rare 2S34 Hosta SPG in the Donetsk region was captured on video. Militarnyi, 2024-07. Read 2026-10-06.
https://militarnyi.com/en/news/the-destruction-of-a-rare-2s34-hosta-spg-in-the-donetsk-region-was-captured-on-video/

MIL5 Під Бахмутом знищили дві «Ноні» окупантів. Militarnyi, 2023-04. Read 2026-10-06.
https://militarnyi.com/uk/news/pid-bahmutom-znyshhyly-dvi-nony-okupantiv/

MIL6 Defence Intelligence of Ukraine Strikes S-400 Launcher and Radar in Crimea. Militarnyi, 2026-07-27. Read 2026-09-29.
https://militarnyi.com/en/news/defence-intelligence-of-ukraine-strikes-s-400-launcher-and-radar-in-crimea/

MIL7 Russian ARK-1 Rys' radar neutralized in the Kherson region. Militarnyi. Read 2026-09-29.
https://militarnyi.com/en/news/russian-ark-1-rys-radar-neutralized-in-the-kherson-region/

MIL8 Counter-battery radars of Russia under Ukrainian fire (Ukrainian text). Militarnyi, 2025. Read 2026-09-29.
https://militarnyi.com/uk/articles/kontrbatarejni-radary-rosiyi-pid-vognem-zsu-shho-znyshheno-i-chomu-tse-vazhlyvo/

MIL9 Ukrainian Drones Hit Module of Russia's Rare Barnaul-T System. Militarnyi, 2025-08 (inferred from image path). Read 2026-09-29.
https://militarnyi.com/en/news/ukrainian-drones-hit-module-of-russia-s-rare-barnaul-t-system/

MIL10 The trophy of the Armed Forces of Ukraine became the BAT-2 CEV of the Russian invaders. Militarnyi, 2022. Read 2026-10-04.
https://militarnyi.com/en/news/the-trophy-of-the-armed-forces-of-ukraine-became-the-bat-2-cev-of-the-russian-invaders/

MIL11 Rosiiski katery BK-16 zi shvedskym korinniam (blog). Militarnyi (Andrii Kharuk), 2026-02-17. Read 2026-10-17.
https://militarnyi.com/uk/blogs/rosijski-katery-bk-16-zi-shvedskym-korinnyam/

MIL12 BK-16: Photos Confirm Complete Destruction of Russian Transport and Landing Craft in Crimea. Militarnyi, 2026-02-19 (page metadata). Read 2026-10-16.
https://militarnyi.com/en/news/bk-16-photos-confirm-complete-destruction-of-russian-transport-and-landing-craft-in-crimea/

MIL13 Dron HUR potopyv rosiiskyi kater BK-16 u Krymu. Militarnyi, 2026-02-16 (page metadata). Read 2026-10-16.
https://militarnyi.com/uk/news/dron-gur-potopyv-rosijskyj-kater-bk-16/

MIL14 Prymary HUR urazyly dva desantni katery BK-16 i novitniu RLS u Krymu. Militarnyi, 2026-03-18 (page metadata). Read 2026-10-16.
https://militarnyi.com/uk/news/prymary-gur-urazyly-dva-desantni-katery-bk-16-i-novitnyu-rls-u-krymu/

MIL15 Ukrainian Forces Destroy Russian Raptor Boat in Crimea. Militarnyi, 2026-03-16 (page metadata). Read 2026-10-17.
https://militarnyi.com/en/news/ukrainian-forces-destroy-russian-raptor-boat-in-crimea/

MIL16 БМД-2 (reference article). Militarnyi. Read 2026-10-03.
https://militarnyi.com/uk/articles/bmd-2/

MIL17 Russian Army receives new BMP-3 and BMD-4M. Militarnyi, 2024. Read 2026-10-03.
https://militarnyi.com/en/news/russian-army-receives-new-bmp-3-and-bmd-4m/

MIL18 Modernized Russian BMP-1AM Falls into Hands of Ukrainian 58th Brigade. Militarnyi, 2023-11. Read 2026-10-03.
https://militarnyi.com/en/news/modernized-russian-bmp-1am-falls-into-hands-of-ukrainian-58th-brigade/

MIL19 Ukrainian Defence Forces destroyed BMP-3 with Kaktus ERA. Militarnyi, undated on page. Read 2026-09-29.
https://militarnyi.com/en/news/ukrainian-defence-forces-destroyed-bmp-3-with-kaktus-era/

MIL20 Армія Росії отримала нові БМПТ «Терминатор». Militarnyi, 2025-10. Read 2026-10-03.
https://militarnyi.com/uk/news/armiya-rosiyi-otrymala-novi-bmpt-termynator/

MIL21 У Росії офіційно перейменували БМПТ «Терминатор» на «Спиридон». Militarnyi, 2026-06. Read 2026-10-03.
https://militarnyi.com/uk/news/perejmenuvaly-bmpt-termynator-na-spyrydon/

MIL22 Ukrainian Forces Destroy Third Borisoglebsk-2 Electronic Warfare System in a Week. Militarnyi, April, year not shown on fetched text. Read 2026-09-29.
https://militarnyi.com/en/news/ukrainian-forces-destroy-third-borisoglebsk-2-electronic-warfare-system-in-a-week/

MIL23 Ukrainian military destroy the Russian R-934BMV Borisoglebsk-2 EW system. Militarnyi, 2023-10-16. Read 2026-10-01.
https://militarnyi.com/en/news/ukrainian-military-destroy-the-russian-r-934bmv-borisoglebsk-2-ew-system/

MIL24 414th Strike Drone Regiment destroyed a Russian R-934BMV electronic warfare station of the Borisoglebsk-2 system. Militarnyi, 2024-11. Read 2026-10-01.
https://militarnyi.com/en/news/414th-strike-drone-regiment-destroyed-a-russian-r-934bmv-electronic-warfare-station-of-the-borisoglebsk-2-system/

MIL25 Russian BREM-L destroyed in the Zaporizhzhia region. Militarnyi, 2023. Read 2026-10-03.
https://militarnyi.com/en/news/russian-brem-l-destroyed-in-the-zaporizhzhia-region/

MIL26 Ukrainian Air Assault Forces demonstrated an unknown modernized version of BRM-1K. Militarnyi. Read 2026-10-03.
https://militarnyi.com/en/news/ukrainian-air-assault-forces-demonstrated-an-unknown-modernized-version-of-brm-1k/

MIL27 A rare BTR-90 was spotted among the defeated column of Russians near Avdiivka. Militarnyi, 2023-12. Read 2026-10-03.
https://militarnyi.com/en/news/a-rare-btr-90-was-spotted-among-the-defeated-column-of-russians-near-avdiivka/

MIL28 Volunteers restored the captured BTR-MD Rakushka for Ukrainian paratroopers. Militarnyi, 2023-06. Read 2026-10-03.
https://militarnyi.com/en/news/volunteers-restored-the-captured-btr-md-rakushka-for-ukrainian-paratroopers/

MIL29 Ukrainian Forces Destroy Russian Buk-M2 Air Defense Systems. Militarnyi, 2025-04-21. Read 2026-09-29.
https://militarnyi.com/en/news/ukrainian-forces-destroy-russian-buk-m²-air-defense-systems/

MIL30 Russia starts using Bulsae-4 missile system from the DPRK against Ukraine. Militarnyi, 2024-07-30. Read 2026-10-08.
https://militarnyi.com/en/news/russia-starts-using-bulsae-4-missile-system-from-the-dprk-against-ukraine/

MIL31 Tested in Kursk Region: North Korea Adapts Bulsae-4 ATGM for SUVs. Militarnyi, 2025-08-22. Read 2026-10-08.
https://militarnyi.com/en/news/tested-in-kursk-region-north-korea-adapts-bulsae-4-atgm-for-suvs/

MIL32 How Chinese 'Golf Carts' Help Russian Invaders. Militarnyi, 2024-12 or later (text cites Dec 2024). Read 2026-10-08.
https://militarnyi.com/en/articles/how-chinese-golf-carts-help-russian-invaders/

MIL33 A school for training drivers of Chinese all-terrain vehicles was opened in Russia. Militarnyi, 2024-12. Read 2026-10-08.
https://militarnyi.com/en/news/a-school-for-training-drivers-of-chinese-all-terrain-vehicles-was-opened-in-russia/

MIL34 Donetsk region: the military destroyed equipment from China. Militarnyi, 2024-01. Read 2026-10-08.
https://militarnyi.com/en/news/donetsk-region-the-military-destroyed-equipment-from-china/

MIL35 В РФ відкрили школу підготовки водіїв китайських мотовсюдиходів (Ukrainian edition of MILSCH). Militarnyi, 2024-12. Read 2026-10-09.
https://militarnyi.com/uk/news/v-rf-vidkryly-shkolu-pidgotovky-vodiyiv-kytajskyh-motovsyudyhodiv/

MIL36 DIU's Operation in the Black Sea: a Boat, Radar and Enemy Personnel Destroyed. Militarnyi, 2025 (page text undated; raid Aug 2025). Read 2026-10-17.
https://militarnyi.com/en/news/diu-s-operation-in-the-black-sea-a-boat-radar-and-enemy-personnel-destroyed/

MIL37 DIU Reveals Details of Russian Naval Drones: From Skanda to Kamikaze USVs. Militarnyi, undated in fetched text (c. 2026-08). Read 2026-10-17.
https://militarnyi.com/en/news/diu-reveals-details-of-russian-naval-drones-from-skanda-to-kamikaze-usvs/

MIL38 Ukrainian Forces Launch Missile Attack on Russian River Flotilla in Crimea. Militarnyi, 2025-12-22 (page metadata, datePublished). Read 2026-10-17.
https://militarnyi.com/en/news/ukrainian-forces-launch-missile-attack-on-russian-river-flotilla-in-crimea/

MIL39 Iran has not transferred launchers to Russia. Militarnyi, 2024-09. Read 2026-10-08.
https://militarnyi.com/en/news/iran-has-not-transferred-launchers-to-russia/

MIL40 Unmanned Systems Forces Shoot Down Russian Forpost-R Drone Over Kursk Region at 4.3 km Altitude. Militarnyi, 2026-07-27. Read 2026-10-02.
https://militarnyi.com/en/news/unmanned-systems-forces-shoot-down-russian-forpost-r-drone-over-kursk-region-at-4-3-km-altitude/

MIL41 Range of 50-65 km: Russians Modernized Fiber Optic FPV Drone Prince Vandal. Militarnyi, 2025-12-27. Read 2026-10-02. https://militarnyi.com/en/news/range-of-50-65-km-russians-modernized-fiber-optic-fpv-drone-prince-vandal/

MIL42 Russian Sobol Patrol Boats Get Camo and Drone Protection. Militarnyi, 2026-10-12 (page metadata). Read 2026-10-17. https://militarnyi.com/en/news/russian-sobol-patrol-boats-get-camo-and-drone-protection/

MIL43 Nine Crew Members Killed in Attack on Russian Grachonok Boat. Militarnyi, 2026-05-04 (page metadata; event of 30 April 2026). Read 2026-10-17. https://militarnyi.com/en/news/nine-killed-attack-russian-grachonok-boat/

MIL44 Ukrainian Defense Forces Hit Russian Mangust Patrol Boat in Crimea. Militarnyi, 2026-09-09 (page metadata). Read 2026-10-17. https://militarnyi.com/en/news/ukrainian-defense-forces-hit-russian-mangust-patrol-boat-in-crimea/

MIL45 Russia Develops Jet-Powered Version of Garpiya Strike Drone. Militarnyi, 2026-10-03. Read 2026-10-08. https://militarnyi.com/en/news/russia-jet-version-of-garpiya-strike-drone/

MIL46 Russians complete formation of first UAV regiment, present it at May 9 parade. Militarnyi, 2025-05. Read 2026-10-02. https://militarnyi.com/en/news/russians-completes-formation-of-first-uav-regiment-presents-it-at-may-9-parade/

MIL47 Ukraine's Unmanned Systems Forces destroy training base of Russian GROM Kaskad drone brigade. Militarnyi, 2026-09. Read 2026-10-02. https://militarnyi.com/en/news/ukraine-s-unmanned-systems-forces-destroy-training-base-of-russian-grom-kaskad-drone-brigade/

MIL48 Ukrainian intelligence releases detailed analysis of Russian Geran-3 jet-powered UAV (series U). Militarnyi, 2025-09. Read 2026-10-02. https://militarnyi.com/en/news/ukrainian-intelligence-releases-detailed-analysis-of-russian-geran-3-jet-powered-uav-series-u

MIL49 Caught on the Ground: NEMESIS Unmanned Systems Brigade Strikes Russian Gerbera UAV on Launch Vehicle. Militarnyi, 2025-12. Read 2026-10-02. https://militarnyi.com/en/news/caught-on-the-ground-nemesis-unmanned-systems-brigade-strikes-russian-gerbera-uav-on-launch-vehicle/

MIL50 Ukrainian Navy Strikes Two Russian Boats Guarding the Kerch Bridge. Militarnyi, 2026-04-30. Read 2026-10-17. https://militarnyi.com/en/news/ukrainian-navy-strikes-two-russian-boats-guarding-the-kerch-bridge/

MIL51 Drones and Artillery Strike Russian Navodchik-2 UAV. Militarnyi. Read 2026-10-03. https://militarnyi.com/en/news/drones-and-artillery-strike-russian-navodchik-2-uav/

MIL52 Ukrainian military destroys Russian R-934B Sinitsa electronic warfare station. Militarnyi, 2024-10 (inferred from image upload path; no date in text). Read 2026-09-29. https://militarnyi.com/en/news/ukrainian-military-destroys-russian-r-934b-sinitsa-electronic-warfare-station/

MIL53 Ukrainian bomber drones destroy two stations of Borisoglebsk-2 EW system. Militarnyi, 2025-04 (inferred from image upload path; no date in text). Read 2026-09-29. https://militarnyi.com/en/news/ukrainian-bomber-drones-destroy-two-stations-of-borisoglebsk-2-ew-system/

MIL54 Russian 9K333 Verba MANPADS mounted on Shahed drone shot down by Darknode Battalion soldiers. Militarnyi, 2026-01. Read 2026-10-07. https://militarnyi.com/en/news/russian-9k333-verba-manpads-mounted-on-shahed-drone-shot-down-by-darknode-battalion-soldiers/

MIL55 Sumy Missile Attack Traced to Russia's 112th and 448th Brigades. Militarnyi, 2025-04-13. Read 2026-09-29. https://militarnyi.com/en/news/sumy-missile-attack-traced-to-russia-s-112th-and-448th-brigades/

MIL56 Portuguese-Transferred Ka-32 to Respond to Aftermath of Strike on Kyiv. Militarnyi, 2025-06-10. Read 2026-10-16. https://militarnyi.com/en/news/portuguese-transferred-ka-32-to-respond-to-aftermath-of-strike-on-kyiv/

MIL57 Know your enemy: Russian military aviation in European Russia and temporarily occupied Crimea. Militarnyi (blog), 2026-01. Read 2026-10-21. https://militarnyi.com/en/blogs/know-your-enemy-russian-military-aviation-in-european-russia-and-temporarily-occupied-crimea/

MIL58 Artillery hits elements of Russian 35N6 Kasta radar. Militarnyi, 2025. Read 2026-10-06. https://militarnyi.com/en/news/artillery-hits-elements-of-russian-35n6-kasta-radar/

MIL59 Russia monitors the sky of Kharkiv region with the Kasta-2E2 radar station. Militarnyi. Read 2026-10-06. https://militarnyi.com/en/news/russia-monitors-the-sky-of-kharkiv-region-with-the-kasta-2e2-radar-station/

MIL60 A warhead of state-of-the-art Russian Kh-69 missile is neutralized in Kyiv. Militarnyi, 2024 (no dateline in the fetched text; year from page context). Read 2026-10-21. https://militarnyi.com/en/news/a-warhead-of-state-of-the-art-russian-kh-69-missile-is-neutralized-in-kyiv/

MIL61 Russia launches new version of Kh-69 missile at Ukraine. Militarnyi, 2024-10. Read 2026-10-21. https://militarnyi.com/en/news/russia-launches-new-version-of-kh-69-missile-at-ukraine/

MIL62 Russians claim to have increased production of Kitolov laser-guided shells that have not even been spotted at the front. Militarnyi, 2025. Read 2026-10-20. https://militarnyi.com/en/news/russians-claim-to-have-increased-production-of-kitolov-laser-guided-shells-that-have-not-even-been-spotted-at-the-front/

MIL63 Russia Resumes Use of the KN-23: North Korean Ballistic Missile Strikes Dnipropetrovsk Region. Militarnyi, 2026-07-30. Read 2026-10-08. https://militarnyi.com/en/news/russia-kn-23-ballistic-missile-strikes/

MIL64 Russia has armed one of the newly established artillery brigades with Koksan SPGs. Militarnyi, 2025-05-21. Read 2026-10-08. https://militarnyi.com/en/news/russia-has-armed-one-of-the-newly-established-artillery-brigades-with-koksan-spgs/

MIL65 Dovha ruka Kim Ir Sena: SAU Koksan (blog, A. Kharuk). Militarnyi, 2023-08-04. Read 2026-10-08. https://militarnyi.com/uk/blogs/dovga-ruka-kim-ir-sena/

MIL66 Ukrainian artillery is firing trophy shells Krasnopol. Militarnyi, n.d. (2023). Read 2026-10-20. https://militarnyi.com/en/news/ukrainian-artillery-is-firing-trophy-shells-krasnopol/

MIL67 In the Kyiv region, Russian servicemen has lost part of the Krasukha-4 EW system. Militarnyi, 2022-03-23. Read 2026-09-29. https://militarnyi.com/en/news/in-the-kyiv-region-russian-servicemen-has-lost-part-of-the-krasukha-4-ew-system/

MIL68 Ukrainian Forces eliminate Russian Krasukha-4 EW System in Zaporizhzhia region. Militarnyi, 2023-11-01. Read 2026-09-29. https://militarnyi.com/en/news/ukrainian-forces-eliminate-russian-krasukha-4-ew-system-in-zaporizhzhia-region/

MIL69 Hackers Leak Detailed Photos of Russian EW System 1RL257 Krasukha-4. Militarnyi, 2025-10-09. Read 2026-09-29. https://militarnyi.com/en/news/hackers-leak-detailed-photos-of-russian-ew-system-1rl257-krasukha-4/

MIL70 ZALA Lancet: engagement and countereffort (Yan). Militarnyi, 2023-07-18. Read 2026-10-03. https://militarnyi.com/en/articles/zala-lancet-engagement-and-countereffort/

MIL71 Ukrainian Defence Forces destroyed the Russian Leer-2 EW system. Militarnyi, 2023-11. Read 2026-09-29. https://militarnyi.com/en/news/ukrainian-defence-forces-destroyed-the-russian-leer-2-ew-system/

MIL72 Mykolaiv paratroopers shot down enemy drone capable of jamming GSM connection. Militarnyi. Read 2026-10-02. https://militarnyi.com/en/news/mykolaiv-paratroopers-shot-down-enemy-drone-capable-of-jamming-gsm-connection/

MIL73 Armed Forces destroyed APC with an RP-377 EW system, Kherson left bank. Militarnyi, 2024. Read 2026-10-06. https://militarnyi.com/en/news/the-armed-forces-destroyed-the-apc-with-an-rp-377-ew-system-on-the-left-bank-of-the-kherson-region/

MIL74 Armed Forces of Ukraine seize new Russian Buran armored vehicle in Kursk oblast. Militarnyi, 2024. Read 2026-10-03. https://militarnyi.com/en/news/armed-forces-of-ukraine-seize-new-russian-buran-armored-vehicle-in-kursk-oblast/

MIL75 North Korea Supplies Russia with 240mm M-1991 Rocket Launchers. Militarnyi, 2025-04-20. Read 2026-10-08. https://militarnyi.com/en/news/north-korea-supplies-russia-with-240mm-m-1991-rocket-launchers/

MIL76 Mi-28 helicopter hunting for drones crashes in Russia. Militarnyi, 2024-07-25 (from the weekday and date in the text). Read 2026-10-16. https://militarnyi.com/en/news/mi-28-helicopter-hunting-for-drones-crashes-in-russia/

MIL77 Russian pilot hands over Mi-8 helicopter with spare parts for fighter jets to Ukraine's Defence Intelligence. Militarnyi, 2023-08-23. Read 2026-10-16. https://militarnyi.com/en/news/russian-pilot-hands-over-mi-8-helicopter-with-spare-parts-for-fighter-jets-to-ukraine-s-defence-intelligence/

MIL78 Росіяни, ймовірно, втратили рідкісний гелікоптер РЕБ Ми-8МТПР-1. Militarnyi. Read 2026-10-16. https://militarnyi.com/uk/news/rosiyany-vtratyly-ridkisnyj-gelikopter-reb-my-8mtpr-1/

MIL79 Ukrainian military for the first time shot down Iranian Mohajer-6. Militarnyi, 2022-09-23. Read 2026-10-02. https://militarnyi.com/en/news/ukrainian-military-for-the-first-time-shot-down-iranian-mohajer-6-drone-used-by-russians/

MIL80 Russia's own Mohajer-6 drone spotted crashed in Kursk region. Militarnyi, 2024-05. Read 2026-10-02. https://militarnyi.com/en/news/russia-s-own-mohajer-6-drone-spotted-crashed-in-kursk-region/

MIL81 In Crimea, SSU struck Iranian Mohajer-6 drone and Pantsir-S2 systems. Militarnyi, 2026-03-06. Read 2026-10-02. https://militarnyi.com/en/news/in-crimea-ssu-struck-mohajer-6-pantsir-s2/

MIL82 Ukrainian Forces Shoot Down AI-Equipped Molniya UAV for the First Time. Militarnyi, 2026-06. Read 2026-10-02. https://militarnyi.com/en/news/ukraine-shoot-down-ai-molniya-uav-first/

MIL83 General Cherry AIR Drones Downed Over 1000 Russian Molniya UAVs in December. Militarnyi, 2026-01. Read 2026-10-02. https://militarnyi.com/en/news/general-cherry-air-drones-downed-over-1000-russian-molniya-uavs-in-december/

MIL84 Lightning 13: РФ розробила нову версію ударного БпЛА «Молния». Militarnyi (Ukrainian edition), 2026-06. Read 2026-10-02. https://militarnyi.com/uk/news/lightning-13-versiyu-udarnogo-bpla-molnyya/

MIL85 Russians Set Ambushes for Ukrainian Drones Using MON-100 and MON-90 Mines. Militarnyi, 2024-10-21. Read 2026-10-22. https://militarnyi.com/en/news/russians-set-ambushes-for-ukrainian-drones-using-mon-100-and-mon-90-mines/

MIL86 HIMARS destroyed a battery of Russian Msta-S. Militarnyi, 2023-06-14. Read 2026-09-29. https://militarnyi.com/en/news/himars-destroyed-a-battalion-of-russian-msta-s/

MIL87 MT-LB: combat chariot of the Russo-Ukrainian war. Militarnyi, 2023. Read 2026-10-03. https://militarnyi.com/en/articles/mt-lb-combat-chariot-of-the-russo-ukrainian-war

MIL88 Russian invaders lost a rare MT-LB 6MB. Militarnyi, undated (2022-2023). Read 2026-10-03. https://militarnyi.com/en/news/russian-invaders-lost-a-rare-mt-lb-6mb/

MIL89 РФ відправляє в Україну 80-ту арктичну бригаду з фінського кордону. Militarnyi, 2022. Read 2026-10-03. https://militarnyi.com/uk/news/rf-vidpravlyaye-v-ukrayinu-80-tu-arktychnu-brygadu-z-finskogo-kordonu-popry-vstup-krayiny-v-nato/

MIL90 Defense Intelligence of Ukraine Struck Russian Murmansk-BN Electronic Warfare station in Crimea. Militarnyi, 2026-07. Read 2026-09-29. https://militarnyi.com/en/news/diu-struck-murmansk-bn-ew-station-in-crimea/

MIL91 Ukrainian Armed Forces Destroy Russian 1L119 Nebo-SVU Radar in Kherson Region. Militarnyi, 2024-01. Read 2026-10-06. https://militarnyi.com/en/news/ukrainian-armed-forces-destroy-russian-1l119-nebo-svu-radar-in-kherson-region/

MIL92 Минулого літа 14-й полк БпАК уразив російську РЛС «Ниобий-СВ». З'явилося офіційне відео. Militarnyi, 2025 (page undated). Read 2026-10-08. https://militarnyi.com/uk/news/mynulogo-lita-14-j-polk-bpak-urazyv-rosijsku-rls-nyobyj-sv-z-yavylosya-oftsijne-video/

MIL93 The commander of the 3rd Signals Intelligence Regiment was eliminated in Crimea. Militarnyi, 2024-01. Read 2026-10-06. https://militarnyi.com/en/news/the-commander-of-the-3rd-signals-intelligence-regiment-was-eliminated-in-crimea/

MIL94 Десантний катер «Сватове» (L434). Militarnyi. Read 2026-10-16. https://militarnyi.com/uk/articles/desantnyj-kater-svatove-l434/

MIL95 Окупанти відновили потоплений біля Маріуполя десантний катер Д-106. Militarnyi, undated (text refers to Feb and Mar 2024). Read 2026-10-16. https://militarnyi.com/uk/news/okupanty-vidnovyly-potoplenyj-bilya-mariupolya-desantnyj-kater-d-106/

MIL96 Ukrainian Armed Force destroy the Russian Palantin-K EW system for the first time. Militarnyi, 2023-02. Read 2026-09-29. https://militarnyi.com/en/news/ukrainian-armed-force-destroy-the-russian-palantin-k-ew-system-for-the-first-time/

MIL97 Ukrainian Special Forces Eliminate Russian Palantin EW System. Militarnyi, 2024-03-11. Read 2026-09-29. https://militarnyi.com/en/news/ukrainian-special-forces-eliminate-russian-palantin-ew-system/

MIL98 Belarus Supplying Russia With MZKT Armored Chassis for New Pantsir Version Since 2024. Militarnyi, 2025-11. Read 2026-09-29. https://militarnyi.com/en/news/belarus-supplying-russia-with-mzkt-armored-chassis-for-new-pantsir-version-since-2024/

MIL99 Hunting for Uragan rocket launchers (Полювання на реактивні Урагани). Militarnyi (Ukraine), 2025. Read 2026-10-21. https://militarnyi.com/uk/articles/polyuvannya-na-reaktyvni-uragany-yak-ukrayinski-fpv-drony-ta-himars-nyshhat-rosijski-rszv/

MIL100 Ukrainian Special Operation Forces destroyed a pontoon unit in the Kursk region. Militarnyi, 2024-08. Read 2026-09-29. https://militarnyi.com/en/news/ukrainian-special-operation-forces-destroyed-a-pontoon-unit-in-the-kursk-region/

MIL101 Russians are mining the territory of Ukraine with POM-3 Medallion landmines. Militarnyi, 2022. Read 2026-10-21. https://militarnyi.com/en/news/russians-are-mining-the-territory-of-ukraine-with-pom-3-medallion-landmines/

MIL102 Russian military use Strizh-3 EW systems against Ukrainian drones. Militarnyi, 2024. Read 2026-10-06. https://militarnyi.com/en/news/russian-military-use-strizh-3-ew-systems-against-ukrainian-drones/

MIL103 Transcarpathian brigade captured the Silok-01 EW system. Militarnyi, 2022. Read 2026-10-06. https://militarnyi.com/en/news/transcarpathian-brigade-captured-the-silok-01-ew-system/

MIL104 Russians Lost Rare PRP-4 Vehicles in Combat. Militarnyi, 2025-11-07. Read 2026-09-29.
https://militarnyi.com/en/news/russians-lost-rare-prp-4-vehicles-in-combat/

MIL105 Russia uses PTM-4 anti-tank mines in Ukraine. Militarnyi, 2022-06. Read 2026-10-21.
https://militarnyi.com/uk/news/rosiya-zastosovuye-v-ukrayini-protytankovi-miny-ptm-4/

MIL106 The Ukrainian military seized a Russian R-149MA1 command post carrier. Militarnyi, 2022. Read 2026-09-29.
https://militarnyi.com/en/news/the-ukrainian-military-seized-a-russian-r-149ma1-command-post-carrier/

MIL107 The Armed Forces had seized the russian R-166-0.5 radio station in the Sumy region. Militarnyi, 2022. Read 2026-10-03.
https://militarnyi.com/en/news/the-armed-forces-had-seized-the-russian-r-166-0-5-radio-station-in-the-sumy-region/

MIL108 Українські війська знищили російський катер «Раптор» у Криму. Militarnyi, 2026-03-15. Read 2026-10-16.
https://militarnyi.com/uk/news/ukrayinski-vijska-znyshhyly-rosijskyj-kater-raptor-u-krymu/

MIL109 Ukrainian Drones Strike Tor, Redut-2US, and Kaira Operator Post. Militarnyi, 2026-05-14. Read 2026-10-04.
https://militarnyi.com/en/news/ukraine-drones-strike-tor-redut-2us-kaira/

MIL110 Zaporizhzhia Region: Invaders' Uragan-1 Firing at Civilians Tracked Down and Destroyed. Militarnyi, undated in fetched text. Read 2026-10-20.
https://militarnyi.com/en/news/zaporizhzhia-region-invaders-uragan-1/

MIL111 Russia presents Drakon TOS-3 MRL for the first time. Militarnyi, 2024-06-04. Read 2026-10-21.
https://militarnyi.com/en/news/russia-presents-drakon-tos-3-mrl-for-the-first-time/

MIL112 Ukrainian Defence Forces use Iranian 120mm mortar rounds. Militarnyi, undated (c. 2022-23). Read 2026-10-20.
https://militarnyi.com/en/news/ukrainian-defence-forces-use-iranian-120mm-mortar-rounds/

MIL113 Cluster munitions of war in Ukraine. Militarnyi, 2023. Read 2026-10-20.
https://militarnyi.com/en/articles/cluster-munitions-of-war-in-ukraine/

MIL114 Russian army receives the batch of 2S19M1 Msta-S self-propelled guns. Militarnyi, 2023. Read 2026-10-20.
https://militarnyi.com/en/news/russian-army-receives-the-batch-of-2s19m1-msta-s-self-propelled-guns/

MIL115 Role of 2S7 Pion in battle for Ukraine. Militarnyi. Read 2026-10-20.
https://militarnyi.com/en/articles/role-of-2s7-pion-in-battle-for-ukraine/

MIL116 Strike on Novorossiysk: Sheskharis oil terminal and air-defense base hit. Militarnyi, 2025-11-14. Read 2026-09-29.
https://militarnyi.com/en/news/strike-on-novorossiysk-sheskharis-oil-terminal-and-air-defense-base-hit/

MIL117 Satellite images confirm destruction of S-400 launchers and radars in Novorossiysk. Militarnyi, 2025-11. Read 2026-09-29.
https://militarnyi.com/en/news/satellite-images-confirm-destruction-of-s-400-launchers-and-radars-in-novorossiysk/

MIL118 Iran Introduces New Shahed-107 Kamikaze Drone. Here's What Sets it Apart. Militarnyi, 2025-06. Read 2026-10-16.
https://militarnyi.com/en/news/iran-introduces-new-shahed-107-kamikaze-drone-here-s-what-sets-it-apart/

MIL119 23 мм зенітна самохідна установка ЗСУ-23-4 «Шилка» 2А6. Militarnyi. Read 2026-10-07.
https://militarnyi.com/uk/articles/23-mm-zenitna-samohidna-ustanovka-shylka-2a6/

MIL120 Росіяни залучили ЗСУ-23-4 «Шилка» до штурму позицій українських десантників. Militarnyi, 2024-11 (inferred from image upload path). Read 2026-10-07.
https://militarnyi.com/uk/news/rosiyany-zaluchyly-zsu-23-4-shylka-do-shturmu-pozytsij-ukrayinskyh-desantnykiv/

MIL121 T-54 and T-55: What are those tanks, and how Russia uses them against Ukraine. Militarnyi, 2023-07. Read 2026-10-02.
https://militarnyi.com/en/articles/t-54-and-t-55-what-are-those-tanks-and-how-russia-uses-them-against-ukraine/

MIL122 Russians Show T-62M and T-62MV Tanks Upgrades: Self-Entrenching Blades, Tank Sweeps and EW. Militarnyi. Read 2026-10-03.
https://militarnyi.com/en/news/russians-show-t-62m-and-t-62mv-tanks-upgrades-self-entrenching-blades-tank-sweeps-and-ew/

MIL123 Russia is using a T-72B3M tank designed for the Tank Biathlon competition in the war with Ukraine. Militarnyi, 2022-09. Read 2026-10-16.
https://militarnyi.com/en/news/russia-is-using-a-t-72b3m-tank-designed-for-the-tank-biathlon-competition-in-the-war-with-ukraine/

MIL124 Russia updates T-72B3 tank modernization package. Militarnyi, 2024-08-01. Read 2026-10-16.
https://militarnyi.com/en/news/russia-updates-t-72b3-tank-modernization-package/

MIL125 Details of the elimination of the first T-90M Proryv in the Kharkiv region have appeared. Militarnyi, 2022-05. Read 2026-10-02.
https://militarnyi.com/en/news/details-of-the-elimination-of-the-first-t-90m-proryv-in-the-kharkiv-region-have-appeared/

MIL126 Drones of National Guard disrupted MTU-72 bridge layer in Donetsk (Militarnyi). Militarnyi, 2025-12-03. Read 2026-09-29.
https://militarnyi.com/uk/news/drony-natsgvardiyi-zirvaly-robotu-mostoukladacha-mtu-72-na-donechchyni/

MIL127 Ukrainian army captured Russian Torn-MDM SIGINT system. Militarnyi, 2022-03. Read 2026-10-06.
https://militarnyi.com/en/news/ukrainian-army-captured-russian-torn-mdm-sigint-system/

MIL128 Solntsepyok, Buratino, and Tosochka: The Threat of Russian Thermobaric Flamethrowers in Ukraine (Kozatskyi). Militarnyi, 2024-10-14. Read 2026-09-29.
https://militarnyi.com/en/articles/solntsepyok-buratino-and-tosochka-the-threat-of-russian-thermobaric-flamethrowers-in-ukraine/

MIL129 Russians lost the state-of-the-art TOS-2 Tosochka flamethrower system. Militarnyi, 2025-02-16. Read 2026-09-29.
https://militarnyi.com/en/news/russians-lost-the-state-of-the-art-tos-2-tosochka-flamethrower-system/

MIL130 In Russia, the development of Pantsir-SM-SV air defense system has been advanced. Militarnyi, 2024-01-06. Read 2026-10-08.
https://militarnyi.com/en/news/in-russia-the-development-of-pantsir-sm-sv-air-defense-system-has-been-advanced/

MIL131 Russia modernizes BM-27 Uragan rocket launchers with BAZ-69092 chassis upgrade. Militarnyi, 2023-12-20. Read 2026-09-29.
https://militarnyi.com/en/news/russia-modernizes-bm-27-uragan-rocket-launchers-with-baz-69092-chassis-upgrade/

MIL132 Сили оборони знищили рідкісну РСЗВ «Ураган» на шасі вантажівки «БАЗ». Militarnyi, 2024-08-25. Read 2026-09-29.
https://militarnyi.com/uk/news/syly-oborony-znyshhyly-ridkisnu-rszv-uragan-na-shasi-vantazhivky-baz/

MIL133 Tornado-U trophy armored vehicle restored for Kraken Regiment. Militarnyi, 2023-09. Read 2026-10-04.
https://militarnyi.com/en/news/tornado-u-trophy-armored-vehicle-restored-for-kraken-regiment/

MIL134 Russia receives upgraded Vikhr-1 missiles for Ka-52 attack helicopters. Militarnyi, n.d. (reports the Kalashnikov announcement of Nov 2025). Read 2026-10-21.
https://militarnyi.com/en/news/russia-receives-upgraded-vikhr-1-missiles-for-ka-52-attack-helicopters/

MIL135 Ukrainian Armed Forces captured the Russian Vityaz DT-30. Militarnyi, 2023 (from text). Read 2026-10-19.
https://militarnyi.com/en/news/ukrainian-armed-forces-captured-the-russian-vityaz-dt-30/

MIL136 Defence Intelligence of Ukraine Destroys Russian Vityaz All-Terrain Vehicle on Tendra Spit. Militarnyi, 2025-09-19. Read 2026-10-19.
https://militarnyi.com/en/news/defence-intelligence-of-ukraine-destroys-russian-vityaz-all-terrain-vehicle-on-tendra-spit/

MIL137 Ukrainian forces target Russian counter-battery radars: what was hit and why it matters. Militarnyi, 2025. Read 2026-10-06.
https://militarnyi.com/en/articles/ukrainian-forces-target-russian-counter-battery-radars-what-was-hit-and-why-it-matters/

MIL138 Russia deploys the newest Yastreb-AV system to war against Ukraine. Militarnyi, 2024-01. Read 2026-10-06.
https://militarnyi.com/en/news/russia-deploys-the-newest-yastreb-av-system-to-war-against-ukraine/

MIL139 HIMARS hits a rare Russian Yastreb-AV radar in the Donetsk region. Militarnyi, 2024. Read 2026-10-06.
https://militarnyi.com/en/news/himars-hits-a-rare-russian-yastreb-av-radar-in-the-donetsk-region/

MIL140 Ukrainian Defense Destroys New Russian Yastreb-AV Radar in Donetsk Region. Militarnyi, 2024. Read 2026-10-06.
https://militarnyi.com/en/news/ukrainian-defense-destroys-new-russian-yastreb-av-radar-in-donetsk-region/

MIL141 The Ukrainian servicemen shot down an enemy ZALA 421-16E2 drone. Militarnyi, 2022-05 (approx.). Read 2026-10-02.
https://militarnyi.com/en/news/the-ukrainian-servicemen-shot-down-an-enemy-zala-421-16e2-drone/

MIL142 Modern Russian ZALA 421-16E2 UAV neutralized near Izium. Militarnyi, 2022-07 (approx.). Read 2026-10-02.
https://militarnyi.com/en/news/modern-russian-zala-421-16e2-uav-neutralized-near-izium/

MIL143 Ukrainian Bukovel-AD EW system landed Russian ZALA 421-16E2 UAV. Militarnyi, 2023-03 (approx.). Read 2026-10-02.
https://militarnyi.com/en/news/ukrainian-bukovel-ad-ew-system-landed-russian-zala-421-16e2-uav/

MIL144 The Russians lost two Zala UAVs that were adjusting strikes in Ukraine. Militarnyi, 2024-07 (approx.). Read 2026-10-02.
https://militarnyi.com/en/news/the-russians-lost-two-zala-uavs-that-were-adjusting-strikes-in-ukraine/

MIL145 Russians Use Chinese-made ZFB-05 Armored Vehicles at Front Line. Militarnyi, 2024-09 (date not printed). Read 2026-10-16.
https://militarnyi.com/en/news/russians-use-chinese-made-zfb-05-armored-vehicles-at-front-line/

MIL146 Chinese Tiger armored vehicles arrived in Russia. Militarnyi, 2023-06 (date not printed). Read 2026-10-16.
https://militarnyi.com/en/news/tiger-armored-vehicles-arrived-from-china-to-russia/

MIL147 Russian R-330Zh Zhitel EW system destroyed in the Kharkiv Region. Militarnyi, 2022-09. Read 2026-09-29.
https://militarnyi.com/en/news/russian-r-330zh-zhitel-ew-system-destroyed-in-the-kharkiv-region/

MIL148 Ukrainian military hit 4 Zoopark-1 radar stations. Militarnyi, 2023-11-04. Read 2026-09-29.
https://militarnyi.com/en/news/ukrainian-military-hit-4-zoopark-1-radar-stations/

MIL149 Destroyed Zoopark-1M radar found in Kherson region. Militarnyi, 2023-02. Read 2026-09-29.
https://militarnyi.com/en/news/destroyed-zoopark-1m-radar-found-in-kherson-region/

MIL150 Nemesis regiment destroys first North Korean M1989 Koksan SAU. Militarnyi, 2025-02-18.
https://mil.in.ua/en/news/nemesis-regiment-destroys-first-north-korean-m1989-koksan-sam

MIL151 Ukrainian paratroopers down Russian Orion UAV over Kursk oblast. Militarnyi, 2024-10.
https://mil.in.ua/en/news/ukrainian-paratroopers-down-russian-orion-uav-over-kursk-oblast

MIL152 Ukrainian troops destroyed Russian Uragan MLRS in the Kharkiv sector. Militarnyi, 2024-07.
https://mil.in.ua/en/news/ukrainian-troops-destroyed-russian-uragan-mlrs-in-the-kharkiv-sector

MIL210 Intelligence: In addition to Koksan, Russia received 240mm MRLs from the DPRK. Militarnyi, 2024-11-17.
https://mil.in.ua/en/news/intelligence-in-addition-to-koksan-russia-received-240mm-mrls-from-the-dprk

MIL922 The 92nd Mechanized Brigade destroyed the Russian Orlan-10 UAV mobile control post. Militarnyi, 2023.
https://mil.in.ua/en/news/the-92nd-mechanized-brigade-of-the-armed-forces-of-ukraine-destroyed-the-russian-orlan-10-uav-mobile-control-post/

MILBY TDA-2K, Voyska RKhB zashchity, equipment page. Ministry of Defence of Belarus.
https://www.mil.by/ru/forces/special/rhbz/equipment/542/8369/

MILEN Ukrainian Intelligence Hits Invaders' Ships. Militarnyi, 2023-11-10 (from page content; page prints no date).
https://mil.in.ua/en/news/ukrainian-intelligence-hits-invaders-ships

MILIN At the end of October the Russian army received a new batch of BMP-3. Militarnyi, 2023-11-02.
https://mil.in.ua/en/news/at-the-end-of-october-the-russian-army-received-a-new-batch-of-bmp-3

MILIN2 Russians stormed Ukrainian positions on golf carts. Militarnyi (mil.in.ua), 2024.
https://mil.in.ua/en/news/russians-stormed-ukrainian-positions-on-golf-carts

MILIN3 Sturm-SM ATGM-vehicle passed state tests. Militarnyi, 2024-01.
https://mil.in.ua/en/news/sturm-sm-atgm-vehicle-passed-state-tests/

MILIN4 The Russian army received a batch of modernized T-80BVM tanks. Militarnyi (mil.in.ua), undated, c. 2024.
https://mil.in.ua/en/news/the-russian-army-received-a-batch-of-modernized-t-80bvm-tanks

MILINF Военный Осведомитель, Telegram post 70948. Voenny Osvedomitel (Telegram channel), 2021-09-04.
https://t.me/s/milinfolive/70948

MILM30 Russians start using a World War II-era M-30 howitzers. Militarnyi (mil.in.ua), 2024.
https://mil.in.ua/en/news/russians-start-using-a-world-war-ii-era-m-30-howitzers/

MILN Russian 203mm Pion self-propelled guns were destroyed in the Kherson region. Militarnyi, 2022.
https://mil.in.ua/en/news/russian-203mm-pion-self-propelled-guns-were-destroyed-in-the-kherson-region

MILNYI Russians published evidence of Tochka-U missile system use in Ukraine by their troops. Militarnyi, 2022.
https://mil.in.ua/en/news/russians-published-evidence-of-tochka-u-missile-system-use-in-ukraine-by-their-troops/

MILPER 82-mm 2B14 Podnos overview. Military Periscope.
https://www.militaryperiscope.com/weapons/artillery/mortars/82-mm-2b14-podnos/overview/

MILPER2 MLZh-VT pontoon bridge (overview). Military Periscope.
https://www.militaryperiscope.com/weapons/ground-combat-vehicles/combat-support/mlzh-vt-pontoon-bridge/overview/

MILPER3 ONDATRA (LCM) class (Russia). Military Periscope.
https://www.militaryperiscope.com/weapons/ships/amphibious/ondatra-lcm-class-russia/

MILRU 96Л6-1 / 96Л6E Всевысотный обнаружитель. MilitaryRussia.ru (DIMMI), 2014-05-07. Read 2026-09-29.
https://web.archive.org/web/2026/http://militaryrussia.ru/blog/topic-805.html

MILUA Ukrainian defenders destroy Russian Aleut swamp buggy. Militarnyi, undated (Aleut loss 2022 referred to as earlier).
https://mil.in.ua/en/news/ukrainian-defenders-destroy-russian-aleut-swamp-buggy/

MILUA2 Ukrainian border guards seized newest Russian T-16 UAV. Militarnyi (mil.in.ua), 2023-08.
https://mil.in.ua/en/news/ukrainian-border-guards-seized-newest-russian-t-16-uav

MILUA3 The drone found in Kyiv region turned out to be a new Russian Gerbera UAV. Ukrainian Military Center (mil.in.ua), 2024-07-29.
https://mil.in.ua/en/news/the-drone-found-in-kyiv-region-turned-out-to-be-a-new-russian-gerbera-uav/

MILUA4 Українські бійці збили з ПЗРК російський вертоліт Ми-35М. Militarnyi (mil.in.ua), undated in text (Wikipedia reference gives 2022-06-16).
https://mil.in.ua/uk/news/na-donechchyni-ter11oborona-ukrayiny-zbyla-rosijskyj-vertolit-my-35m/

MILUA5 Ukrainian troops seize Russian satellite communications station in Kursk Oblast. Militarnyi (mil.in.ua), 2024.
https://mil.in.ua/en/news/ukrainian-troops-seize-russian-satellite-communications-station-in-kursk-oblast

MILUA6 SNAR-10M1 radar reconnaissance station seized in Ukraine. Militarnyi, 2022-04.
https://mil.in.ua/en/news/the-snar-10m1-radar-reconnaissance-station-of-the-russian-army-was-seized-in-ukraine/

MILUA7 Ukrainian FPV-drones hit Russian minelayers. Militarnyi (mil.in.ua), 2023.
https://mil.in.ua/en/news/ukrainian-fpv-drones-hit-russian-minelayers/

MILUA8 Luhansk region: Ukrainian troops used UR-77 Meteorit mine clearing vehicle. Militarnyi, 2024.
https://mil.in.ua/en/news/luhansk-region-ukrainian-troops-used-ur-77-meteorit-mine-clearing-vehicle-against-russian-invaders

MILUA22 Armed Forces captured upgraded Russian BMP-2M in Kherson Region. Militarnyi (mil.in.ua), 2022.
https://mil.in.ua/en/news/armed-forces-captured-upgraded-russian-bmp-2m-in-kherson-region/

MILUA23 Special Operations Forces operators seized russian Eleron UAV. Militarnyi (mil.in.ua), 2022.
https://mil.in.ua/en/news/special-operations-forces-operators-seized-russian-eleron-uav/

MILUA24 Ukrainian National Guard destroys Russian armored group with rarely protected BMP-2. Militarnyi (mil.in.ua), 2024.
https://mil.in.ua/en/news/ukrainian-national-guard-destroys-russian-armored-group-with-rarely-protected-bmp-2

MINFORM Amur servicemen received new KamAZ-65225 tractors (Military Informant), search result summary. Military Informant.
https://military-informant.com/army/1-sp-1868560589.html

MINS Russia Cages Black Sea Fleet Grachonok Patrol Boats After Repeated Ukrainian Drone Strikes. Marine Insight, 2026-05-12.
https://www.marineinsight.com/russia-cages-black-sea-fleet-grachonok-patrol-boats-after-repeated-ukrainian-drone-strikes/

MISS1 Anti-aircraft missile system 9K37 Buk-M1 (EN and RU pages). Missilery.info. Read 2026-09-29.
https://en.missilery.info/missile/bukm1

MISS2 Зенитный ракетный комплекс средней дальности 9К317 «Бук-М2». Missilery.info. Read 2026-09-29.
https://missilery.info/missile/buk-2m

MISS3 Зенитный ракетный комплекс средней дальности 9К317М «Бук-М3». Missilery.info. Read 2026-09-29.
https://missilery.info/missile/bukm3

MISS4 Зенитный ракетный комплекс 2К12 «Куб». Missilery.info. Read 2026-09-29.
https://missilery.info/missile/kub

MISS5 Зенитный ракетный комплекс «Тор-М2Э». Missilery.info. Read 2026-09-29.
https://missilery.info/missile/tor-m²

MISS6 Игла-С. missilery.info. Read 2026-10-07.
https://missilery.info/missile/igla-c

MISS7 РСЗО 9К51 «Град». missilery.info. Read 2026-09-29.
https://missilery.info/missile/grad

MISS8 Переносной зенитный ракетный комплекс 9К38 «Игла». missilery.info (Ракетная техника). Read 2026-10-07.
https://missilery.info/missile/igla

MISS9 Переносной зенитный ракетный комплекс 9К310 «Игла-1». missilery.info (Ракетная техника). Read 2026-10-07.
https://missilery.info/missile/igla1

MISS10 9K720 Iskander operational-tactical missile system. missilery.info. Read 2026-09-29.
https://en.missilery.info/missile/iscander

MISS11 Тактическая ракета средней дальности Х-59. missilery.info. Read 2026-10-20.
https://missilery.info/missile/x59

MISS12 Ракета Х-59М «Овод-М». missilery.info. Read 2026-10-20.
https://missilery.info/missile/x59m

MISS13 Ракета Х-59МК / Х-59МК2. missilery.info. Read 2026-10-20.
https://missilery.info/missile/x59mk

MISS14 Kornet anti-tank missile system. missilery.info. Read 2026-10-07.
https://en.missilery.info/missile/cornet

MISS15 Противотанковый ракетный комплекс 9П149 Штурм-С. missilery.info (Ракетная техника). Read 2026-10-20.
https://missilery.info/missile/shturms

MISS16 9K113 Konkurs antitank missile system. missilery.info. Read 2026-10-07.
https://en.missilery.info/missile/concurs

MISS17 Contest-M (Konkurs-M) anti-tank missile system. missilery.info. Read 2026-10-07.
https://en.missilery.info/missile/concursm

MISS18 Portable anti-tank complex 9K111 Fagot. missilery.info. Read 2026-10-07.
https://en.missilery.info/missile/fagot

MISS19 Противотанковый ракетный комплекс 9К135 «Корнет». missilery.info. Read 2026-10-20.
https://missilery.info/missile/cornet

MISS20 Атака-В. missilery.info. Read 2026-10-16.
https://missilery.info/missile/ataka

MISS21 Universal anti-aircraft missile and gun system Pantsir-S1. missilery.info (Raketnaya tekhnika). Read 2026-10-01.
https://en.missilery.info/missile/panz

MISS22 M-21 Field rocket system (missilery.info, S. V. Gurov). missilery.info, 2026. Read 2026-10-20.
https://en.missilery.info/missile/grad

MISS23 Smerch (en.missilery.info). missilery.info, 2026. Read 2026-10-20.
https://en.missilery.info/missile/smerch

MISS24 9K515 Tornado-S (missilery.info, Russian). missilery.info, 2026. Read 2026-10-20.
https://missilery.info/missile/tornado-s

MISS25 Heavy flamethrower system TOS-1A (rocket data sheet). missilery.info. Read 2026-10-20.
https://en.missilery.info/missile/tos-1a

MISS26 Anti-aircraft missile system S-300V / S-300VM Antey-2500. missilery.info. Read 2026-09-29.
https://en.missilery.info/missile/c300v

MISS27 Anti-aircraft missile system 9K33 Wasp. missilery.info. Read 2026-09-29.
https://en.missilery.info/missile/osa

MISS28 Тактический ракетный комплекс 9К79-1 Точка-У. missilery.info (Ракетная техника). Read 2026-10-06.
https://missilery.info/missile/tochka

MISS29 Anti-aircraft missile system Tor-M2E. missilery.info. Read 2026-09-29.
https://en.missilery.info/missile/tor-m²

MISS30 Переносной зенитный ракетный комплекс 9К333 «Верба». missilery.info. Read 2026-10-07.
https://missilery.info/missile/verba

MISS31 Antitank complex 9K121 Vortex (missilery.info). missilery.info. Read 2026-10-21.
https://en.missilery.info/missile/vichr

MK Беспилотники «Форпост» поставлены на Тихоокеанский флот. Moskovsky Komsomolets, 2014-01-16.
https://www.mk.ru/politics/army/news/2014/01/16/971083-bespilotniki-quotforpostquot-postavlenyi-na-tihookeanskiy-flot.html

MK2 «Длинная рука» артиллерии: расчет «Торнадо-С» уничтожил скопление ВСУ. Moskovsky Komsomolets, 2025-04-09.
https://www.mk.ru/politics/2025/04/09/dlinnaya-ruka-artillerii-raschet-tornados-unichtozhil-skoplenie-vsu.html

MK3 V Rossii poyavilsya kompleks, sposobnyy podavlyat rabotu sputnikov svyazi. Moskovskiy Komsomolets, 2018-10-28.
https://www.mk.ru/politics/2018/10/28/v-rossii-poyavilsya-kompleks-sposobnyy-podavlyat-rabotu-sputnikov-svyazi.html

MK26 Tyulpany VS RF razbili podzemnye komandnye punkty VSU pod Kupyanskom. Moskovskiy Komsomolets, 2026-02-09.
https://www.mk.ru/politics/2026/02/09/tyulpany-vs-rf-razbili-podzemnye-komandnye-punkty-vsu-pod-kupyanskom.html

MOCR Decontamination System TZ-74. Czech Ministry of Defence.
https://mocr.mo.gov.cz/scripts/detail.php?id=6068

MODEL Tirazh modelej avtopoezda APS-1 (1:43 scale model listing). Modellmix (scale-model maker).
https://new.modellmix.su/voennaya-texnika/gruzoviki,-specztexnika/3653

MODI Leonov interview, new equipment delivered to Army air defence in 2022 (CAMTO digest of Krasnaya Zvezda). CAMTO / Russian MoD, 2022-12-26.
https://armstrade.org/includes/periodics/news/2022/1226/101570985/detail.shtml

MODMR Минобороны показало работу новейшего БПЛА «Молния-2» в Курской области. News.mail.ru, quoting Russian MoD, 2024-11-19.
https://news.mail.ru/svo/63702601/

MODRT Минобороны рассказало о подготовке кадров для применения НРТК «Курьер». RT via Rambler, 2026.
https://news.rambler.ru/army/55874723-minoborony-rasskazalo-o-podgotovke-kadrov-dlya-primeneniya-nrtk-kurer/

MOLKP Ukrainian Drone Hunters Turn Their Attention to Russian Operators. Kyiv Post, 2025-04-03.
https://www.kyivpost.com/amp/post/50064

MON90IE Protivopekhotnaya mina MON-90. Instruktsiya po ekspluatatsii (IE). USSR Ministry of Defence, Engineer Troops Directorate; Voenizdat, 1982.
https://ukr.bulletpicker.com/pdf/Противопехотная мина МОН-90 Инструкция по эксплуатации.pdf

MONIT Russian Federation: Mine Ban Policy. Landmine Monitor / ICBL, 2025.
https://the-monitor.org/country-profile/russian-federation/mine-ban-policy

MONIT2 Landmine Monitor country profile: Ukraine mine ban policy (2023 edition). ICBL-CMC Landmine Monitor, 2023.
https://the-monitor.org/country-profile/ukraine/mine-ban-policy?year=2023

MONITOR Russian Federation: Mine Ban Policy (Landmine Monitor 2023 profile). The Monitor (ICBL-CMC), 2023.
https://the-monitor.org/country-profile/russian-federation/mine-ban-policy?year=2023

MONITOR2 Russian Federation: Cluster Munition Ban Policy. Cluster Munition Monitor, 2025-08-20.
https://the-monitor.org/country-profile/russian-federation/cluster-munition-ban-policy

MONITOR3 Ukraine: Mine Ban Policy, use of antivehicle mines. Landmine and Cluster Munition Monitor (ICBL-CMC), 2025-12.
https://the-monitor.org/country-profile/ukraine/mine-ban-policy?year=2025

MONOCLE Rostec presented an export variant of the Lesochek EW complex. Monocle.ru, quoting TASS and Rostec, 2024-09-24.
https://monocle.ru/2024/09/24/rostekh-predstavil-eksportniy-variant-kompleksa-reb-lesochek/

MOSTIM Russian attack helicopter crashes near annexed Crimea. The Moscow Times, 2024-04-10.
https://www.themoscowtimes.com/2024/04/10/russian-attack-helicopter-crashes-near-annexed-crimea-a84799

MPER Searcher (overview). Military Periscope.
https://www.militaryperiscope.com/weapons/unmanned/unmanned-aerial-vehicles/searcher/overview/

MPER2 AT-7 Saxhorn (overview, free part). Military Periscope.
https://www.militaryperiscope.com/weapons/missilesrocketsbombs/anti-tank/7-saxhorn/overview

MPER3 220-mm BM-22 Uragan MRL, overview. Military Periscope.
https://www.militaryperiscope.com/weapons/munitions/multiple-rocket-launchers/220-mm-bm-22-uragan-mrl/overview/

MPER4 GMZ-3 tracked minelayer, overview. Military Periscope.
https://www.militaryperiscope.com/weapons/ground-combat-vehicles/combat-support/gmz-3-tracked-minelayer/overview/

MRLJ Sovremennaya RLS Nebo-U postupila na vooruzhenie ... ZVO (reprint of mil.ru item with Military Russia data sheet). svbr livejournal blog, 2016-05-21.
https://svbr.livejournal.com/35965.html

MT Russia Deploys New Missile System Along Norwegian Border. The Moscow Times, 2019-12-02.
https://themoscowtimes.com/2019/12/02/russia-deploys-new-missile-system-along-norwegian-border-a68424

MT16 Kalashnikov delivers first assault boats to Russian army. The Moscow Times (citing TASS), 2016-07-06.
https://themoscowtimes.com/2016/07/06/kalashnikov-delivers-first-assault-boats-to-russian-army-a54468

MVSUA In Kharkiv region, an anti-personnel mine left by the Russians killed two civilians. Ministry of Internal Affairs of Ukraine (mvs.gov.ua), 11 October, year not in fetched text.
https://mvs.gov.ua/en/news/na-xarkivshhini-protipixotna-mina-iaku-zalisili-rosiiani-vbila-dvox-civilnix

NAKED Rossiya ispytala morskoy udarnyy BPLA. Naked Science (citing TASS/Kalashnikov), 2021-08.
https://naked-science.ru/article/tech/rossiya-ispytala-morskoj-udarnyj-bpla

NAKED2 V Rossii vosstanovili bronemashinu Sudnogo dnya. Naked Science.
https://naked-science.ru/article/tech/v-rossii-vosstanovili-bronemashinu-sudnogo-dnya

NASHAVT БАЗ-6950 семейство «Основа». nashi-avto.ru.
http://nashi-avto.ru/ru/bzkt/s/baz-6950.html

NAVN Sweden donates 16 CB90 boats as a part of largest support package to Ukraine. Naval News, c. 2025-01 (18th Swedish package).
https://www.navalnews.com/?p=67842

NAVNEWS Russia's Bal system to hit targets at over 500 km with new missile. Naval News (relaying TASS), 2021-11-02.
https://www.navalnews.com/?p=27005

NAVYP Ivan Gren (Project 11711), Navypedia mirror. Navypedia (Ivan Gogin), mirror site, 2019 data.
https://myownonpmirror.com/ships/russia/ru_ls_ivan_gren.html

NAVYP2 D-67 landing craft (project 11770) (1994-2014). Navypedia, undated (fates as of 2019).
https://www.navypedia.org/ships/russia/ru_ls_d67.htm

NAVYPD Ataman Platov landing craft (project 21820). Navypedia, undated (fates as of 2019).
https://www.navypedia.org/ships/russia/ru_ls_ataman_platov.htm

NAVYPO D-335 landing craft (project 1176) (1971-2009). Navypedia, undated (fates as of 2019).
https://www.navypedia.org/ships/russia/ru_ls_d335.htm

NEWSRU Артиллерия разнесла опорники ВСУ: успехи ВС РФ к утру 25 октября. News.ru, quoting Russian MoD, 2025-10-25.
https://news.ru/russia/artilleriya-raznesla-oporniki-vsu-uspehi-vs-rf-k-utru-25-oktyabrya

NEWSRU2 Терминатор выпустил 400 снарядов по ВСУ. News.ru, 2023-07-11.
https://news.ru/world/terminator-vypustil-400-snaryadov-po-vsu-novosti-svo-na-utro-11-iyulya/

NEWSRU3 Накрыли огнем минометы ВСУ: успехи российской армии к утру 21 июля. News.ru (citing TASS, Russian MoD), 2024-07-21.
https://news.ru/russia/nakryli-ognem-minomety-vsu-uspehi-rossijskoj-armii-k-utru-21-iyulya/

NEWSRU4 Vskryli punkt upravleniya BPLA VSU: uspekhi VS RF k utru 1 marta. News.ru, 2026-03-01.
https://news.ru/russia/vskryli-punkt-upravleniya-bpla-vsu-uspehi-vs-rf-k-utru-1-marta

NGE Страшное оружие на тонкой леске. Novaya Gazeta Europe, 2025-09-25.
https://novayagazeta.eu/articles/2025/09/25/strashnoe-oruzhie-na-tonkoi-leske

NGE2 «Искандер» по-северокорейски. Novaya Gazeta Europe, 2026-08-12.
https://novayagazeta.eu/amp/articles/2026/08/12/iskander-po-severokoreiski

NI The Russian Army Just Received Its First New T-90M Proryv Tanks (Suciu, The National Interest). Warrior Maven / The National Interest, 2020-04.
https://warriormaven.com/land/the-russian-army-just-received-its-first-new-t-90m-proryv-tanks

NI360 Морпехи сбили украинский Су-25 перед ударом по позициям группировки войск «Восток». 360.ru, citing RIA Novosti, 2023-04-20.
https://360.ru/news/ukrainian-crisis/morpehi-sbili-ukrainskij-su-25-pered-udarom-po-pozitsijam-gruppirovki-vojsk-vostok/

NIKIT БТР-МДМ: десантируемая Ракушка. nikitinskii LiveJournal (repost), 2014.
https://nikitinskii.livejournal.com/240438.html

NKN2 First footage emerges of Russia firing North Korean 240mm rockets at Ukraine. NK News, 2025-05-08.
https://www.nknews.org/?p=955676

NLOOK Assessing Russia's first major naval loss of the war in Ukraine. Navy Lookout, 2022-03-28 (dateline from a Wikipedia citation; page prints none).
https://www.navylookout.com/assessing-russias-first-major-naval-loss-of-the-war-in-ukraine/

NNEWS Zelenodolsk Shipyard Launched Two Russian Navy's Project 21980 Boats. Naval News (text by TASS), 2021-07-27.
https://www.navalnews.com/?p=24277

NNEWS2 Vympel Shipyard Lays Keel Of Russian Navy's 14th Project 21980 Boat. Naval News (text by TASS), 2021-07-16.
https://www.navalnews.com/naval-news/2021/07/vympel-shipyard-lays-keel-of-russian-navys-14th-project-21980-boat/

NNEWS3 3 More Russian Amphibious Ships Enter the Black Sea Including New LST. Naval News, 2022-02-09.
https://www.navalnews.com/?p=30151

NOLAND Mines PMN. nolandmines.com.
https://nolandmines.com/explosive_hazards/minesPMN.htm

NOLAND2 TM46 anti-tank mine. nolandmines.com.
https://nolandmines.com/explosive_hazards/minesTM46.htm

NOVG Dyryavyy shchit Rossii. Novaya Gazeta Europe, 2025-06-26.
https://novayagazeta.eu/articles/2025/06/26/dyriavyi-shchit-rossii

NSI Off-Route Mines with Unique Initiation Systems in Ukraine. NSI Global Counterintelligence, 2023.
https://nsi-globalcounterintelligence.com/news/off-route-mines-with-unique-initiation-systems-in-ukraine/

NTVRU Azart i adrenalin: boitsy RF sobrali avtopark trofeinoi natovskoi tekhniki. NTV, 2024-12-27.
https://www.ntv.ru/novosti/2868680/

NVO Porazit pervym vystrelom (Hit with the first shot). Nezavisimoe Voennoe Obozrenie, 1999-11-05.
https://nvo.ng.ru/armament/1999-11-05/6_firstshot.html

ODETIE Комплекс управляемого вооружения 9К119 «Рефлекс». Одетые в броню (forum site).
https://odetievbrony.ru/viewtopic.php?id=452

OKRU R-381T Taran - radio intelligence complex (group repost of Russian text). ok.ru group 53905095655517.
https://ok.ru/group/53905095655517/topic/151060800561245

OLUA Watch: border guards destroyed a rare radar station of the occupiers in Luhansk region. online.ua, 2026.
https://news.online.ua/en/watch-border-guards-destroyed-a-rare-radar-station-of-the-occupiers-in-luhansk-region-902621/

ORUZH 9S482M7 (PU-12M7) battery mobile control post. oruzhie.info.
http://oruzhie.info/vojska-pvo/243-9s482m7-pu-12m7

ORYX1 Attack On Europe: Documenting Russian Equipment Losses During The Russian Invasion Of Ukraine, section Artillery and Missile Support Vehicles. Oryx, continuously updated. Read 2026-10-16.
https://www.oryxspioenkop.com/2022/02/attack-on-europe-documenting-equipment.html

ORYX2 Counting Down: A List Of Russian Army Equipment Not Yet Destroyed Or Captured. Oryx, 2023-03 (updated). Read 2026-10-06.
https://www.oryxspioenkop.com/2023/03/counting-down-list-of-russian-army.html

ORYX3 List of naval losses during 2022. Oryx, 2022 (page as fetched 2026-10-16). Read 2026-10-16.
https://www.oryxspioenkop.com/2022/03/list-of-naval-losses-during-2022.html

ORYX4 Destination Disaster: Russia's Failure At Hostomel Airport. Oryx, 2022-04. Read 2026-10-03.
https://www.oryxspioenkop.com/2022/04/destination-disaster-russias-failure-at.html

ORYX5 List Of Aircraft Losses During The 2022 Russian Invasion Of Ukraine. Oryx, fetched 2026-10-16. Read 2026-10-22.
https://www.oryxspioenkop.com/2022/03/list-of-aircraft-losses-during-2022.html

ORYX6 Hit or miss: Russian loitering munition strikes (Kub and Lancet-3(M)). Oryx, 2023-03. Read 2026-10-02.
https://www.oryxspioenkop.com/2022/11/hit-or-miss-russian-loitering-munition.html

ORYXL1 Oryx loss record 1043: 170mm M-1989 Koksan (Chuch'ep'o), destroyed 13-04-25. Oryx via Postimages, 2025-04-13.
https://postimg.cc/GpSQWQW6

ORYXL2 Oryx loss record 1139: Chuch'ep'o (M-1989 Koksan), destroyed 26-09-25. Oryx via Postimages, 2025-09-26.
https://postimg.cc/X7KLdYrs

OSCE Latest from the OSCE SMM to Ukraine, based on information received as of 19:30, 10 August 2018. OSCE, 2018-08-11.
https://www.osce.org/special-monitoring-mission-to-ukraine/390236

OSN Расчеты миномётов 2Б9 «Василёк» нанесли удар по позициям ВС Украины. Obshchestvennaya sluzhba novostei (OSN), 2023-04-01.
https://www.osnmedia.ru/politika/raschety-minomyotov-2b9-vasilyok-nanesli-udar-po-pozitsiyam-vs-ukrainy/amp/

OSN2 «Ростех»: Минобороны РФ получило партию модернизированных минометных комплексов «Сани». Obshchestvennaya sluzhba novostei (citing Rostec), 2023-07-11.
https://www.osnmedia.ru/obshhestvo/rosteh-minoborony-rf-poluchilo-partiyu-modernizirovannyh-minometnyh-kompleksov-sani/amp/

OSN3 «РВ»: Десант ВС РФ кошмарит ВСУ дронами Mavic на ночной охоте. Obshchestvennaya Sluzhba Novostei (OSN), 2023-04-05.
https://www.osnmedia.ru/obshhestvo/rv-desant-vs-rf-koshmarit-vsu-dronami-mavic-na-nochnoj-ohote/amp/

OSN4 Минобороны показало кадры боевого дежурства ЗРС «Фаворит». Obshchestvennaya Sluzhba Novostei, 2022-06-02.
https://www.osnmedia.ru/politika/minoborony-pokazalo-kadry-boevogo-dezhurstva-zrs-favorit/amp/

OSN5 VS RF v zone SVO primenyayut sovremennye kompleksy artrazvedki 'Yastreb-AV'. Obshchestvennaya sluzhba novostei, 2024-01-02.
https://www.osnmedia.ru/politika/vs-rf-v-zone-svo-primenyayut-sovremennye-kompleksy-artrazvedki-yastreb-av/amp/

OSN22 Минобороны показало работу противотанковых подразделений на Украине. OSN (Obshchestvennaya sluzhba novostey), 2022-04-14.
https://www.osnmedia.ru/obshhestvo/minoborony-pokazalo-rabotu-protivotankovyh-podrazdelenij-na-ukraine/amp/

OSONE Многоножка из Миасса (Урал-532301). os1.ru, about 2003.
http://www.os1.ru/article/7612-mnogonojka-iz-miassa-ural-532301

OVC Preimushchestva sistemy minirovaniya «Zemledeliye» i ispolzovaniye eyo na SVO. Overclockers.ru (user blog).
https://overclockers.ru/blog/Blog9JACKa/show/101493/Preimuschestva-sistemy-minirovaniya-Zemledelie-i-ispol-zovanie-ee-na-SVO

OVD Elements of Russia's Elite 1st Guards Tank Army Withdrawn From Ukraine. Overt Defense, 2022-03-29.
https://overtdefense.com/2022/03/29/elements-of-russias-elite-1st-guards-tank-army-withdrawn-from-ukraine

OVERCL Rostekh nachal postavlyat v voyska novye SAU Floks (overclockers.ru blog). overclockers.ru, 2023-10.
https://overclockers.ru/blog/GOTREK/show/113571/rosteh-nachal-postavlyat-v-vojska-novye-sau-floks

OVERT BMP-3 Armed With a 57mm Autocannon (VIDEO). Overt Defense, 2018-06-10.
https://overtdefense.com/2018/06/10/bmp-3-gets-a-new-57mm-autocannon

OZLIB Mashina tekhnicheskoi pomoshchi MTP-A2 (Sovremennye obraztsy podvizhnykh sredstv TO i remonta). ozlib.com.
https://ozlib.com/993120/sotsium/mashina_tehnicheskoy_pomoschi

PARK Автоматизированная станция помех Р-934УМ. Park Patriot.
https://parkpatriot.ru/o-parke/tekhnika-parka/r-934um/

PARMKT KT-L - legkii kolesnyi evakuatsionnyi transporter (parm.mybb.ru). parm.mybb.ru.
http://parm.mybb.ru/viewtopic.php?id=996

PAS Murmansk-BN HF EW Complex. Planesandstuff (blog), 2019-09-09.
https://planesandstuff.wordpress.com/2019/09/09/murmansk-bn-hf-ew-complex/

PATR 332 radiotekhnicheskii polk, 1 diviziya PVO, 45 armiya VVS i PVO Severnogo flota. GAU Arkhangelskoi oblasti Patriot (regional patriotic centre), c.2020.
https://patriotcentr29.ru/vooruzhennye-sily/332-radiotekhnicheskij-polk-1-divizii-pvo-45-armii-vvs-i-pvo-severnogo-flota/

PERISC Central Military District Gets New Surveillance Radars. Military Periscope, 2019-01-10.
https://www.militaryperiscope.com/news/central-military-district-gets-new-surveillance-radars

PIONT Schwere mechanisierte Brücke TMM-7. pioniertechnik.de, undated (covers Army-2017 to Army-2020).
https://www.pioniertechnik.de/tmm7.html

PIONT6 TMM-6. pioniertechnik.de, undated (mentions 2013 procurement release).
https://www.pioniertechnik.de/tmm6.html

PLANDIY Merlin-VR UAV: experimental Russian scout (plandiy.com.ua). plandiy.com.ua, 2026.
https://plandiy.com.ua/ru/merlin-bpla-eksperymentalnyi-rozvidnyk-rosiiskoi-armii-iakyi-stav-dorohoiu-zdobychchiu-dlia-zsu/

PMUL Russian artillery support vehicles (PRP-3 section). pmulcahy.com (hobby site).
http://www.pmulcahy.com/artillery_support_vehicles/russian_asv.htm

PN180 Vympel Shipyard launches Mongoose high-speed coast guard patrol boat of Project 12150. PortNews (shipyard statement), 2014-05.
https://en.portnews.ru/news/180069

PN209 Vympel Shipyard launches Mangust-type patrol boat, Project 12150 (hull 02647). PortNews (shipyard press release), 2015-11.
https://en.portnews.ru/news/209429

PN304 Almaz shipyard to deliver the Sobol high-speed motor boat to the Border Guard of RF FSB. PortNews (citing RIA Novosti), 2006-10-02.
https://en.portnews.ru/news/304

PORTN Caspian Flotilla naval infantry to get three Project 11770 Serna craft (RIA Novosti relay). PortNews, undated (c. 2012).
https://en.portnews.ru/news/150085

PORTST Morze Czarne: ukrainski dron FPV z USV stracil rosyjski smiglowiec Ka-27. Portal Stoczniowy, 2026-03.
https://portalstoczniowy.pl/en/morze-czarne-stracenie-smiglowca-ka27-dron-fpv-usv/

PPTO Obshchie svedeniya o RLS 35N6 (lecture slides, Siberian Federal University military training department). ppt-online.org, undated (after 2015).
https://ppt-online.org/405887

PRIME Новый ударный дрон "Провод" начал массово поступать в войска. Prime (RIA Novosti group), 2026-02-05.
https://1prime.ru/20260205/dron-867201482.html

PRIME26 Raschety minometov unichtozhili punkt dislokatsii VSU pod Kharkovom. PRIME (Rossiya Segodnya), 2026-01-17.
https://1prime.ru/20260117/vsu-866619242.html

PRIZ Engineer-sapper battalion of the new-look brigade. prizyvnik.info (blog).
https://www.prizyvnik.info/blogs/entry/3239-inzhenerno-sapernyj-batalyon-brigady-novogo-oblika/

PRO Автоматизированная станция помех Р-330Ж. ОАО NVP Protek (manufacturer), via Wayback Machine, 2015-10-05.
https://web.archive.org/web/20160413003527/http://www.protek-vrn.ru/production/avtomatizirovannaya-stantsiya-pomeh-r-330zh/

PROF Справка «Профиля»: боевые машины пехоты Вооружённых сил РФ. Profile.ru, 2023-09-14.
https://profile.ru/news/military/spravka-profilya-boevye-mashiny-pehoty-vooruzhjonnyh-sil-rf-1390964

PROF2 Уралвагонзавод отправил в войска партию БМПТ. Profile.ru, 2025-10.
https://profile.ru/news/military/uralvagonzavod-otpravil-v-vojska-partiju-bmpt-ranshe-ih-nazyvali-terminatorami-1762052/amp/

PROF3 Какие беспилотники есть на вооружении у российской армии. Profile.ru, undated, c. 2019.
https://profile.ru/military/kakie-bespilotniki-est-na-vooruzhenii-u-rossijskoj-armii-275319/amp/

PROF4 Длинная рука Москвы: какие БПЛА использует Россия для ударов по тылам Украины. Profil (Russia), 2026-03-02.
https://profile.ru/military/dlinnaya-ruka-moskvy-kakie-bpla-ispolzuet-rossiya-dlya-udarov-po-tylam-ukrainy-1827608/amp/

PROF22 На параде в Петербурге впервые показали катер «Раптор» с ракетным комплексом «Корнет». Profile.ru (relaying TASS), 2022-07-31.
https://profile.ru/?p=1133602

PROFILE В трёх регионах России начались масштабные учения ВДВ. Profile.ru (citing RIA Novosti and MoD), 2021-02.
https://profile.ru/news/protection/army/v-trex-regionax-rossii-nachalis-masshtabnye-ucheniya-vdv-644509/

PUBLIC Russia is losing contact. Border guards have destroyed a rare target worth $600,000. thepublic.info, 2026-03.
https://thepublic.info/en/news/rosiia_vtracaje_zviazok_prikordonniki_znishhili_ridkisnu_cil_za_600_tisiac_dolariv

PVO Радиолокационная станция 96Л6Е. pvo.guns.ru (Nevsky Bastion material), 2008-11-30.
https://pvo.guns.ru/rtv/96l6.htm

R360 Katera BK-16 zadeistvovali protiv vrazheskikh bezekipazhnykh sudov v Chernom more. 360.ru (citing TASS), 2026-06-10 (page metadata).
https://360.ru/news/ukrainian-crisis/katera-bk-16-zadejstvovali-protiv-vrazheskih-bezekipazhnyh-sudov-v-chernom-more/

R3602 Artillerymen destroyed Ukrainian strongpoints with Krasnopol in Dnipropetrovsk Oblast (TASS via 360.ru). 360.ru / TASS, 2026-07-29.
https://360.ru/news/ukrainian-crisis/artilleristy-unichtozhili-krasnopoljami-oporniki-vsu-v-dnepropetrovskoj-oblasti/

RADTUT 1L271 (Radartutorial, saved mirror). Radartutorial.eu via l.xif.fr mirror.
https://l.xif.fr/files/elec/radar/radartutorial-eu.save/19.kartei/04.battle/karte036.en.html

RAKUL Станция спутниковой связи Р-439-КУЛ. RusArmy.com, 2004-2010.
http://www.rusarmy.com/svyaz/sputnik/r-439-kul.html

RAMB Как командир артдивизиона победил в критической ситуации с помощью "Гвоздики". Rambler News (military press feature), 2025.
https://news.rambler.ru/army/54697946-kak-komandir-artdiviziona-pobedil-v-kriticheskoy-situatsii-s-pomoschyu-gvozdiki/

RAMB2 Российский ОПК создал мобильную пусковую установку под Циркон. Rambler (relaying TASS), 2022.
https://news.rambler.ua/army/49635134-rossiyskiy-opk-sozdal-mobilnuyu-puskovuyu-ustanovku-pod-tsirkon/amp/

RAMB3 Minoborony RF soobshchilo ob uspeshnom primenenii dronov Lantset. Rambler News (quoting Russian MoD and RT), 2026-06-10.
https://news.rambler.ru/army/56580923-minoborony-rf-soobschilo-ob-uspeshnom-primenenii-dronov-lantset/

RAMBLER 2С34 «Хоста» — российская самоходная артиллерийская установка. Rambler News.
https://news.rambler.ru/army/54054783-2s34-hosta-rossiyskaya-samohodnaya-artilleriyskaya-ustanovka/

RAMBLER2 Boepripasy KUB dosrochno postavili na SVO. Rambler (relaying TASS), c. 2025, undated page.
https://finance.rambler.ru/business/55553441-boepripasy-kub-dosrochno-postavili-na-svo/

RAMBLER3 Бойцы «Центра» взорвали систему фортификационных сооружений ВСУ (TASS). news.rambler.ru, TASS, 2026-10-21.
https://news.rambler.ru/army/57266738-boytsy-tsentra-vzorvali-sistemu-fortifikatsionnyh-sooruzheniy-vsu/

RAMD1 Мобильная станция спутниковой связи Р-439-МД1. RusArmy.com, 2004-2010.
http://www.rusarmy.com/svyaz/sputnik/r-439-md1.html

RAMD2 Станция спутниковой связи Р-439-МД2. RusArmy.com, 2004-2010.
http://www.rusarmy.com/svyaz/sputnik/r-439-md2.html

RAMD3 Станция спутниковой связи Р-439-МД3. RusArmy.com, 2004-2010.
http://www.rusarmy.com/svyaz/sputnik/r-439-md3.html

RAND The Future of the Russian Military (RR-3099-A), PDF pp. 73 and 76. RAND Corporation, 2019.
https://www.rand.org/content/dam/rand/pubs/research_reports/RR3000/RR3099/RAND_RR3099.pdf

RAZOM Drones in War: How FPV and Mavic Are Changing the Game for the Ukrainian Army. Razom for Ukraine, 2025.
https://razom.com/en/blog/drony-na-viyni-fpv-i-mavic-zsu

RBASE Носимый противотанковый комплекс 9К115 «Метис». Ракетная техника (rbase.new-factoria.ru).
http://rbase.new-factoria.ru/missile/wobb/metis/metis.shtml

RBASE2 Реактивная система залпового огня 9К51М Торнадо-Г. Ракетная техника (rbase.new-factoria.ru / missilery.info), undated, after 2018.
http://rbase.new-factoria.ru/missile/wobb/tornado-g/tornado-g.shtml

RBASEM Противотанковый ракетный комплекс 9К115-2 «Метис-М». Ракетная техника (rbase.new-factoria.ru).
http://rbase.new-factoria.ru/missile/wobb/metis_m/metis_m.shtml

RBC Украинские СМИ сообщили об участии псковского десанта в боях за Луганск. RBC, 2014-08.
https://www.rbc.ru/news/570420f79a794760d3d40d9c

RBC2 НРТК «Курьер»: российский наземный боевой робот. RBC, 2025-11-28.
https://www.rbc.ru/base/28/11/2025/692868ad9a7947e26dd0442e

RBC18 V Yuzhnyi voennyi okrug postupila novaya RLS Kasta-2. RBC (citing RIA Novosti, Southern MD press service), 2018-05-16.
https://www.rbc.ru/rbcfreenews/5afa2e6c9a7947e14ee5ecc5

RBTH UR-77: Clearing one landmine at a time. Russia Beyond, 2017-03-29.
https://www.rbth.com/multimedia/video/2017/03/29/ur-77-clearing-one-landmine-at-a-time_729866

RDP1 Upgunning Artillery. Russian Defense Policy (blog), 2018-04-29. Read 2026-10-01.
https://russiandefpolicy.com/2018/04/29/upgunning-artillery/

RDP2 New airborne armor deliveries. Russian Defense Policy (blog), 2020-06-25. Read 2026-10-03.
https://russiandefpolicy.com/2020/06/25/new-airborne-armor-deliveries/

RDP3 Russian Defense Policy, 26 July 2021 post. Russian Defense Policy (blog), 2021-07-26. Read 2026-10-03.
https://russiandefpolicy.com/2021/07/26/

RDP4 Electronic warfare: myths and truth (translation of Aleksey Ramm, VPK, Oct 2015). russiandefpolicy.com, 2015. Read 2026-09-29.
https://russiandefpolicy.com/tag/r-330zh/

RDP5 Iskander-M (tag archive). Russian Defense Policy blog, 2014 to 2017 posts. Read 2026-09-29.
https://russiandefpolicy.com/tag/iskander-m/

RDP6 Chernigovka. Russian Defense Policy (blog), 2021-01-26. Read 2026-10-16.
https://russiandefpolicy.com/2021/01/26/chernigovka/

RDP7 Polyana-D4M1 (tag page; Ground Troops procurement 2011). Russian Defense Policy blog, 2011. Read 2026-09-29.
https://russiandefpolicy.com/tag/polyana-d4m1/

RDP8 Tag archive: Tornado-G (Motovilikha 2019 GOZ report). Russian Defense Policy blog, 2019-12. Read 2026-09-29.
https://russiandefpolicy.com/tag/tornado-g/

REACH Красуха-2 (1Л269). reachaim, LiveJournal, 2014-03-17.
https://reachaim.livejournal.com/5097.html

RECO TMM-7 photographs at Army-2017 and Army-2020 forums. RecoMonkey, 2017 and 2020 photographs.
https://www.recomonkey.com/Land-Platforms/Engineer/Bridge-laying-ferry--and-pontoon/TMM-7

RECOMON MMK bridge-mechanised complex, bridge-laying vehicle (photographs, Army-2015). RecoMonkey, 2015.
https://www.recomonkey.com/Land-Platforms/Engineer/Bridge-laying-ferry--and-pontoon/MMK

REDSTAR «Гиацинт-К» в жарком бою. Krasnaya Zvezda (MoD newspaper), undated (2025 or later).
http://redstar.ru/giatsint-k-v-zharkom-boyu/

REDSTAR2 2S38 Derivatsiya-PVO self-propelled anti-aircraft gun system. redstar.gr.
https://www.redstar.gr/en/other/others-systems/2s38-derivatsiya-pvo-self-propelled-anti-aircraft-gun-system.html

REDSTAR3 Bystro i s vysokim kachestvom (interview with the Railway Troops chief on the 2020 training year). Krasnaya Zvezda (Ministry of Defence newspaper), 2020-12.
http://redstar.ru/bystro-i-s-vysokim-kachestvom/

REFORM Russian Company Begins Supplying Belarus With Upgraded Supercam S350 Drones. Reform.news, 2026-06-17.
https://reform.news/en/russian-company-begins-supplying-belarus-with-upgraded-supercam-s350-drones

RELIEF Ukraine: Cluster Munitions Repeatedly Used on Mykolaiv (HRW release, ReliefWeb copy). Human Rights Watch via ReliefWeb, 2022-03-17.
https://reliefweb.int/report/ukraine/ukraine-cluster-munitions-repeatedly-used-mykolaiv

RF26 Russian early-warning radar network in 2026. Russian strategic nuclear forces (P. Podvig), 2026-08.
https://russianforces.org/blog/2026/08/russian_early-warning_radar_ne.shtml

RFARM Two radars at Armavir. Russian strategic nuclear forces (P. Podvig), 2009-02-12.
https://russianforces.org/blog/2009/02/two_radars_at_armavir.shtml

RFERL Ukraine Says Naval Drones Destroy Two Russian Boats In Crimea. RFE/RL, 2024-05-30.
https://www.rferl.org/a/ukraine-crimea-drones-russia-boats/32972127.html

RFERL2 Біля Зміїного українські військові знищили три російські катери – ОК «Південь». Radio Svoboda (RFE/RL Ukrainian service), 2022-05-08 (page metadata).
https://www.radiosvoboda.org/a/news-znyshcheni-rosiyski-katery/31839589.html

RFKAL Voronezh-DM radar near Kaliningrad is operational. Russian strategic nuclear forces (P. Podvig), 2011-11-29.
https://russianforces.org/blog/2011/11/voronezh-dm_radar_near_kalinin.shtml

RFPOT Voronezh-DM's potential. Russian strategic nuclear forces (P. Podvig), 2006-02.
https://russianforces.org/blog/2006/02/voronezhdms_potential.shtml

RFSPRN Early warning (radar table, 2026). Russian strategic nuclear forces (P. Podvig), 2026.
https://russianforces.org/sprn/

RG Как самоходки «Нона-С» применяются при уничтожении противника на Артемовском направлении. Rossiyskaya Gazeta, 2022-12-01.
https://rg.ru/2022/12/01/orudie-trojnogo-udara.html

RG1 Garpun-3 article (amp). Rossiyskaya Gazeta, 2022-10-17.
https://rg.ru/amp/2022/10/17/reg-pfo/armiia-rf-primeniaet-novejshie-ruchnye-kompleksy-garpun-3-v-specoperacii.html

RG2 Гаубица Д-30 остается наиболее эффективным орудием из числа применяемых в СВО. Rossiyskaya Gazeta, 2024-05-19.
https://rg.ru/2024/05/19/orudie-na-vse-vremena.html

RG3 IT-специалист развернул в Туле производство FPV-дронов «Овод». Rossiyskaya Gazeta, 2025-04-01.
https://rg.ru/2025/04/01/reg-cfo/tulskij-prianik-kak-indikator-togo-chto-dron-ne-ustarel.html

RG4 Ognennyi shchit: effektnuiu rabotu kompleksa 'Infauna' sniali na video. Rossiyskaya Gazeta, 2019-04-08.
https://rg.ru/2019/04/08/ognennyj-shchit-effektnuiu-rabotu-kompleksa-infauna-sniali-na-video.html

RG5 Противотанковый комплекс «Конкурс-М» получит дистанционное управление. Rossiyskaya Gazeta, 2024-12-23.
https://rg.ru/2024/12/23/protivotankovyj-kompleks-konkurs-m-poluchit-distancionnoe-upravlenie.html

RG6 Chto nuzhno znat o boepripasakh Lantset. Rossiyskaya Gazeta, 2023-04-06.
https://rg.ru/2023/04/06/ot-lanceta-gaubica-ne-spriachetsia.html

RG7 Russian armour is being fitted with the small Lesochek EW system. Rossiyskaya Gazeta (state), 2023-12-15.
https://rg.ru/2023/12/15/rossijskuiu-bronetehniku-osnashchaiut-malogabaritnoj-sistemoj-reb-lesochek.html

RG8 Forbes: Россия применяет новые системы РЭБ для борьбы с дронами ВСУ. Rossiyskaya Gazeta, 2025-04-11.
https://rg.ru/2025/04/11/forbes-rossiia-primeniaet-novye-sistemy-reb-dlia-borby-s-dronami-vsu.html

RG9 Штурмовиков поддерживают новые «Тосочки». Rossiyskaya Gazeta, 2024-07-02.
https://rg.ru/2024/07/02/shturmovikov-podderzhivaiut-novye-tosochki.html

RG10 С-350 в четыре раза повышает эффективность борьбы с крылатыми ракетами. Rossiyskaya Gazeta, 2020-04-10.
https://rg.ru/2020/04/10/s-350-v-chetyre-raza-povyshaet-effektivnost-borby-s-krylatymi-raketami.html

RG11 Комплекс Стрелец-М помогает ВКС РФ поражать сложные цели ВСУ. Rossiyskaya Gazeta (from RIA Novosti), 2022-06-07.
https://rg.ru/2022/06/07/kompleks-strelec-m-pomogaet-vks-rf-porazhat-slozhnye-celi-vsu.html

RG12 Характеристики «летающего танка» Т-80БВМ рассекретили на «Армии-2020». Rossiyskaya Gazeta, 2020-08-23.
https://rg.ru/2020/08/23/harakteristiki-letaiushchego-tanka-t-80bvm-rassekretili-na-armii-2020.html

RG13 Ubiytsy sputnikovoy svyazi: chto izvestno o kompleksakh Tirada i Rudolf. Rossiyskaya Gazeta, 2022-10-15.
https://rg.ru/2022/10/15/ubijcy-sputnikovoj-sviazi-chto-izvestno-o-kompleksah-tirada-i-rudolf.html

RG14 Efirnaia voina radiochastot. Rossiyskaya Gazeta, 2024-04-24.
https://rg.ru/2024/04/24/efirnaia-vojna-radiochastot.html

RG15 Подразделения РЭБ на Дальнем Востоке получат беспилотники «Леер-3» (Gavrilov). Rossiyskaya Gazeta, 2015-06-28.
https://rg.ru/2015/06/28/leer-site.html

RG16 Zaglushat za gorizontom (Kompleksy REB Murmansk-BN obedinili v edinuiu sistemu). Rossiiskaya Gazeta, 2016-11-14.
https://rg.ru/2016/11/14/kompleksy-radioelektronnoj-borby-murmansk-bn-obedinili-v-edinuiu-sistemu.html

RG17 Novyy divizion na tyazhelykh minometakh poyavitsya v TsVO. Rossiyskaya Gazeta, 2017-07-26.
https://rg.ru/2017/07/26/reg-urfo/divizion-na-tiazhelyh-minometah.html

RG18 Росгвардия применила незаметные для украинских войск беспилотники. Rossiyskaya Gazeta, 2022-04-27.
https://rg.ru/2022/04/27/rosgvardiia-primenila-nezametnye-dlia-ukrainskih-vojsk-bespilotniki.html

RG19 Применение комплекса "Палантин-К" впервые показали на видео. Rossiyskaya Gazeta, 2019-10-08.
https://rg.ru/2019/10/08/primenenie-kompleksa-palantin-k-vpervye-pokazali-na-video.html

RG20 Вторая жизнь: чем примечательна БМП-1АМ «Басурманин». Rossiyskaya Gazeta, 2020-08-28.
https://rg.ru/2020/08/28/vtoraia-zhizn-chem-primechatelna-bmp-1am-basurmanin.html

RG21 В 2021 году военные получат новые машины химразведки РХМ-8 и РХМ-9. Rossiyskaya Gazeta, 2021-01-05.
https://rg.ru/2021/01/05/v-2021-godu-voennye-poluchat-novye-mashiny-himrazvedki-rhm-8-i-rhm-9.html

RG22 Razrushitel bunkerov: kak samokhodnye minomety Tyulpan unichtozhayut ukrepraiony VSU. Rossiyskaya Gazeta, 2022-11-18.
https://rg.ru/2022/11/18/razrushitel-bunkerov-kak-samohodnye-minomety-tiulpan-unichtozhaiut-ukreprajony-vsu.html

RG22B Разработанный для десанта "Корнет-Д1" проходит стрельбовые испытания. Rossiyskaya Gazeta (state), citing TASS/Rostec, 2022-02-21.
https://rg.ru/2022/02/21/razrabotannyj-dlia-desanta-kornet-d1-prohodit-strelbovye-ispytaniia.html

RG22B2 На учениях в ЗВО применили комплекс РЭБ "Палантин-К". Rossiyskaya Gazeta, 2022-02-08.
https://rg.ru/2022/02/08/reg-szfo/na-ucheniiah-v-zvo-primenili-kompleks-reb-palantin-k.html

RG23 Бронированный «Басурманин» и БРМ-1К показали преимущество перед обычной БМП-1. Rossiyskaya Gazeta, 2023-09-14.
https://rg.ru/2023/09/14/bronirovannyj-basurmanin-i-brm-1k-pokazali-preimushchestvo-pered-obychnoj-bmp-1.html

RG24 «Коалиция-СВ» принята на вооружение и вышла на передовую. Rossiyskaya Gazeta, 2024-01-09.
https://rg.ru/2024/01/09/koaliciia-priniata-na-vooruzhenie-i-vyshla-na-peredovuiu.html

RG25 В чем уникальность российских систем Гарпун-3. Rossiyskaya Gazeta, 2022-10-18.
https://rg.ru/2022/10/18/na-bespilotniki-ohotiatsia-s-garpunom.html

RG26 Radiorazvedchiki slyshat kazhdoe slovo protivnika. Rossiyskaya Gazeta, 2024-07-21.
https://rg.ru/2024/07/21/radiorazvedchiki-slyshat-kazhdoe-slovo-protivnika.html

RG152 Артиллеристы ЮВО получили новые комплексы радиолокационной разведки. Rossiyskaya Gazeta, 2015-03-11.
https://www.rg.ru/2015/03/11/aistenok.html

RG162 В Приамурье разведчиков научат пользоваться радарами Соболятник. Rossiyskaya Gazeta (quotes Eastern MD press service), 2016-07-12.
https://rg.ru/2016/07/12/reg-dfo/v-priamure-razvedchikov-nauchat-polzovatsia-radarami-soboliatnik.html

RG163 Военные арктической бригады пересели в нарты. Rossiyskaya Gazeta, 2016-02-02.
https://rg.ru/2016/02/02/narty.html

RG172 К 2020 году ВДВ получат более трехсот новых бронемашин. Rossiyskaya Gazeta, 2017-04-28.
https://rg.ru/2017/04/28/reg-pfo/k-2020-godu-vdv-poluchat-bolee-trehsot-novyh-bronemashin.html

RG173 На вооружение ЗВО поступил уникальный комплекс «Борисоглебск-2». Rossiyskaya Gazeta, 2017-04-01.
https://rg.ru/2017/04/01/reg-cfo/borisoglebsk-2.html

RG174 V Krymu voennye razvernuli sverkhmoshchnyi kompleks REB Murmansk. Rossiiskaya Gazeta, 2017-03-10.
https://rg.ru/2017/03/10/reg-ufo/v-krymu-voennye-razvernuli-sverhmoshchnyj-kompleks-reb-murmansk.html

RG175 Первый полк Тор-М2 пришел в войска. Rossiyskaya Gazeta, 2017-03-25.
https://rg.ru/2017/03/25/pervyj-polk-tor-m2-prishel-v-vojska.html

RG176 Мотострелков ЦВО вооружили новейшими ПЗРК «Верба». Rossiyskaya Gazeta, 2017-12-18.
https://rg.ru/2017/12/18/reg-urfo/motostrelkov-cvo-vooruzhili-novejshimi-pzrk-verba.html

RG192 Арктический комплекс Тор-М2ДТ заступил на боевое дежурство. Rossiyskaya Gazeta, 2019-11-30.
https://rg.ru/2019/11/30/reg-szfo/arkticheskij-kompleks-tor.html

RG202 Новейший комплекс РЭБ "Палантин" поступит на вооружение ВВО. Rossiyskaya Gazeta, 2020-07-27.
https://rg.ru/2020/07/27/reg-dfo/novejshij-kompleks-reb-palantin-postupit-na-vooruzhenie-vvo.html

RG203 Военные провели стрельбы из комплекса ПВО "Панцирь-СА" в Арктике. Rossiyskaya Gazeta, 2020-08-08.
https://rg.ru/2020/08/08/voennye-proveli-strelby-iz-kompleksa-pvo-pancir-sa-v-arktike.html

RG212 В войска передан новейший комплекс разведки «Пенициллин». Rossiyskaya Gazeta, 2021-01-22.
https://rg.ru/2021/01/22/v-vojska-peredan-novejshij-kompleks-razvedki-penicillin.html

RG213 Бронеавтомобиль «Тайфун-ВДВ» приняли на снабжение ВДВ. Rossiyskaya Gazeta, 2021-08-04.
https://rg.ru/2021/08/04/broneavtomobil-tajfun-vdv-priniali-na-snabzhenie-vdv.html

RG214 Новейшие «Торнадо-У» приняли участие в параде на авиабазе Хмеймим. Rossiyskaya Gazeta, 2021-05-12.
https://rg.ru/2021/05/12/novejshie-tornado-u-priniali-uchastie-v-parade-na-aviabaze-hmejmim.html

RG215 В арктической бригаде Северного флота осваивают новые снегоходы А-1. Rossiyskaya Gazeta, 2021-01-08.
https://rg.ru/2021/01/08/v-arkticheskoj-brigade-severnogo-flota-osvaivaiut-novye-snegohody-a-1.html

RG222 ВВО получит боевые машины «Басурманин». Rossiyskaya Gazeta, 2022-02-02.
https://rg.ru/2022/02/02/reg-dfo/vvo-poluchit-boevye-mashiny-basurmanin.html

RG223 В Белгородской области будет развернут новый батальон радиоэлектронной борьбы. Rossiyskaya Gazeta, 2022-01-25.
https://rg.ru/2022/01/25/na-granice-s-ukrainoj-razvernut-novyj-batalon-radioelektronnoj-borby.html

RG224 «Игла» поразит низколетящие воздушные цели. Rossiyskaya Gazeta, 2022-04-28.
https://rg.ru/2022/04/28/igla-porazit-nizkoletiashchie-vozdushnye-celi.html

RG225 Минобороны показало кадры боевого применения ПТРК "Корнет" в ходе спецоперации. Rossiyskaya Gazeta (state), 2022-06-27.
https://rg.ru/2022/06/27/ot-korneta-zashchity-net.html

RG232 Системы РБ-109А "Былина" готовятся к развертыванию в зоне СВО. Rossiyskaya Gazeta, 2023-10-30.
https://rg.ru/2023/10/30/sistemy-rb-109a-bylina-gotoviatsia-k-razvertyvaniiu-v-zone-svo.html

RG233 Командир комплекса Тор-М2 рассказал, как сбил с начала СВО 50 воздушных целей. Rossiyskaya Gazeta, 2023-11-24.
https://rg.ru/2023/11/24/komandir-kompleksa-tor-m2-rasskazal-kak-sbil-s-nachala-svo-50-vozdushnyh-celej.html

RG234 Модернизированный комплекс РЭБ «Сапфир» получил возможность подавлять FPV-дроны. Rossiyskaya Gazeta (state), 2023-11-14.
https://rg.ru/2023/11/14/modernizirovannyj-kompleks-reb-sapfir-poluchil-vozmozhnost-podavliat-fpv-drony.html

RG242 Na SVO primenili noveyshuyu versiyu drona-kamikadze KUB. Rossiyskaya Gazeta, 2024-12-27.
https://rg.ru/2024/12/27/novyj-udarnyj-dron-primenen-na-fronte.html

RG243 Как комплекс артразведки «Пенициллин» вскрывает позиции артиллерии ВСУ. Rossiyskaya Gazeta, 2024-02-01.
https://rg.ru/2024/02/01/otvetnyj-udar-po-zvuku-vystrela.html

RG244 Как разведчики применяют беспилотники и РЛС Соболятник в зоне СВО. Rossiyskaya Gazeta (MoD material), 2024-01-15.
https://rg.ru/2024/01/15/mini-radar-vidit-vse.html

RG245 Бойцы расчета рассказали, в чем успех ракетного комплекса Тор-М2. Rossiyskaya Gazeta, 2024-09-13.
https://rg.ru/2024/09/13/reg-cfo/bojcy-rascheta-rasskazali-v-chem-uspeh-raketnogo-kompleksa-tor-m2.html

RG246 Бойцы ВС РФ показали преимущества бронированной кабины вездехода «Торнадо-У». Rossiyskaya Gazeta, 2024-12-06.
https://rg.ru/2024/12/06/bojcy-vs-rf-pokazali-preimushchestva-bronirovannoj-kabiny-vezdehoda-tornado-u.html

RG247 Переносные комплексы «Верба» модернизируют для городских боев. Rossiyskaya Gazeta, 2024-12-01.
https://rg.ru/2024/12/01/perenosnye-kompleksy-verba-moderniziruiut-dlia-gorodskih-boev.html

RG248 Зенитчик Иркут рассказал, как в зоне СВО сбивают вражеские дроны. Rossiyskaya Gazeta, 2024-05-07.
https://rg.ru/2024/05/07/zenitchik-irkut-rasskazal-kak-v-zone-svo-sbivaiut-vrazheskie-drony.html

RG252 ЗРК Тор-М2 получил дополнительную броню и средства РЭБ. Rossiyskaya Gazeta, 2025-08-13.
https://rg.ru/2025/08/13/zrk-tor-m2-poluchil-dopolnitelnuiu-broniu-i-sredstva-reb.html

RG253 Боец с позывным Искра рассказал о нелегкой работе зенитчиков. Rossiyskaya Gazeta, 2025-07-01.
https://rg.ru/2025/07/01/boec-s-pozyvnym-iskra-rasskazal-o-nelegkoj-rabote-zenitchikov.html

RG2018 'Leer-2' prikryl tanki T-72B3 i bronetransportery BTR-82A. Rossiyskaya Gazeta, 2018-03-26.
https://rg.ru/2018/03/26/leer-2-prikryl-tanki-t-72b3-i-bronetransportery-btr-82a.html

RG2108 Специальный колесный разведчик РХМ-9 можно увидеть на Армии-2021. Rossiyskaya Gazeta, 2021-08-24.
https://rg.ru/2021/08/24/specialnyj-kolesnyj-razvedchik-rhm-9-mozhno-uvidet-na-armii-2021.html

RGAZ V zone SVO nachali primenyat ZRK Gibka-S na baze Tigra-M. Rossiyskaya Gazeta, 2024-01-11.
https://rg.ru/2024/01/11/ohota-za-vrazheskimi-raketami-stanet-gibkoj.html

RGAZ2 Сирийские танкисты впервые показали сверхточный ракетный "Рефлекс". Rossiyskaya Gazeta, 2018-01-15.
https://rg.ru/2018/01/15/sirijskie-tankisty-vpervye-pokazali-sverhtochnyj-raketnyj-refleks.html

RGGIB В 2022 году в войска начнут поставлять комплексы ПВО «Гибка-С». Rossiyskaya Gazeta, 2022-01-06.
https://rg.ru/2022/01/06/v-2022-godu-v-vojska-nachnut-postavliat-kompleksy-pvo-gibka-s.html

RGMAL «Ростех» отправил в войска партию самоходных артиллерийских орудий 2С43 «Мальва». Rossiyskaya Gazeta, 2024-08-04.
https://rg.ru/2024/08/04/gaubica-s-nezhnym-imenem-no-ochen-groznaia-i-podvizhnaia.html

RGMAL2 Новейшая САУ 2С43 «Мальва» замечена в зоне СВО. Rossiyskaya Gazeta, 2024-06-02.
https://rg.ru/2024/06/02/novejshaia-sau-2s43-malva-zamechena-v-zone-svo.html

RGNEWS Роботов-саперов «Уран-6» модернизировали по результатам применения в зоне СВО. Rossiyskaya Gazeta, 2025-03-07.
https://rg.ru/2025/03/07/robotov-saperov-uran-6-modernizirovali-po-rezultatam-primeneniia-v-zone-svo.html

RGPAL Комплекс РЭБ "Палантин" подавляет средства связи штабов ВСУ. Rossiyskaya Gazeta, 2022-07-27.
https://rg.ru/2022/07/27/kompleks-reb-palantin-podavliaet-sredstva-sviazi-shtabov-vsu.html

RGPAR Новейшие российские САУ «Мальва» и «Гиацинт-К» впервые приняли участие в параде. Rossiyskaya Gazeta, 2025-05-09.
https://rg.ru/2025/05/09/novejshie-rossijskie-sau-malva-i-giacint-k-vpervye-priniali-uchastie-v-parade.html

RGRU Почему САУ «Нона-СВК» остается одной из лучших в своем классе. Rossiyskaya Gazeta, 2018-06-18.
https://rg.ru/2018/06/18/pochemu-sau-nona-svk-ostaetsia-odnoj-iz-luchshih-v-svoem-klasse.html

RGRU1 Ивановская дивизия ВДВ получила боевые машины БМД-4М и БТР-МДМ «Ракушка». Rossiyskaya Gazeta (state), 2021-07-26.
https://rg.ru/2021/07/26/reg-cfo/ivanovskaia-diviziia-vdv-poluchila-boevye-mashiny-bmd-4m-i-btr-mdm-rakushka.html

RGRU2 Новая российская автоматизированная самоходка 2С31 «Вена» замечена в зоне СВО. Rossiyskaya Gazeta, 2023-09-15.
https://rg.ru/2023/09/15/novaia-rossijskaia-avtomatizirovannaia-samohodka-2s31-vena-zamechena-v-zone-svo.html

RGRU3 Mozhet strelyat kak gaubitsa, minomet i pushka: Floks (Rossiyskaya Gazeta). Rossiyskaya Gazeta, 2023-06-01.
https://rg.ru/2023/06/01/pushka-mozhet-stat-nevidimoj.html

RGRU4 Разведка на броне: В зоне СВО появились новые боевые машины БРМ-1К. Rossiyskaya Gazeta (state), 2023-02-14.
https://rg.ru/2023/02/14/razvedka-na-brone-v-zone-svo-poiavilis-novye-boevye-mashiny-brm-1k.html

RGRU5 Trofeinuyu BMP Bradley s opoznavatelnymi znakami VS RF snyali na foto. Rossiyskaya Gazeta (RIA Novosti photo), 2025-04-19.
https://rg.ru/2025/04/19/trofejnuiu-bmp-bradley-s-opoznavatelnymi-znakami-vs-rf-sniali-na-foto.html

RGRU6 Ростех старается ускорить первые поставки Деривации-ПВО на передовую. Rossiyskaya Gazeta, 2024-04-08.
https://rg.ru/2024/04/08/rosteh-staraetsia-uskorit-pervye-postavki-derivacii-pvo-na-peredovuiu.html

RGRU7 V Sirii vpervye zamechena novieishaya rossiiskaya RLS Garmon. Rossiiskaya Gazeta, 2018-03-06.
https://rg.ru/2018/03/06/v-sirii-vpervye-zamechena-novejshaia-rossijskaia-rls-garmon.html

RGRU8 Сверхточные мины «Грань» и снаряды «Китолов» применили в ходе спецоперации. Rossiyskaya Gazeta (Russian government newspaper), 2022-07-08.
https://rg.ru/2022/07/08/sverhtochnye-miny-gran-i-snariady-kitolov-primenili-v-hode-specoperacii.html

RGRU9 Первый авиаполк МиГ-31 с гиперзвуковыми «Кинжалами» сформирован в России. Rossiyskaya Gazeta, 2021-12-21.
https://rg.ru/2021/12/21/pervyj-aviapolk-mig-31-s-giperzvukovymi-kinzhalami-sformirovan-v-rossii.html

RGRU10 Истребители Су-57 получили компактную крылатую ракету большой дальности. Rossiyskaya Gazeta, 2023-11-01.
https://rg.ru/2023/11/01/unichtozhit-cel-za-sotni-kilometrov.html

RGRU11 «Краснополь», «Китолов», «Грань»: какие высокоточные снаряды используют Вооруженные силы России. Rossiyskaya Gazeta, 2022-07-12.
https://rg.ru/2022/07/12/snariad-porazhaet-s-pervogo-vystrela.html

RGRU12 V Rossii sozdana umnaia mina s shurikenami. Rossiiskaia gazeta, 2017-05-24.
https://rg.ru/2017/05/24/reg-cfo/v-rossii-sozdana-umnaia-mina-s-shurikenami.html

RGRU13 РСЗО Торнадо-С уничтожила заглубленный командный пункт ВСУ под Добропольем. Rossiyskaya Gazeta (citing Russian MoD), 2026-08-05.
https://rg.ru/2026/08/05/reg-dnr/rszo-tornado-s-unichtozhila-zaglublennyj-komandnyj-punkt-vsu-pod-dobropolem.html

RGRU14 Российские бойцы показали гигантские мины для самоходных минометов "Тюльпан". Rossiyskaya Gazeta (state newspaper), 2025-06-25.
https://rg.ru/2025/06/25/rossijskie-bojcy-pokazali-gigantskie-miny-dlia-samohodnyh-minometov-tiulpan.html

RGRU15 Танки и пехота получают компактную защиту от дронов. Rossiyskaya Gazeta (state), 2024-01-15.
https://rg.ru/2024/01/15/tanki-i-pehota-poluchaiut-kompaktnuiu-zashchitu-ot-dronov.html

RGRU22 Десантные БТР-МДМ «Ракушка» вооружили скорострельными «рогатками». Rossiyskaya Gazeta (state), 2021-09-28.
https://rg.ru/2021/09/28/desantnye-btr-mdm-rakushka-vooruzhili-skorostrelnymi-rogatkami.html

RGTV Роты НРТК создали в бригаде имени Александра Невского. Rossiyskaya Gazeta via Rambler, 2026.
https://news.rambler.ua/army/55988574-roboty-idut-v-boy-rotu-nrtk-sozdali-v-brigade-imeni-aleksandra-nevskogo/

RHPR Joint State Tests of Mi-26T2V Helicopter Started. Russian Helicopters (press release, via AviationPros), 2019-12-26.
https://www.aviationpros.com/aircraft-maintenance-technology/aircraft-technology/rotorcraft/press-release/21119324/russian-helicopters-joint-state-tests-of-mi-26t2v-helicopter-started

RIA Расчет БПЛА уничтожил технику ВСУ почти на три миллиона долларов. RIA Novosti, 2026-03-04.
https://ria.ru/20260304/spetsoperatsiya-2078346762.html

RIA2 Десантники испытали новые высокоточные снаряды «Китолов-2». RIA Novosti (Ministry of Defence statement), 2013-03-22.
https://ria.ru/20130322/928472367.html

RIA3 Новейшие радиостанции Р-166 впервые задействуют на учениях в ЦВО. RIA Novosti, 2012-09-18.
https://ria.ru/20120918/753121813.html

RIA4 Tornado-G crews mask their routes (RIA Novosti). RIA Novosti, 2026-10-14.
https://ria.ru/20261014/svo-2124362975.html

RIA5 Источник рассказал, как танковые ракеты прошивают бронетехнику ВСУ. RIA Novosti, 2024-03-27.
https://ria.ru/20240327/rakety-1936068479.html

RIA6 Palantin and Tirada-2 to enter service with Central Military District in 2019. RIA Novosti, 2018-12-17.
https://ria.ru/20181217/1548106399.html

RIA7 VS RF primenyayut v zone SVO noveishie kompleksy artrazvedki 'Yastreb-AV'. RIA Novosti (Russian state news agency), 2024-01-02.
https://ria.ru/20240102/spetsoperatsiya-1919420169.html

RIA15 KRET v 2015 godu peredal Vooruzhennym silam 9 kompleksov REB Moskva-1. RIA Novosti, 2015-12-25.
https://ria.ru/20151225/1348750286.html

RIA16 Western Military District receives KamAZ-65225 tractors (RIA Novosti, 20 Dec 2016). RIA Novosti, 2016-12-20.
https://ria.ru/20161220/1484163732.html

RIA17 Все дивизии ВДВ России перевооружены на ПЗРК «Верба». RIA Novosti, 2017-07-27.
https://ria.ru/20170727/1499245207.html

RIA17B Наследница «Иглы»: почему российскую «Вербу» считают лучшим ПЗРК в мире. RIA Novosti, 2017-12-25.
https://ria.ru/20171225/1511551922.html

RIA19 V Rossii sozdali kassetnye miny s elementami iskusstvennogo intellekta. RIA Novosti, 2019-06-27.
https://ria.ru/20190627/1555961958.html

RIA22 Самоходные орудия "Гиацинт-С" уничтожили подразделение гаубиц М777. RIA Novosti, 2022-05-23.
https://ria.ru/20220523/gaubitsy-1790076832.html

RIA23 В зону спецоперации прибыли модернизированные машины-разведчики БРМ-1К. RIA Novosti (state media), 2023-02-14.
https://ria.ru/20230214/brm-1k-1851839705.html

RIA222 Боевые машины пехоты «Басурманин» поступят в ВВО в феврале. RIA Novosti, 2022-02-02.
https://ria.ru/20220202/vooruzheniya-1770605498.html

RIA223 Генерал Балуевский рассказал о революции в артиллерии. RIA Novosti, 2022-08-11.
https://ria.ru/20220811/kvadrokoptery-1808761668.html

RIA232 Не скрыться нигде: какое оружие успешно применили в зоне СВО. RIA Novosti, 2023-05-29.
https://ria.ru/20230529/solntsepek-1874825378.html

RIASV Беспилотник «Тахион» — что это? Инфографика. RIA SV, 2022-11-08.
https://riasv.ru/obshhestvo/2022/11/08/bespilotnik-tahion-chto-eto-infografika/

RIAVRN Первый в вооруженных силах комплекс радиоэлектронной борьбы поступил в Воронежскую область. RIA Voronezh, 2019-04-11.
https://riavrn.ru/news/pervyy-v-vooruzhennykh-silakh-kompleks-radioelektronnoy-borby-postupil-v-voronezhskuyu-oblast/

RMBG Оператор НРТК «Богомол» рассказал, как «робот» спас раненого бойца. Rambler news, 2026.
https://news.rambler.ua/army/56507721-operator-nrtk-bogomol-rasskazal-kak-robot-spas-ranenogo-boytsa/

ROBO4 Гранат-4 (Robotrends catalogue). Robotrends.
https://robotrends.ru/robopedia/granat-4

ROBOT ZALA 421-16E. Robotrends.ru, 2019 (news items to 2019-05).
https://robotrends.ru/robopedia/zala-421-16e

ROE Buk-M2E (9K317E). Rosoboronexport. Read 2026-09-29.
https://web.archive.org/web/20251028012324/https://roe.ru/en/production/protivovozdushnaya-oborona/zenitnye-raketnye-kompleksy-i-ustanovki/zenitnye-raketnye-kompleksy-sistemy-sredney-dalnosti/buk-m2e/

ROE2 Air Defence Systems Export Catalogue, Pelena-1 Ground-Based AWACS-Type Radar Jammer, p. 76. Rosoboronexport (copy on ebin.pub), 2003.
https://ebin.pub/air-defence-systems-export-catalogue.html

ROSTEC Rostec sends Krasnopol guided munitions to the troops. Rostec press service via 1RU, 2024-04-23.
https://www1.ru/en/news/2024/04/23/vsegda-popadaet-v-cel-i-raznosit-ee-v-shhepki-rostex-otpravliaet-v-voiska-upravliaemye-boepripasy-k.amp.html

ROSTEC2 Батальоны дают огня: о системах «Солнцепек» и «Тосочка». Rostec, 2024-05-21.
http://rostec.ru/media/news/batalony-dayut-ognya-o-sistemakh-solntsepek-i-tosochka/

ROSTEC23 Ростех поставил вооруженным силам новую партию БМП-2М «Бережок». Oruzhie Rossii (www1.ru), Rostec / High-Precision Systems release, 2023-09-06.
https://www1.ru/news/2023/09/06/rostex-postavil-vooruzennym-silam-novuiu-partiiu-bmp-2m-berezok-usoversenstvovannye-boevye-masiny.html

ROSTEC25 In demand in the Middle East: Rostec assessed the prospects of the Berezhok module with Kornet missiles. Oruzhie Rossii (www1.ru), Rostec statement, 2025-02-13.
https://www1.ru/en/news/2025/02/13/vostrebovan-na-bliznem-vostoke-rostex-ocenil-perspektivy-modulia-berezok-s-raketami-kornet.html

RS 96Л6 всевысотный радиолокатор целеуказания. Russkaya Sila (русская-сила.рф).
https://xn----7sbb5ahj4aiadq2m.xn--p1ai/guide/army/rl/96l6.shtml

RS19 Первый в Российской армии комплекс РЭБ «Палантин» дебютировал на учении под Воронежем. Krasnaya Zvezda, 2019-09.
http://redstar.ru/pervyj-v-rossijskoj-armii-kompleks-reb-palantin-debyutiroval-na-uchenii-pod-voronezhem/

RSIG The Wireless-Set-No19 Group, Russian equipment index (R161 entries). Royal Signals Amateur Radio Society.
https://www.royalsignals.org.uk/Russian/index.html

RSTAR Pod prikrytiem Pantsirey. Krasnaya Zvezda (Russian MoD), 2020-02-10.
http://redstar.ru/pod-prikrytiem-pantsirej/

RSUPPLY Russia transports tanks of the 1960s to the Ukrainian front. Railway Supply, citing CFTS, 2022-06-01.
https://www.railway.supply/en/russia-transports-tanks-of-the-1960s-to-the-ukrainian-front/

RT 96L6E Cheese Board. radartutorial.eu (Wolff), mirror copy, 2015.
https://l.xif.fr/files/elec/radar/radartutorial-eu.save/19.kartei/02.surv/karte044.en.html

RT2 Новые возможности: какими будут российские ударные и разведывательные БПЛА «Альтиус» и «Форпост». RT (Russian state media), 2020.
https://russian.rt.com/russia/article/715411-rossiya-bespilotniki-altius-forpost

RT3 Управляемый «Китолов»: как в России наращивается выпуск высокоточных артиллерийских боеприпасов. RT (Russian state media), citing a Kalashnikov press release, 2025.
https://russian.rt.com/russia/article/1468709-kitolov-snaryad-kalashnikov

RT4 Sistemnaya modernizatsiya: kak sovershenstvuetsya semeystvo barrazhiruyushchikh boepripasov Lantset. RT (Russian state media), 2024 (after Army-2024, Aug 2024; exact date not on page).
https://russian.rt.com/russia/article/1354523-lancet-modernizaciya-zala-svo

RT5 Radioelectronic Lesochek: how EW complexes protect Russian troops from drones. RT Russian (state media), 2024-01.
https://russian.rt.com/russia/article/1254121-reb-lesochek-minoborony

RT6 «Увеличивает потенциал системы ПВО»: на что способны российские радиолокационные радары типа «Ниобий». RT (russian.rt.com), 2022-01-14.
https://russian.rt.com/russia/article/948530-niobii-nebo-rls-postavka-pvo/amp

RT7 Inokhodets: combat capabilities of the Russian UAV. RT (Russian state media), 2022-03.
https://russian.rt.com/russia/article/976629-inohodec-orion-ukraina-specoperaciya/amp

RT8 «Всегда выполняли опасную работу»: каких результатов достигли инженерные войска России. RT (Russian state media), 2022-01-21.
https://russian.rt.com/russia/article/951664-inzhenernye-voiska-istoriya-perevooruzhenie-taktika

RT9 Чем уникален новый авиадесантируемый бронеавтомобиль «Тайфун-ВДВ». RT (Russian state media), 2020.
https://russian.rt.com/russia/article/858725-taifun-vdv-mashina-pushka-bronya

RT10 «Всеракурсная защита»: какие новые комплексы борьбы с FPV-дронами. RT (Russian state media), 2023.
https://russian.rt.com/russia/article/1220024-fpv-dron-reb-saniya-3mx

RT11 «Уникальная установка»: на что будет способна российская арктическая артиллерийская самоходка «Магнолия». RT (Russian state media), 2021 (from text).
https://russian.rt.com/russia/article/831989-rossiya-armiya-arktika-magnoliya

RT18 «Тахион», «Орлан» и «Элерон»: зачем в ВДВ России создают подразделения беспилотной авиации. RT (Russian), 2018-05-29.
https://russian.rt.com/russia/article/517579-vdv-bespdesantniki-bespilotniki-podrazdelenija-sozdanijeilotniki

RT21 Готовы к самым разным вызовам: новейшие машины РХБЗ. RT (Russian), 2021.
https://russian.rt.com/russia/article/844614-rhbz-mashina-rhm-tigr-taifun

RT23 Гроза диверсантов: ВМФ России провёл учения с использованием катера проекта 03160 «Раптор». RT (Russian state media, relaying the Russian MoD), 2023-10-09.
https://russian.rt.com/russia/article/1214130-rossiya-flot-raptor/amp

RT24 С рекордной дистанции: российские десантники уничтожили БМП противника из ПТРК «Корнет». RT (Russian state media), citing Russian MoD, 2024-01-15.
https://russian.rt.com/russia/article/1258126-ptrk-kornet-minoborony

RTGIB «В единой системе управления»: какие преимущества получит армия РФ с появлением комплекса ПВО «Гибка-С». RT, 2019-12-27.
https://russian.rt.com/russia/article/702175-gibka-s-tigr-m-pzrk-minoborony

RTRS Exclusive: Chinese engines shipped as cooling units power Russian drones used in Ukraine. Reuters (copy on Denver Gazette), 2025-07.
https://www.denvergazette.com/2025/07/exclusive-chinese-engines-shipped-as-cooling-units-power-russian-drones-used-in-ukraine-5774e411-00cb-5a5a-aa4e-1941afb1d73b

RTRU Vsepogodnost i bolshaya dalnost: dostoinstva malogabaritnykh radiolokatorov. RT (Russian), 2020-07-25.
https://russian.rt.com/russia/article/767395-garmon-malogabaritnye-rls-razvedka

RTRU2 Podpolkovnik VS RF o minnykh polyakh i inzhenernoy tekhnike v zone SVO (RT interview with Lt Col O. Klyukov, relayed). Rambler / RT, 2023.
https://news.rambler.ua/army/51313592-podpolkovnik-vs-rf-o-minnyh-polyah-i-inzhenernoy-tehnike-v-zone-svo/

RUBR Russia deploys its only Terminator company to Sievierodonetsk - British intelligence. Rubryka, 2022-05-22.
https://rubryka.com/en/2022/05/22/u-brytanskij-rozvidtsi-povidomyly-pro-perekydannya-rosiyeyu-pid-syevyerodonetsk-svoyeyi-yedynoyi-grupy-z-terminatoramy

RUBR2 Russian forces bring decommissioned Soviet howitzers from Crimea to frontline - ATESH partisan movement. Rubryka, 2023-10-06.
https://rubryka.com/en/?p=584054

RUBRYKA russian assault ship sinks near Mariupol. Rubryka, undated (year not printed; events of 30 June).
https://rubryka.com/en/?p=419188

RUELEC РЛС в Армавире заступила на боевое дежурство. Время электроники (quotes RIA Novosti), 2009-02.
https://russianelectronics.ru/rls-v-armavire-zastupila-na-boevoe-dezhurstvo/

RUMOD Модернизированный разведывательный комплекс «Зоопарк-1М» (MoD news item). Russian Ministry of Defence (mil.ru). Read 2026-09-29.
https://mil.ru/et/news/more.htm?id=12191174@egNews

RUSA1 Mobile control posts PU-12M7, PU-12M6. RusArmy.com, 2004-2010.
https://www.rusarmy.com/pvo/pvo_vsk/su_pu-12m7_pu-12m6.html

RUSA2 Unified battery command post 9S737M; 9S737 Ranzhir. RusArmy.com, 2004-2010.
https://www.rusarmy.com/pvo/pvo_vsk/su_9s737m.html

RUSAR1 Автоматизированная система управления смешанной группировкой ЗРК 9С52М1 «Поляна-Д4М1». RusArmy.com, 2004-2010.
https://rusarmy.com/pvo/pvo_vsk/su_polyana-d4m1.html

RUSARM Модернизированная радиолокационная станция П-18 (вариант ННИИРТ). RusArmy.com, 2010.
https://rusarmy.com/pvo/pvo_vsk/rls_p-18.html

RUSARMM Комплекс 9С52М «Поляна-Д4М». RusArmy.com, 2004-2010.
https://rusarmy.com/pvo/pvo_vsk/su_polyana-d4m.html

RUSARMY 152-мм пушка 2А36 Гиацинт-Б. RusArmy.com, 2004-2010.
https://rusarmy.com/brone/bau_2a36_giatsint-b.htm

RUSARMY2 Inzhenerno-razvedyvatelnaya mashina IRM Zhuk. RusArmy.com.
https://www.rusarmy.com/brone/rzm_irm_zhuk.htm

RUSARMY3 Radiolokatsionnaya stantsiya Kasta-2E1. RusArmy.com, 2010.
https://rusarmy.com/pvo/pvo_vvs/rls_kasta-2e1.html

RUSARMY4 Командно штабная машина Р-145БМ «Чайка». RusArmy.com, 2004-2010.
https://www.rusarmy.com/svyaz/kshm/kshm_r-145bm.html

RUSARMY5 Komandno-shtabnaya mashina R-149BMR. RusArmy.com, 2010.
https://www.rusarmy.com/svyaz/kshm/kshm_r-149bmr.html

RUSARMY6 Мобильный пункт связи Р-166. RusArmy.com, 2004-2010.
http://www.rusarmy.com/svyaz/radio/r-166.html

RUSF Oreshnik in Belarus? (Podvig). russianforces.org, 2025-12.
https://russianforces.org/blog/2025/12/oreshnik_in_belarus.shtml

RUSI1 Defending Mother Russia's Skies (Withington). RUSI Commentary, 2022-07-13. Read 2026-09-29.
https://www.rusi.org/explore-our-research/publications/commentary/defending-mother-russias-skies

RUSI2 Tactical Developments During the Third Year of the Russo-Ukrainian War (Watling, Reynolds). RUSI, 2025-02. Read 2026-10-02.
https://static.rusi.org/tactical-developments-third-year-russo-ukrainian-war-february-2205.pdf

RUSI3 Russia's Iranian-Made UAVs: A Technical Profile (Uzi Rubin). RUSI, 2023-01-13. Read 2026-10-02.
https://www.rusi.org/explore-our-research/publications/commentary/russias-iranian-made-uavs-technical-profile

RUSI4 The Iskander-M and Iskander-K: A Technical Profile (Cranny-Evans, Kaushal). RUSI, 2022-08-08. Read 2026-09-29.
https://www.rusi.org/explore-our-research/publications/commentary/iskander-m-and-iskander-k-technical-profile

RUSI5 Russia's Artillery War in Ukraine: Challenges and Innovations (Sam Cranny-Evans). RUSI, 2023. Read 2026-10-20.
https://www.rusi.org/explore-our-research/publications/commentary/russias-artillery-war-ukraine-challenges-and-innovations

RUSI6 Mass Precision Strike: Designing UAV Complexes for Land Forces (Bronk, Watling). RUSI, 2024-04-11. Read 2026-10-06.
https://static.rusi.org/mass-precision-strike-final.pdf

RUSI7 Meatgrinder: Russian Tactics in the Second Year of Its Invasion of Ukraine (Watling, Reynolds). RUSI, 2023-05-19. Read 2026-10-02.
https://static.rusi.org/403-SR-Russian-Tactics-web-final.pdf

RUSI8 The Russian Air War and Ukrainian Requirements for Air Defence. RUSI (Bronk, Reynolds, Watling), 2022-11-07. Read 2026-10-16.
https://static.rusi.org/SR-Russian-Air-War-Ukraine-web-final.pdf

RUSI9 The Oreshnik Ballistic Missile: From Russia with Love? (Kaushal, Savill). RUSI, 2024-12-10. Read 2026-10-21.
https://www.rusi.org/explore-our-research/publications/commentary/oreshnik-ballistic-missile-russia-love

RUSI10 Ukraine at War: Paving the Road from Survival to Victory (Watling, Reynolds). RUSI, 2022-07-04. Read 2026-10-06.
https://static.rusi.org/special-report-202207-ukraine-final-web_0.pdf

RUSIAD Modern Russian and Chinese Integrated Air Defence Systems (Bronk). RUSI, 2020.
https://rusi.org

RUSIAD Modern Russian and Chinese Integrated Air Defence Systems (Bronk). RUSI, 2020.
https://rusi.org (search by title)

RUSIPL Preliminary Lessons in Conventional Warfighting, Feb to Jul 2022, p. 15. RUSI, 2022-11.
https://static.rusi.org/359-SR-Ukraine-Preliminary-Lessons-Feb-July-2022-web-final.pdf

RUSTEAM Комплекс радиоэлектронной борьбы Борисоглебск-2. rus.team, n.d. (latest event 2019-01-10).
https://rus.team/articles/kompleks-radioelektronnoj-borby-borisoglebsk-2

RUWK152 1V152 (Russian Wikipedia mirror, dic.academic.ru). Wikipedia mirror, 2010.
https://dic.academic.ru/dic.nsf/ruwiki/1415735

RVIA Сучасні зразки озброєння та військової техніки імовірного противника. Довідник (publisher's sample pages, printed pp. 9–18). Research Centre for Missile Troops and Artillery with the RViA Directorate, Ukrainian Ground Forces; Tsentr uchbovoi literatury, Kyiv, 2022.
https://jurkniga.ua/contents/suchasni-zrazki-ozbroiennya-ta-viyskovoi-tekhniki-imovirnogo-protivnika-dovidnik.pdf

RVVDKU Podvizhnye sredstva tekhnicheskogo obsluzhivaniya i remonta voennoi avtomobilnoi tekhniki (textbook). Ryazan Higher Airborne Command School, RF MoD, 2012.
https://military.samgtu.ru/uploads/library/podvizhnaya_mast_mto-at.pdf

RWW The Russian Way of War: Force Structure, Tactics, and Modernization of the Russian Ground Forces (Grau, Bartles), pp. 234, 251–252. FMSO, 2016.
https://archive.org/details/The_Russian_Way_of_War_Force_Structure_Tactics_and_Moderniza

SAFAN Радиолокационная станция 5Н84А «Оборона—14». safaniuk.livejournal.com.
https://safaniuk.livejournal.com/28392.html

SAIDPVO РЛС «Зоопарк-1М» в Алабино. saidpvo LiveJournal blog, reposting a militaryrussia.ru table, 2015.
https://saidpvo.livejournal.com/418815.html

SAPORG Radyanska protypikhotna mina OZM-72 (OZM-72 Mine Specifications). sappers.org handbook.
https://sappers.org/en/handbook/mines/tripwire-operated-anti-personnel/ozm-72

SAPPER2 PMN-2 Mine Specifications. sappers.org handbook.
https://sappers.org/en/handbook/mines/pressure-actuated-anti-personnel-mines/pmn-2

SAPPER4 PMN-4 Mine Specifications. sappers.org handbook.
https://sappers.org/en/handbook/mines/pressure-actuated-anti-personnel-mines/pmn-4

SAPPERS MON-200 mine specifications (Sappers handbook). sappers.org, 2026.
https://sappers.org/en/handbook/mines/command-detonated-antipersonnel-mines/mon-200

SAPPERS1 MON-100 mine specifications (Sappers handbook). sappers.org, 2026.
https://sappers.org/en/handbook/mines/command-detonated-antipersonnel-mines/mon-100

SAPPERS2 MON-50 Mine Specifications, handbook entry. sappers.org, 2026.
https://sappers.org/en/handbook/mines/command-detonated-antipersonnel-mines/mon-50

SAPPERS3 Soviet PDM-1M Anti-Landing Mine (handbook). Sappers (sappers.org).
https://sappers.org/en/handbook/mines/anti-landing/pdm-1m

SAPPERS4 POM-2R, POM-2R1, POM-2RBS, POM-2R1BS Anti-Personnel Mines. sappers.org handbook.
https://sappers.org/en/handbook/mines/tripwire-operated-anti-personnel/pom-2r

SAPPERS5 Specifications of PTM-1/PTM1-G Mines, sappers.org handbook. sappers.org.
https://sappers.org/en/handbook/mines/anti-tank-anti-track/ptm-1-ptm1-g

SAPPERS6 Russian anti-tank mine PTM-4 and PTM-4R. Sappers handbook.
https://sappers.org/en/handbook/mines/anti-tank-bottom-attack/ptm-4-and-ptm-4r

SAPPERS7 TM-62M, TM-62P3 and TM-62P2 pages, Handbook of mines. sappers.org (Ukrainian mine handbook).
https://sappers.org/en/handbook/mines/anti-tank-anti-track/tm-62m

SAS Issue Brief 9: Man-portable Air Defence Systems (MANPADS) and Syria. Small Arms Survey, 2014.
https://smallarmssurvey.org/sites/default/files/resources/SAS-IB9-MANPADS-and-Syria.pdf

SBBY «Длинная рука»: Ми-35М сможет поражать танки на дистанции в 10 км. SB. Belarus Segodnya (sb.by), 2018.
https://www.sb.by/articles/dlinnaya-ruka-mi-35m-smozhet-porazhat-tanki-na-distantsii-v-10-km.html

SBX Russia is trying to cut off Ukraine's access to Starlink (T. Spirlet, Business Insider). Sandboxx News, 2024.
https://www.sandboxx.us/?p=98665

SCDSA Russia's Supercam S350 UAV Showcased First Time in Caspian Region During ADEX-2024. Defence Security Asia, 2024-09.
https://defencesecurityasia.com/en/russias-supercam-s350-uav-showcased-in-caspian-region-during-adex-2024/

SCMFR Supercam S350 (product page). GK Bespilotnye sistemy (Unmanned Systems Group), undated, read 2026-10.
https://supercam.aero/catalog/supercam-s350

SDELANO Всевидящее око на Кубани. Сделано у нас (reprint of Krasnaya Zvezda-type article), 2014-09.
https://sdelanounas.ru/blogs/53133/

SDN В полк РХБЗ ВВО поступили АРС-14КМ. Сделано у нас (blog), undated, about 2020.
https://sdelanounas.ru/blogs/86040/

SDN2 Pyat RLS Garmon 1L122 postupili v TsVO. Sdelano u nas (repost of Central MD press service), 2018-08-15.
https://sdelanounas.ru/blogs/110803/

SDU Комплект средств автоматизации «Барнаул-Т». Sdelano u nas (user blog), 2011-10-16.
https://sdelanounas.ru/blogs/8245/

SDU13 Kompleks 1L267 Moskva-1 s moduliami 1L265 / 1L266 voshel v seriinoe proizvodstvo. Sdelano u nas (user post), 2013-12-14.
https://sdelanounas.ru/blogs/44869/

SHEP Russia deploys 2S43 Malva to Kharkiv offensive. Shephard Media, 2024-06.
https://www.shephardmedia.com/news/landwarfareintl/russia-deploys-2s43-malva-to-kharkiv-offensive/

SHEP2 Russian MoD to receive Eleron-3 UAS. Shephard Media, 2018-05.
https://shephardmedia.com/news/uv-online/russian-mod-receive-eleron-3-uas/

SHEP3 Two Mi-171MTPR-1s delivered to the Russian MoD. Shephard Media.
https://shephardmedia.com/news/defence-helicopter/two-mi-171mtpr-1s-delivered-russian-mod

SHEP4 Russian Land Forces take on Niobiy-SV radars. Shephard Media, 2019-04-10.
https://shephardmedia.com/news/digital-battlespace/russian-land-forces-take-niobiy-sv-radars

SHEP5 Central MD unit receives Aistyonok radar complex. Shephard Media, 2018-01-19.
https://www.shephardmedia.com/news/landwarfareintl/central-md-unit-receives-aistyonok-radar-complex/

SHEP6 Russia's Baltic Fleet receives new patrol boat. Shephard Media, 2017-11-01.
https://shephardmedia.com/news/naval-warfare/russias-baltic-fleet-receives-raptor-patrol-boat

SHEP17 Russian Navy orders Kalashnikov craft. Shephard Media, 2017-08.
https://www.shephardmedia.com/news/naval-warfare/russian-navy-orders-kalashnikov-craft/

SHEP18 Russia's WMD receives Shturm-S systems. Shephard Media, 2018-05.
https://shephardmedia.com/news/landwarfareintl/russias-wmd-receives-shturm-s-anti-tank-missile-co

SHEP21 Army-21: First wheeled platform integration for Sosna SAM system unveiled. Shephard Media, 2021-08.
https://shephardmedia.com/news/landwarfareintl/army-21-first-wheeled-platform-integration-sosna-s

SHEPH Russian Army receives SNAR-10 M1 radar. Shephard Media, 2019-01.
https://shephardmedia.com/news/digital-battlespace/russian-cmd-receives-portable-snar-10-m1-radar

SHEPHRD Latest version of Russia's Sosna air defence system presented. Shephard Media, 2019-06.
https://www.shephardmedia.com/news/landwarfareintl/latest-version-russias-sosna-air-defence-system-pr/

SILARF Novoe remontno-evakuatsionnoe podrazdelenie VVO poluchilo REM-KL. Silovoi blok (citing Russian MoD), 2019-07-26.
https://www.sila-rf.ru/2019/07/26/novoe-remontno-jevakuacionnoe-podrazdelenie-vvo-poluchilo-sovremennye-mashiny-rjem-kl/

SLOVO Border Guard Phoenix unit destroys R-416G-MS in Luhansk region. Slovo i Dilo, 2026-03-26.
https://www.slovoidilo.ua/2026/03/26/novyna/bezpeka/unikalna-czil-prykordonnyky-obrizaly-zvyazok-okupantam-luhanshhyni

SMITODAY На берегах Днепра показали минные поля донных ПДМ-1М. smi.today (aggregator teaser of Rossiyskaya Gazeta, rg.ru).
https://www.smi.today/ru_smi/3756816-na-beregakh-dnepra-pokazali.html

SNG Ukraine notes improved accuracy of Russia's North Korean missiles (Reuters text). StratNews Global, with inputs from Reuters, 2025-02.
https://stratnewsglobal.com/ukraine/ukraine-notes-improved-accuracy-of-russias-north-korean-missiles/

SNOB Kalashnikov predstavil samovzryvayushchiysya bespilotnik. Snob (quoting Rostec), 2019-02.
https://snob.ru/news/172572/

SOVAMMO 122-мм выстрелы ЗВОФ81 и ЗВОФ82 с осколочно-фугасным снарядом ЗОФ56 «Лещ». soviet-ammo.ucoz.ru (Боеприпасник), hobby reference site.
http://soviet-ammo.ucoz.ru/index/122_3of56/0-109

SPAGE Air Defense: The Old Gun Is The New Gun. StrategyPage, 2020-07-10.
https://www.strategypage.com/htmw/htada/20200710.aspx

SPREV2 Russia gears up for electronic warfare in space (part 2) (Hendrickx). The Space Review, 2020-11.
https://thespacereview.com/article/4060/1

SPT Понтонно-мостовой парк ПМП. sptechnika.ru (surplus equipment dealer).
https://sptechnika.ru/voennaya-tekhnika/pontonno-mostovoj-park-pmp/

SPUT СВО: артиллеристы из Приморья "гвоздят" позиции ВСУ, обрушивая до 100 снарядов в сутки. Sputnik Kazakhstan, quoting Russian MoD, 2024-04-12.
https://ru.sputnik.kz/20240412/svo-artilleristy-iz-primorya-gvozdyat-pozitsii-vsu-obrushivaya-do-100-snaryadov-v-sutki-43621094.html

STARCOM РЛС П-14 "Оборона" - лучшая РЛС времен СССР. starcom68.livejournal.com.
https://starcom68.livejournal.com/3150409.html

STC15 Primenenie BLA semeystva Orlan dlya aerosyemochnykh rabot (conference slides). Special Technology Centre (STC), via robotrends.ru, 2015-06.
https://robotrends.ru/images/1540/467822/2015_STC_BPLA_ORLAN.pdf

STKT «Торнадо-У». Новый военный «Урал». st-kt.ru (Za Rulem reprint), 2015–2016.
https://st-kt.ru/articles/«tornado-u»-novyi-voennyi-«ural»

STOL Ракетная дуэль «Торнадо-С» и HIMARS (79th Gds Rocket Artillery Brigade). StolicaMedia, 2026-09-17.
https://stolicamedia.ru/news/2624426/

STRASAM S-400 Triumf Air Defence System (Part 1). STRASAM, 2026-04.
https://strasam.org/en/defense/aerospace-industry/s-400-triumf-air-defence-system-part-1-4079

STRAT Russia Begins Garpia-A1E Export Push. StratPost, 2026-08-23.
https://stratpost.com/russia-begins-garpia-a1e-export-push/

STRAT2 Armor: Russia Using Chinese Armored Vehicles. StrategyPage, 2024-12-19.
https://www.strategypage.com/htmw/htarm/articles/202412190252.aspx

STRIPES Russia tests secretive weapon to target SpaceX's Starlink in Ukraine (Washington Post, A. Horton, reprint). Stars and Stripes (Washington Post reprint), 2023-04-18.
https://www.stripes.com/theaters/europe/2023-04-18/russia-secretive-weapon-spacex-starlink-ukraine-9841092.html

STUD1 Тактико-технические данные машины ТМС-65. studfile.net (training manual).
https://studfile.net/preview/553111/page:2/

STUD2 АРС-14, устройство и работа станции. studfile.net (training manual).
https://studfile.net/preview/553066/page:2/

STUD2A Авторазливочная станция АРС-14. Техническое описание (Кутин, РХТУ, 1999), page 1. studfile.net (training manual), 1999.
https://studfile.net/preview/553066/

STUDF Tema 21. Inventarnye mosty, zanyatie 9: Naplavnoj zheleznodorozhnyj most-lenta (MLZh), lecture slides. Rostov State Transport University, military department (via studfile.net), undated, after 2000.
https://studfile.net/preview/4499101/

STUDF2 6.5 Особенности устройства и принцип действия минометных выстрелов с активно-реактивными минами. studfile.net, student copy of a Russian artillery-munitions textbook.
https://studfile.net/preview/10059312/page:4/

SVOB Быстрая, но неточная: что известно о российских ракетах Циркон. Radio Svoboda / Krym.Realii, 2026-01.
https://www.svoboda.org/a/bystraya-no-netochnaya-chto-izvestno-o-rossiyskih-raketah-tsirkon/33666005.html

SVOB2 ВСУ бомбят Воронеж. Удары по российским РЛС. Радио Свобода, 2024.
https://www.svoboda.org/a/vsu-bombyat-voronezh-udary-po-rossiyskim-rls/32967418.html

SVOB3 Китай отрицает поставки бронетехники в Чечню (title taken from URL). Radio Svoboda (RFE/RL), 2023-06 (date not printed).
https://www.svoboda.org/a/kitay-otritsaet-postavki-bronetehniki-v-chechnyu/32455545.html

SVRHBZ Авторазливочная станция АРС-14КМ. Союз ветеранов РХБЗ (veterans association site).
https://soyuz-veteranov-rhbz.ru/tehnika/avtorazlivochnaya-stanciya-ars-14km

SZILV Aviation anti-tank missile AT-16 Scallion (9A4172 Vikhr), L. Szilvassy. Repulestudomany (Hungarian National University of Public Service), 2014.
https://www.repulestudomany.hu/folyoirat/2014_3/2014-3-03-0178_Szilvassy_Laszlo.pdf

T24TV Instruments of Russian Terror: How Dangerous Kalibr Missiles Are. 24tv.ua, 2026-07.
https://24tv.ua/en/calibre-cruise-missile-specifications-price-range-and-how-many_n3152707/amp

TA Ukraine's Newest Heavy Brigade Rides in Captured Russian Tanks (Axe). Trench Art, 2025-09.
https://www.trenchart.us/p/ukraines-newest-heavy-brigade-rides

TAD Zala E-серия БВС. TAdviser, 2022.
https://www.tadviser.ru/index.php/Продукт:Zala_E-серия_БВС_(Беспилотное_воздушное_судно)

TADV 2С38 Деривация-ПВО. TAdviser, 2024-08.
https://www.tadviser.ru/index.php/Продукт:2С38_Деривация-ПВО

TADV2 Грань (управляемая мина). TAdviser, 2022.
https://www.tadviser.ru/index.php/Продукт:Грань_(управляемая_мина)

TADV3 Гранат-4 (TAdviser). TAdviser, 2024-07.
https://www.tadviser.ru/index.php/Продукт:Гранат-4

TADV4 Сапфир (комплекс радиоэлектронной борьбы). TAdviser, 2023.
https://www.tadviser.ru/index.php/Продукт:Сапфир_(комплекс_радиоэлектронной_борьбы)

TAKT Rosselektronika presented a modernised Lesochek EW complex. Takticheskiy.ru, 2024-12-19.
https://takticheskiy.ru/2024/12/19/roselektronika-predstavila-modernizirovannyj-kompleks-reb-lesochek/

TANKAFV MT-LBu (1974). tank-afv.com.
https://tank-afv.com/coldwar/ussr/MT-LBu.php

TANKENC Medium Recovery Vehicle M88. Tank Encyclopedia.
https://tanks-encyclopedia.com/coldwar-us-medium-recovery-vehicle-m88/

TASS Ураган калибра 57 мм: долгая история зенитной пушки С-60 (via Rambler). TASS, 2023.
https://news.rambler.ru/army/52631567-uragan-kalibra-57-mm-dolgaya-istoriya-zenitnoy-pushki-s-60/

TASS1 Malka unichtozhila punkt vremennoy dislokatsii s zhivoy siloy VSU. TASS, 2024-11-06. Read 2026-10-01.
https://tass.ru/armiya-i-opk/25548423

TASS2 Defense contractor delivers advanced artillery fire control system to Russian troops. TASS (quoting Rostec press office), 2021-10-26. Read 2026-10-04.
https://tass.com/defense/1354193

TASS3 Russian military gets first batch of cutting-edge electronic warfare operation systems. TASS, 2017-09-26. Read 2026-10-06.
https://tass.com/defense/967567/amp

TASS4 Provod fiber-optic FPV drones deployed at ranges over 40 km. TASS, 2026-08-19. Read 2026-10-02.
https://tass.com/defense/2175003

TASS5 Russian troops use Gran, Kitolov guided projectiles in Ukraine - source. TASS (Russian state agency), 2022-07-08. Read 2026-10-20.
https://tass.com/defense/1477229

TASS6 Rostec delivers IMR-3 obstacle-clearing vehicles to Defense Ministry. TASS, 2026-01-21. Read 2026-10-01.
https://tass.com/defense/2074497

TASS7 Foreign military attaches, media get a look at 9M729 for Iskander-M. TASS, 2019-01-23. Read 2026-09-29.
https://tass.com/defense/1041360

TASS8 Russian Helicopters deliver upgraded Ka-27Ms to Defense Ministry. TASS, 2018-01-09. Read 2026-10-16.
https://tass.com/defense/984289

TASS9 Latest Msta-S howitzers arrive for 49th Army in Southern Military District. TASS, 2020-03-16. Read 2026-10-20.
https://tass.com/defense/1130667

TASS10 KUB munitions integrated into Russian military armament system. TASS, 2026-01-19. Read 2026-10-02.
https://tass.com/defense/2073179

TASS11 Single Russian Lancet drone crew destroys 20 pieces of Ukrainian equipment in DPR. TASS, 2026-07-09. Read 2026-10-02.
https://tass.com/politics/2158107

TASS12 Russia to feature latest Lesochek small-size portable jammer at Army-2021 arms show. TASS (state news agency), quoting Western MD press office, 2021-08-03. Read 2026-10-06.
https://tass.com/defense/1322243

TASS13 Arctic helicopters to carry out year-round patrols in easternmost Russia. TASS, 2019-11-08. Read 2026-10-16.
https://tass.com/defense/1087613/amp

TASS14 Defense firm delivers latest Msta-S self-propelled howitzers to Russian troops. TASS, 10 November, year not shown on fetched page. Read 2026-09-29.
https://tass.com/defense/1359801

TASS15 Military peacekeepers suppress enemy communications in Volga area drills. TASS, 2020-06-18. Read 2026-10-04.
https://tass.com/defense/1169139/amp

TASS16 Russia's Western Military District gets first radio-electronic warfare system Palantin. TASS, 2019-04-10. Read 2026-09-29.
https://tass.com/defense/1053089

TASS17 New targeting system to double range of Russia's Pantsir air defense system. TASS, 2016-10-06. Read 2026-09-29.
https://tass.com/defense/904503

TASS18 New Pantsir-S1M upgraded after Syria to be able to hit any drones. TASS, 2019-05. Read 2026-09-29.
https://tass.com/defense/1058576

TASS19 Russian units uncover Ukrainian artillery positions with Penicillin. TASS, 2023-04-15. Read 2026-09-29.
https://tass.com/defense/1604741

TASS20 Ukraine's military scatters Lepestok anti-personnel mines at Donetsk railway station. TASS, 2022-08-09. Read 2026-10-21.
https://tass.com/defense/1491221/amp

TASS21 Firing range of Tosochka flamethrower system extended. TASS, 2024-08-13. Read 2026-10-20.
https://tass.com/defense/1828589

TASS22 Range of Russian S-300V4 system with new missile reaches 400 km. TASS, 2016-05-19. Read 2026-09-29.
https://tass.com/defense/876665

TASS23 Advanced long-range missile for S-400 system accepted for service in Russia. TASS, 2018-10-18. Read 2026-09-29.
https://tass.com/defense/1026630

TASS24 Over 1,000 Russian marines land on Caspian coast in large-scale drills. TASS, 2020-02-13. Read 2026-10-16.
https://tass.com/defense/1119687/amp

TASS25 Russian hi-tech firm showcases latest Sosna short-range air defense missile system. TASS (quotes Rostec), 2018-08-22. Read 2026-10-07.
https://tass.com/defense/1018157

TASS26 Russia to display Supercam S350 drone at ADEX show. TASS, 2024-09-23. Read 2026-10-02.
https://tass.com/defense/1846567/amp

TASS27 Supercam S350 UAV helps Russian troops destroy array of Western-made armament. TASS, 2025-05-21. Read 2026-10-02.
https://tass.com/defense/1961491/amp

TASS28 Supercam S350 reconnaissance and strike drone to be presented at World Defense Show. TASS, 2026-02-06. Read 2026-10-02.
https://tass.com/defense/2082793/amp

TASS29 Russia's latest recon drones successfully employed in Ukraine operation - source. TASS, 2022-12-05. Read 2026-10-02.
https://tass.com/politics/1545685

TASS30 Latest Tornado-G multiple rocket launchers arrive for troops in Russia's south. TASS, 2021-04-06. Read 2026-09-29.
https://tass.com/defense/1274683

TASS31 Heavy flamethrowers unit assumes combat duty in northwest Russia. TASS, 2018-11-13. Read 2026-09-29.
https://tass.com/defense/1030669

TASS32 Russia's cutting-edge TOS-2 flamethrower boasts high export potential. TASS, 2021-11-19. Read 2026-09-29.
https://tass.com/defense/1363645

TASS33 Russia engages TOS-2 flamethrowers in Ukraine. TASS, 2024-05-03. Read 2026-09-29.
https://tass.com/defense/1783193

TASS34 Moscow Military District to receive TOS-1A, TOS-2 heavy flamethrower systems. TASS, 2026-03-31. Read 2026-09-29.
https://tass.com/defense/2109769

TASS35 Russian engineering troops receive over 20 robotic vehicles. TASS (quoting Krasnaya Zvezda interview), 2023-01-20. Read 2026-10-04.
https://tass.com/defense/1564823/amp

TASS36 Russia expands use of Vikhr missiles in Ukraine operation (TASS, citing Rostec). TASS, 2024-07-23. Read 2026-10-21.
https://tass.com/politics/1820259

TASS37 Russia's Vikhr air-launched missiles highly efficient in Ukraine operation (TASS, citing Kalashnikov). TASS, 2024-07-26. Read 2026-10-21.
https://tass.com/defense/1821659

TASS38 Kalashnikov improves combat capabilities of Vikhr-1 aviation missile (TASS). TASS, 2024-12-23. Read 2026-10-21.
https://tass.com/defense/1891709

TASS39 Kalashnikov modifies Vikhr missile to combat UAVs as armored vehicles withdraw (TASS). TASS, 2026-08-10. Read 2026-10-21.
https://tass.com/defense/2170837

TASSM Бойцы «Центра» взорвали систему фортификационных сооружений ВСУ (TASS, citing Russian MoD). news.mail.ru, TASS dateline 21 October, 2026-10-21.
https://news.mail.ru/politics/72795140/

TASSMR Tornado-G crew destroyed enemy personnel (TASS item on news.mail.ru). TASS / Russian MoD, 2026-09-30.
https://news.mail.ru/politics/72544798/

TASSNN Russia's Forpost UAV Designates Naval Targets During Black Sea Fleet Maneuvers (TASS story). Naval News / TASS, c. 2020 (undated in fetched text).
https://www.navalnews.com/?p=15155

TE 9P78 TEL for the 9K720 Iskander complex. truck-encyclopedia.com.
https://truck-encyclopedia.com/modern/russia/9K720-iskander.php

TECH Армия получает новые БМП с тепловизорами. TechInsider (Popular Mechanics Russia), undated on page.
https://www.techinsider.ru/weapon/news-366562-armiya-poluchaet-novye-bmp-s-teplovizorami/

TECHI Крым защитят дальнобойным «Ниобием». Tech Insider (techinsider.ru), 2019-10-09.
https://www.techinsider.ru/weapon/news-511982-krym-zashchityat-dalnoboynym-niobiem/

TECHIN Ladoga: how the Soviet tank-limousine was built. Technical Insider.
https://www.techinsider.ru/weapon/498622-sovetskiy-tank-limuzin-stal-muzeynym-eksponatom/

TECHIN2 Иду по приборам: первый серийный вертолет Ми-26Т2В. Техинсайдер (techinsider.ru), undated (page prints no date).
https://www.techinsider.ru/weapon/474532-idu-po-priboram-pervyy-seriynyy-vertolet-mi-26t2v/

TECHINS Боевые машины разминирования: езда напролом. Populyarnaya Mekhanika (techinsider.ru).
https://www.techinsider.ru/weapon/10637-k-protivniku-naprolom-boevye-mashiny-razminirovaniya/

TELE Мины ТМ-57 и реализация сюрприза для ТМ-62. teletype.in (@oisb, Russian-language blog), undated; refers to autumn 2023.
https://teletype.in/@oisb/4Fryjpeo-fg

TELEG Китай помогает РФ в войне? На фронте засветились бронемашины ZFB-05, что говорят в КНР (фото). Telegraf (Ukraine), 2024-09-24.
https://news.telegraf.com.ua/ukraina/2024-09-24/5872761-kitay-pomogaet-rf-v-voyne-na-fronte-zasvetilis-bronemashiny-zfb-05-chto-govoryat-v-knr-foto

TELETYP Мины ПТМ-4 отечественные. Свежие, интересные. Обзор (teletype.in/@oisb). Blog (Russian author, pro-Russian), 2023–2025.
https://teletype.in/@oisb/hvDFJo-KrZ6

TELETYPE Mini directional mines MON-50, MON-90, MON-100, MON-200, M18A1 Claymore: overview. Teletype (OISB blog), 2023.
https://teletype.in/@oisb/feqOOyOy9ib

TENC 2S23 Nona-SVK. Tank Encyclopedia, 2025-01.
https://tanks-encyclopedia.com/coldwar/russia/2s23-nona-svk/

TENC2 BMO-T (Heavy Armored Flamethrower Personnel Carrier). Tank Encyclopedia.
https://tanks-encyclopedia.com/bmo-t-heavy-armored-flamethrower-personnel-carrier/

TERRO Mobius report 38/2025: OZM-72 bounding mines modified for delivery by drone (Ukraine). Terrogence, 2025-05.
https://terrogence.com/blog/2025/05/mobius-report-38-2025-ozm-72-bounding-mines-modified-for-delivery-by-drone-ukraine/

TERRO2 Mobius report 35/2023: TM-83 off-route mines with unique initiation systems, Ukraine. Terrogence, 2023-05.
https://terrogence.com/blog/2023/05/mobius-report-35-2023-tm-83-off-route-mines-with-unique-initiation-systems-ukraine/

TESTP Kh-22 (AS-4 Kitchen). testpilot.ru.
https://testpilot.ru/en/rossiya-e/mikoyan/kh22/

TEXTY Як влаштовані російські FPV-дрони: боєць ЗСУ дослідив трофейний зразок. Texty.org.ua, 2023-09-28.
https://texty.org.ua/fragments/110753/yak-vlashtovani-rosijski-fpv-drony-boyec-doslidyv-trofejnyj-zrazok-i-poradyv-yak-z-nymy-borotysya/

TH Missile attack on the Chernihiv Regional Drama Theatre building. Truth Hounds, 2023 or later.
https://truth-hounds.org/en/cases/missile-attack-on-the-chernihiv-regional-drama-theatre-building/

THEINS Ukraine hits Russian helicopter on Black Sea drilling platform (Navy statement). The Insider, 2026-03-05.
https://theins.ru/en/news/290036

TI Южные войска получили модернизированные «Сани». TechInsider (citing RIA Novosti and Southern MD press service), 2018.
https://www.techinsider.ru/weapon/news-415572-rossiyskie-voyska-poluchili-modernizirovannye-sani/

TI2 Мост навстречу врагу: понтонно-мостовой парк (Veremeev). TechInsider (Popular Mechanics Russia), 2020-06-17. https://www.techinsider.ru/weapon/10160-most-navstrechu-vragu-pontonno-mostovoy-park/

TI3 Nemirnoye «Zemledeliye»: kak rabotayet rossiyskaya sistema zalpovogo minirovaniya. Techinsider. https://www.techinsider.ru/weapon/1540730-nemirnoe-zemledelie-kak-rabotaet-rossiyskaya-sistema-zalpovogo-minirovaniya/

TMMAN Противотанковая мина ТМ-57 (technical description; text of the Soviet MoD handbook, library copy). bookstock.e-libra.ru (reprint of USSR Ministry of Defence manual), 1976 manual; page retrieved 2026. https://bookstock.e-libra.ru/read/499105-protivotankovaya-mina-tm-57.html

TNI This is Russia's BMP-3M Infantry Fighting Vehicle: Here's What It Can Do (Charlie Gao). The National Interest, via Warrior Maven, 2019-03-11. https://warriormaven.com/land/this-is-russia-s-bmp-3m-infantry-fighting-vehicle

TO2S9 120-мм самоходное артиллерийское орудие 2С9. Техническое описание и инструкция по эксплуатации. Ministry of Defence of the USSR (scan on military-references.com), 1986. https://www.military-references.com/wp-content/uploads/books/spg/ussr/2s9/2C9_Нона_120-мм-самоходное_артиллерийское_орудие_Техническое_описание_и_инструкция_по_эксплуатации_1986.pdf

TOPWAR1 From Rys to Yastreb: Russian counter-battery radars. Top War (en.topwar.ru), 2021-02-17. Read 2026-09-29. https://en.topwar.ru/180040-ot-rysi-k-jastrebu-otechestvennye-rls-kontrbatarejnoj-borby.html

TOPWAR2 От «Рыси» к «Ястребу». Отечественные РЛС контрбатарейной борьбы (Russian original of TOPWAR). Военное обозрение (topwar.ru), 2021-02-17. Read 2026-10-06. https://topwar.ru/180040-ot-rysi-k-jastrebu-otechestvennye-rls-kontrbatarejnoj-borby.html

TOPWAR3 Радиолокационная станция 1Л122 «Гармонь». Topwar.ru, с. 2015. Read 2026-10-06. https://topwar.ru/amp/68472-radiolokacionnaya-stanciya-1l122-garmon.html

TOPWAR4 The new RCB reconnaissance complex on KamAZ-63969 Typhoon was adopted. Topwar.ru (English), 2021. Read 2026-10-04. https://en.topwar.ru/200880-novyj-kompleks-rhb-razvedki-na-baze-broneavtomobilja-kamaz-63969-tajfun-prinjat-na-vooruzhenie-rossijskoj-armii.html

TOPWAR5 Smoke machine TDA-3. topwar.ru (English edition), 2021. Read 2026-10-04. https://en.topwar.ru/207753-dymovaja-mashina-tda-3.html

TOPWAR6 Станция РЭБ Р-934У «Синица» (Topwar). Topwar.ru (Voyennoye Obozreniye), 2017-11-03. Read 2026-10-01. https://topwar.ru/128807-stanciya-reb-r-934u-sinica-kogda-sinica-v-pole-zhuravlyam-v-nebe-tyazhko.html

TOPWAR7 Р-330Ж «Житель». Возвращаясь к написанному. Voennoe obozrenie (topwar.ru), R. Skomorokhov, 2017-11-01. Read 2026-09-29. https://topwar.ru/amp/128607-r-330zh-zhitel-vozvraschayas-k-napisannomu.html

TOPWAR8 Chto takoe kompleks REB Moskva-1? Topwar (Voennoe obozrenie), 2016-07-25. Read 2026-09-29. https://topwar.ru/amp/98465-kompleks-moskva-1-eksklyuziv-dlya-voennogo-obozreniya.html

TOPWAR9 Инженерная техника разработки КБТМ принята на снабжение вооруженных сил. Военное обозрение (topwar.ru), 2014-02-05. Read 2026-10-20. https://topwar.ru/39342-inzhenernaya-tehnika-razrabotki-kbtm-prinyata-na-snabzhenie-vooruzhennyh-sil.html

TOPWAR10 Kompleksy REB Pole-21 v rossiiskoi armii (English mirror). Voennoe obozrenie (topwar.ru), 2021-04-21. Read 2026-10-01. https://en.topwar.ru/182196-kompleksy-rjeb-pole-21-v-rossijskoj-armii.html

TOPWAR11 Means of remote mining in the Russian army. Topwar.ru (English edition), 2023. Read 2026-10-21. https://en.topwar.ru/220304-sredstva-distancionnogo-minirovanija-v-rossijskoj-armii.html

TOPWAR12 Rostec announced the shipment of the first batch of Groza.04.K anti-drone systems. Topwar.ru (EN), 2024-03. Read 2026-10-06. https://en.topwar.ru/237757-rosteh-soobschil-ob-otpravke-v-zonu-svo-pervoj-partii-antidronovyh-kompleksov-groza04k.html

TOPWAR13 Techmash presented KPOM-3 and KPTM-4 cluster mines. Topwar (English edition, citing Techmash), 2019-08. Read 2026-10-21. https://en.topwar.ru/159498-tehmash-predstavil-umnye-kassetnye-miny-kpom-3-i-kptm-4.html

TOPWAR14 Interference station for radio fuses SPR-2M Mercury-BM. Topwar.ru (English edition), 2022. Read 2026-10-06. https://en.topwar.ru/194545-stancija-pomeh-radiovzryvateljam-spr-2m-rtut-bm.html

TOPWAR15 Electronic warfare complex Tobol and the Starlink system. Topwar.ru (English edition), 2023-04. Read 2026-10-06. https://en.topwar.ru/215398-kompleks-rjeb-tobol-i-sistema-starlink-realnye-ispytanija-ili-borba-za-kontrakty.html

TOPWAR16 Russian engineering units in the NVO zone were covered by the Sapphire anti-drone system. Topwar.ru (citing TASS), 2023-07-31. Read 2026-10-06. https://en.topwar.ru/222784-rossijskie-inzhenernye-podrazdelenija-v-zone-svo-prikryvalis-protivodronovym-kompleksom-sapfir.html

TOPWAR17 Станция постановки помех Р-330Ж «Житель». Voennoe obozrenie (topwar.ru), R. Skomorokhov, 2016-07-26. Read 2026-09-29. https://web.archive.org/web/2017/https://topwar.ru/98467-stanciya-postanovki-pomeh-r-330zh-zhitel.html

TRENCH Russia's Cozy Nuke-Proof Command Vehicle Is Back in Action. Trench Art (David Axe), 2025-08. https://www.trenchart.us/p/russias-cozy-nuke-proof-command-vehicle

TRENCH2 Russia is desperate for tanks. Is it desperate enough to use T-64s? (Axe/Jompy lineage). The Trench Art, Substack, 2025-10. https://www.trenchart.us/p/russia-is-desperate-for-tanks-is

TRENCH3 The ground shakes in eastern Ukraine (Trench Art, Axe). Trench Art (Substack), 2025. https://www.trenchart.us/p/the-ground-shakes-in-eastern-ukraine

TRENCH4 Desperate to cross the Vovcha (Trench Art excerpt). Trench Art / Euromaidan Press (Axe), 2026-06. https://www.trenchart.us/p/desperate-to-cross-the-vovcha-the

TRUCK Podlet 1K (2015). truck-encyclopedia.com. https://truck-encyclopedia.com/modern/russia/podlet-1k.php

TRUCKENC 5P85 TEL (S-300 PMU). Truck Encyclopedia. https://truck-encyclopedia.com/coldwar/ussr/5P85.php

TSAMTO В отдельную инженерную бригаду в Башкортостане поступили две машины разграждения ИМР-3М на базе танка Т-90. ЦАМТО (TsAMTO), citing the Central Military District press service, 2018-11-16. http://www.armstrade.org/includes/periodics/news/2018/1116/100049656/detail.shtml

TSN RF could strike Europe with Gerberas from sea containers: details of the threat. TSN (tsn.ua), 2026 (page undated, after 2025-09). https://tsn.ua/ru/zbroya/chto-takoe-gerbera-rossiyskiy-dron-kotoryy-mozhet-zapuskatsya-s-korabley-i-ugrozhat-nato-i-evrope-3174659.html

TSN2 Ракета Х-69: что это за оружие России, которое атакует Украину. TSN (Ukraine). https://tsn.ua/ru/zbroya/raketa-h-69-chto-eto-za-oruzhie-rossii-kotoroe-atakuet-ukrainu-i-mozhet-li-ego-sbit-patriot-foto-3119381.html

TSN3 New threat: Russians remotely mine streets in Kherson (photos). TSN (Ukraine), 2025. https://tsn.ua/en/ukrayina/new-threat-russians-remotely-mine-streets-in-kherson-photos-2899079.html

TSN4 Знищений силами ЗСУ десантний катер типу «Серна»: основні характеристики. TSN, 2022-05 (from page content). https://tsn.ua/ato/desantniy-kater-tipu-serna-osnovni-harakteristiki-2055886.html

TSR Russia's space-related electronic warfare projects (B. Hendrickx). The Space Review, 2020-10-26. https://thespacereview.com/article/4056/1

TV24 Orlan-10: kharakteristiki drona, tsena, dalnost. 24 Kanal (24tv.ua), 2026. https://24tv.ua/military/ru/orlan-10-harakteristiki-drona-cena-dalnost-skorost-i-jeffektivnost_n3044152

TV242 SSO znyshchyly kompleks orbitalnoho podavlennia suputnykiv Tirada-2. 24 Kanal, 2024-01-08. https://24tv.ua/tirada-2-rosiyi-sso-znishhili-potuzhniy-kompleks-reb-vorogа-donechchini_n2468162/amp

TWZ1 One Of Russia's Newest Air Defense Systems Has Been Captured By Ukraine. The War Zone (Trevithick), 2022-03. Read 2026-09-29. https://www.twz.com/44981/ukraine-captured-one-of-russias-newest-air-defense-systems

TWZ2 Rundown of Russia's arsenal of artillery. The War Zone, 2022-02. Read 2026-09-29. https://www.twz.com/44579/this-is-russias-much-feared-artillery-arsenal-that-could-wreak-havoc-on-ukraine

TWZ3 Russia's Advanced Podlet-1K Radar Captured By Anti-Assad Forces In Syria. The War Zone, 2024-12. Read 2026-09-29. https://www.twz.com/land/russias-advanced-podlet-1k-radar-captured-by-anti-assad-forces-in-syria

TWZ4 Russia claims it launched Bastion-P anti-ship missiles against ground targets in Ukraine. The War Zone, 2022-03. Read 2026-10-06. https://www.twz.com/44891/russia-claims-it-launched-bastion-p-anti-ship-missiles-against-ground-targets-in-ukraine

TWZ5 Hasta La Vista, Baby! Ukraine Kills Its First Russian Terminator Combat Vehicle. The War Zone, 2023-02-09. Read 2026-10-03. https://www.twz.com/hasta-la-vista-baby-ukraine-kills-its-first-russian-terminator-combat-vehicle

TWZ6 Russia's New Buk-M3 Air Defense Missile System Now Appears To Be In Ukraine (Newdick). The War Zone, 2022-03-22. Read 2026-09-29. https://www.twz.com/44866/russias-new-buk-m3-air-defense-missile-system-now-appears-to-be-in-ukraine

TWZ7 North Korean Anti-Tank Missile-Toting Vehicle Appears To Be Operating In Ukraine. The War Zone (TWZ), 2024-07-30. Read 2026-10-08. https://www.twz.com/news-features/north-korean-anti-tank-missile-toting-vehicle-appears-to-be-operating-in-ukraine.md

TWZ8 M2 Bradley Fighting Vehicle Appears In Russia With Locally Made 30mm Cannon. The War Zone, undated (c. 2025). Read 2026-10-08. https://www.twz.com/land/m²-bradley-fighting-vehicle-appears-in-russia-with-locally-made-30mm-cannon

TWZ9 New Russian Long-Range Drone Appears In Ukraine (Newdick). The War Zone, 2024-07-29. Read 2026-10-09. https://www.twz.com/news-features/new-russian-long-range-drone-appears-in-ukraine

TWZ10 Russian Navy Ka-29 Assault Helicopter Downed Amid Massive Ukrainian Drone Attack. The War Zone, 2024-06-21. Read 2026-10-16. https://www.twz.com/air/russian-navy-ka-29-assault-helicopter-downed-amid-massive-ukrainian-drone-attack

TWZ11 Enhanced Version Of Russia's Ka-52 Attack Helicopter Appears. The War Zone, 2023-07-21. Read 2026-10-16. https://www.twz.com/enhanced-version-of-russias-ka-52-attack-helicopter-appears

TWZ12 Ukraine's Armor Appears To Have A Russian Attack Helicopter Problem. The War Zone, 2023-06-15. Read 2026-10-21. https://www.twz.com/ukraines-armor-appears-to-have-a-russian-attack-helicopter-problem

TWZ13 These Are The Standoff Missiles Russia Used To Open Its War Against Ukraine. The War Zone, 2022-02. Read 2026-10-20. https://www.twz.com/44443/these-are-the-standoff-missiles-russia-used-to-open-its-war-against-ukraine.md

TWZ14 Russia's Secretive Long-Range Bomber Operations Against Ukraine (Piotr Butowski). The War Zone, 2022-09-14. Read 2026-10-20. https://www.twz.com/russias-secretive-long-range-bomber-operations-against-ukraine

TWZ15 Intriguing Features Seen On Largely Intact Russia Cruise Missile Wreck. The War Zone, 2023-01-30. Read 2026-10-20. https://www.twz.com/intriguing-features-seen-on-largely-intact-russia-cruise-missile-wreck

TWZ16 Russia Now Using Kh-69 Cruise Missiles In Ukraine: Reports (Newdick). The War Zone, 2024-02-16. Read 2026-10-21. https://www.twz.com/air/russia-now-using-kh-69-cruise-missiles-in-ukraine-reports

TWZ17 North Korean Long-Range Self-Propelled Artillery Appears In Russia. The War Zone (Newdick), 2024-11-14. Read 2026-10-08. https://www.twz.com/land/north-korean-long-range-self-propelled-artillery-appears-in-russia.md

TWZ18 More North Korean Artillery Troops Heading To Russia: Ukraine Intel Chief. The War Zone (Altman), 2025-01-22. Read 2026-10-08. https://www.twz.com/news-features/more-north-korean-artillery-troops-heading-to-russia-ukraine-intel-chief.md

TWZ19 Ukraine Just Captured Part Of One Of Russia's Most Capable Electronic Warfare Systems. The War Zone (Joseph Trevithick), 2022-03-22. Read 2026-09-29. https://www.twz.com/44879/ukraine-just-captured-part-of-one-of-russias-most-capable-electronic-warfare-systems

TWZ20 Ultra-Rare Russian Armored VIP Escape Vehicle Spotted In Ukraine. The War Zone, 2024-03. Read 2026-10-04. https://www.twz.com/news-features/ultra-rare-russian-armored-vip-escape-vehicle-spotted-in-ukraine

TWZ21 Russia's Mi-28NM Attack Helicopter Seen Using New Anti-Armor Missile In Ukraine. The War Zone (Piotr Butowski), 2023-01. Read 2026-10-16. https://twz.com/russias-mi-28nm-attack-helicopter-seen-using-new-anti-armor-missile-in-ukraine

TWZ22 Russia's Mi-28 Havoc Attack Helicopter Has Tiny Crew Compartment To Pick Up Downed Pilots. The War Zone (Thomas Newdick), 2026-02-23. Read 2026-10-16. https://www.twz.com/air/russias-mi-28-havoc-attack-helicopter-has-tiny-crew-compartment-to-pick-up-downed-pilots

TWZ23 This Is Russia's Electronic Warfare Helicopter Jamming In Ukraine. The War Zone (Piotr Butowski), 2022-10-10. Read 2026-10-16. https://twz.com/this-is-russias-electronic-warfare-helicopter-jamming-in-ukraine

TWZ24 Defecting Russian Mi-8 Helicopter Was Lured To Ukraine: Reports. The War Zone, 2023-08-23. Read 2026-10-16. https://www.twz.com/defecting-russian-mi-8-helicopter-was-lured-to-ukraine-reports

TWZ25 Prized Russian Long Range Radar System Attacked In Eastern Ukraine. The War Zone, 2024-05-28. Read 2026-09-29. https://www.twz.com/news-features/prized-russian-long-range-radar-system-attacked-in-eastern-ukraine

TWZ26 Sea Drones Attack Russian Landing Craft In Crimean Port. The War Zone, 2023-11-10. Read 2026-10-16. https://www.twz.com/sea-drones-attack-russian-landing-craft-in-crimean-port

TWZ27 Russia Claims Oreshnik Intermediate-Range Ballistic Missile Now 'On Combat Duty' In Belarus (Newdick). The War Zone, 2025-12-30. Read 2026-10-21.
https://www.twz.com/land/russias-claims-oreshnik-ballistic-missile-now-on-combat-duty-in-belarus

TWZ28 Russia's Predator-Style Drone With Big Export Potential Has Launched Its First Missiles. The War Zone, 2020-12-28. Read 2026-10-02.
https://twz.com/38446/russias-predator-style-drone-with-big-export-potential-has-launched-its-first-missiles

TWZ29 Russia's Predator-Like Drone Is Now Shooting Down Other Drones. The War Zone, 2021-12. Read 2026-10-02.
https://www.twz.com/43585/russias-predator-like-drone-is-now-shooting-down-other-drones

TWZ30 Ukraine Appears To Have Destroyed Its First Russian S-350 Air Defense System. The War Zone, undated (reports the Feb 2024 loss as earlier). Read 2026-09-29.
https://www.twz.com/land/ukraine-appears-to-have-destroyed-its-first-russian-s-350-air-defense-system

TWZ31 Ukraine Situation Report: TB2s Strike Russian SAM-Carrying Landing Craft At Snake Island. The War Zone, 2022-05-07 (from page content: Saturday). Read 2026-10-16.
https://www.twz.com/ukraine-situation-report-tb2s-strike-russian-sam-carrying-landing-craft-at-snake-island

TWZ32 Russia Now Using Iranian Shahed-107 Drones To Strike Beyond The Front Lines. The War Zone, 2025-11. Read 2026-10-16.
https://www.twz.com/air/russia-now-using-iranian-shahed-107-drones-to-strike-beyond-the-front-lines

TWZ33 Russian Troops Deploy Huge Smokescreen To Hide From Marauding Drones. The War Zone, 2024. Read 2026-10-04.
https://www.twz.com/news-features/russian-troops-deploy-huge-smokescreen-to-hide-from-marauding-drones

TWZ34 Ukraine Just Captured Another Rare Russian Electronic Warfare Vehicle. The War Zone, 2022. Read 2026-10-06.
https://www.twz.com/ukraine-just-captured-another-rare-russian-electronic-warfare-vehicle

TWZ35 The Truth About Russia's Mysterious Winged Glide Bombs (Butowski). The War Zone, 2023-07-19. Read 2026-10-21.
https://www.twz.com/air/the-truth-about-russias-mysterious-winged-glide-bombs

TWZ36 Russia's Small Diameter Bomb-Like Weapon Seen In Action For The First Time. The War Zone, 2024-05-23. Read 2026-10-21.
https://www.twz.com/air/russias-small-diameter-bomb-like-weapon-seen-in-action-for-the-first-time

TWZ37 Russian mine clearing vehicle detonates in massive fireball from drone bomblet. The War Zone, 2023. Read 2026-09-29.
https://www.twz.com/russian-mine-clearing-vehicle-detonates-in-massive-fireball-from-drone-bomblet

TWZ38 Mine-clearing system seen being used as devastating urban artillery in Ukraine. The War Zone, 2023. Read 2026-09-29.
https://www.twz.com/mine-clearing-system-seen-being-used-as-devastating-urban-artillery-in-ukraine

TWZ39 Ukraine Situation Report: Russian Anti-Drone Electronic Warfare Tank Captured. The War Zone, 2024. Read 2026-10-06.
https://www.twz.com/news-features/ukraine-situation-report-russian-anti-drone-electronic-warfare-tank-captured

TWZ40 Russia's Arctic Troops Are Getting These Specialized Mobile Air Defenses. The War Zone, 2017-04. Read 2026-10-19.
https://www.twz.com/9238/russias-arctic-troops-are-getting-these-specialized-mobile-air-defenses

U241 Ukraine blinds Russia's S-400 in Crimea, then sets its launcher ablaze. United24 Media, 2026-07-27. Read 2026-09-29.
https://united24media.com/war-in-ukraine/ukraine-blinds-russias-s-400-in-crimea-then-sets-its-launcher-ablaze-21083

U242 Ukrainian Drones Destroy Russian BAT-2 Engineering Vehicle: A Battlefield First. United24 Media, 2025-02. Read 2026-10-04.
https://united24media.com/latest-news/ukrainian-drones-destroy-russian-bat-2-engineering-vehicle-a-battlefield-first-6101

U243 Ukrainian Drone Strike Destroys Rare RKhM-4 Chemical Recon Vehicle. UNITED24 Media, undated (1 April, year not stated). Read 2026-10-04.
https://united24media.com/latest-news/ukrainian-drone-strike-destroys-rare-rkhm-4-chemical-recon-vehicle-video-7239

U244 Ukraine Destroys Russian Harpoon-B Radar, Groza EW and BL-680 Boat in a Single Black Sea Raid, Video. United24 Media, 2025-09-05 (release date given in text). Read 2026-10-17.
https://united24media.com/latest-news/ukraine-destroys-russian-harpoon-b-radar-groza-ew-and-bl-680-boat-in-a-single-black-sea-raid-video-11403

U245 Russia Strips FSB Patrol Boats of Coast Guard Markings and Adds Anti-Drone Armor in the Baltic. United24 Media, 2026-10-12 (page metadata; images of 11 October). Read 2026-10-17.
https://united24media.com/war-in-ukraine/russia-strips-fsb-patrol-boats-of-coast-guard-markings-and-adds-anti-drone-armor-in-the-baltic-23343

U246 Ukraine Hits Kasta and P-18 Radars Alongside Russian Attack Drone Facility. UNITED24 Media (relaying Ukrainian General Staff), 2026-09-24. Read 2026-10-06.
https://united24media.com/war-in-ukraine/ukraine-hits-kasta-and-p-18-radars-alongside-russian-attack-drone-facility-22836

U247 Russia Expands Production of Laser-Guided Kitolov Shells. UNITED24 Media, 2025-04. Read 2026-10-20.
https://united24media.com/latest-news/russia-expands-production-of-laser-guided-kitolov-shells-potential-us-copperhead-rival-7809

U248 Russia Orders New 122mm Guided Artillery Shells With Unknown Designation. UNITED24 Media (from Militarnyi), 2026-01. Read 2026-10-20.
https://united24media.com/latest-news/russia-orders-new-122mm-guided-artillery-shells-with-unknown-designation-15368

U249 GMLRS Strike Takes Out North Korean M-1991 in Kursk: First Confirmed Strike Caught on Video. UNITED24 Media, 2025-05-07. Read 2026-10-08.
https://united24media.com/latest-news/gmlrs-strike-takes-out-north-korean-m-1991-in-kursk-first-confirmed-strike-caught-on-video-8178

U2410 Russia Gave Its Mi-28NM New Anti-Drone Defenses—A Ukrainian FPV Still Took It Down. United24 Media, undated in fetched text (event 14 Oct, year not printed). Read 2026-10-16.
https://united24media.com/war-in-ukraine/russia-gave-its-mi-28nm-new-anti-drone-defenses-a-ukrainian-fpv-still-took-it-down-23420

U2411 Russia Tests Molniya Strike Drones as Flying Couriers. UNITED24 Media, 2026-09-24. Read 2026-10-02.
https://united24media.com/war-in-ukraine/russia-tests-molniya-strike-drones-as-flying-couriers-for-carrying-weapons-and-food-to-frontline-22837

U2412 Ukraine Blinds Russian Air Defense in Crimea, Destroying Four Rare Radar Systems. United24 Media, 2026-03-09. Read 2026-10-06.
https://united24media.com/latest-news/ukraine-blinds-russian-air-defense-in-crimea-destroying-four-rare-radar-systems-16643

U2413 Ukraine Blinds Russia's Air Defenses in Crimea: Podlet and Nebo-M Radars Destroyed. United24 Media, 2025-09-09. Read 2026-09-29.
https://united24media.com/latest-news/ukraine-blinds-russias-air-defenses-in-crimea-podlet-and-nebo-m-radars-destroyed-11491

U2414 Russia Brought Back a Giant 1950s Radar. Ukraine Hit It Days Later. UNITED24 Media (citing Defense Express), 2026-07. Read 2026-10-06.
https://united24media.com/war-in-ukraine/russia-brought-back-a-giant-1950s-radar-ukraine-hit-it-days-later-20650

U2415 Ukraine Hits Russian P-18 Terek Early-Warning Radar Watching Skies for 250 Km. UNITED24 Media, 2026-09-26. Read 2026-10-06.
https://united24media.com/war-in-ukraine/ukraine-hits-russian-p-18-terek-early-warning-radar-watching-skies-for-250-km-22886

U2416 Ukraine Destroys $20M Russian "Palantin" EW System, Opening Skies for Drone Operations. United24 Media, 2026-04. Read 2026-09-29.
https://united24media.com/latest-news/ukraine-destroys-20m-russian-palantin-ew-system-opening-skies-for-drone-operations-17562

U2417 Partisans blow up Russian military communications station in Rostov (Spanish edition). United24 Media, 2025 (year not shown on page). Read 2026-10-04.
https://united24media.com/es/latest-news/partisanos-dinamitan-una-estacion-de-comunicaciones-militares-rusa-en-rostov-en-un-sabotaje-de-ataque-a-largo-alcance-13085

U2418 Inside the Shahed-107: Ukraine Unpacks Iran's Newest Attack Drone Now Targeting Its Cities. United24 Media, 2025-11. Read 2026-10-16.
https://united24media.com/latest-news/inside-the-shahed-107-ukraine-analyzes-the-new-iranian-attack-drone-now-targeting-its-cities-13746

U2419 Fuerzas especiales ucranianas destruyen un sistema Buk-M3 y un raro MLRS Uragan. United24 Media, 2025-05. Read 2026-09-29.
https://united24media.com/es/latest-news/fuerzas-especiales-ucranianas-destruyen-un-sistema-ruso-de-defensa-antiaerea-buk-m^3-de-45-millones-de-dolares-y-un-raro-mlrs-uragan-8334

UAHB Guidelines: combined arms units to combat Iranian-made strike UAVs Shahed-136 (Geran-2) and Lancet, VP 3-00(116)120. General Staff of the Armed Forces of Ukraine, 2023-03.
https://mil.ee/wp-content/uploads/2024/10/2023_Ukrainian-handbook-C-UAS-ON-IRANIAN-MADE-SHAHED-136-GERAN-2-AND-LANCET-2-ASSOCIATION-AIRCRAFT.pdf

UAMOD Анатомія KN-23 та KN-24: експерти Міноборони дослідили північнокорейські ракети. Ministry of Defence of Ukraine, 2026-04.
https://mod.gov.ua/news/anatomiia-kn-23-ta-kn-24-eksperty-minoborony-doslidyly-pivnichnokereiski-rakety-yakymy-rosiia-byla-po-ukraini

UAOTT Execution of works related to disposal of PFM anti-personnel mines in Ukraine. Ukraine, Ministry of Defence / NSPA presentation, 2013-05.
https://old.apminebanconvention.org/fileadmin/APMBC/IWP/SC-may13/Speeches-SD/2_ART_4_STATES_PARTIES_UPDATES_-_Ukraine.pdf

UAS Russian tank units in Ukraine take delivery of new counter-drone EW systems. Unmanned Airspace, 2023.
https://www.unmannedairspace.info/counter-uas-systems-and-policies/russian-tank-units-in-ukraine-take-delivery-of-new-counter-drone-ew-systems/

UASV New Russian Mobile Anti-Drone System. UAS Vision (from Sputnik/Izvestia), 2017-01-06.
https://www.uasvision.com/2017/01/06/new-russian-mobile-anti-drone-system/

UASV2 Russian-Built Israeli Drone on Display. UAS Vision, 2018-05-29.
https://www.uasvision.com/2018/05/29/russian-built-israeli-drone-on-display/

UINF SOF strikes four radar stations in Crimea and Russian command post in Donetsk region. Ukrinform, 2026-03.
https://www.ukrinform.net/rubric-ato/4099578-sof-strikes-four-radar-stations-in-crimea-and-russian-command-post-in-donetsk-region.html

UKDI Подразделения РФ вынуждены пересаживаться на бронетранспортеры 1950-х годов — британская разведка. Yevropeiska Pravda, 2022-07-09.
https://www.eurointegration.com.ua/rus/news/2022/07/9/7142882/

UKMOD Russia replenishing armored vehicle losses with old T-62 tanks - UK intel. Ukrinform, quoting UK Ministry of Defence intelligence update, 2023-03.
https://ukrinform.net/rubric-ato/3678721-russia-replenishing-armored-vehicle-losses-with-old-t62-tanks-uk-intel.html

UKR300 Russians have gathered 300 boats to cross Dnipro River - RMA says attack on Kherson possible. Ukrinform, 2024-12 (year from KYIND; text gives no year).
https://ukrinform.net/rubric-ato/3934320-russians-have-gathered-300-boats-to-cross-dnipro-river-rma-says-attack-on-kherson-possible.html

UKRF March Massacre of Russian Air Defenses. Ukrinform, 2026-04-15 (page metadata).
https://www.ukrinform.net/rubric-ato/4112595-march-massacre-of-russian-air-defenses.html

UKRIN Border guards destroy 22 Russian vehicles, EW control center. Ukrinform, 2025-05.
https://www.ukrinform.net/rubric-ato/3996456-border-guards-destroy-22-russian-vehicles-ew-control-center-and-fuel-depot-in-kharkiv-region.html

UKRIN1 Ukrainian forces shoot down three Kh-59/69 missiles used by Russia to attack Kryvyi Rih. Ukrinform, 2024-12-02.
https://ukrinform.net/rubric-ato/3933682-ukrainian-forces-shoot-down-three-kh5969-missiles-used-by-russia-to-attack-kryvyi-rih.html

UKRIN2 Ukraine downs Russia's Kh-59 missile over Mykolaiv region. Ukrinform, 2024.
https://ukrinform.net/rubric-ato/3816865-ukraine-downs-russias-kh59-missile-over-mykolaiv-region.html

UKRIN3 General Staff update: Not Orsk but Saratov landing ship destroyed at Berdiansk Port. Ukrinform, 2022-03-25 (from a Wikipedia citation; page prints none).
https://ukrinform.net/rubric-ato/3439345-general-staff-update-not-orsk-but-saratov-landing-ship-destroyed-at-berdiansk-port.html

UKRIN4 Defense Forces strike Russian ammunition depot and Terek radar station. Ukrinform (relays Ukrainian General Staff), 2026-09-26.
https://www.ukrinform.net/rubric-ato/4168275-defense-forces-strike-russian-ammunition-depot-and-terek-radar-station.html

UKRIN5 Ukrainian forces destroy Russia's Leopard radar on left bank of Dnipro River. Ukrinform, 2024-01-17.
https://ukrinform.net/rubric-ato/3814762-ukrainian-forces-destroy-russias-leopard-radar-on-left-bank-of-dnipro-river.html

UKRIN6 InformNapalm: Drone downed in Donbas in service with twelve Russian army units. Ukrinform, 2020.
https://www.ukrinform.net/rubric-defense/3000100-informnapalm-drone-downed-in-donbas-in-service-with-twelve-russian-army-units.html

UKRINBL DIU releases footage of Russian boat, comms gear destroyed in Black Sea strike. Ukrinform, 2025 (page text undated; raid Aug 2025).
https://ukrinform.net/rubric-ato/4033271-diu-releases-footage-of-russian-boat-comms-gear-destroyed-in-black-sea-strike.html

UKRINF SBU strikes three Russian warships in occupied Crimea. Ukrinform (Ukrainian state news agency), 2026-04-18.
https://www.ukrinform.net/rubric-ato/4114007-sbu-strikes-three-russian-warships-in-occupied-crimea.html

UKRINF1 Ukrainian defenders destroy Russia's Pole-21 EW system. Ukrinform, 2023-11.
https://www.ukrinform.net/rubric-ato/3782899-ukrainian-defenders-destroy-russias-pole21-ew-system.html

UKRINF2 Ukraine's special forces destroy two Russian EW systems near Avdiivka. Ukrinform, 2023-11-11.
https://ukrinform.net/rubric-ato/3785708-ukraines-special-forces-destroy-two-russian-ew-systems-near-avdiivka.html

UKRINF3 Russia keeps five Kalibr carriers in Black Sea, total volley up to 34 missiles. Ukrinform, 2025-05-02.
https://ukrinform.net/rubric-ato/3988369-russia-keeps-five-kalibr-carriers-in-black-sea-total-volley-up-to-34-missiles.html

UKRINF4 Russia strikes Odesa with Kinzhal missiles, casualties, destruction reported. Ukrinform, 2022-05-09 (from the text: strike during Charles Michel's visit; no dateline in the fetched text).
https://ukrinform.net/rubric-ato/3479245-russia-strikes-odesa-with-kinzhal-missiles-casualties-destruction-reported.html

UKRINF5 National Guard destroys Russian anti-tank system 'Chrysanthemum'. Ukrinform (Ukrainian state news agency), 2024-03.
https://www.ukrinform.net/rubric-ato/3843171-national-guard-destroys-russian-antitank-system-chrysanthemum.html

UKRINF6 Ukraine destroys three North Korean howitzers in Kursk region. Ukrinform, 2025-03-18.
https://ukrinform.net/rubric-ato/3972095-ukraine-destroys-three-north-korean-howitzers-in-kursk-region.html

UKRINF7 Drones strike two helicopters in Russia's Voronezh region. Ukrinform, 2026-04-29 (year from the Euromaidan Press URL of the same report; text gives 29 April).
https://ukrinform.net/rubric-ato/4117964-drones-strike-two-helicopters-in-russias-voronezh-region.html

UKRINF8 Ukrainian drones strike Russian Murmansk-BN EW system in Crimea. Ukrinform, 2026-07-31.
https://www.ukrinform.net/rubric-ato/4149676-ukrainian-drones-strike-russian-murmanskbn-ew-system-in-crimea.html

UKRINF9 Ukraine forces destroy Russia's Palantin e-warfare system. Ukrinform, 2023-02.
https://www.ukrinform.net/rubric-ato/3670026-ukraine-forces-destroy-russias-palantin-ewarfare-system.html

UKRINF10 Russians scatter petal mines remotely in Kherson region. Ukrinform (citing National Police of Ukraine), 2025.
https://www.ukrinform.net/rubric-ato/4029746-russians-scatter-petal-mines-remotely-in-kherson-region.html

UKRINF11 Ukrainian USFs hit Russia's air defense system, communications complex, drone command post. Ukrinform, 2026-05-14.
https://ukrinform.net/rubric-ato/4123339-ukrainian-usfs-hit-russias-air-defense-system-communications-complex-drone-command-post.html

UKRINF12 Army destroys Russian EW system, two drones, over 40 invaders in southern Ukraine. Ukrinform, 2022-05-01.
https://www.ukrinform.net/rubric-ato/3471882-army-destroys-russian-ew-system-two-drones-over-40-invaders-in-southern-ukraine.html

UKRINF13 Drone operators destroy rare Russian anti-aircraft gun. Ukrinform, 2025-06-29.
https://www.ukrinform.net/rubric-ato/4009447-drone-operators-destroy-rare-russian-antiaircraft-gun.html

UKRINF14 OSCE again spots Russian TORN electronic warfare system in Donbas. Ukrinform, 2019-06.
https://ukrinform.net/rubric-defense/2719757-osce-again-spots-russian-torn-electronic-warfare-system-in-donbas.html

UKRINF22 Ukrainian forces destroy enemy electronic warfare system near Kakhovka HPP. Ukrinform, 2022-07-20.
https://www.ukrinform.net/rubric-ato/3532722-ukrainian-forces-destroy-enemy-electronic-warfare-system-near-kakhovka-hpp.html

UKRPR OSINT analysts identify production facilities for the Russian Garpiya-A1 attack drone. Ukrainska Pravda (read as copy on Yahoo News), 2026-10-01.
https://www.yahoo.com/news/world/articles/osint-analysts-identify-production-facilities-085400199.html

UKRTDY Russians Set Ambushes for Ukrainian Drones Using MON-100 and MON-90 Mines (republication, dateline 21 October 2024). Ukraine Today, 2024-10-21.
https://ukrainetoday.org/russians-set-ambushes-for-ukrainian-drones-using-mon-100-and-mon-90-mines/

UNIAN В Україні могли знищити майже всі БМО-Т окупантів. UNIAN, c. 2025.
https://www.unian.ua/weapons/v-ukrajini-mogli-znishchiti-mayzhe-vsi-bmo-t-okupantiv-ekspert-13273467.html

UNIAN2 Drony Italmas: chto izvestno o novykh bespilotnikakh RF. UNIAN, 2023-10.
https://www.unian.net/weapons/drony-italmas-chto-izvestno-o-novyh-bespilotnikah-rf-12436263.html

UNIAN3 РБ-341В Леєр-3 - ЗСУ затрофеїли рідкісний російський комплекс РЕБ. UNIAN, 2023-02-04.
https://www.unian.ua/war/rb-341v-leyer-3-zsu-zatrofejili-ridkisniy-rosiyskiy-kompleks-reb-foto-12132975.html

UNIAN4 Ударний вертоліт Мі-35: що це за машина, як відрізнити від Мі-24 та які її особливості. UNIAN, 2022-06-03.
https://www.unian.ua/war/udarniy-vertolit-mi-35-shcho-ce-za-mashina-yak-vidrizniti-vid-mi-24-ta-yaki-jiji-osoblivosti-novini-vtorgnennya-rosiji-v-ukrajinu-amp-11852781.html

UNIAN5 ZSU destroyed Chayka command vehicle and Groza EW station. UNIAN.
https://www.unian.ua/war/viyna-v-ukrajini-zsu-prodovzhuyut-znishchuvati-tehniku-okupantiv-12660045.html

UNIAN6 Ukrainian troops captured R-149AKSh-1 command and staff vehicle. UNIAN, 2022-09-09.
https://www.unian.net/war/ukrainskie-voennye-zahvatili-cennyy-trofey-komandno-shtabnuyu-mashinu-r-149aksh-1-okkupantov-11972223.html

UNIAN7 ZSU vykorystovuyut do SAU Pion amerykanski snaryady. UNIAN, citing Defence Express.
https://www.unian.ua/weapons/amerikanski-snaryadi-dlya-sau-pion-eksperti-poyasnili-v-chomu-jih-problema-12674019.html

UNIAN8 Танк Т-62МВ образца 2022 - лучший вариант Т-62, но есть важный нюанс. UNIAN, 2024-02-12.
https://www.unian.net/weapons/tank-t-62mv-obrazca-2022-luchshiy-variant-t-62-no-est-vazhnyy-nyuans-12541386.html

UNN23 Александр Рувин рассказал подробности об исследовании российского противокорабельного комплекса «Бал». UNN, 2023-06-15.
https://unn.ua/ru/amp/oleksandr-ruvin-rozpoviv-podrobitsi-pro-doslidzhennya-rosiyskogo-protikorabelnogo-kompleksu-bal

UPDIU Defence Intelligence of Ukraine reveals data on Russian Orion drone production. Ukrainska Pravda (via Yahoo News), 2025-11-05.
https://www.yahoo.com/news/articles/ukraines-defence-intelligence-reveals-data-074800301.html

UPRAVDA Ukraine strikes Russian anti-sabotage vessel in Dagestan. Ukrainska Pravda, 2026-05-18.
https://www.pravda.com.ua/eng/news/2026/05/18/8035195/

USER8OCT Editor's inspection of photographs, 8 Oct 2026. Editor (editor observation), 2026-10-08.

USM Russian amphibious transport boat hit in Crimea. USM (Ukrainian outlet), 2026-02-14 (page metadata).
https://en.usm.media/russian-amphibious-transport-boat-hit-in-crimea/

USM2 What is known about the destroyed enemy boat of the KS-701 "Tunets" type. USM (Ukrainian outlet), 2023-09-14 (page metadata; event of 13 September 2023).
https://en.usm.media/?p=121172

USM3 Russia strengthens Northern Fleet with new boat Grachonok. USM (Ukrainian outlet), 2025-01-09.
https://en.usm.media/russia-strengthens-northern-fleet-with-new-boat-grachonok/

USM6 The Armed Forces of Ukraine destroyed 6 Russian boats on the Dnipro. USM (Ukrainian Shipbuilding Media), 2023-09 (claim of 10 Sep; year confirmed by EUROM23, dated 2023-09-11).
https://en.usm.media/the-armed-forces-of-ukraine-destroyed-6-russian-boats-on-the-dnipro/

UTIN Радиостанции полевых узлов связи (Utin, Makaterchik, Maseichik), учебно-методическое пособие. BSUIR Military Faculty, Minsk, 2018.
https://libeldoc.bsuir.by/bitstream/123456789/33800/1/Utin_radio.pdf

UZST Технические характеристики автомобилей КамАЗ 5350. UZST (KamAZ dealer, operator-manual data).
https://uzst.ru/poleznaya-informaciya/rukovodstvo-po-ekspluatacii-avtomobilej-kamaz/ekspluatacionnye-parametry/tehnicheskie-harakteristiki-avtomobilej-kamaz-5350

V16P1 The Mi-8, part 1 (first-generation Hip). 16va.be (Soviet 16th Air Army in the GDR research site).
https://16va.be/4.5_les_mi-8_part1_eng.html

V16P3 The Second-Generation "Hip" (The Mi-8, part 3). 16va.be (Soviet 16th Air Army in the GDR research site).
https://16va.be/4.5_les_mi-8_part3_eng.html

VALKA Barnaul-T (RUS) automated air defence command system. valka.cz / armedconflicts.com.
https://www.armedconflicts.com/Barnaul-T-t217337

VALKA2 MZKT-7930 Astrolog. valka.cz.
https://en.valka.cz/topic/view/44260

VALKA3 SOV - BMP-1K (velitelske vozidlo) / BMP-1KS. valka.cz.
https://en.valka.cz/topic/view/64809

VALKA4 RUS - 9K334 Gibka-S (valka.cz / armedconflicts.com). armedconflicts.com, 2024-02.
https://www.armedconflicts.com/RUS-9K334-Gibka-S-t242316

VALKA5 P-240TM node plant (ČSLA). valka.cz.
https://en.valka.cz/topic/view/82854

VALKA6 SOV - R-412 (troposfericka radiova stanice). valka.cz (armedconflicts.com mirror), 2007 source book; 1983 manual.
https://www.armedconflicts.com/-t93909

VALKA7 RUS - S-300PM / S-300PMU-1 [SA-20A Gargoyle]. valka.cz.
https://en.valka.cz/topic/view/69036

VALKACZ SOV - BMP-1KŠ / BMP-1KŠM (velitelské vozidlo), datasheet. valka.cz.
https://www.valka.cz/SOV-BMP-1KS-BMP-1KSM-velitelske-vozidlo-t64809

VESTMAI The Mi-26T2 Helicopter Transport Modification for Large-Sized Loads Transportation. Vestnik MAI (Moscow Aviation Institute), undated (references reach 2025).
https://vestnikmai.ru/eng/publications.php?ID=184450

VESTNIK Разведчики ВДВ получат специальные радары 1Л277 Соболятник. Vestnik Mordovii (repeats MoD release), 2020-06-21.
https://vestnik-rm.ru/articles/blog-tankoveda-1945-stranicy-voennoj-istorii/razvedchiki-vdv-poluchat-specialnye-radary-1l277-sobolyatnik

VFS27 Kamov Ka-27 (vertidev database). Vertical Flight Society.
https://vertidev.vtol.org/aircraft/getAircraft/aircraftID/154

VFS29 Kamov Ka-29 (vertidev database). Vertical Flight Society.
https://vertidev.vtol.org/aircraft/getAircraft/aircraftID/481

VIKNA БПЛА Форпост стоимостью $7 млн: характеристики. Vikna, 2024-04.
https://vikna.tv/ru/dlia-tebe/bpla-forpost-za-7-mln-unichtozhen-vsu-chto-izvestno-o-tth/

VIKNA2 Катер КС-701 Тунец: характеристики плавсредств врага, уничтоженных в Крыму. Vikna (vikna.tv), 2024-05-30 (page metadata).
https://vikna.tv/ru/dlia-tebe/vijna-v-ukrayini/kater-tunecz-harakteristiki-czena-i-chto-izvestno/amp/

VIKNA3 Ka-27 unichtozhen VSU v Krymu 10 aprelya 2024: kharakteristiki vertoleta. Vikna, 2024-04-10.
https://vikna.tv/ru/dlia-tebe/vijna-v-ukrayini/ka-27-unichtozhen-vsu-v-krymu-10-aprelya-2024-harakteristiki-vertoleta/

VIKNA4 БпЛА Молния: что известно о новой российской разработке. Vikna (STB), 2025-05.
https://vikna.tv/ru/dlia-tebe/bpla-molniya-chto-izvestno-o-novoj-rossijskoj-razrabotke/

VKS Luzan A., 'Novoe kachestvo ... nekotorye predlozheniya po modernizatsii ZRS S-300V4', Vozdushno-kosmicheskaya sfera No. 3(92), pp. 56-61. Vozdushno-kosmicheskaya sfera (journal), 2017-09.
https://www.socium-a.ru/public/flippingbook/vks20173/20/assets/basic-html/page60.html

VKS2 Luzan A., same article as VKS, Vozdushno-kosmicheskaya sfera No. 3(92), opening page (printed p. 57). Vozdushno-kosmicheskaya sfera (journal), 2017-09.
https://www.socium-a.ru/public/flippingbook/vks20173/20/assets/basic-html/page59.html

VKS3 Luzan A., same article as VKS, Vozdushno-kosmicheskaya sfera No. 3(92), printed p. 60. Vozdushno-kosmicheskaya sfera (journal), 2017-09.
https://www.socium-a.ru/public/flippingbook/vks20173/20/assets/basic-html/page62.html

VM Железные саперы: первыми на минные поля пойдут бронированные машины. Vechernyaya Moskva (quoting Russian MoD information department), 2018-11-28.
https://vm.ru/news/561956.html

VM2 Артиллеристы воюют характером. Vechernyaya Moskva (vm.ru), 2025.
https://vm.ru/society/1335467-artilleristy-voyuyut-harakterom

VM3 Lantset primeril telnyashku. Vechernyaya Moskva, 2025-06.
https://vm.ru/opinion/1241338-lancet-primeril-telnyashku

VM4 Видео тренировки расчетов систем ПВО на полигоне Ашулук появились в Сети. Vechernyaya Moskva, 2019.
https://vm.ru/news/663849.html

VMAG Russian Helicopters demonstrate new Arctic version of Mi-8AMTSh. Vertical (Russian Helicopters press release), 2016-09-06.
https://www.verticalmag.com/press-releases/russian-helicopters-demonstrate-new-arctic-version-mi-8amtsh/

VMUS 152-мм пушка «Гиацинт-Б» 2А36. СССР. Victory Museum (Moscow).
https://victorymuseum.ru/encyclopedia/technic/artilleriya/152-mm-pushka-giatsint-b-2a36-sssr/

VNTU Osoblyvosti vykorystannya radioreleynoho ta troposfernoho zvyazku s'ohodni (Kakovkin). VNTU conference APOZBT, 2021.
https://conferences.vntu.edu.ua/index.php/apozbt/apozbt2021/paper/download/13982/11846

VPK1 120-мм самоходное артиллерийское орудие 2С31 «Вена». VPK.name. Read 2026-10-21.
https://vpk.name/library/f/2c31-vena.html

VPK2 Управляемые боеприпасы «Китолов-2» и «Китолов-2М». vpk.name (Sergey Yuferev), 2013. Read 2026-10-21.
https://vpk.name/news/86779_upravlyaemye_boepripasy_kitolov-2_i_kitolov-2m.html

VPK3 2S34 Khosta Russian self-propelled artillery system. vpk.name (English). Read 2026-10-06.
https://vpk.name/en/964800_2s34-khosta-russian-self-propelled-artillery-system.html

VPK4 Self-propelled launcher 9P78-1. vpk.name. Read 2026-09-29.
https://vpk.name/library/f/spu-9p78-1.html

VPK5 БМП-1АМ «Басурманин». Как легендарной советской «копейке» подарили вторую жизнь (TASS, reposted by VPK.name). TASS, 2022-02. Read 2026-10-03.
https://vpk.name/news/581211_bmp-1am_basurmanin_kak_legendarnoi_sovetskoi_kopeike_podarili_vtoruyu_zhizn.html

VPK6 БТР-МДМ Ракушка-М. vpk.name library. Read 2026-10-03.
https://vpk.name/library/f/btr-mdm.html

VPK7 Minoborony rasskazalo, kak postavili na hod trofeinyi BTR M113 v Kurskoi oblasti (TASS text). vpk.name, reprinting TASS, 2025-02-01. Read 2026-10-08.
https://vpk.name/news/970452_minoborony_rasskazalo_kak_postavili_na_hod_trofeinyi_btr_m113_v_kurskoi_oblasti.html

VPK8 Партия разведывательных химических машин РХМ-6 поступила в подразделения РХБ защиты ВВО. vpk.name / САМТО, 2015-11-17. Read 2026-10-06.
https://vpk.name/news/144363_partiya_razvedyvatelnyh_himicheskih_mashin_rhm-6_postupila_v_podrazdeleniya_rhb_zashity_vvo.html

VPK9 Zenitnyy raketnyy kompleks Gibka-S (vpk.name), from KBM material. vpk.name. Read 2026-10-07.
https://vpk.name/library/f/gobka-s.html

VPK10 Mobilnaya RLS 39N6 Kasta-2. vpk.name. Read 2026-10-06.
https://vpk.name/library/f/kasta-2.html

VPK11 Mobilnyi avtomatizirovannyi kompleks REB 'Leer-2' (copy of arms-expo.ru catalogue). vpk.name, 2021. Read 2026-10-01.
https://vpk.name/library/f/leer-2.html

VPK12 Moskva-1 (library entry). VPK.name. Read 2026-09-29.
https://vpk.name/library/f/moscow-1.html

VPK13 Novaya RLS Nebo-M postupila na vooruzhenie voisk v Povolzhe (TASS via VPK.name). TASS, 2018-04-25. Read 2026-09-29.
https://vpk.name/news/213609_novaya_radiolokacionnaya_stanciya_nebo-m_postupila_na_vooruzhenie_voisk_v_povolzhe.html

VPK14 Понтонный парк ПП-91 (ПП-2005). ВПК.name. Read 2026-09-29.
https://vpk.name/library/f/pp-91.html

VPK15 Поляна-Д4. VPK.name library. Read 2026-09-29.
https://vpk.name/library/f/polyana-d.html

VPK16 Battery command post 9S482M7 PU-12M7. VPK.name. Read 2026-09-29.
https://vpk.name/library/f/pu-12m7.html

VPK17 Автомобильная КВ/УКВ радиостанция Р-166 «Артек». VPK.name, undated (archived 2019). Read 2026-10-03.
https://vpk.name/library/f/r-166.html

VPK18 V Priamure v obedinenie VVO postupili REM-KL (RIA Novosti). VPK.name / RIA Novosti, 2019-10-17. Read 2026-10-06.
https://vpk.name/news/165963_v_priamure_v_obedinenie_vvo_postupili_noveishie_mashiny_rem-kl.html

VPK19 Korrektiruemyj artillerijskij boepripas Santimetr. vpk.name. Read 2026-10-20.
https://vpk.name/library/f/santimetr-kab.html

VPK20 НПО «Стрела» показало машину радиолокационной разведки СНАР-10М1. VPK.name (Topwar lineage), 2014-08. Read 2026-10-01.
https://vpk.name/news/116377_npo_strela_pokazalo_mashinu_radiolokacionnoi_razvedki_snar-10m1.html

VPK21 В войска ЗВО в ближайшее время поступят станции наземной артиллерийской разведки «Пантера». VPK.name relaying TsAMTO, 2016-03-11. Read 2026-10-01.
https://vpk.name/news/151126_v_voiska_zvo_v_blizhaishee_vremya_postupyat_stancii_nazemnoi_artilleriiskoi_razvedki_pantera.html

VPK22 Боевая машина огневой поддержки 2С25 Спрут-СД. vpk.name. Read 2026-10-06.
https://vpk.name/library/f/2c25.html

VPK23 Комплекс разведки, управления и связи Стрелец и Стрелец-М для Ратник. vpk.name (Novosti VPK), undated, c2016–2018. Read 2026-10-04.
https://vpk.name/library/f/strelec.html

VPK24 Invar-M tank rocket on its own. vpk.name, 2024. Read 2026-10-07.
https://vpk.name/en/958603_invar-m-tank-rocket-on-its-own.html

VPK25 Новый переносной зенитный ракетный комплекс «Верба» начал поступать на вооружение российской армии (АРМС-ТАСС). VPK.name / ARMS-TASS, 2014-08-22. Read 2026-10-07.
https://vpk.name/news/116170_novyii_perenosnoi_zenitnyii_raketnyii_kompleks_verba_nachal_postupat_na_vooruzhenie_rossiiskoi_armii.html

VPK26 Беспилотный летательный аппарат ZALA 421-16(E). VPK.name. Read 2026-10-02.
https://vpk.name/library/f/421-16.html

VRF1 Комплекс управления огнем артиллерии 1В12М. вооружение.рф. Read 2026-09-29.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/1v12m-mashina/

VRF2 Комплекс радиоэлектронной борьбы РБ-301Б Борисоглебск-2. вооружение.рф. Read 2026-09-29.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/rb-301b-borisoglebsk-2/

VRF3 Станция постановки помех Р-934БМВ. вооружение.рф. Read 2026-10-01.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/r-934bmv/

VRF4 PXM-4 (Army Guide). army-guide.com Russian mirror. Read 2026-10-04.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/rhm-4/

VRF5 PXM-6 (Army Guide). army-guide.com Russian mirror. Read 2026-10-04.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/rhm-6/

VRF6 PXM-8 (Army Guide). army-guide.com Russian mirror. Read 2026-10-04.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/rhm-8/

VRF7 МКТК-1А Дзюдоист (Weapons of Russia reference page). Weapons of Russia (reference site). Read 2026-10-06.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/mktk-1a-dzyudoist/

VRF8 РБ-531Б «Инфауна». vooruzhenie.rf. Read 2026-10-01.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/rb-531b-infauna/

VRF9 РБ-341В «Леер-3» (catalogue entry). вооружение.рф. Read 2026-09-29.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/rb-341v-leer-3/

VRF10 Радиолокационная станция «Небо-СВУ» 1Л119. Обзор вооружения и военной техники (xn--b1agacl3aeas4a.xn--p1ai). Read 2026-10-06.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/nebo-svu/

VRF11 Понтонно-мостовой парк ПМП: обзор. Вооружение.рф. Read 2026-09-29.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/pmp/

VRF12 Автоматизированная система управления Поляна-Д4. вооружение.рф. Read 2026-09-29.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/polyana-d4/

VRF13 1L262E Rtut-BM (SPR-2M), equipment page with characteristics table. вооружение.рф. Read 2026-10-06.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/1l262e-rtut-bm-spr-2m/

VRF14 Dymovaya mashina TDA-2K: obzor kharakteristiki. armyguide (xn--b1agacl3aeas4a.xn--p1ai). Read 2026-10-04.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/tda-2k/

VRF15 1L277 Sobolyatnik catalogue page. Reference site (copies manufacturer sheet). Read 2026-10-06.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/1l277-sobolyatnik/

VRF16 RB-636 Svet-KU (military equipment catalogue). vooruzhenie.rf, 2023. Read 2026-10-06.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/rb-636-svet-ku/

VRF17 Электрический беспилотный летательный аппарат Тахион. xn--b1agacl3aeas4a.xn--p1ai (armament catalogue). Read 2026-10-02.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/tahion/

VRF18 Р-330Ж «Житель». vooruzhenie.rf (вооружение.рф), Russian reference site. Read 2026-09-29.
https://xn--b1agacl3aeas4a.xn--p1ai/armament/r-330zh-zhitel/

VS По крутым траекториям. Vokrug Sveta.
https://www.vokrugsveta.ru/vs/po-krutym-traektoriyam-id585154/

VZ 2С9 «Нона-С». Vzglyad, 2025-01-17.
https://vz.ru/information/2025/1/17/1308582.html

VZ2 Десантники впервые сбросили роботов с парашютами на учениях «Центр-2026». Vzglyad, 2026-10-02.
https://vz.ru/news/2026/10/2/1458036.html

VZRU Специально против БПЛА. Зенитно-ракетный комплекс Деривация-ПВО. Vzglyad, 2025-03-21.
https://vz.ru/information/2025/3/21/1321436.html

W1 Tanks T-90M and T-72B3M received new improvement against drones. www1.ru, 2026-05-12.
https://www1.ru/en/news/2026/05/12/tanki-t-90m-i-t-72b3m-poluchili-novoe-uluchshenie-protiv-dronov.amp.html

W1A Раскрыты характеристики новейшего ударного БПЛА «Молния-2». www1.ru, quoting Russian MoD, 2024-12-05.
https://www1.ru/news/2024/12/05/raskryty-xarakteristiki-noveisego-udarnogo-bpla-molniia-2-okazalsia-proshhe-lanceta.html

W1A2 Морской десант катера «Алексей Баринов» уничтожил дроны и БЭК-камикадзе на Балтике. www1.ru, 2025-05-02 (from URL path).
https://www1.ru/news/2025/05/02/morskoi-desant-katera-aleksei-barinov-unictozil-drony-i-bek-kamikadze-na-baltike.amp.html

W1A3 Glaza i ushi voennykh: v Minoborony RF nazvali preimushchestva dronov Supercam S350. www1.ru, 2024-07-14.
https://www1.ru/news/2024/07/14/glaza-i-usi-voennyx-v-minoborony-rf-nazvali-preimushhestva-dronov-razvedcikov-supercam-s350.html

W1A4 Ustroit kontrbatareinuyu vzbuchku: chem khorosha perspektivnaya RSZO Uragan-1M. www1.ru, 2024-10-08.
https://www1.ru/news/2024/10/08/ustroit-kontrbatareinuiu-vzbucku-cem-xorosa-perspektivnaia-rszo-uragan-1m.html

W1B Крылатая смерть: раскрыта дальность полёта дрона-камикадзе «Молния-2». www1.ru, quoting Russian MoD press service, 2025-01-28.
https://www1.ru/news/2025/01/28/krylataia-smert-raskryta-sumassedsaia-dalnost-poleta-noveisego-drona-kamikadze-molniia-2.html

W1B2 Десантные катера «Дюгонь» и «Серна» (Baltic Fleet exercise). www1.ru, 2026-04-16 (from URL path).
https://www1.ru/news/2026/04/16/410153-desantnye-katera-diugon-i-serna.amp.html

W1B3 Novoe pokolenie vozdushnoi razvedki: Supercam S350 zadeistvovali v otslezhivanii manevrov. www1.ru, 2024-08-26.
https://www1.ru/news/2024/08/26/novoe-pokolenie-vozdusnoi-razvedki-supercam-s350-zadeistvovali-v-otslezivanii-manevrov-protivnika.amp.html

W1C Военные показали работу дрона-камикадзе «Молния-2». www1.ru, quoting Russian MoD, 2025-02-03.
https://www1.ru/news/2025/02/03/voennye-pokazali-rabotu-preodolevaiushhego-pomexi-sredstv-reb-drona-kamikadze-molniia-2.html

W1C2 Sovsem strakh poteriali: armiya Rossii svela poteri dronov Supercam pochti k nulyu. www1.ru, 2024-10-25.
https://www1.ru/news/2024/10/25/sovsem-strax-poteriali-armiia-rossii-svela-poteri-dronov-razvedcikov-supercam-pocti-k-nuliu.amp.html

W1C3 Brosit vyzov amerikanskoi HIMARS: noveishaya RSZO Uragan-1M. www1.ru, 2024-10-28.
https://www1.ru/news/2024/10/28/brosit-vyzov-amerikanskoi-himars-noveisaia-rszo-uragan-1m-ustroit-kontrbatareinuiu-vzbucku.html

W1D Раскрыты официальные характеристики дрона «Молния-2». www1.ru, quoting Russian MoD, 2025-05-02.
https://www1.ru/news/2025/05/02/raskryty-oficialnye-xarakteristiki-drona-molniia-2-sostoit-iz-aliuminievyx-trub-i-plastika.html

W1D2 Ustoichiv k REB, rabotaet kruglye sutki: chto mozhet novyi bespilotnik Superkam. www1.ru, 2024-01-27.
https://www1.ru/news/2024/01/27/ustoiciv-k-reb-rabotaet-kruglye-sutki-cto-mozet-novyi-rossiiskii-bespilotnik-superkam.amp.html

W1E Gaubitsu 2S3 Akatsiya nachali ispolzovat v svyazke s razvedronom Supercam. www1.ru, 2024-08-15.
https://www1.ru/news/2024/08/15/cvetok-kalibra-152-mm-gaubicu-2s3-akaciia-nacali-ispolzovat-v-sviazke-s-razveddronom-supercam.html

W1E2 Poyavilis pervye kadry boevogo primeneniya noveishei RSZO Uragan-1M (English edition). www1.ru, 2025-02-06.
https://www1.ru/en/news/2025/02/06/poiavilis-pervye-kadry-boevogo-primeneniia-noveisei-rszo-uragan-1m.amp.html

W1F Supercam S350 corrected the destruction of a drone control point. www1.ru, 2026-03-18.
https://www1.ru/en/news/2026/03/18/bespilotnik-supercam-s350-skorrektiroval-unictozenie-punkta-upravleniia-dronami.amp.html

W1G Rossiiskie voennye poluchat prodvinutuyu versiyu Supercam S350. www1.ru, 2025-05-22.
https://www1.ru/news/2025/05/22/rossiiskie-voennye-polucat-prodvinutuiu-versiiu-bespilotnika-razvedcika-supercam-s350.amp.html

W1H Supercam S350 records hundreds of targets at the front. www1.ru, 2026-03-22.
https://www1.ru/en/news/2026/03/22/bpla-supercam-s350-fiksiruet-sotni-celei-na-peredovoi-operator-nazval-kameru-odnoi-iz-lucsix-sredi-analogov.html

W1I Nazvana glavnaya modifikatsiya drona Supercam S350. www1.ru, 2025-01-20.
https://www1.ru/news/2025/01/20/nazvana-glavnaia-modifikaciia-drona-supercam-s350-novoe-pokolenie-vozdusnoi-razvedki.html

W1ITAL Redkiy dron Italmas zasvetilsya na foto, sposoben proletat 200 km. www1.ru, 2025-01-21.
https://www1.ru/news/2025/01/21/redkii-dron-italmas-zasvetilsia-na-foto-sposoben-proletat-200-km.html

W1J Protivniku ne ostavlyaem shansov: rossiiskie voennye ispolzuyut bespilotniki Superkam. www1.ru, 2024-04-29.
https://www1.ru/news/2024/04/29/protivniku-ne-ostavliaem-sansov-rossiiskie-voennye-ispolzuiut-bespilotniki-superkam-dlia-tocnoi-r.amp.html

W1KK Defence blog: Wreckage of Russian loitering munition "Garpia-A1" of the KK series found in Mali. www1.ru (summary of Defence Blog, Dylan Malyasov), 2026-05-19.
https://www1.ru/en/news/2026/05/19/defence-blog-oblomki-rossiiskogo-barraziruiushhego-boepripasa-garpiia-a1-serii-kk-nasli-v-mali.html

W1KVN Передовые дроны «Князь Вандал Новгородский» с тепловизором вышли в серийное производство. www1.ru, 2025-01-14.
https://www1.ru/news/2025/01/14/peredovye-drony-kniaz-vandal-novgorodskii-s-teplovizorom-vysli-v-seriinoe-proizvodstvo.html

W1O30 Lazernaya ukazka Orlana navodit artilleriyu i vysokotochnye snaryady. www1.ru, 2024-11-20.
https://www1.ru/news/2024/11/20/lazernaia-ukazka-orlana-navodit-artilleriiu-i-vysokotocnye-snariady-bpla-pokazal-vysokuiu-effektivnos.amp.html

W1PROV Новый оптоволоконный дрон-камикадзе «Провод» дальностью 30 км ушел в серийное производство. www1.ru, 2026-02-05.
https://www1.ru/news/2026/02/05/novyi-optovolokonnyi-dron-kamikadze-provod-dalnostiu-30-km-usel-v-seriinoe-proizvodstvo.html

W1R РСЗО 9К57 «Ураган» на новом шасси БАЗ-69092 поступила в российскую армию. www1.ru (news aggregator), 2026-02-24.
https://www1.ru/news/2026/02/24/rszo-9k57-uragan-na-novom-sassi-baz-69092-postupila-v-rossiiskuiu-armiiu.amp.html

W1R1 Ростех отправил в армию России партию БМП-3 и БМД-4М с индивидуальными станциями РЭБ. www1.ru, 2024-08-30.
https://www1.ru/news/2024/08/30/rostex-otpravil-v-armiiu-rossii-partiiu-bmp-3-i-bmd-4m-s-individualnymi-stanciiami-reb.amp.html

W1R2 Названы характеристики новейшей «королевы пехоты» БМП-3. www1.ru, 2024-12-19.
https://www1.ru/news/2024/12/19/nazvany-xarakteristiki-noveisei-korolevy-pexoty-bmp-3-so-sposobnym-rabotat-s-zakrytyx-pozicii-ptu.amp.html

W1R3 Модернизированные БМП-3 с усиленной защитой от подрыва передал войскам Ростех. www1.ru, 2026-07-27.
https://www1.ru/en/news/2026/07/27/425277-modernizirovannye-bmp-3-s-usilennoi-zashhitoi-ot-podryva-peredal-voiskam-rostex.amp.html

W1RU Модернизированные БМД-2М с отделением «Берег» впервые поставил Ростех. www1.ru, 2026-05-29.
https://www1.ru/news/2026/05/29/modernizirovannye-bmd-2m-s-otdeleniem-bereg-vpervye-postavil-rostex.amp.html

W1RU2 Неуловимая птичка: российский FPV-дрон ВТ-40. www1.ru, 2024-07-15.
https://www1.ru/news/2024/07/15/neulovimaia-pticka-rossiiskii-fvp-dron-vt-40-stal-kosmarom-dlia-tankov-protivnika-na-peredovoi.html

W1RU3 Дёшево и сердито: появилось первое фото ЗСУ-23-4 «Шилка» с усиленной защитой. www1.ru, 2025-08-02.
https://www1.ru/news/2025/08/02/desevo-i-serdito-poiavilos-pervoe-foto-zsu-23-4-silka-s-usilennoi-zashhitoi.html

W1RU25 Merlin with 90x zoom directs artillery (www1.ru). www1.ru, 2025-02-19.
https://www1.ru/news/2025/02/19/merlin-s-90-kratnym-zumom-navodit-artilleriiu-raskryty-xarakteristiki-noveisego-rossiiskogo-bpla.amp.html

W1RU26 Jams hunters and flies 150 km without losing link (www1.ru). www1.ru, 2026-05-20.
https://www1.ru/news/2026/05/20/glusit-oxotnikov-i-letit-150-km-bez-poteri-sviazi-nazvany-polnye-xarakteristiki-drona-merlin-vr.html

W171 Tseleukazanie za minuty: Orlan-10 zakryl petlyu mezhdu obnaruzheniem tseli i artilleriyskim udarom. www1.ru, 2026-04-04.
https://www1.ru/news/2026/04/04/celeukazanie-za-minuty-orlan-10-zakryl-petliu-mezdu-obnaruzeniem-celi-i-artilleriiskim-udarom.html

WDN Russia Receives New Batch of T-90M, T-80BVM and T-72B3M Tanks With Anti-Drone Upgrades. World Defense News (thedefensenews.com), 2026-05-10.
https://www.thedefensenews.com/news-details/Russia-Receives-New-Batch-of-T-90M-T-80BVM-and-T-72B3M-Tanks-With-Anti-Drone-Upgrades/

WEAPLAND Противодесантная мина ПДМ-1М (Советские и Российские мины). Weaponland (weaponland.ru), text by Yu. G. Veremeev.
https://weaponland.ru/publ/protivodesantnaja_mina_pdm_1m_sovetskie_i_rossijskie_miny/20-1-0-940

WEAPONL Protivotankovaya mina PTM-1 (Veremeev, Sapper) on weaponland.ru. weaponland.ru.
https://weaponland.ru/publ/protivotankovaja_mina_ptm_1_sovetskie_i_rossijskie_miny/20-1-0-899

WEG1 2S23 Nona-SVK Russian 120mm Amphibious Self-Propelled Mortar (extract, last modified 2025-03-13). US Army TRADOC Worldwide Equipment Guide, 2025-03-13. Read 2026-10-06.
https://odin.tradoc.army.mil/WEG/Asset/2S23_Nona-SVK_Russian_120mm_Amphibious_Self-Propelled_Mortar

WEG2 WEG: 2S31 Vena Russian Amphibious 120mm Self-Propelled Mortar. TRADOC, 2025-03-04. Read 2026-10-06.
https://odin.tradoc.army.mil/WEG/Asset/2S31_Vena_Russian_Amphibious_120mm_Self-Propelled_Mortar

WEG3 Worldwide Equipment Guide, 2S34 Hosta/Chosta entry (local extract). US Army TRADOC, 2025-04-10. Read 2026-10-21.
https://odin.tradoc.army.mil/WEG/Asset/2S34_Hosta::Chosta_Russian_120mm_Self-Propelled_Mortar

WEG4 ODIN WEG: 2S35 Koalitsiya-SV and 2S43 Malva Russian 152mm SPH (local extract). US Army TRADOC, 2024-12-12 (2S35); 2026-02-13 (2S43). Read 2026-09-29.
https://odin.tradoc.army.mil/WEG/Asset/2S35_Koalitsiya-SV_Russian_152mm_Self-Propelled_Howitzer_(SPH)

WEG5 2S4 Tyulpan (M-1975) Russian 240mm Self-Propelled Heavy Mortar (local extract). US Army TRADOC, ODIN WEG, 2025-05-06. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/2S4_Tyulpan_(M-1975)_Russian_240mm_Self-Propelled_Heavy_Mortar

WEG6 2S7 Pion (M1975) Russian 203mm SPG, WEG extract. US Army TRADOC, 2025-04-22. Read 2026-10-08.
https://odin.tradoc.army.mil/WEG/Asset/2S7_Pion_(M1975)_Russian_203mm_Self-Propelled_Gun_(SPG)

WEG7 Worldwide Equipment Guide, 2S40 Floks. US Army TRADOC, 2025-04-01. Read 2026-10-06.
https://odin.tradoc.army.mil/WEG/Asset/2S40_Floks_Russian_6x6_120mm_Self-Propelled_Mortar_System_

WEG8 2S5 Giatsint-S Russian 152mm Self-Propelled Gun (SPG), WEG extract. US Army TRADOC, 2025-03-11. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/2S5_Giatsint-S_Russian_152mm_Self-Propelled_Gun_(SPG)

WEG9 WEG: 2S9 Anona (SO-120) Russian 120mm Amphibious Self-Propelled Mortar. US Army TRADOC (ODIN WEG), local extract pilot/weg_extract/2s9.json, 2024-10-08. Read 2026-10-21.
https://odin.tradoc.army.mil/WEG/Asset/2S9_Anona_(SO-120)_Russian_120mm_Amphibious_Self-Propelled_Mortar

WEG10 WEG: 2S9-1 Sviristelka Russian 120mm Self-Propelled Mortar. US Army TRADOC (ODIN WEG), local extract, 2025-03-04. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/2S9-1_Sviristelka_Russian_120mm_Self-Propelled_Mortar

WEG11 WEG: 2S9-1M (Nona-S) Russian 120mm Self-Propelled Mortar. US Army TRADOC (ODIN WEG), local extract, 2025-10-20. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/2S9-1M_(Nona-S)_Russian_120mm_Self-Propelled_Mortar

WEG12 96L6E (Cheese Board) Russian Early-Warning and Acquisition Radar (WEG extract). US Army TRADOC ODIN, 2024-10-23. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/96L6E_(Cheese_Board)_Russian_Early-Warning_and_Acquisition_Radar

WEG13 WEG: ARK-1M RYS Russian Artillery Locating Radar (local extract, last modified 2024-10-22). US Army TRADOC, 2024-10-22. Read 2026-09-29.
https://odin.tradoc.army.mil/WEG/Asset/ARK-1M_RYS_Russian_Artillery_Locating_Radar

WEG14 ODIN WEG: 3K60 Bal (SSC-6 Sennight) Russian Coastal Defense System (local extract). US Army TRADOC, 2024-06-03. Read 2026-10-06.
https://odin.tradoc.army.mil/WEG/Asset/3K60_Bal_(SSC-6_Sennight)_Russian_Coastal_Defense_System_

WEG15 Barnaul-T Russian Air Defense Command and Control System. US Army TRADOC, ODIN WEG, 2025-06-10. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/Barnaul-T_Russian_Air_Defense_Command_and_Control_System

WEG16 K-300P Bastion-P (SS-C-5 Stooge) Russian Coastal Defense Missile System (local extract pilot/weg_extract/bastion.json). US Army TRADOC, ODIN WEG, 2025-06-10. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/K-300P_Bastion-P_(SS-C-5_Stooge)_Russian_Coastal_Defense_Missile_System_

WEG17 WEG online, BAT-2 Russian Combat Engineer Vehicle (local extract). TRADOC, 2024-10-21. Read 2026-10-04.
https://odin.tradoc.army.mil/WEG/Asset/BAT-2_Russian_Combat_Engineer_Vehicle

WEG18 Worldwide Equipment Guide: BMD-1 and BMD-2 Russian Airborne Amphibious IFV (local extract). US Army TRADOC (ODIN), 2024-08-28 (BMD-1), 2025-03-03 (BMD-2). Read 2026-10-03.
https://odin.tradoc.army.mil/WEG/Asset/BMD-2_Russian_Airborne_Amphibious_Infantry_Fighting_Vehicle_(IFV)

WEG19 Worldwide Equipment Guide: BMD-4 Russian Airborne Amphibious IFV (local extract, page modified 2024-08-28). US Army TRADOC, 2024-08-28. Read 2026-10-03.
https://odin.tradoc.army.mil/WEG/Asset/BMD-4_Russian_Airborne_Amphibious_Infantry_Fighting_Vehicle_(IFV)

WEG20 BMP-1 Russian Amphibious Infantry Fighting Vehicle (IFV), ODIN WEG (local extract pilot/weg_extract/bmp1.json). US Army TRADOC, 2025-03-03. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/BMP-1_Russian_Amphibious_Infantry_Fighting_Vehicle_(IFV)

WEG21 WEG extract: BMP-1KSh (BMP M1978), last modified 2024-08-07. US Army TRADOC, ODIN Worldwide Equipment Guide, 2024-08-07. Read 2026-09-29.
https://odin.tradoc.army.mil/WEG/Asset/BMP-1KSh_(BMP_M1978)_Russian_Amphibious_Command_Post_and_Staff_Infantry_Fighting_Vehicle_(IFV)

WEG22 WEG: PRP-4A (Argus) Russian Amphibious Artillery Reconnaissance Vehicle. TRADOC, 2024-10-11. Read 2026-10-01.
https://odin.tradoc.army.mil/WEG/Asset/PRP-4A_(Argus)_Russian_Amphibious_Artillery_Reconnaissance_Vehicle

WEG23 BMP-2 Russian Amphibious Infantry Fighting Vehicle (IFV). US Army TRADOC, ODIN WEG, 2025-03-03. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/BMP-2_Russian_Amphibious_Infantry_Fighting_Vehicle_(IFV)

WEG24 BMP-3 and BMP-3M Russian Amphibious Infantry Fighting Vehicle (IFV). US Army TRADOC, Worldwide Equipment Guide (ODIN), local extract, 2025-03-03 (BMP-3); 2024-08-28 (BMP-3M). Read 2026-10-09.
https://odin.tradoc.army.mil/WEG/Asset/BMP-3_Russian_Amphibious_Infantry_Fighting_Vehicle_(IFV)

WEG25 BMPT Terminator Russian Heavy Fire Support Combat Vehicle; BMPT-72 Terminator 2 Russian Tank Support Armored Fighting Vehicle. US Army TRADOC, ODIN WEG, 2024-08-29 and 2025-01-13. Read 2026-10-07.
https://odin.tradoc.army.mil/WEG/Asset/BMPT_Terminator_Russian_Heavy_Fire_Support_Combat_Vehicle

WEG26 Worldwide Equipment Guide: BMR-3M Russian Mine Clearing Vehicle (local extract). US Army TRADOC, 2024-10-16. Read 2026-10-04.
https://odin.tradoc.army.mil/WEG/Asset/BMR-3M_Russian_Mine_Clearing_Vehicle

WEG27 Borisoglebsk-2 (RB-301B) Russian Amphibious Multipurpose Jamming Complex. US Army TRADOC, ODIN WEG, 2025-06-05. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/Borisoglebsk-2_(RB-301B)_Russian_Amphibious_Multipurpose_Jamming_Complex

WEG28 BRDM-2 Russian 4x4 Amphibious Armored Scout Car (Worldwide Equipment Guide online, local extract pilot/weg_extract/brdm2.json). US Army TRADOC, 2025-03-03. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/BRDM-2_Russian_4x4_Amphibious_Armored_Scout_Car

WEG29 Worldwide Equipment Guide: BREM-1, BREM-2, BREM-D, RM-G (local extract). US Army TRADOC, 2024-10-15. Read 2026-10-03.
https://odin.tradoc.army.mil/WEG/Asset/BREM-1_Russian_Armored_Recovery_Vehicle

WEG30 Worldwide Equipment Guide: IMR-2 Russian Combat Engineering Vehicle (local extract). US Army TRADOC, 2024-10-16. Read 2026-10-04.
https://odin.tradoc.army.mil/WEG/Asset/IMR-2_Russian_Combat_Engineering_Vehicle

WEG31 WEG extract: BRM-1K Russian Amphibious Combat Reconnaissance Vehicle (CRV). TRADOC Worldwide Equipment Guide (ODIN), 2025-03-03. Read 2026-10-03.
https://odin.tradoc.army.mil/WEG/Asset/BRM-1K_Russian_Amphibious_Combat_Reconnaissance_Vehicle_(CRV)

WEG32 WEG online: BTR-90 (GAZ-5923) Russian 8x8 Amphibious APC (local extract pilot/weg_extract/btr-90.json). US Army TRADOC, 2025-12-10. Read 2026-10-03.
https://odin.tradoc.army.mil/WEG/Asset/BTR-90_(GAZ-5923)_Russian_8x8_Amphibious_Armored_Personnel_Carrier_(APC)

WEG33 Worldwide Equipment Guide: BTR-70 (BTR M1978) and BTR-80 Russian 8x8 Amphibious APC (local extract). US Army TRADOC (ODIN), 2025-03-05. Read 2026-10-04.
https://odin.tradoc.army.mil/WEG/Asset/BTR-80_Russian_8x8_Amphibious_Armored_Personnel_Carrier_(APC)

WEG34 WEG: BTR-D (BMD M1979) Airborne APC (local extract pilot/weg_extract/btr-d.json). US Army TRADOC, 2025-03-05. Read 2026-10-03.
https://odin.tradoc.army.mil/WEG/Asset/BTR-D_(BMD_M1979)_Russian_Amphibious::Airborne_Armored_Personnel_Carrier_(APC)

WEG35 WEG extract: BTR-MD Rakushka (Russian Amphibious Airborne APC). TRADOC WEG, 2024-08-07. Read 2026-10-03.
https://odin.tradoc.army.mil/WEG/Asset/BTR-MD_Rakushka_Russian_Amphibious::Airborne_Armored_Personnel_Carrier_(APC)

WEG36 9K37 Buk-M1 (SA-11 Gadfly) Russian Medium-Range Surface-to-Air Missile System. US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-06-10. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/9K37_Buk-M1_(SA-11_Gadfly)_Russian_Medium-Range_Surface-to-Air_Missile_System

WEG37 Buk-M2 (SA-17 Grizzly) Russian Medium-Range Air Defense Missile System. US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-06-10. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/Buk-M2_(SA-17_Grizzly)_Russian_Medium-Range_Air_Defense_Missile_System

WEG38 9K317M Buk-M3 (SA-27) Russian Medium-Range Air Defense Missile System. US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-06-10. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/9K317M_Buk-M3_(SA-27)_Russian_Medium-Range_Air_Defense_Missile_System

WEG39 9K330 Tor (SA-15 Gauntlet) Russian Short-Range Surface-to-Air Missile System. US Army TRADOC, Worldwide Equipment Guide (ODIN), 2025-06-10. Read 2026-10-07.
https://odin.tradoc.army.mil/WEG/Asset/9K330_Tor_(SA-15_Gauntlet)_Russian_Short-Range_Surface-to-Air_Missile_System

WEG40 WEG entry RKhM-6 and RKhM-8 (local extract). US Army TRADOC, 2024-10-09. Read 2026-10-04.
https://odin.tradoc.army.mil/WEG/Asset/RKhM-6_Russian_8x8_Amphibious_CBRN_Reconnaissance_Vehicle

WEG41 D-20 (M1955) Russian 152mm Towed Gun-Howitzer, Worldwide Equipment Guide (local extract). US Army TRADOC, 2025-04-10. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/D-20_(M1955)_Russian_152mm_Towed_Gun-Howitzer

WEG42 D-30 (M1963) Russian 122mm Towed Howitzer, Worldwide Equipment Guide (local extract). US Army TRADOC, 2025-03-06. Read 2026-02-25.
https://odin.tradoc.army.mil/WEG/Asset/D-30_(M1963)_Russian_122mm_Towed_Howitzer

WEG43 WEG extract decon.json (ARS-14KM, TMS-65 pages). TRADOC, odin.tradoc.army.mil/WEG, 2024-10-15 and 2025-03-06. Read 2026-10-04.
https://odin.tradoc.army.mil/WEG/Asset/ARS-14KM_Russian_6x6_Decontamination_Truck

WEG44 Worldwide Equipment Guide: BTM-3, MDK-3, PZM-2 (local extract). TRADOC, 2025-03-20. Read 2026-10-04.
https://odin.tradoc.army.mil/WEG/Asset/BTM-3_Russian_Trenching_Machine

WEG45 WEG online extract: GAZ-66 and GAZ-3308 Sadko (pilot/weg_extract/gaz-trucks.json). TRADOC, 2024-12-10. Read 2026-10-06.
https://odin.tradoc.army.mil/WEG/Asset/GAZ-3308_Sadko_Russian_4X4_Light_Utility_Truck

WEG46 WEG: Gibka-S Russian Self-Propelled VSHORAD System (local extract pilot/weg_extract/gibka.json). US Army TRADOC, WEG, 2025-06-10. Read 2026-10-07.
https://odin.tradoc.army.mil/WEG/Asset/Gibka-S_Russian_Self-Propelled_Very_Short-Range_Air_Defense_(VSHORAD)_System_

WEG47 WEG: 9K35 Strela-10 (SA-13 Gopher) Russian Short-Range Surface-to-Air Missile System (local extract pilot/weg_extract/strela10.json). US Army TRADOC, WEG, 2025-06-10. Read 2026-10-08.
https://odin.tradoc.army.mil/WEG/Asset/9K35_Strela-10_(SA-13_Gopher)_Russian_Short-Range_Surface-to-Air_Missile_System

WEG48 WEG extract: BM-21 Grad Russian 122mm MRL (last modified 2024-12-19). US Army TRADOC, 2024-12. Read 2026-09-29.
https://odin.tradoc.army.mil/WEG/Asset/BM-21_Grad_Russian_122mm_Multiple_Rocket_Launcher_(MRL)

WEG49 WEG extract groza.json: R-934UM2, R-330B, R-934B pages. US Army TRADOC, 2025-06-05. Read 2026-09-29.
https://odin.tradoc.army.mil/WEG/Asset/R-934B_Russian_VHF_Air_Communication_Automated_Jamming_Station

WEG50 WEG: 9K310 Igla-1 (SA-16 Gimlet); 9K38 Igla (SA-18 Grouse); 9K388 [sic] Igla-S (SA-24 Grinch). US Army TRADOC ODIN, 2025-06-10. Read 2026-10-07.
https://odin.tradoc.army.mil/WEG/Asset/9K38_Igla_(SA-18_Grouse)_Russian_Man-Portable_Air-Defense_Missile

WEG51 Worldwide Equipment Guide online: MTU-72 AVLB and TMM-3 mobile bridging system (local extract tmm.json). TRADOC, 2024-10 to 2025-04. Read 2026-09-29.
https://odin.tradoc.army.mil/WEG/Asset/TMM-3_Russian_6x6_Mobile_Bridging_System

WEG52 Infauna (RB-531B) Russian 8x8 Amphibious Electronic Warfare System. TRADOC WEG, 2025-06-05. Read 2026-09-29.
https://odin.tradoc.army.mil/WEG/Asset/Infauna_(RB-531B)_Russian_8x8_Amphibious_Electronic_Warfare_System

WEG53 WEG: IRM Zhuk Russian Amphibious Engineer Reconnaissance Vehicle (local extract pilot/weg_extract/irm.json). TRADOC, 2024-10-30. Read 2026-10-04.
https://odin.tradoc.army.mil/WEG/Asset/IRM_Zhuk_Russian_Amphibious_Engineer_Reconnaissance_Vehicle

WEG54 WEG extract, LPD-801 Russian UAV Jammer. US Army TRADOC WEG (local extract), 2025-06-05. Read 2026-10-06.
https://odin.tradoc.army.mil/WEG/Asset/LPD-801_Russian_Unmanned_Aerial_Vehicle_(UAV)_Jammer

WEG55 Worldwide Equipment Guide, KamAZ-4310, 5350, 6350 pages. TRADOC, 2024-10. Read 2026-10-04. https://odin.tradoc.army.mil/WEG/Asset/KamAZ-4310_Russian_6x6_General_Utility_Vehicle

WEG56 Kasta 2E1 Russian 6x6 Low-Altitude All-Around 3-D Surveillance Radar System (WEG extract). US Army TRADOC, WEG online, 2024-08-07. Read 2026-10-06. https://odin.tradoc.army.mil/WEG/Asset/Kasta_2E1_Russian_6x6_Low-Altitude_All-Around_3-D_Surveillance_Radar_System

WEG57 WEG: 9P157 Khrizantema-S ATGM System; 9M123 Khrizantema (AT-15 Springer) ATGM. US Army TRADOC (ODIN WEG), local extract pilot/weg_extract/khrizantema.json, 2024-07-16 / 2024-08-07. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/9P157_Khrizantema-S_Russian_Anti-Tank_Guided_Missile_System

WEG58 9K111 Fagot (AT-4 Spigot) and 9M113 Konkurs (AT-5 Spandrel) ATGM pages, local extract. US Army TRADOC (ODIN WEG), 2025-02-20 / 2025-11-12. Read 2026-10-07. https://odin.tradoc.army.mil/WEG/Asset/9M113_Konkurs_(AT-5_Spandrel)_Russian_Anti-Tank_Guided_Missile_(ATGM)

WEG59 9M133 Kornet (AT-14 Spriggan) Russian Anti-Tank Guided Missile (ATGM). US Army TRADOC, Worldwide Equipment Guide (ODIN), 2024-08-07. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/9M133_Kornet_(AT-14_Spriggan)_Russian_Anti-Tank_Guided_Missile_(ATGM)

WEG60 9M133 Kornet-EM Russian 4x4 Anti-Tank Guided Missile (ATGM) Vehicle. US Army TRADOC, Worldwide Equipment Guide (ODIN), 2024-08-29. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/9M133_Kornet-EM_Russian_4x4_Anti-Tank_Guided_Missile_(ATGM)_Vehicle

WEG61 Krasuha Russian Mobile Electronic Warfare Jamming System (WEG extract). US Army TRADOC, ODIN, 2025-06-05. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/Krasuha_Russian_Mobile_Electronic_Warfare_Jamming_System

WEG62 Worldwide Equipment Guide: T-80B Russian Main Battle Tank (local extract pilot/weg_extract/t80.json). US Army TRADOC G-2 (ODIN), 2024-08-05. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/T-80B_Russian_Main_Battle_Tank_(MBT)

WEG63 WEG: Leer-2 Russian 4x4 Mobile EW Vehicle (local extract). US Army TRADOC, 2025-06-05. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/Leer-2_Russian_4x4_Mobile_Electronic_Warfare_(EW)_Vehicle

WEG64 WEG extract: KrAZ-255B, KrAZ-260, ZIL-131. TRADOC WEG, 2024-03. Read 2026-10-06. https://odin.tradoc.army.mil/WEG/Asset/KrAZ-255B_Russian_6x6_Cargo_Truck

WEG65 WEG extract: AMN-590951 (Spartak) and Z-STS Akhmat. TRADOC WEG, 2024-08/2024-09. Read 2026-10-03. https://odin.tradoc.army.mil/WEG/Asset/AMN-590951_(Spartak)_Russian_4x4_Mine_Resistant_Ambush_Protected_(MRAP)

WEG66 WEG: 9K115 Metis (AT-7 Saxhorn) and 9K115-2 Metis-M (AT-13 Saxhorn-2) Russian ATGM (local extract). US Army TRADOC (ODIN WEG), 2024-11-25 / 2025-02-20. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/9K115_Metis_(AT-7_Saxhorn)_Russian_Anti-Tank_Guided_Missile_(ATGM)

WEG67 PMP Russian Heavy Folding Pontoon Bridge (WEG online). US Army TRADOC G-2, 2024-10-16. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/PMP_Russian_Heavy_Folding_Pontoon_Bridge

WEG68 Moskva-1 (1L265) Russian Electronic Warfare Vehicle. US Army TRADOC ODIN WEG, 2025-06-06. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/Moskva-1_(1L265)_Russian_Electronic_Warfare_Vehicle

WEG69 Worldwide Equipment Guide: 2S19 Msta-S, 2S19M1 (Msta-SM1) and 2S19M2 (Msta-SM2) 152mm SPH records. US Army TRADOC (ODIN), 2025-04-03 (2S19); 2025-04-07 (2S19M1, 2S19M2). Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/2S19_Msta-S_Russian_152mm_Self-Propelled_Howitzer_(SPH)

WEG70 Worldwide Equipment Guide: MT-LB Russian Amphibious Armored Personnel Carrier (local extract pilot/weg_extract/mtlb.json). US Army TRADOC, 2025-03-05. Read 2026-10-03. https://odin.tradoc.army.mil/WEG/Asset/MT-LB_Russian_Amphibious_Armored_Personnel_Carrier_(APC)

WEG71 Murmansk-BN Russian Long-Range Communications Jamming System. US Army TRADOC, ODIN WEG, 2025-06-05. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/Murmansk-BN_Russian_Long-Range_Communications_Jamming_System

WEG72 48Ya6-K1 Podlet K1 Russian Mobile Long-Range High-Altitude Surveillance Radar (local extract). US Army TRADOC, ODIN WEG, 2025-04-08. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/48Ya6-K1_Podlet_K1_Russian_Mobile_Long-Range_High-Altitude_Surveillance_Radar

WEG73 WEG: P-18 (Spoon Rest D) Russian Mobile 2D VHF Radar. US Army TRADOC, 2025-11-07. Read 2026-10-06. https://odin.tradoc.army.mil/WEG/Asset/P-18_(Spoon_Rest_D)_Russian_Mobile_2D_VHF_Radar

WEG74 Pantsir-S1 (SA-22 Greyhound) Russian Short-Range Air Defense Gun/Missile System. US Army TRADOC ODIN WEG, 2025-06-10. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/Pantsir-S1_(SA-22_Greyhound)_Russian_Short-Range_Air_Defense_Gun::Missile_System

WEG75 Pole-21E Russian RF Jammer. US Army TRADOC WEG, 2025-06-05. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/Pole-21E_Russian_RF_Jammer

WEG76 9S52 Polyana-D4 ASU Russian 6x6 Air Defense Command and Control Vehicle (local extract). US Army TRADOC, ODIN WEG, 2025-06-10. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/9S52_Polyana-D4_ASU_Russian_6x6_Air_Defense_Command_and_Control_Vehicle

WEG77 WEG page: UMZ Russian 6x6 Scatterable Minelaying System, Mines tab. TRADOC ODIN, 2024-10-16. Read 2026-10-21. https://odin.tradoc.army.mil/WEG/Asset/UMZ_Russian_6x6_Scatterable_Minelaying_System

WEG78 WEG page: 9A52-4 Tornado, ammunition option 9M55K4. TRADOC ODIN, 2024-10-22. Read 2026-10-21. https://odin.tradoc.army.mil/WEG/Asset/9A52-4_Tornado_Russian_300mm_Multiple_Rocket_Launcher

WEG79 WEG extract: PTS-4 and PMM-2 pages. US Army TRADOC, WEG (local extract), 2024. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/PTS-4_Russian_Amphibious_Cargo_Vehicle

WEG80 PU-12M7 Russian 8x8 Mobile Command and Control Vehicle; 9S737 Ranzhir Russian 6x6 Mobile Command Center. US Army TRADOC, ODIN WEG, 2024-08-26. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/PU-12M7_Russian_8x8_Mobile_Command_and_Control_Vehicle

WEG81 WEG BTR-60-R-145BM Command Post and Communication Center Vehicle. US Army TRADOC, 2024-08-07. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/BTR-60-R-145BM_Russian_8x8_Command_Post_and_Communication_Center_Vehicle

WEG82 Worldwide Equipment Guide sheets: R-149AKSh-1 (mod. 2025-04-23), R-149BMR (2025-01-08), R-149MA3 (2025-04-10). US Army TRADOC (ODIN), 2025. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/R-149AKSh-1_Russian_6x6_Command_and_Signal_Vehicle

WEG83 WEG: REM-KL Russian 8x8 Recovery Vehicle. US Army TRADOC, 2024-10-22. Read 2026-10-06. https://odin.tradoc.army.mil/WEG/Asset/REM-KL_Russian_8x8_Recovery_Vehicle_

WEG84 Repellent Russian 8x8 Anti-Drone Warfare Complex. TRADOC WEG (local extract), 2025-06-05. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/Repellent_Russian_8x8_Anti-Drone_Warfare_Complex

WEG85 9P140 (BM-27 Uragan) Russian 220mm Multiple Rocket Launch (MRL), ammunition options. US Army TRADOC, Worldwide Equipment Guide (ODIN), local extract, 2024-10-28. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/9P140_(BM-27_Uragan)_Russian_220mm_Multiple_Rocket_Launch_(MRL)

WEG86 Worldwide Equipment Guide: 9A52-2 (BM-30 Smerch-M); 9A52-4 Tornado; 9A53-S Tornado-S (local extract). US Army TRADOC, 2024-10. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/9A52-2_(BM-30_Smerch-M)_Russian_300mm_Multiple_Launch_Rocket_System

WEG87 Worldwide Equipment Guide: TOS-1, TOS-1A and TOS-2 pages (local extract). US Army TRADOC, 2024-10. Read 2026-10-21. https://odin.tradoc.army.mil/WEG/Asset/TOS-2_Russian_220mm_Heavy_Flamethrower_System

WEG88 50R6 Vityaz (S-350E) Russian Medium-Range Air Defense Missile System (local extract). US Army TRADOC ODIN WEG, 2025-06-10. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/50R6_Vityaz_(S-350E)_Russian_Medium-Range_Air_Defense_Missile_System

WEG89 Worldwide Equipment Guide: S-300V (SA-12a Gladiator) and S-300V (SA-12b Giant) Russian Long-Range Air Defense Missile System (local extract pilot/weg_extract/s300v4.json). US Army TRADOC, 2025-06-10. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/S-300V_(SA-12a_Gladiator)_Russian_Long-Range_Air_Defense_Missile_System

WEG90 Worldwide Equipment Guide: S-400 Triumph (SA-21 Growler) (local extract pilot/weg_extract/s400.json). US Army TRADOC, 2025-11-17. Read 2026-10-06. https://odin.tradoc.army.mil/WEG/Asset/S-400_Triumph_(SA-21_Growler)_Russian_Long-Range_Surface-to-Air_Missile_(SAM)_System

WEG91 ZSU-23-4 Shilka Russian 23mm Self-Propelled Anti-Aircraft Weapon System (WEG, local extract pilot/weg_extract/shilka.json). US Army TRADOC (ODIN), 2025-06-10. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/ZSU-23-4_Shilka_Russian_23mm_Self-Propelled_Anti-Aircraft_Weapon_System

WEG92 9K114 Shturm (AT-6 Spiral) Russian Anti-Tank Missile Carrier. US Army TRADOC, ODIN WEG, 2025-04-24. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/9K114_Shturm_(AT-6_Spiral)_Russian_Anti-Tank_Missile_Carrier

WEG93 WEG: TDA-3 Russian 6x6 Mobile Smokescreen Generator. US Army TRADOC, 2024-08-29. Read 2026-10-04. https://odin.tradoc.army.mil/WEG/Asset/TDA-3_Russian_6x6_Mobile_Smokescreen_Generator

WEG94 WEG: SNAR-10 and SNAR-10M1 (Big Fred) entries, last modified 2024-10-22. TRADOC, 2024-10. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/SNAR-10M1_(Big_Fred)_Russian_Battlefield_Surveillance_Radar

WEG95 WEG: 2S25 Sprut-SD Russian Light Amphibious Tank (local extract). TRADOC WEG, 2024-11-12. Read 2026-10-06. https://odin.tradoc.army.mil/WEG/Asset/2S25_Sprut-SD_Russian_Light_Amphibious_Tank

WEG96 9M119 Svir / 9M119M Refleks (AT-11 Sniper) WEG page, extract. TRADOC WEG, 2024-08-07. Read 2026-10-07. https://odin.tradoc.army.mil/WEG/Asset/9M119_Svir_::_9M119M_Refleks_(AT-11_Sniper)_Russian_Anti-Tank_Guided_Missile_(ATGM)

WEG97 WEG extract t55: T-55 Russian Main Battle Tank (MBT), page last modified 2025-04-16. TRADOC WEG, 2025-04. Read 2026-10-02. https://odin.tradoc.army.mil/WEG/Asset/T-55_Russian_Main_Battle_Tank_(MBT)

WEG98 T-62 Russian Medium Tank, Worldwide Equipment Guide (local extract pilot/weg_extract/t62.json). US Army TRADOC, 2025-02-27. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/T-62_Russian_Medium_Tank

WEG99 T-72B3 Russian Main Battle Tank (MBT), Worldwide Equipment Guide. US Army TRADOC G-2 (ODIN), 2024-07-30. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/T-72B3_Russian_Main_Battle_Tank_(MBT)

WEG100 T-72 Russian Main Battle Tank (MBT), Worldwide Equipment Guide. US Army TRADOC G-2 (ODIN), 2025-12-15. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/T-72_Russian_Main_Battle_Tank_(MBT)

WEG101 T-72B Russian Main Battle Tank (MBT), Worldwide Equipment Guide. US Army TRADOC G-2 (ODIN), 2024-08-05. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/T-72B_Russian_Main_Battle_Tank_(MBT)

WEG102 T-72BM Russian Main Battle Tank (MBT), Worldwide Equipment Guide. US Army TRADOC G-2 (ODIN), 2024-08-27. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/T-72BM_Russian_Main_Battle_Tank_(MBT)

WEG103 T-72A Russian Main Battle Tank (MBT), Worldwide Equipment Guide. US Army TRADOC G-2 (ODIN), 2024-08-05. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/T-72A_Russian_Main_Battle_Tank_(MBT)

WEG104 T-90 Russian Main Battle Tank (MBT). US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-02-27. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/T-90_Russian_Main_Battle_Tank_(MBT)

WEG105 GAZ-2975 Tigr and GAZ-3937 Vodnik (WEG extract, two records). US Army TRADOC, ODIN WEG, 2025-02-11. Read 2026-10-03. https://odin.tradoc.army.mil/WEG/Asset/GAZ-2975_Tigr_Russian_4x4_Combat_Support_Vehicle_::_Light_Utility_Vehicle

WEG106 9A53-G Tornado Russian 122mm Multiple Rocket Launcher (local extract). US Army TRADOC, ODIN WEG, 2024-08-21. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/9A53-G_Tornado_Russian_122mm_Multiple_Rocket_Launcher

WEG107 Worldwide Equipment Guide: TOS-1A Solntsepek, TOS-1 Buratino and TOS-2 220mm Heavy Flamethrower System records. US Army TRADOC (ODIN), 2024-09-05 (TOS-1A); 2024-10-10 (TOS-1); 2024-10-17 (TOS-2). Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/TOS-1A_Solntsepek_Russian_220mm_Heavy_Flamethrower_System

WEG108 WEG online record MAZ-537 Russian 8x8 Special Wheeled Chassis (extract). TRADOC Worldwide Equipment Guide, 2024-10-15. Read 2026-10-06. https://odin.tradoc.army.mil/WEG/Asset/MAZ-537_Russian_8x8_Special_Wheeled_Chassis

WEG109 WEG extracts: 2S6M1 Tunguska-M1 and 2S6M Tunguska-M (SA-19 Grison). US Army TRADOC, 2025-06-10. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/2S6M1_Tunguska-M1_Russian_30mm_Self-Propelled_Anti-Aircraft_System

WEG110 Worldwide Equipment Guide extract: KamAZ-53949 Typhoon-K and Linza. US Army TRADOC, 2024-10. Read 2026-10-03. https://odin.tradoc.army.mil/WEG/Asset/KamAZ-53949_Typhoon-K_Russian_4x4_Armored_Mine-Resistant_Ambush_Protected_(MRAP)

WEG111 WEG extract, UAZ-469 Russian 4x4 Light Utility Vehicle (odin.tradoc.army.mil, last modified 2024-09-03). US Army TRADOC, 2024-09-03. Read 2026-10-06. https://odin.tradoc.army.mil/WEG/Asset/UAZ-469_Russian_4x4_Light_Utility_Vehicle

WEG112 WEG entry: UR-77 Meteorit Russian Mine Clearing Vehicle (local extract ur77.json). US Army TRADOC, 2024-10-24. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/UR-77_Meteorit_Russian_Mine_Clearing_Vehicle

WEG113 9K512 (Uragan-1M) Russian 220mm/300mm Multiple Launch Rocket System (MRL), Worldwide Equipment Guide (local extract). US Army TRADOC G-2, 2025-03-27. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/9K512_(Uragan-1M)_Russian_220mm::300mm_Multiple_Launch_Rocket_System_(MRL)

WEG114 Worldwide Equipment Guide: Ural-4320 record (variants: Ural-4320-70 Ural Next). US Army TRADOC (ODIN), 2024-03-04 / 2025-01-29. Read 2026-10-07. https://odin.tradoc.army.mil/WEG/Asset/Ural-4320_Russian_6x6_General_Utility_Truck

WEG115 WEG entry: Uran-6 Russian Demining UGV (local extract pilot/weg_extract/uran6.json). US Army TRADOC, 2024-10-16. Read 2026-10-04. https://odin.tradoc.army.mil/WEG/Asset/Uran-6_Russian_Demining_Unmanned_Ground_Vehicle_(UGV)

WEG116 9K333 Verba (SA-29) Russian MANPADS, WEG asset page (local extract). US Army TRADOC, 2025-06-10. Read 2026-10-07. https://odin.tradoc.army.mil/WEG/Asset/9K333_Verba_(SA-29)_Russian_Man-Portable_Infrared_Homing_Surface-to-Air_Missile_(MANPAD)

WEG117 Vityaz DT-10PM Russian All Terrain Carrier. US Army TRADOC, Worldwide Equipment Guide (ODIN), 2024-03-05. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/Vityaz_DT-10PM_Russian_All_Terrain_Carrier

WEG118 Vityaz DT-30PM Russian All Terrain Carrier. US Army TRADOC, Worldwide Equipment Guide (ODIN), 2024-03-05. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/Vityaz_DT-30PM_Russian_All_Terrain_Carrier

WEG119 DT-3P Russian All-Terrain Tracked Carrier. US Army TRADOC, Worldwide Equipment Guide (ODIN), 2024-08-07. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/DT-3P_Russian_All-Terrain_Tracked_Carrier_

WEG120 WEG extract for ML-20, M-30, BS-3, D-44 (D-1 not present). TRADOC WEG (local extract), 2025. Read 2026-10-06. https://odin.tradoc.army.mil/WEG

WEG121 ODIN WEG: GMZ-3 Russian Tracked Minelaying Vehicle; ISDM Zemledeliye Russian 8x8 Mine-Laying System (local extract). US Army TRADOC, 2024-10-16. Read 2026-09-29. https://odin.tradoc.army.mil/WEG/Asset/ISDM_Zemledeliye_Russian_8x8_Mine-Laying_System

WEG122 R-330Zh Zhitel Russian Cellular Jamming and Direction Finding System. US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-09-03. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/R-330Zh_Zhitel_Russian_Cellular_Jamming_and_Direction_Finding_System

WEG123 ZU-23-2 Russian 23mm Towed Anti-Aircraft Gun (WEG extract). US Army TRADOC, 2025-06-10. Read 2026-02-25. https://odin.tradoc.army.mil/WEG/Asset/ZU-23-2_Russian_23mm_Towed_Anti-Aircraft_Gun

WEG2015 Worldwide Equipment Guide 2015, Volume 1. TRADOC, 2015. https://archive.org/details/USArmyWorldwideEquipmentGuide2015

WEG2015 Worldwide Equipment Guide 2015, Vol. 1: Russian 220-mm MRL 9P140 (ammunition table). TRADOC, 2015.

WIKRD18 Mashina komandira batarei 1V18 Klen-1 (handbook text on tech.wikireading.ru). Wikireading (reprint of Russian armour handbook). https://tech.wikireading.ru/7372

WLAND Protivotankovaya mina TM-83 (Sovetskie i Rossiiskie miny), reprint of Veremeev, Sapper, April 2013. weaponland.ru, 2013. https://weaponland.ru/publ/protivotankovaja_mina_tm_83_sovetskie_i_rossijskie_miny/20-1-0-896

WMC1 File: 61st Naval Infantry Brigade's exercise in Murmansk Oblast (16-04-2020).webm. Wikimedia Commons (video by Russian MoD), 2020-04-16. Read 2026-10-06. https://commons.wikimedia.org/wiki/File:61st_Naval_Infantry_Brigade's_exercise_in_Murmansk_Oblast_(16-04-2020).webm

WMC2 Category: 2B14 Podnos mortar (Wikimedia Commons file list). Wikimedia Commons, 2023-02. Read 2026-10-06. https://commons.wikimedia.org/wiki/Category:2B14_Podnos_mortar

WMC3 Wikimedia Commons photographs of 96L6E (MAKS-2011, MAKS-2009, VVS 100th anniversary 2012, Patriot Park 2016). Wikimedia Commons, 2009–2016. Read 2026-09-29. https://commons.wikimedia.org/wiki/Category:96L6E

WMC4 MasteringTheArmament2018-13.jpg (Russian MoD photo, caption). Russian MoD via Wikimedia Commons, 2018. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:MasteringTheArmament2018-13.jpg

WMC5 File:BMD-2 - 137AirborneRegiment22.jpg. Wikimedia Commons (photo by Vitaly V. Kuzmin), 2011-09-28. Read 2026-10-03. https://commons.wikimedia.org/wiki/File:BMD-2_-_137AirborneRegiment22.jpg

WMC6 File:ElectronicWarfareExercise2018-01.jpg (MoD caption: 74th Separate Guards MR Brigade exercise with Borisoglebsk-2). Wikimedia Commons / Russian MoD, 2018. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:ElectronicWarfareExercise2018-01.jpg

WMC7 File:GAZ-66 truck of Russian Army.JPG. Wikimedia Commons. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:GAZ-66_truck_of_Russian_Army.JPG

WMC8 File:KAMAZ-5350 military truck of Russia.jpg (Vitaly V. Kuzmin). Wikimedia Commons, 2011. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:KAMAZ-5350_military_truck_of_Russia.jpg

WMC9 File:Granat-4 UAV at Interpolitex-2015.jpg. Wikimedia Commons, 2015-10-20. Read 2026-10-02. https://commons.wikimedia.org/wiki/File:Granat-4_UAV_at_Interpolitex-2015.jpg

WMC10 File:2014.05.14 kamaz-4310(1).JPG. Wikimedia Commons, 2014-05-14. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:2014.05.14_kamaz-4310(1).JPG

WMC11 File:Kitolov (artillery ammunition).jpg. Wikimedia Commons (Mike1979 Russia), 2008-08-21. Read 2026-10-20. https://commons.wikimedia.org/wiki/File:Kitolov_(artillery_ammunition).jpg

WMC12 File:Krasukha-2 (Красуха-2) Unloaded.jpg. Wikimedia Commons (Vitaly V. Kuzmin), 2014-12-11. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:Krasukha-2_(Красуха-2)_Unloaded.jpg

WMC13 File:1L269E Krasukha-2 Army-2018.jpg. Wikimedia Commons (Boevaya mashina), 2018-08-22. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:1L269E_Krasukha-2_Army-2018.jpg

WMC14 File:1RL257E Krasukha-4 Army-2018.jpg. Wikimedia Commons (Boevaya mashina), 2018-08-22. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:1RL257E_Krasukha-4_Army-2018.jpg

WMC15 File:1RL257E Krasukha-4 Army-2022 2022-08-20 2459.jpg. Wikimedia Commons (Mike1979 Russia), 2022-08-20. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:1RL257E_Krasukha-4_Army-2022_2022-08-20_2459.jpg

WMC16 File:TB2015ExhibitionP2-47.jpg (RB-341V Leer-3 ECM system with UAV). Wikimedia Commons, 2015. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-47.jpg

WMC17 File:TB2015ExhibitionP2-48.jpg (RB-341V Leer-3 ECM system with UAV). Wikimedia Commons, 2015. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-48.jpg

WMC18 File:Ural-4320 - TankBiathlon14part1-51.jpg (Vitaly V. Kuzmin). Wikimedia Commons, 2014-06-28. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:Ural-4320_-_TankBiathlon14part1-51.jpg

WMC19 File:Mil Mi-35M (54 yellow).jpg. Wikimedia Commons, 2012-08-10. Read 2026-10-22. https://commons.wikimedia.org/wiki/File:Mil_Mi-35M_(54_yellow).jpg

WMC20 File:MLZh-VF-VT.webm (video description from the Ministry of Defence). Wikimedia Commons; original Ministry of Defence of the Russian Federation, mil.ru, uploaded 2022-08-07. Read 2026-10-20. https://commons.wikimedia.org/wiki/File:MLZh-VF-VT.webm

WMC21 File:Disposal of MON-90 anti-personnel mine.webm. Wikimedia Commons (source: State Emergency Service of Ukraine), 2022-04. Read 2026-10-21. https://commons.wikimedia.org/wiki/File:Disposal_of_MON-90_anti-personnel_mine.webm

WMC22 File:ДКА Д-704 в Амурском заливе 2010.07.25.JPG (D-704 beached, bow ramp down). Wikimedia Commons (photo by Alex omen), 2010-07-25 (taken; uploaded 2015-12-19). Read 2026-10-17. https://commons.wikimedia.org/wiki/File:ДКА_Д-704_в_Амурском_заливе_2010.07.25.JPG

WMC23 File:Soviet Anti-personnel landmines OZM-72.jpg. Wikimedia Commons, 2011-07-22. Read 2026-10-21. https://commons.wikimedia.org/wiki/File:Soviet_Anti-personnel_landmines_OZM-72.jpg

WMC24 File:27th Independent Sevastopol Guards Motor Rifle Brigade (181-28).jpg. Wikimedia Commons, 2009-04-25. Read 2026-10-21. https://commons.wikimedia.org/wiki/File:27th_Independent_Sevastopol_Guards_Motor_Rifle_Brigade_(181-28).jpg

WMC25 File:OZM 3, 4 und 72.jpg. Wikimedia Commons, 2010-09-18. Read 2026-10-21. https://commons.wikimedia.org/wiki/File:OZM_3,_4_und_72.jpg

WMC26 File:Развертывание РЭБ Палантин на учениях.jpg. Wikimedia Commons (Ministry of Defence of Russia), 2019-03. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:Развертывание_РЭБ_Палантин_на_учениях.jpg

WMC27 File:Antilanding bottom mine PDM-1.jpg. Wikimedia Commons, 2011-07-22. Read 2026-10-21. https://commons.wikimedia.org/wiki/File:Antilanding_bottom_mine_PDM-1.jpg

WMC28 Open Water 2017 qualifying photographs (OpenWater2017qualifying-01 to -13). Vitaly V. Kuzmin via Wikimedia Commons, 2017. Read 2026-09-29. https://commons.wikimedia.org/wiki/Category:PMP_pontoon_bridge_in_Russian_service

WMC29 File:POM-2S.jpg (Wikimedia Commons). Wikimedia Commons, 2007-06-26. Read 2026-10-21. https://commons.wikimedia.org/wiki/File:POM-2S.jpg

WMC30 File:Mine POM-3.jpg. Wikimedia Commons, 2020. Read 2026-10-21. https://commons.wikimedia.org/wiki/File:Mine_POM-3.jpg

WMC31 File:MAKS-2009-225.jpg (PU-12M7 on K1Sh1, roof sensor). Wikimedia Commons (Vitaly V. Kuzmin), 2009-08-20. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:MAKS-2009-225.jpg

WMC32 File:Punkt ipravleniya PU-12M7.jpg (PU-12M7 at MAKS 2007). Wikimedia Commons (Vitaly V. Kuzmin), 2007-08-23. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:Punkt_ipravleniya_PU-12M7.jpg

WMC33 File:R-149MA1 - Engineering technologies 2012 (1).jpg (R-149MA1, rear three-quarter). Wikimedia Commons (Vitaly V. Kuzmin), 2012-06-27. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:R-149MA1_-_Engineering_technologies_2012_(1).jpg

WMC34 File:R-149BMR - ETIF-2010 (1).jpg (R-149BMR, side view, mast raised). Wikimedia Commons (Vitaly V. Kuzmin), 2010-06-30. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:R-149BMR_-_ETIF-2010_(1).jpg

WMC35 File:R-166-0,5 radiostation - 27th Independent Sevastopol Guards Motor Rifle Brigade (4).jpg (R-166-0.5 on K1Sh1, side view). Wikimedia Commons (Vitaly V. Kuzmin), 2011-10-29. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:R-166-0,5_radiostation_-_27th_Independent_Sevastopol_Guards_Motor_Rifle_Brigade_(4).jpg

WMC36 File:R-142N command vehicle.jpg. Wikimedia Commons (photo by Vitaly V. Kuzmin), 2011. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:R-142N_command_vehicle.jpg

WMC37 File:R-166-0,5 radiostation - 27th Independent Sevastopol Guards Motor Rifle Brigade (2).jpg. Wikimedia Commons (photo by Vitaly V. Kuzmin), 2011-10-29. Read 2026-10-04. https://commons.wikimedia.org/wiki/File:R-166-0,5_radiostation_-_27th_Independent_Sevastopol_Guards_Motor_Rifle_Brigade_(2).jpg

WMC38 File:R-166 radiostation.jpg. Wikimedia Commons (photo by Vitaly V. Kuzmin), 2011-12-16. Read 2026-10-04. https://commons.wikimedia.org/wiki/File:R-166_radiostation.jpg

WMC39 File:R-149MA1 - Engineering technologies 2012 (1).jpg. Wikimedia Commons (photo by Vitaly V. Kuzmin), 2012. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:R-149MA1_-_Engineering_technologies_2012_(1).jpg

WMC40 File:Радиорелейный комплекс связи Р-416ГМ «Гранит-М».jpg. Wikimedia Commons (photo by Vladislav Belogrud), 2017-08-23. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:Радиорелейный_комплекс_связи_Р-416ГМ_«Гранит-М».jpg

WMC41 File:Redut-2US - SignalExercise2017-04.jpg. Wikimedia Commons (Russian MoD photo), 2017. Read 2026-10-04. https://commons.wikimedia.org/wiki/File:Redut-2US_-_SignalExercise2017-04.jpg

WMC42 File:ConfidentReception2018-05.jpg (Category P-260T Redut-2US). Wikimedia Commons (Russian MoD photo), 2018. Read 2026-10-04. https://commons.wikimedia.org/wiki/File:ConfidentReception2018-05.jpg

WMC43 File:S-350E Vityaz - MAKS2013part4-26.jpg (50P6E launcher, side view). Wikimedia Commons, 2013. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:S-350E_Vityaz_-_MAKS2013part4-26.jpg

WMC44 File:S-350E Vityaz - MAKS2013firstpix01.jpg (launcher, front three-quarter). Wikimedia Commons, 2013. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:S-350E_Vityaz_-_MAKS2013firstpix01.jpg

WMC45 File:TB2015ExhibitionP2-55.jpg. Wikimedia Commons (photo Vitaly V. Kuzmin), 2015-08-15. Read 2026-10-06. https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-55.jpg

WMC46 File: TM-83 at an engineer troops range (Mil.ru photo, Uran-6 and Uran-14 demonstration). Wikimedia Commons (source: Russian Ministry of Defence), uploaded 2017-07-14. Read 2026-10-21. https://commons.wikimedia.org/wiki/File:TM-83_-_На_полигоне_инженерных_войск_в_подмосковном_Никола-Урюпино_показали_боевую_работу_Уран-6_и_Уран-14_01.jpg

WMC47 File:Army2016demo-062.jpg (2B17M combat vehicle of 9K51M Tornado-G MLRS). Wikimedia Commons, 2016-09-11. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:Army2016demo-062.jpg

WMC48 File:NBCProtectionExercise2019-21.jpg (TOS-1A firing, 6th NBC Protection Regiment, Sapyornoye). Wikimedia Commons (image from Mil.ru), 2019. Read 2026-09-29. https://commons.wikimedia.org/wiki/File:NBCProtectionExercise2019-21.jpg

WMC49 File:Part of R-410-7,5 tropospheric radio relay communication station. Technical museum Togliatti-0480.JPG. Wikimedia Commons (photo by ShinePhantom), 2008-04-13. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:Part_of_R-410-7,5_tropospheric_radio_relay_communication_station._Technical_museum_Togliatti-0480.JPG

WMC50 File:MasteringTheArmament2018-07.jpg (Russian MoD photo caption). Wikimedia Commons / Russian MoD, 2018. Read 2026-10-07. https://commons.wikimedia.org/wiki/File:MasteringTheArmament2018-07.jpg

WMC51 R-330Zh Zhitel ECM station (ParkPatriot2015part9-58 and -60). Vitaly V. Kuzmin, Wikimedia Commons, 2016-02-07. Read 2026-09-29.
https://commons.wikimedia.org/wiki/File:ParkPatriot2015part9-58.jpg

WMC52 Станция помех Р-330Ж Житель (TB2015ExhibitionP2-51 and -52). Vitaly V. Kuzmin, Wikimedia Commons, 2015-08-15. Read 2026-09-29.
https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-52.jpg

WMC53 R-330Zh Zhitel jammer. Russian MoD (Denis Abramov), via Wikimedia Commons, 2018-07-19. Read 2026-09-29.
https://commons.wikimedia.org/wiki/File:R-330Zh_Zhitel_jammer.jpg

WMC54 File:1L219M MAKS2005.jpg. Wikimedia Commons, 2005-07-20. Read 2026-09-29.
https://commons.wikimedia.org/wiki/File:1L219M_MAKS2005.jpg

WMC55 File:1L260-E Army-2018.jpg. Wikimedia Commons, 2018-08-22. Read 2026-09-29.
https://commons.wikimedia.org/wiki/File:1L260-E_Army-2018.jpg

WP-EN1 2A36 Giatsint-B. English Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/2A36_Giatsint-B

WP-EN2 152 mm howitzer 2A65 Msta-B. English Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/152_mm_howitzer_2A65_Msta-B

WP-EN3 244th Artillery Brigade (Russia). English Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/244th_Artillery_Brigade_(Russia)

WP-EN4 2S5 Giatsint-S. English Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/2S5_Giatsint-S

WP-EN5 288th Guards Artillery Brigade (Russia). Wikipedia, 2024. Read 2026-09-29.
https://en.wikipedia.org/wiki/288th_Guards_Artillery_Brigade_(Russia)

WP-EN6 227th Artillery Brigade (Russia). Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/227th_Artillery_Brigade_(Russia)

WP-EN7 2B14 Podnos (English Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/2B14_Podnos

WP-EN8 2B9 Vasilek (English Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/2B9_Vasilek

WP-EN9 2S1 Gvozdika. Wikipedia (English), 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/2S1_Gvozdika

WP-EN10 2S12 Sani. Wikipedia (en), 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/2S12_Sani

WP-EN11 2S9 Nona (page the 2S23 title redirects to). English Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/2S23_Nona-SVK

WP-EN12 2S3 Akatsiya. English Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/2S3_Akatsiya

WP-EN13 2S31 Vena. Wikipedia (en), 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/2S31_Vena

WP-EN14 2S35 Koalitsiya-SV. Wikipedia (English), 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/2S35_Koalitsiya-SV

WP-EN15 2S43 Malva. Wikipedia (English), 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/2S43_Malva

WP-EN16 2S4 Tyulpan (English Wikipedia). Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/2S4_Tyulpan

WP-EN17 2S40 Floks (English Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/2S40_Floks

WP-EN18 2S7 Pion. Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/2S7_Pion

WP-EN19 MT-LBu (variants list). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/MT-LBu

WP-EN20 BTR-60 (English Wikipedia), variants list. Wikipedia. Read 2026-10-04.
https://en.wikipedia.org/wiki/BTR-60

WP-EN21 BTR-80 (English Wikipedia), variants list. Wikipedia. Read 2026-10-04.
https://en.wikipedia.org/wiki/BTR-80

WP-EN22 BTR-D (English Wikipedia). Wikipedia, 2026. Read 2026-10-04.
https://en.wikipedia.org/wiki/BTR-D

WP-EN23 Kh-35. English Wikipedia. Read 2026-10-06.
https://en.wikipedia.org/wiki/Kh-35

WP-EN24 K-300P Bastion-P. English Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/K-300P_Bastion-P

WP-EN25 MZKT-7930. English Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/MZKT-7930

WP-EN26 IMR-2. Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/IMR-2

WP-EN27 BMD-2. Wikipedia (en). Read 2026-10-03.
https://en.wikipedia.org/wiki/BMD-2

WP-EN28 BMD-4 (English Wikipedia). Wikipedia, 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/BMD-4

WP-EN29 BMP-1. English Wikipedia, 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/BMP-1

WP-EN30 List of BMP-1 variants. Wikipedia, 2026. Read 2026-10-04.
https://en.wikipedia.org/wiki/List_of_BMP-1_variants

WP-EN31 BMP-2 (English Wikipedia). Wikipedia, 2026. Read 2026-10-02.
https://en.wikipedia.org/wiki/BMP-2

WP-EN32 BMP-3. Wikipedia (English), 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/BMP-3

WP-EN33 BMPT Terminator. English Wikipedia, 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/BMPT_Terminator

WP-EN34 BRDM-2. English Wikipedia. Read 2026-10-03.
https://en.wikipedia.org/wiki/BRDM-2

WP-EN35 T-62. Wikipedia (en). Read 2026-10-01.
https://en.wikipedia.org/wiki/T-62

WP-EN36 List of BMP-1 variants (BRM-1K section). Wikipedia. Read 2026-10-03.
https://en.wikipedia.org/wiki/BRM-1K

WP-EN37 BTR-90. Wikipedia (English), 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/BTR-90

WP-EN38 247th Guards Air Assault Regiment, composition. Wikipedia (English), 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/247th_Guards_Air_Assault_Regiment

WP-EN39 Russian Airborne Forces, Ukraine section. Wikipedia (English), 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/Russian_Airborne_Forces

WP-EN40 BTR-70 (English Wikipedia). Wikipedia, 2026. Read 2026-10-02.
https://en.wikipedia.org/wiki/BTR-70

WP-EN41 S-300V. Wikipedia (English). Read 2026-09-29.
https://en.wikipedia.org/wiki/S-300V

WP-EN42 Buk missile system. Wikipedia (English). Read 2026-09-30.
https://en.wikipedia.org/wiki/9K37_Buk

WP-EN43 Bulsae-4. Wikipedia (English). Read 2026-10-08.
https://en.wikipedia.org/wiki/Bulsae-4

WP-EN44 Bulsae ATGM. Wikipedia (English). Read 2026-10-08.
https://en.wikipedia.org/wiki/Bulsae_ATGM

WP-EN45 List of equipment of the Korean People's Army Ground Force. Wikipedia (English). Read 2026-10-08.
https://en.wikipedia.org/wiki/List_of_equipment_of_the_Korean_People's_Army_Ground_Force

WP-EN46 M2 Bradley. Wikipedia (English). Read 2026-10-08.
https://en.wikipedia.org/wiki/M2_Bradley

WP-EN47 International MaxxPro. Wikipedia (English). Read 2026-10-08.
https://en.wikipedia.org/wiki/International_MaxxPro

WP-EN48 M88 recovery vehicle. Wikipedia (English). Read 2026-10-08.
https://en.wikipedia.org/wiki/M88_recovery_vehicle

WP-EN49 M113 armored personnel carrier. Wikipedia (English). Read 2026-10-09.
https://en.wikipedia.org/wiki/M113_armored_personnel_carrier

WP-EN50 152 mm gun-howitzer D-20. Wikipedia (en), 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/152_mm_towed_gun-howitzer_M1955_(D-20)

WP-EN51 152 mm howitzer-gun M1937 (ML-20). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/152_mm_howitzer-gun_M1937_(ML-20)

WP-EN52 122 mm howitzer 2A18 (D-30). Wikipedia (English), 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/122_mm_howitzer_2A18_(D-30)

WP-EN53 152 mm howitzer M1943 (D-1). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/152_mm_howitzer_M1943_(D-1)

WP-EN54 R-330Zh Zhitel (Wikipedia, en). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/R-330Zh_Zhitel

WP-EN55 ENICS Eleron-3. Wikipedia (en). Read 2026-10-02.
https://en.wikipedia.org/wiki/Eleron-3

WP-EN56 IAI Searcher. Wikipedia (en). Read 2026-10-02.
https://en.wikipedia.org/wiki/IAI_Searcher

WP-EN57 Mohajer-6. Wikipedia, 2026-10-02. Read 2026-10-02.
https://en.wikipedia.org/wiki/Mohajer-6

WP-EN58 Baykar Bayraktar TB2. Wikipedia, 2026-10-03. Read 2026-10-03.
https://en.wikipedia.org/wiki/Baykar_Bayraktar_TB2

WP-EN59 Luch Korsar. English Wikipedia, 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/Luch_Korsar

WP-EN60 Unmanned Systems Forces of Russia. Wikipedia, 2026-09. Read 2026-10-02.
https://en.wikipedia.org/wiki/Unmanned_Systems_Forces_of_Russia

WP-EN61 Mangust-class patrol boat. Wikipedia, 2026-10-17 (page as fetched). Read 2026-10-17.
https://en.wikipedia.org/wiki/Mangust-class_patrol_boat

WP-EN62 Sobol-class patrol boat. Wikipedia, 2026-10-17 (page as fetched). Read 2026-10-17.
https://en.wikipedia.org/wiki/Sobol-class_patrol_boat

WP-EN63 Garpiya. Wikipedia, 2026-10. Read 2026-10-08.
https://en.wikipedia.org/wiki/Garpiya

WP-EN64 HESA Shahed 136. Wikipedia, 2026-10. Read 2026-10-08.
https://en.wikipedia.org/wiki/HESA_Shahed_136

WP-EN65 GAZ-66. Wikipedia (English), 2026-10. Read 2026-10-06.
https://en.wikipedia.org/wiki/GAZ-66

WP-EN66 GAZ-3308 Sadko. Wikipedia (English), 2026-10. Read 2026-10-06.
https://en.wikipedia.org/wiki/GAZ-3308

WP-EN67 Gerbera (drone). Wikipedia (English), 2026. Read 2026-10-02.
https://en.wikipedia.org/wiki/Gerbera_(drone)

WP-EN68 Grachonok-class patrol boat. English Wikipedia, 2026. Read 2026-10-17.
https://en.wikipedia.org/wiki/Grachonok-class_patrol_boat

WP-EN69 BM-21 Grad. Wikipedia (English), 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/BM-21_Grad

WP-EN70 KM-8 Gran. Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/KM-8_Gran

WP-EN71 2S9 Nona. Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/2S9_Nona

WP-EN72 9K38 Igla. Wikipedia (en), 2026. Read 2026-10-07.
https://en.wikipedia.org/wiki/9K38_Igla

WP-EN73 1st Guards Engineer Brigade. Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/1st_Guards_Engineer_Brigade

WP-EN74 9K720 Iskander. Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/9K720_Iskander

WP-EN75 Italmas. Wikipedia (English), 2026. Read 2026-10-02.
https://en.wikipedia.org/wiki/Italmas

WP-EN76 Kamov Ka-27. Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/Kamov_Ka-27

WP-EN77 Kamov Ka-50 (Ka-52 section). Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/Kamov_Ka-52

WP-EN78 List of aviation shootdowns and accidents during the Russo-Ukrainian war. Wikipedia, 2026-10-16. Read 2026-10-16.
https://en.wikipedia.org/wiki/List_of_aviation_shootdowns_and_accidents_during_the_Russo-Ukrainian_war

WP-EN79 Mil Mi-28. Wikipedia, 2026. Read 2026-10-16.
https://en.wikipedia.org/wiki/Mil_Mi-28

WP-EN80 Kalibr (missile family). Wikipedia, 2026-10. Read 2026-10-20.
https://en.wikipedia.org/wiki/3M-54_Kalibr

WP-EN81 3S-14. Wikipedia, 2024-05. Read 2026-10-20.
https://en.wikipedia.org/wiki/3S-14

WP-EN82 KamAZ-5350 (English Wikipedia). Wikipedia, 2024. Read 2026-10-06.
https://en.wikipedia.org/wiki/KamAZ-5350

WP-EN83 KamAZ-4310 (English Wikipedia). Wikipedia, 2026. Read 2026-10-04.
https://en.wikipedia.org/wiki/KamAZ-4310

WP-EN84 Kasta 2E (English Wikipedia). Wikipedia, 2025. Read 2026-10-06.
https://en.wikipedia.org/wiki/Kasta_2E

WP-EN85 P-19 radar (English Wikipedia). Wikipedia, 2025. Read 2026-10-06.
https://en.wikipedia.org/wiki/P-19_radar

WP-EN86 Kh-101. Wikipedia (English). Read 2026-10-20.
https://en.wikipedia.org/wiki/Kh-101

WP-EN87 Kh-55. Wikipedia (English). Read 2026-10-20.
https://en.wikipedia.org/wiki/Kh-55

WP-EN88 Kh-22 (English Wikipedia). Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/Kh-22

WP-EN89 Kh-32 (English Wikipedia). Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/Kh-32

WP-EN90 Kh-47M2 Kinzhal. Wikipedia (English). Read 2026-10-20.
https://en.wikipedia.org/wiki/Kh-47M2_Kinzhal

WP-EN91 Kh-59 (English Wikipedia). Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/Kh-59

WP-EN92 Kh-69. English Wikipedia, 2024. Read 2026-10-21.
https://en.wikipedia.org/wiki/Kh-69

WP-EN93 Kitolov-2M. English Wikipedia. Read 2026-10-20.
https://en.wikipedia.org/wiki/Kitolov-2M

WP-EN94 Krasnopol (weapon system). English Wikipedia. Read 2026-10-20.
https://en.wikipedia.org/wiki/Krasnopol_(weapon_system)

WP-EN95 Hwasong-11A (KN-23). Wikipedia, 2026-09. Read 2026-10-08.
https://en.wikipedia.org/wiki/KN-23

WP-EN96 Hwasong-11B (KN-24). Wikipedia, 2026-09. Read 2026-10-08.
https://en.wikipedia.org/wiki/KN-24

WP-EN97 North Korean involvement in the Russo-Ukrainian war (2022-present). Wikipedia, 2026-10. Read 2026-10-08.
https://en.wikipedia.org/wiki/North_Korean_involvement_in_the_Russo-Ukrainian_war_(2022–present)

WP-EN98 M-1978 Koksan. Wikipedia, 2026-10. Read 2026-10-08.
https://en.wikipedia.org/wiki/M-1978_Koksan

WP-EN99 Krasukha. Wikipedia (English). Read 2026-09-29.
https://en.wikipedia.org/wiki/Krasukha

WP-EN100 ZALA Kub-BLA. Wikipedia (English). Read 2026-10-03.
https://en.wikipedia.org/wiki/ZALA_KYB-UAV

WP-EN101 ZALA Lancet. Wikipedia (English). Read 2026-10-02.
https://en.wikipedia.org/wiki/ZALA_Lancet

WP-EN102 Ropucha-class landing ship. Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/Ropucha-class_landing_ship

WP-EN103 Tapir-class landing ship (page URL: Alligator-class landing ship). Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/Alligator-class_landing_ship

WP-EN104 Ivan Gren-class landing ship. Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/Ivan_Gren-class_landing_ship

WP-EN105 KrAZ-255. Wikipedia (en), 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/KrAZ-255

WP-EN106 KrAZ-260. Wikipedia (en), 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/KrAZ-260

WP-EN107 ZIL-131. Wikipedia (en), 2026. Read 2026-10-07.
https://en.wikipedia.org/wiki/ZIL-131

WP-EN108 Ural-4320. English Wikipedia. Read 2026-10-07.
https://en.wikipedia.org/wiki/Ural-4320

WP-EN109 BPM-97. Wikipedia (English), 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/BPM-97

WP-EN110 List of equipment of the Russian Ground Forces. Wikipedia (English), 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/List_of_equipment_of_the_Russian_Ground_Forces

WP-EN111 130 mm towed field gun M1954 (M-46). Wikipedia, 2026. Read 2026-09-30.
https://en.wikipedia.org/wiki/130_mm_towed_field_gun_M1954_(M-46)

WP-EN112 9K115 Metis. English Wikipedia, 2026. Read 2026-10-07.
https://en.wikipedia.org/wiki/9K115_Metis

WP-EN113 9K115-2 Metis-M. English Wikipedia, 2026. Read 2026-10-07.
https://en.wikipedia.org/wiki/9K115-2_Metis-M

WP-EN114 Mil Mi-24. Wikipedia (English). Read 2026-10-16.
https://en.wikipedia.org/wiki/Mil_Mi-24

WP-EN115 Mil Mi-26. Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/Mil_Mi-26

WP-EN116 Mil Mi-8. Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/Mil_Mi-8

WP-EN117 Mil Mi-17. Wikipedia (English). Read 2026-10-16.
https://en.wikipedia.org/wiki/Mil_Mi-17

WP-EN118 Molniya (drone). Wikipedia, 2026-09-30. Read 2026-10-02.
https://en.wikipedia.org/wiki/Molniya_(drone)

WP-EN119 MON-100. Wikipedia, 2026. Read 2026-10-22.
https://en.wikipedia.org/wiki/MON-100

WP-EN120 MON-50 (English Wikipedia). Wikipedia, 2026. Read 2026-09-30.
https://en.wikipedia.org/wiki/MON-50

WP-EN121 2S19 Msta-S (English Wikipedia). Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/2S19_Msta-S

WP-EN122 MT-12. English Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/MT-12

WP-EN123 100 mm anti-tank gun T-12. English Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/100_mm_anti-tank_gun_T-12

WP-EN124 MT-LB (English Wikipedia). Wikipedia. Read 2026-10-03.
https://en.wikipedia.org/wiki/MT-LB

WP-EN125 Nebo-SVU. Wikipedia (English), 2026. Read 2026-10-08.
https://en.wikipedia.org/wiki/Nebo-SVU

WP-EN126 Nebo-M. English Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/Nebo-M

WP-EN127 Russian air surveillance radars. English Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/Russian_air_surveillance_radars

WP-EN128 P-14 radar. Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/P-14_radar

WP-EN129 Ondatra-class landing craft. Wikipedia, 2026-10-16 (page as retrieved). Read 2026-10-16.
https://en.wikipedia.org/wiki/Ondatra-class_landing_craft

WP-EN130 Oreshnik (missile). English Wikipedia, 2026-10. Read 2026-10-21.
https://en.wikipedia.org/wiki/Oreshnik_(missile)

WP-EN131 Kronshtadt Orion. Wikipedia (en), 2026. Read 2026-10-02.
https://en.wikipedia.org/wiki/Kronshtadt_Orion

WP-EN132 Orlan-10. Wikipedia (English), 2026. Read 2026-10-02.
https://en.wikipedia.org/wiki/Orlan-10

WP-EN133 OZM. English Wikipedia. Read 2026-10-21.
https://en.wikipedia.org/wiki/OZM-72

WP-EN134 P-18 radar. Wikipedia (English), 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/P-18_radar

WP-EN135 Pantsir missile system. English Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/Pantsir_missile_system

WP-EN136 PDM (series of amphibious mines). Wikipedia (English), undated; page cites Sappers, retrieved 24 Sep 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/PDM_(series_of_amphibious_mines)

WP-EN137 Landmines in Ukraine. Wikipedia (English). Read 2026-10-21.
https://en.wikipedia.org/wiki/Landmines_in_Ukraine

WP-EN138 Penicillin (counter-artillery system). Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/Penicillin_(counter-artillery_system)

WP-EN139 Aistyonok. Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/Aistyonok

WP-EN140 PFM-1 mine. Wikipedia (English), 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/PFM-1_mine

WP-EN141 VSM-1 mine system. Wikipedia (English), 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/VSM-1_mine_system

WP-EN142 9M27K / BM-27 Uragan. Wikipedia (English), 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/9M27K

WP-EN143 PMN mine. Wikipedia, 2026. Read 2026-10-22.
https://en.wikipedia.org/wiki/PMN_mine

WP-EN144 PMP Floating Bridge. English Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/PMP_Floating_Bridge

WP-EN145 Polyana-D4. Wikipedia (English), 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/Polyana-D4

WP-EN146 Ural-375D. Wikipedia (English), 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/Ural-375D

WP-EN147 POM-2 mine (English Wikipedia). Wikipedia, 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/POM-2_mine

WP-EN148 POM-3 mine. Wikipedia (English), 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/POM-3_mine

WP-EN149 PTM-1. Wikipedia, 2025. Read 2026-10-21.
https://en.wikipedia.org/wiki/PTM-1

WP-EN150 KMGU. Wikipedia. Read 2026-10-21.
https://en.wikipedia.org/wiki/KMGU

WP-EN151 File:Demining in Kharkiv, 11 April 2022 (11).jpg, file page metadata. Wikimedia Commons, 2022-04-11. Read 2026-10-21.
https://en.wikipedia.org/w/api.php?action=query&titles=File:Demining_in_Kharkiv,_11_April_2022_(11).jpg&prop=imageinfo&iiprop=extmetadata&format=json

WP-EN152 PTM-3 mine (English Wikipedia). Wikipedia, 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/PTM-3_mine

WP-EN153 PTS (vehicle) (en.wikipedia). Wikipedia, 2026. Read 2026-09-30.
https://en.wikipedia.org/wiki/PTS_(vehicle)

WP-EN154 288th Guards Artillery Brigade (en.wikipedia). Wikipedia, 2026. Read 2026-10-01.
https://en.wikipedia.org/wiki/288th_Guards_Artillery_Brigade

WP-EN155 4th Guards Tank Division. English Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/4th_Guards_Tank_Division

WP-EN156 Raptor-class patrol boat. Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/Raptor-class_patrol_boat

WP-EN157 REM-KL. Wikipedia, 2024. Read 2026-10-06.
https://en.wikipedia.org/wiki/REM-KL

WP-EN158 Repellent-1. Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/Repellent-1

WP-EN159 9K512 Uragan-1M. English Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/9K512_Uragan-1M

WP-EN160 79th Guards Rocket Artillery Brigade. Wikipedia, 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/79th_Guards_Rocket_Artillery_Brigade

WP-EN161 TOS-1. Wikipedia (English), 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/TOS-1

WP-EN162 TOS-2. Wikipedia (English), 2026. Read 2026-10-20.
https://en.wikipedia.org/wiki/TOS-2

WP-EN163 S-300VM missile system (English Wikipedia). Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/S-300VM_missile_system

WP-EN164 S-350 missile system. Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/S-350_missile_system

WP-EN165 List of NATO reporting names for surface-to-air missiles. Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/List_of_NATO_reporting_names_for_surface-to-air_missiles

WP-EN166 S-400 missile system. Wikipedia (en). Read 2026-09-29.
https://en.wikipedia.org/wiki/S-400_missile_system

WP-EN167 AZP S-60. Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/AZP_S-60

WP-EN168 Serna-class landing craft. Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/Serna-class_landing_craft

WP-EN169 ZSU-23-4 Shilka. Wikipedia (en), 2026. Read 2026-10-07.
https://en.wikipedia.org/wiki/ZSU-23-4_Shilka

WP-EN170 BM-30 Smerch. English Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/BM-30_Smerch

WP-EN171 2S25 Sprut-SD (English Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/2S25_Sprut-SD

WP-EN172 9K35 Strela-10. Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/9K35_Strela-10

WP-EN173 9K33 Osa. Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/9K33_Osa

WP-EN174 9M119 Svir/Refleks. Wikipedia, 2025. Read 2026-10-07.
https://en.wikipedia.org/wiki/9M119_Svir/Refleks

WP-EN175 T-54/T-55 (English Wikipedia). Wikipedia. Read 2026-10-02.
https://en.wikipedia.org/wiki/T-54/T-55

WP-EN176 T-64 (Wikipedia). Wikipedia. Read 2026-10-03.
https://en.wikipedia.org/wiki/T-64

WP-EN177 T-90. English Wikipedia, 2026. Read 2026-10-02.
https://en.wikipedia.org/wiki/T-90

WP-EN178 Tigr (military vehicle). Wikipedia, 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/GAZ_Tigr

WP-EN179 Vodnik (Russian military vehicle). Wikipedia, 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/Vodnik_(Russian_military_vehicle)

WP-EN180 TM-46 mine (English Wikipedia). Wikipedia, 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/TM-46_mine

WP-EN181 TM-57 mine. English Wikipedia. Read 2026-10-21.
https://en.wikipedia.org/wiki/TM-57

WP-EN182 TM-62. Wikipedia (English), 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/TM-62

WP-EN183 TM-83 mine (English Wikipedia). Wikipedia. Read 2026-10-21.
https://en.wikipedia.org/wiki/TM-83_mine

WP-EN184 English Wikipedia: T-72 operators and variants (MTU-72 entry). Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/T-72

WP-EN185 English Wikipedia: TMM-6. Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/TMM-6

WP-EN186 OTR-21 Tochka. Wikipedia (English), 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/OTR-21_Tochka

WP-EN187 MAZ-537 (English Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/MAZ-537

WP-EN188 KZKT-7428 (English Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/KZKT-7428

WP-EN189 2K22 Tunguska. Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/2K22_Tunguska

WP-EN190 KamAZ-63968 (Kamaz Typhoon), English Wikipedia. Wikipedia, 2026. Read 2026-10-03.
https://en.wikipedia.org/wiki/KamAZ-63968

WP-EN191 UAZ-452 (English Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/UAZ-452

WP-EN192 UAZ-469 (English Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/UAZ-469

WP-EN193 UMPK (bomb kit). Wikipedia (English), 2026-10. Read 2026-10-21.
https://en.wikipedia.org/wiki/UMPK_(bomb_kit)

WP-EN194 UMPB D-30SN. Wikipedia (English), 2026-10. Read 2026-10-21.
https://en.wikipedia.org/wiki/UMPB_D-30SN

WP-EN195 UR-77 Meteorit. Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/UR-77_Meteorit

WP-EN196 BM-27 Uragan. English Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/BM-27_Uragan

WP-EN197 338th Guards Rocket Artillery Brigade. English Wikipedia, 2026. Read 2026-09-29.
https://en.wikipedia.org/wiki/338th_Guards_Rocket_Artillery_Brigade

WP-EN198 9K333 Verba. Wikipedia (en). Read 2026-10-07.
https://en.wikipedia.org/wiki/9K333_Verba

WP-EN199 9K121 Vikhr. Wikipedia (English), 2026. Read 2026-10-21.
https://en.wikipedia.org/wiki/9K121_Vikhr

WP-EN200 Vityaz (ATV). Wikipedia. Read 2026-10-19.
https://en.wikipedia.org/wiki/Vityaz_(ATV)

WP-EN201 Voronezh radar. Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/Voronezh_radar

WP-EN202 Armavir Radar Station. Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/Armavir_Radar_Station

WP-EN203 122 mm howitzer M1938 (M-30). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/122_mm_howitzer_M1938_(M-30)

WP-EN204 100 mm field gun M1944 (BS-3). Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/100_mm_field_gun_M1944_(BS-3)

WP-EN205 85 mm divisional gun D-44. Wikipedia, 2026. Read 2026-10-06.
https://en.wikipedia.org/wiki/85_mm_divisional_gun_D-44

WP-EN206 Zemledeliye (minelaying system). Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/Zemledeliye_(minelaying_system)

WP-EN207 GMZ-3. Wikipedia. Read 2026-09-29.
https://en.wikipedia.org/wiki/GMZ-3

WP-EN208 ZFB-05. Wikipedia. Read 2026-10-16.
https://en.wikipedia.org/wiki/ZFB-05

WP-EN209 ZU-23-2. Wikipedia (English), 2026. Read 2026-10-07.
https://en.wikipedia.org/wiki/ZU-23-2

WP-RU1 1В13; 1В14; МТ-ЛБу (Russian Wikipedia articles). Wikipedia. Read 2026-09-29.
https://ru.wikipedia.org/wiki/1В13 ; https://ru.wikipedia.org/wiki/1В14 ; https://ru.wikipedia.org/wiki/МТ-ЛБу

WP-RU2 152-мм пушка 2А36. Russian Wikipedia, 2026. Read 2026-10-20.
https://ru.wikipedia.org/wiki/2А36

WP-RU3 152-мм гаубица 2А65. Russian Wikipedia, 2024. Read 2026-10-20.
https://ru.wikipedia.org/wiki/2А65

WP-RU4 2Б14 «Поднос» (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://ru.wikipedia.org/wiki/2Б14_«Поднос»

WP-RU5 2Б9 «Василёк» (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-06.
https://ru.wikipedia.org/wiki/2Б9_«Василёк»

WP-RU6 2С1 «Гвоздика». Wikipedia (Russian), 2026. Read 2026-10-20.
https://ru.wikipedia.org/wiki/2С1_«Гвоздика»

WP-RU7 2С12 «Сани». Wikipedia (ru), 2026. Read 2026-09-30.
https://ru.wikipedia.org/wiki/2С12_«Сани»

WP-RU8 2С23 «Нона-СВК». Russian Wikipedia, 2026. Read 2026-10-21.
https://ru.wikipedia.org/wiki/2С23_«Нона-СВК»

WP-RU9 2С40. Russian Wikipedia, 2026. Read 2026-10-06.
https://ru.wikipedia.org/wiki/2С40

WP-RU10 2С17. Russian Wikipedia, 2026. Read 2026-10-07.
https://ru.wikipedia.org/wiki/2С17

WP-RU11 2С31 «Вена». Russian Wikipedia. Read 2026-10-21.
https://ru.wikipedia.org/wiki/2С31_«Вена»

WP-RU12 2С3 «Акация». Russian Wikipedia, 2026. Read 2026-10-20.
https://ru.wikipedia.org/wiki/2С3_«Акация»

WP-RU13 2С34 (Russian Wikipedia). Wikipedia. Read 2026-10-21.
https://ru.wikipedia.org/wiki/2С34

WP-RU14 2С1 «Гвоздика». Wikipedia (ru), 2026. Read 2026-10-01.
https://ru.wikipedia.org/wiki/2С1

WP-RU15 2С35. Wikipedia (Russian), 2026. Read 2026-09-29.
https://ru.wikipedia.org/wiki/2С35

WP-RU16 2С43. Wikipedia (Russian), 2026. Read 2026-09-29.
https://ru.wikipedia.org/wiki/2С43

WP-RU17 2С19 «Мста-С». Wikipedia (Russian), 2026. Read 2026-09-29.
https://ru.wikipedia.org/wiki/2С19

WP-RU18 2С4 (Russian Wikipedia). Wikipedia, 2026. Read 2026-09-29.
https://ru.wikipedia.org/wiki/2С4

WP-RU19 2С5 (Russian Wikipedia). Wikipedia. Read 2026-09-29.
https://ru.wikipedia.org/wiki/2С5

WP-RU20 2С7 «Пион». Russian Wikipedia, 2026. Read 2026-10-20.
https://ru.wikipedia.org/wiki/2С7_«Пион»

WP-RU21 2С9 «Нона-С». Russian Wikipedia. Read 2026-10-20.
https://ru.wikipedia.org/wiki/2С9_«Нона-С»

WP-RU22 120-мм орудие 2Б16. Russian Wikipedia. Read 2026-10-20.
https://ru.wikipedia.org/wiki/2Б16

WP-RU23 2С19 «Мста-С», ammunition table (Таблица ТТХ выстрелов, 2А64). Russian Wikipedia, 2026. Read 2026-10-20.
https://ru.wikipedia.org/wiki/2С19_«Мста-С»

WP-RU24 152-мм гаубица 2А65 «Мста-Б», ammunition list. Russian Wikipedia, 2026. Read 2026-10-20.
https://ru.wikipedia.org/wiki/152-мм_гаубица_2А65

WP-RU25 С-400 (article, raw wikitext). Wikipedia (Russian). Read 2026-09-29.
https://ru.wikipedia.org/wiki/С-400

WP-RU26 ГАЗ-3344. Wikipedia (Russian). Read 2026-10-03.
https://ru.wikipedia.org/wiki/ГАЗ-3344

WP-RU27 1V119 (Russian Wikipedia). Wikipedia. Read 2026-10-04.
https://ru.wikipedia.org/wiki/1В119

WP-RU28 1V18 (Russian Wikipedia). Wikipedia. Read 2026-10-04.
https://ru.wikipedia.org/wiki/1В18

WP-RU29 БМД-1КШ (Russian Wikipedia). Wikipedia, 2025. Read 2026-10-04.
https://ru.wikipedia.org/wiki/БМД-1КШ

WP-RU30 БМД-1 (Russian Wikipedia). Wikipedia, 2025. Read 2026-10-04.
https://ru.wikipedia.org/wiki/БМД-1

WP-RU31 Бал (береговой ракетный комплекс). Russian Wikipedia. Read 2026-10-06.
https://ru.wikipedia.org/wiki/Бал_(береговой_ракетный_комплекс)

WP-RU32 Барнаул-Т. Russian Wikipedia. Read 2026-09-29.
https://ru.wikipedia.org/wiki/Барнаул-Т

WP-RU33 9С737 «Ранжир». Russian Wikipedia. Read 2026-09-29.
https://ru.wikipedia.org/wiki/9С737_«Ранжир»

WP-RU34 Бастион (береговой ракетный комплекс). Russian Wikipedia, 2026. Read 2026-10-06.
https://ru.wikipedia.org/wiki/Бастион_(береговой_ракетный_комплекс)

WP-RU35 БАТ-2. Russian Wikipedia, 2026. Read 2026-10-04.
https://ru.wikipedia.org/wiki/БАТ-2

WP-RU36 МДК-3. Wikipedia (ru). Read 2026-10-04.
https://ru.wikipedia.org/wiki/МДК-3

WP-RU37 Десантные катера проекта 02510. Wikipedia (Russian). Read 2026-10-17.
https://ru.wikipedia.org/wiki/Десантные_катера_проекта_02510

WP-RU38 БТР-Д (Russian Wikipedia). Wikipedia, 2025. Read 2026-10-04.
https://ru.wikipedia.org/wiki/БТР-Д

WP-RU39 БМД-2. Wikipedia (ru). Read 2026-10-03.
https://ru.wikipedia.org/wiki/БМД-2

WP-RU40 БМД-4 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БМД-4

WP-RU41 2А70 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-03.
https://ru.wikipedia.org/wiki/2А70

WP-RU42 БМД-3 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БМД-3

WP-RU43 БМО-Т. Russian Wikipedia. Read 2026-10-07.
https://ru.wikipedia.org/wiki/БМО-Т

WP-RU44 БМП-1. Russian Wikipedia, 2026. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БМП-1

WP-RU45 2А28. Russian Wikipedia, 2026. Read 2026-10-03.
https://ru.wikipedia.org/wiki/2А28

WP-RU46 БМП-1КШ. Wikipedia (ru). Read 2026-10-01.
https://ru.wikipedia.org/wiki/БМП-1КШ

WP-RU47 БМП-2 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-02.
https://ru.wikipedia.org/wiki/БМП-2

WP-RU48 БМП-3. Wikipedia (Russian), 2026. Read 2026-09-29.
https://ru.wikipedia.org/wiki/БМП-3

WP-RU49 БМПТ «Терминатор». Russian Wikipedia, 2026. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БМПТ_«Терминатор»

WP-RU50 БМПТ-72. Russian Wikipedia, 2026. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БМПТ-72

WP-RU51 БМР-3М. Russian Wikipedia. Read 2026-10-04.
https://ru.wikipedia.org/wiki/БМР-3М

WP-RU52 БМР-3. Russian Wikipedia. Read 2026-10-04.
https://ru.wikipedia.org/wiki/БМР-3

WP-RU53 Wikipedia (ru): БРЭМ-1. Wikipedia. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-1

WP-RU54 Р-330. Wikipedia (Russian). Read 2026-10-06.
https://ru.wikipedia.org/wiki/Р-330

WP-RU55 БРДМ-2. Russian Wikipedia. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БРДМ-2

WP-RU56 Wikipedia (ru): БРЭМ-2. Wikipedia. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-2

WP-RU57 Wikipedia (ru): БРЭМ-Л. Wikipedia. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-Л

WP-RU58 Wikipedia (ru): БРЭМ-Д. Wikipedia. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-Д

WP-RU59 Wikipedia (ru): БРЭМ-К. Wikipedia. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-К

WP-RU60 Wikipedia (ru): БТС-4. Wikipedia. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БТС-4

WP-RU61 Wikipedia (ru): МТ-ЛБ. Wikipedia. Read 2026-10-03.
https://ru.wikipedia.org/wiki/МТ-ЛБ

WP-RU62 БРМ-1К. Wikipedia (ru). Read 2026-10-03.
https://ru.wikipedia.org/wiki/БРМ-1К

WP-RU63 БТР-90. Wikipedia (Russian), 2026. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БТР-90

WP-RU64 БТР-МДМ. Russian Wikipedia, 2026. Read 2026-10-03.
https://ru.wikipedia.org/wiki/БТР-МДМ

WP-RU65 БТР-80 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-02.
https://ru.wikipedia.org/wiki/БТР-80

WP-RU66 БТР-82 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-02.
https://ru.wikipedia.org/wiki/БТР-82

WP-RU67 БТР-70 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-02.
https://ru.wikipedia.org/wiki/БТР-70

WP-RU68 2А72 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-02.
https://ru.wikipedia.org/wiki/2А72

WP-RU69 Бук-М2. Wikipedia (Russian). Read 2026-09-29.
https://ru.wikipedia.org/wiki/Бук-М2

WP-RU70 РХМ-4. Russian Wikipedia. Read 2026-10-04.
https://ru.wikipedia.org/wiki/РХМ-4

WP-RU71 РХМ-6. Russian Wikipedia. Read 2026-10-04.
https://ru.wikipedia.org/wiki/РХМ-6

WP-RU72 152-мм пушка-гаубица Д-20. Wikipedia (ru), 2026. Read 2026-10-06.
https://ru.wikipedia.org/wiki/152-мм_пушка-гаубица_Д-20

WP-RU73 Д-30 (гаубица). Wikipedia (Russian), 2026. Read 2026-10-20.
https://ru.wikipedia.org/wiki/Д-30_(гаубица)

WP-RU74 М-30 (гаубица). Wikipedia (Russian), 2026. Read 2026-10-06.
https://ru.wikipedia.org/wiki/М-30_(гаубица)

WP-RU75 ТМС-65. Russian Wikipedia. Read 2026-10-04.
https://ru.wikipedia.org/wiki/ТМС-65

WP-RU76 2С38. Russian Wikipedia, 2026. Read 2026-10-07.
https://ru.wikipedia.org/wiki/2С38

WP-RU77 АУ-220М. Russian Wikipedia, 2026. Read 2026-10-07.
https://ru.wikipedia.org/wiki/АУ-220М

WP-RU78 БТМ-3. Wikipedia (ru). Read 2026-10-04.
https://ru.wikipedia.org/wiki/БТМ-3

WP-RU79 ПЗМ-2. Wikipedia (ru). Read 2026-10-04.
https://ru.wikipedia.org/wiki/ПЗМ-2

WP-RU80 Элерон-3. Wikipedia (ru). Read 2026-10-02.
https://ru.wikipedia.org/wiki/Элерон-3

WP-RU81 Элерон-10. Wikipedia (ru). Read 2026-10-02.
https://ru.wikipedia.org/wiki/Элерон-10

WP-RU82 Тахион (БПЛА), Russian Wikipedia. Wikipedia, 2026. Read 2026-10-02.
https://ru.wikipedia.org/wiki/Тахион_(БПЛА)

WP-RU83 IAI Searcher (Форпост (БПЛА)). Wikipedia (ru). Read 2026-10-02.
https://ru.wikipedia.org/wiki/Форпост_(БПЛА)

WP-RU84 Mohajer-6. Wikipedia (ru), 2026-10-03. Read 2026-10-03.
https://ru.wikipedia.org/wiki/Mohajer-6

WP-RU85 Соболятник. Wikipedia (Russian). Read 2026-10-06.
https://ru.wikipedia.org/wiki/Соболятник

WP-RU86 ГАЗ-3308. Wikipedia (Russian), 2026-10. Read 2026-10-06.
https://ru.wikipedia.org/wiki/ГАЗ-3308

WP-RU87 ГАЗ-66. Wikipedia (Russian), 2026-10. Read 2026-10-06.
https://ru.wikipedia.org/wiki/ГАЗ-66

WP-RU88 Герань-2. Wikipedia (Russian), 2026. Read 2026-10-02.
https://ru.wikipedia.org/wiki/Герань-2

WP-RU89 Гербера (БПЛА). Russian Wikipedia. Read 2026-10-02.
https://ru.wikipedia.org/wiki/Гербера_(БПЛА)

WP-RU90 Gibka (3M-47) and Tigr (armoured car), Russian Wikipedia. Wikipedia. Read 2026-10-07.
https://ru.wikipedia.org/wiki/Тигр_(бронеавтомобиль)

WP-RU91 Стрела-10. Wikipedia (ru), 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/Стрела-10

WP-RU92 Противодиверсионные катера проекта 21980. Russian Wikipedia, 2026 (page text current to 2025-05). Read 2026-10-17. https://ru.wikipedia.org/wiki/Противодиверсионные_катера_проекта_21980

WP-RU93 БМ-21 «Град». Wikipedia (Russian), 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/БМ-21_«Град»

WP-RU94 Грань (управляемая мина). Wikipedia (ru), 2026. Read 2026-10-20. https://ru.wikipedia.org/wiki/Грань_(управляемая_мина)

WP-RU95 Гранат-4. Russian Wikipedia, 2026-10. Read 2026-10-02. https://ru.wikipedia.org/wiki/Гранат-4

WP-RU96 Гранат-1. Russian Wikipedia, 2026-10. Read 2026-10-02. https://ru.wikipedia.org/wiki/Гранат-1

WP-RU97 Игла (переносной зенитный ракетный комплекс). Wikipedia (ru), 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/Игла_(ПЗРК)

WP-RU98 ИМР-2. Russian Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/ИМР-2

WP-RU99 ИМР-3М. Russian Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/ИМР-3

WP-RU100 РБ-531Б «Инфауна». Wikipedia (ru). Read 2026-09-29. https://ru.wikipedia.org/wiki/РБ-531Б_«Инфауна»

WP-RU101 Zhuk (IRM). Russian Wikipedia. Read 2026-10-04. https://ru.wikipedia.org/wiki/Жук_(ИРМ)

WP-RU102 Ступор (ружьё). Russian Wikipedia, 2022. Read 2026-10-06. https://ru.wikipedia.org/wiki/Ступор_(ружьё)

WP-RU103 Ка-27. Wikipedia (Russian). Read 2026-10-16. https://ru.wikipedia.org/wiki/Ка-27

WP-RU104 Ка-52. Wikipedia (Russian), 2026. Read 2026-10-16. https://ru.wikipedia.org/wiki/Ка-52

WP-RU105 Калибр (ракетный комплекс). Russian Wikipedia, 2026-10. Read 2026-10-21. https://ru.wikipedia.org/wiki/Калибр_(ракетный_комплекс)

WP-RU106 КамАЗ-5350 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-04. https://ru.wikipedia.org/wiki/КамАЗ-5350

WP-RU107 КамАЗ-6350 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-04. https://ru.wikipedia.org/wiki/КамАЗ-6350

WP-RU108 КамАЗ-4310 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-04. https://ru.wikipedia.org/wiki/КамАЗ-4310

WP-RU109 35N6 (Russian Wikipedia). Wikipedia, 2025. Read 2026-10-06. https://ru.wikipedia.org/wiki/35Н6

WP-RU110 39N6 Kasta-2-2 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/39Н6

WP-RU111 X-101. Wikipedia (Russian). Read 2026-10-20. https://ru.wikipedia.org/wiki/X-101

WP-RU112 X-55. Wikipedia (Russian). Read 2026-10-20. https://ru.wikipedia.org/wiki/X-55

WP-RU113 X-22 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-20. https://ru.wikipedia.org/wiki/X-22

WP-RU114 X-32 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-20. https://ru.wikipedia.org/wiki/X-32

WP-RU115 Кинжал (авиационный ракетный комплекс). Wikipedia (Russian). Read 2026-10-20. https://ru.wikipedia.org/wiki/Кинжал_(авиационный_ракетный_комплекс)

WP-RU116 X-59 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/X-59

WP-RU117 X-69. Russian Wikipedia, 2024. Read 2026-10-21. https://ru.wikipedia.org/wiki/X-69

WP-RU118 Хризантема (противотанковый ракетный комплекс). Russian Wikipedia. Read 2026-10-07. https://ru.wikipedia.org/wiki/Хризантема_(ПТРК)

WP-RU119 Китолов (управляемый снаряд). Russian Wikipedia. Read 2026-10-20. https://ru.wikipedia.org/wiki/Китолов_(управляемый_снаряд)

WP-RU120 2C9 Нона-С. Russian Wikipedia. Read 2026-10-20. https://ru.wikipedia.org/wiki/2С9

WP-RU121 KN-23. Wikipedia (Russian), 2026-10. Read 2026-10-08. https://ru.wikipedia.org/wiki/KN-23

WP-RU122 Конкурс (противотанковый ракетный комплекс). Wikipedia (ru). Read 2026-10-07. https://ru.wikipedia.org/wiki/Конкурс_(ПТРК)

WP-RU123 9П148. Wikipedia (ru). Read 2026-10-07. https://ru.wikipedia.org/wiki/9П148

WP-RU124 9K135 «Корнет». Russian Wikipedia, 2026. Read 2026-10-20. https://ru.wikipedia.org/wiki/9К135_«Корнет»

WP-RU125 7-я гвардейская десантно-штурмовая дивизия. Russian Wikipedia. Read 2026-10-07. https://ru.wikipedia.org/wiki/7-я_гвардейская_десантно-штурмовая_дивизия

WP-RU126 Корсар (БПЛА). Russian Wikipedia, 2026. Read 2026-10-02. https://ru.wikipedia.org/wiki/Корсар_(БПЛА)

WP-RU127 Краснополь (управляемый снаряд), Russian Wikipedia. Wikipedia, retrieved 2026. Read 2026-10-20. https://ru.wikipedia.org/wiki/Краснополь-М2

WP-RU128 Мста-С, Russian Wikipedia (ammunition table and 2S19 stowage). Wikipedia, retrieved 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/Мста-С

WP-RU129 Красуха (комплекс РЭБ). Wikipedia (Russian). Read 2026-09-29. https://ru.wikipedia.org/wiki/Красуха_(комплекс_РЭБ)

WP-RU130 Kub-BLA. Wikipedia (Russian). Read 2026-10-02. https://ru.wikipedia.org/wiki/Куб-БЛА

WP-RU131 Большие десантные корабли проекта 775. Wikipedia (Russian). Read 2026-10-16. https://ru.wikipedia.org/wiki/Большие_десантные_корабли_проекта_775

WP-RU132 Большие десантные корабли проекта 1171 «Тапир». Wikipedia (Russian). Read 2026-10-16. https://ru.wikipedia.org/wiki/Большие_десантные_корабли_проекта_1171

WP-RU133 Большие десантные корабли проекта 11711. Wikipedia (Russian). Read 2026-10-19. https://ru.wikipedia.org/wiki/Большие_десантные_корабли_проекта_11711

WP-RU134 Леер-2. Russian Wikipedia, 2026-09-29. Read 2026-09-29. https://ru.wikipedia.org/wiki/Леер-2

WP-RU135 РБ-341В. Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/РБ-341В

WP-RU136 КрАЗ-255. Wikipedia (ru), 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/КрАЗ-255

WP-RU137 КрАЗ-260. Wikipedia (ru), 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/КрАЗ-260

WP-RU138 ЗИЛ-131. Wikipedia (ru), 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/ЗИЛ-131

WP-RU139 АМН-590951 (ВПК-Урал). Wikipedia (Russian), 2025. Read 2026-10-03. https://ru.wikipedia.org/wiki/ВПК-Урал

WP-RU140 Патруль (бронеавтомобиль). Wikipedia (Russian), 2024. Read 2026-10-03. https://ru.wikipedia.org/wiki/Патруль_(бронеавтомобиль)

WP-RU141 130-мм пушка М-46. Wikipedia (Russian), 2026. Read 2026-09-30. https://ru.wikipedia.org/wiki/130-мм_пушка_М-46

WP-RU142 Метис (противотанковый ракетный комплекс). Russian Wikipedia, 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/Метис_(ПТРК)

WP-RU143 Ми-24. Wikipedia (Russian). Read 2026-10-16. https://ru.wikipedia.org/wiki/Ми-24

WP-RU144 Ми-26. Wikipedia (Russian). Read 2026-10-16. https://ru.wikipedia.org/wiki/Ми-26

WP-RU145 Ми-28. Russian Wikipedia. Read 2026-10-16. https://ru.wikipedia.org/wiki/Ми-28

WP-RU146 Ми-8. Wikipedia (Russian). Read 2026-10-23. https://ru.wikipedia.org/wiki/Ми-8

WP-RU147 Список вооружения и военной техники Сухопутных войск Российской Федерации. Wikipedia (Russian), 2026. Read 2026-10-09. https://ru.wikipedia.org/wiki/Список_вооружения_и_военной_техники_Сухопутных_войск_Российской_Федерации

WP-RU148 Орион (БПЛА). Wikipedia (ru), 2026. Read 2026-10-02. https://ru.wikipedia.org/wiki/Орион_(БПЛА)

WP-RU149 МОН-100. Wikipedia (Russian), 2026. Read 2026-10-22. https://ru.wikipedia.org/wiki/МОН-100

WP-RU150 MON-50 (Russian Wikipedia). Wikipedia, 2026. Read 2026-09-30. https://ru.wikipedia.org/wiki/МОН-50

WP-RU151 МОН-90. Wikipedia (Russian), 2026. Read 2026-09-30. https://ru.wikipedia.org/wiki/МОН-90

WP-RU152 Moskva-1 (REB). Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/Москва-1_(РЭБ)

WP-RU153 16-ia otdelnaia brigada radioelektronnoi borby. Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/16-я_отдельная_бригада_радиоэлектронной_борьбы

WP-RU154 100-мм противотанковая пушка МТ-12. Russian Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/МТ-12

WP-RU155 МТ-ЛБу (Russian Wikipedia). Wikipedia. Read 2026-10-03. https://ru.wikipedia.org/wiki/МТ-ЛБу

WP-RU156 9П149. Russian Wikipedia. Read 2026-10-07. https://ru.wikipedia.org/wiki/9П149

WP-RU157 Небо (радиолокационная станция). Wikipedia (Russian), 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/Небо-СВУ

WP-RU158 Nebo (radiolokatsionnaya stantsiya). Russian Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/Небо_(радиолокационная_станция)

WP-RU159 Radiotekhnicheskie voyska Rossiyskoy Federatsii. Russian Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/Радиотехнические_войска_Российской_Федерации

WP-RU160 Nebo-M. Russian Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/Небо-М

WP-RU161 48Ya6-K1 Podlyot. Russian Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/48Я6-К1_«Подлет»

WP-RU162 П-14 (Russian Wikipedia article reached via 5H84A). Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/5Н84А

WP-RU163 Десантные катера проекта 1176. Wikipedia (Russian), 2026-10-17 (page as retrieved). Read 2026-10-17. https://ru.wikipedia.org/wiki/Десантные_катера_проекта_1176

WP-RU164 Орешник (ракета). Russian Wikipedia, 2026-10. Read 2026-10-21. https://ru.wikipedia.org/wiki/Орешник_(ракета)

WP-RU165 Orlan-30. Wikipedia (Russian), 2026. Read 2026-10-02. https://ru.wikipedia.org/wiki/Орлан-30

WP-RU166 ОЗМ-72. Russian Wikipedia. Read 2026-10-21. https://ru.wikipedia.org/wiki/ОЗМ-72

WP-RU167 П-18. Wikipedia (Russian), 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/П-18

WP-RU168 Палантин (комплекс РЭБ). Russian Wikipedia, 2024. Read 2026-09-29. https://ru.wikipedia.org/wiki/Палантин_(комплекс_РЭБ)

WP-RU169 Pantsir-S1. Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/Панцирь-С1

WP-RU170 Противодесантная мина. Wikipedia (Russian). Read 2026-10-21. https://ru.wikipedia.org/wiki/Противодесантная_мина

WP-RU171 Пенициллин (комплекс артразведки). Russian Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/Пенициллин_(комплекс_артразведки)

WP-RU172 Аистёнок (радиолокационный комплекс). Russian Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/Аистёнок_(радиолокационный_комплекс)

WP-RU173 ПФМ-1. Wikipedia (Russian), 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/ПФМ-1

WP-RU174 ПМН. Wikipedia (ru), 2026. Read 2026-10-22. https://ru.wikipedia.org/wiki/ПМН

WP-RU175 ПМП-М. Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/ПМП-М

WP-RU176 ПП-91 (понтонный парк). Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/ПП-91_(понтонный_парк)

WP-RU177 Поляна-Д4. Wikipedia (Russian), 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/Поляна-Д4

WP-RU178 ПОМ-2 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/ПОМ-2

WP-RU179 БМ-21 «Град» (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/БМ-21_«Град»

WP-RU180 Zemledeliye (sistema minirovaniia). Wikipedia (Russian), 2021. Read 2026-10-21. https://ru.wikipedia.org/wiki/Земледелие_(система_минирования)

WP-RU181 ПРП-4. Russian Wikipedia, 2026. Read 2026-10-01. https://ru.wikipedia.org/wiki/ПРП-4

WP-RU182 ПТМ-3 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/ПТМ-3

WP-RU183 Ураган (РСЗО) (Russian Wikipedia), rocket table and notes. Wikipedia, 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/Ураган_(РСЗО)

WP-RU184 Смерч (РСЗО) (Russian Wikipedia), rocket table. Wikipedia, 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/Смерч_(РСЗО)

WP-RU185 ПТС-4 (ru.wikipedia). Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/ПТС-4

WP-RU186 ПММ-2М (ru.wikipedia). Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/ПММ-2М

WP-RU187 ПММ-2 (ru.wikipedia). Wikipedia, 2026. Read 2026-09-30. https://ru.wikipedia.org/wiki/ПММ-2

WP-RU188 ПУ-12М6. Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/ПУ-12М6

WP-RU189 Ранжир-М. Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/Ранжир-М

WP-RU190 Мотострелковый полк СССР. Russian Wikipedia. Read 2026-10-01. https://ru.wikipedia.org/wiki/Мотострелковый_полк_СССР

WP-RU191 Р-142. Russian Wikipedia. Read 2026-10-04. https://ru.wikipedia.org/wiki/Р-142

WP-RU192 Р-161 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-04. https://ru.wikipedia.org/wiki/Р-161

WP-RU193 Р-145БМ (ru.wikipedia). Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/Р-145БМ

WP-RU194 БТР-60 (ru.wikipedia). Wikipedia, 2026. Read 2026-10-01. https://ru.wikipedia.org/wiki/БТР-60

WP-RU195 R-149MA1 (Russian Wikipedia). Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/Р-149МА1

WP-RU196 R-149BMR (Russian Wikipedia). Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/Р-149БМР

WP-RU197 Р-166. Russian Wikipedia, 2026. Read 2026-10-03. https://ru.wikipedia.org/wiki/Р-166

WP-RU198 Р-439 (article). Russian Wikipedia, 2021 (refs). Read 2026-10-04. https://ru.wikipedia.org/wiki/Р-439

WP-RU199 Патрульные катера проекта 03160. Wikipedia (Russian). Read 2026-10-16. https://ru.wikipedia.org/wiki/Патрульные_катера_проекта_03160

WP-RU200 Прима (РС30) (Russian Wikipedia). Wikipedia, 2026-09-30. Read 2026-09-30. https://ru.wikipedia.org/wiki/Прима_(РС30)

WP-RU201 Торнадо-Г (Russian Wikipedia). Wikipedia, 2026-09-30. Read 2026-09-30. https://ru.wikipedia.org/wiki/Торнадо-Г

WP-RU202 227-я артиллерийская бригада. Russian Wikipedia, 2026. Read 2026-10-20. https://ru.wikipedia.org/wiki/227-я_артиллерийская_бригада

WP-RU203 ТОС-1. Wikipedia (Russian), 2026. Read 2026-10-20. https://ru.wikipedia.org/wiki/ТОС-1

WP-RU204 2А51. Russian Wikipedia, 2026-10-20. Read 2026-10-20. https://ru.wikipedia.org/wiki/2А51

WP-RU205 120-мм орудие 2Б16. Russian Wikipedia, 2026-10-20. Read 2026-10-20. https://ru.wikipedia.org/wiki/120-мм_орудие_2Б16

WP-RU206 Маркировка боеприпасов (Russian Wikipedia), summary table of the old GRAU system. Wikipedia (ru). Read 2026-10-20. https://ru.wikipedia.org/wiki/Маркировка_боеприпасов

WP-RU207 2S5 Giatsint-S (Russian Wikipedia), ammunition table. Wikipedia (ru), 2026. Read 2026-10-20. https://ru.wikipedia.org/wiki/2С5_«Гиацинт-С»

WP-RU208 2С4 «Тюльпан» (Russian Wikipedia). Wikipedia. Read 2026-10-20. https://ru.wikipedia.org/wiki/2С4_«Тюльпан»

WP-RU209 С-300П (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/С-300П

WP-RU210 S-300V (Russian Wikipedia). Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/С-300В

WP-RU211 9А83 (Russian Wikipedia). Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/9А83

WP-RU212 С-350. Wikipedia (Russian), 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/С-350

WP-RU213 С-400. Wikipedia (ru). Read 2026-09-29. https://ru.wikipedia.org/wiki/С-400

WP-RU214 4-я гвардейская армия ВВС и ПВО. Wikipedia (ru). Read 2026-09-29. https://ru.wikipedia.org/wiki/4-я_гвардейская_армия_военно-воздушных_сил_и_противовоздушной_обороны

WP-RU215 С-60. Russian Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/С-60

WP-RU216 Santimetr (snaryad), Russian Wikipedia. Wikipedia, 2026. Read 2026-10-20. https://ru.wikipedia.org/wiki/Сантиметр_(снаряд)

WP-RU217 3СУ-23-4 «Шилка». Wikipedia (ru), 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/3СУ-23-4_«Шилка»

WP-RU218 Shipovnik-AERO (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/Шиповник-АЭРО

WP-RU219 Штурм (противотанковый ракетный комплекс). Russian Wikipedia. Read 2026-10-07. https://ru.wikipedia.org/wiki/Штурм_(ПТРК)

WP-RU220 Смерч (РС30). Russian Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/9К58

WP-RU221 МАЗ-543. Russian Wikipedia, 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/МАЗ-543

WP-RU222 Леопард (радиолокационная станция). Russian Wikipedia, 2026. Read 2026-10-01. https://ru.wikipedia.org/wiki/ЧАР-10

WP-RU223 Сосна (зенитный ракетный комплекс). Russian Wikipedia, 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/Сосна_(зенитный_ракетный_комплекс)

WP-RU224 2С25 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/2С25

WP-RU225 Стрелец (КРУС-ВР). Wikipedia (ru). Read 2026-10-04. https://ru.wikipedia.org/wiki/Стрелец_(КРУС-ВР)

WP-RU226 Supercam S350. Russian Wikipedia, read 2026-10. Read 2026-10-02. https://ru.wikipedia.org/wiki/Supercam_S350

WP-RU227 Рефлекс (противотанковый ракетный комплекс). Russian Wikipedia, 2025. Read 2026-10-07. https://ru.wikipedia.org/wiki/Рефлекс_(ПТРК)

WP-RU228 Словесные названия российского оружия/С. Russian Wikipedia, 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/Словесные_названия_российского_оружия/С

WP-RU229 Т-72Б. Russian Wikipedia, 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/Т-72Б

WP-RU230 T-55 (Russian Wikipedia). Wikipedia. Read 2026-10-02. https://ru.wikipedia.org/wiki/Т-55

WP-RU231 Т-62. Russian Wikipedia, 2026. Read 2026-10-03. https://ru.wikipedia.org/wiki/Т-62

WP-RU232 T-72. Wikipedia (Russian). Read 2026-09-29. https://ru.wikipedia.org/wiki/Т-72

WP-RU233 Т-72Б3. Wikipedia (Russian). Read 2026-10-01. https://ru.wikipedia.org/wiki/Т-72Б3

WP-RU234 T-80 (Russian Wikipedia article, comparison table, modifications, service lists). Wikipedia. Read 2026-10-07. https://ru.wikipedia.org/wiki/Т-80

WP-RU235 Т-90. Russian Wikipedia, 2026. Read 2026-10-02. https://ru.wikipedia.org/wiki/Т-90

WP-RU236 Т-90М. Russian Wikipedia, 2026. Read 2026-10-02. https://ru.wikipedia.org/wiki/Т-90М

WP-RU237 Словесные названия российского оружия/Т. Wikipedia (Russian), 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/Словесные_названия_российского_оружия/Т

WP-RU238 Тигр (бронеавтомобиль). Russian Wikipedia, 2026. Read 2026-10-03. https://ru.wikipedia.org/wiki/Тигр_(бронеавтомобиль)

WP-RU239 ТМ-46 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/ТМ-46

WP-RU240 ТМ-57. Russian Wikipedia. Read 2026-10-21. https://ru.wikipedia.org/wiki/ТМ-57

WP-RU241 ТМ-62. Wikipedia (Russian), 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/ТМ-62

WP-RU242 ТМ-83 (Russian Wikipedia). Wikipedia. Read 2026-10-21. https://ru.wikipedia.org/wiki/ТМ-83

WP-RU243 Russian Wikipedia: ТММ-3. Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/ТММ-3

WP-RU244 Russian Wikipedia: МТУ-72. Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/МТУ-72

WP-RU245 Точка (тактический ракетный комплекс). Wikipedia (Russian), 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/Точка-У

WP-RU246 Тор (зенитный ракетный комплекс). Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/Тор_(зенитный_ракетный_комплекс)

WP-RU247 Торнадо-Г. Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/Торнадо-Г

WP-RU248 МАЗ-537 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/МАЗ-537

WP-RU249 КАМАЗ-65225 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/КАМАЗ-65225

WP-RU250 Slovesnye nazvaniya rossiyskogo oruzhiya/R. Russian Wikipedia, 2026. Read 2026-10-04. https://ru.wikipedia.org/wiki/Словесные_названия_российского_оружия/Р

WP-RU251 Slovesnye nazvaniya rossiyskogo oruzhiya/B. Russian Wikipedia, 2026. Read 2026-10-04. https://ru.wikipedia.org/wiki/Словесные_названия_российского_оружия/Б

WP-RU252 Тунгуска (зенитный ракетно-пушечный комплекс). Russian Wikipedia, 2026. Read 2026-10-01. https://ru.wikipedia.org/wiki/2К22_«Тунгуска»

WP-RU253 КамАЗ-63968 «Тайфун-К», Russian Wikipedia. Wikipedia, 2026. Read 2026-10-03. https://ru.wikipedia.org/wiki/Тайфун-К

WP-RU254 КамАЗ-53949 «Линза», Russian Wikipedia. Wikipedia, 2026. Read 2026-10-03. https://ru.wikipedia.org/wiki/КамАЗ-53949

WP-RU255 Тайфун (семейство бронеавтомобилей), Russian Wikipedia. Wikipedia, 2026. Read 2026-10-03. https://ru.wikipedia.org/wiki/Тайфун_(семейство_бронеавтомобилей)

WP-RU256 Урал-63095, Russian Wikipedia. Wikipedia, 2026. Read 2026-10-03. https://ru.wikipedia.org/wiki/Урал-63095

WP-RU257 2С41 «Дрок», Russian Wikipedia. Wikipedia, 2026. Read 2026-10-03. https://ru.wikipedia.org/wiki/2С41

WP-RU258 UAZ-469 (Russian Wikipedia). Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/УАЗ-469

WP-RU259 Унифицированный модуль планирования и коррекции. Wikipedia (Russian), 2026-10. Read 2026-10-21. https://ru.wikipedia.org/wiki/УМПК

WP-RU260 УР-77. Russian Wikipedia, 2026. Read 2026-10-01. https://ru.wikipedia.org/wiki/УР-77

WP-RU261 Uragan-1M (Russian Wikipedia). Wikipedia, 2026. Read 2026-09-29. https://ru.wikipedia.org/wiki/Ураган-1М

WP-RU262 Урал-6370 (Урал-63704 redirects here). Russian Wikipedia, retrieved 2026-10. Read 2026-10-04. https://ru.wikipedia.org/wiki/Урал-63704

WP-RU263 Уран-6. Russian Wikipedia, 2026. Read 2026-10-04. https://ru.wikipedia.org/wiki/Уран-6

WP-RU264 Верба (переносной зенитный ракетный комплекс). Wikipedia (ru). Read 2026-10-07. https://ru.wikipedia.org/wiki/Верба_(ПЗРК)

WP-RU265 Вихрь (противотанковый ракетный комплекс). Wikipedia (Russian), 2026. Read 2026-10-21. https://ru.wikipedia.org/wiki/Вихрь_(ПТРК)

WP-RU266 ДТ-30. Wikipedia (Russian). Read 2026-10-19. https://ru.wikipedia.org/wiki/ДТ-30

WP-RU267 ДТ-10. Wikipedia (Russian). Read 2026-10-19. https://ru.wikipedia.org/wiki/ДТ-10

WP-RU268 Воронеж (радиолокационная станция). Wikipedia (ru), 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/Воронеж_(радиолокационная_станция)

WP-RU269 БС-3. Russian Wikipedia, 2026. Read 2026-10-06. https://ru.wikipedia.org/wiki/БС-3

WP-RU270 152-мм гаубица образца 1943 года (Д-1). Russian Wikipedia, 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/152-мм_гаубица_образца_1943_года_(Д-1)

WP-RU271 Bird-Eye 400 (Russian Wikipedia, redirect from Застава (БПЛА)). Wikipedia, 2026. Read 2026-10-02. https://ru.wikipedia.org/wiki/Застава_(БПЛА)

WP-RU272 Зоопарк (радиолокационный комплекс). Russian Wikipedia. Read 2026-09-29. https://ru.wikipedia.org/wiki/Зоопарк_(радиолокационный_комплекс)

WP-RU273 ЗУ-23-2. Wikipedia (Russian), 2026. Read 2026-10-07. https://ru.wikipedia.org/wiki/ЗУ-23-2

WP-UK1 РБ-301Б «Борисоглебськ-2». Wikipedia (Ukrainian). Read 2026-09-29. https://uk.wikipedia.org/wiki/РБ-301Б_«Борисоглебськ-2»

WP-UK2 R-340RP Pole-21. Ukrainian Wikipedia, 2026-09-30. Read 2026-09-30. https://uk.wikipedia.org/wiki/Р-340РП_«Поле-21»

WP-UK3 ПТМ-4. Ukrainian Wikipedia, retrieved 2026. Read 2026-10-21. https://uk.wikipedia.org/wiki/ПТМ-4

WP-UK4 Torn (EW complex), Ukrainian Wikipedia. Wikipedia, 2026. Read 2026-10-06. https://uk.wikipedia.org/wiki/Торн_(комплекс_РЕБ)

WPBTR60 BTR-60. Wikipedia, 2026. https://Www.wikipedia.org/wiki/BTR-60

WPLAND Противопехотная мина ПОМ-2 (Советские и Российские мины). weaponland.ru (text of Yu. Veremeev). https://weaponland.ru/publ/protivopekhotnaja_mina_pom_2_sovetskie_i_rossijskie_miny/20-1-0-929

WSN1 152mm 2A36 Giatsint-B. WeaponSystems.net. Read 2026-09-30. https://weaponsystems.net/system/340-152mm+2A36+Giatsint-B

WSN2 82mm 2B14 Podnos. weaponsystems.net. Read 2026-10-06. https://weaponsystems.net/system/1135-82mm+2B14+Podnos

WSN3 2S34 Hosta. weaponsystems.net. Read 2026-10-06. https://weaponsystems.net/system/1400-2S34 Hosta

WSN4 2S31 Vena. weaponsystems.net, 2026. Read 2026-10-06. https://weaponsystems.net/system/135-2S31+Vena

WSN5 2S35 Koalitsiya-SV. weaponsystems.net. Read 2026-09-29. https://weaponsystems.net/system/836-2S35+Koalitsiya-SV

WSN6 BAT-2. WeaponSystems.net, 2026. Read 2026-10-04. https://weaponsystems.net/system/306-BAT-2

WSN7 BMP-3. weaponsystems.net. Read 2026-09-29.
https://weaponsystems.net/system/344-BMP-3

WSN8 BRM-1K Korshun. weaponsystems.net. Read 2026-10-03.
https://weaponsystems.net/system/346-BRM-1K Korshun

WSN9 9K57 Uragan. weaponsystems.net. Read 2026-10-20.
https://weaponsystems.net/weaponsystem/DD05 - BM-27 Uragan.html

WSN10 T-72B3. weaponsystems.net. Read 2026-10-16.
https://weaponsystems.net/system/1410-T-72B3

WSN11 TMM (weaponsystems.net). WeaponSystems.net. Read 2026-10-01.
https://weaponsystems.net/system/1276-TMM

WSN12 9K79 Tochka. weaponsystems.net. Read 2026-10-06.
https://weaponsystems.net/system/907-9K79+Tochka

WSPOT1 WarSpotting loss record 3619: 2F510A transport vehicle (for 2S12 'Sani' mortar). WarSpotting, 2022-02-26. Read 2026-10-06.
https://ukr.warspotting.net/api/losses/russia/3619

WSPOT2 WarSpotting loss record 8233: 2F510A transport vehicle (for 2S12 'Sani' mortar). WarSpotting, 2022-09-10. Read 2026-10-06.
https://ukr.warspotting.net/api/losses/russia/8233

WSPOT3 WarSpotting loss record 8689: 2F510A transport vehicle (for 2S12 'Sani' mortar). WarSpotting, 2022-09-13. Read 2026-10-06.
https://ukr.warspotting.net/api/losses/russia/8689

WSPOT4 WarSpotting API, Russian losses 2022-09-10 (records 8171, 8864). WarSpotting, 2022-09-10. Read 2026-10-06.
https://ukr.warspotting.net/api/losses/russia/2022-09-10

WSPOT5 WarSpotting API, Russian losses 2022-09-12 (record 8420). WarSpotting, 2022-09-12. Read 2026-10-06.
https://ukr.warspotting.net/api/losses/russia/2022-09-12

WSPOT6 WarSpotting API, Russian losses 2022-09-13 (record 8529). WarSpotting, 2022-09-13. Read 2026-10-06.
https://ukr.warspotting.net/api/losses/russia/2022-09-13

WSPOT7 #22099 120mm 2S34 'Khosta', Yasynuvata (WarSpotting API record). WarSpotting, 2023-12. Read 2026-10-07.
https://ukr.warspotting.net/api/losses/russia/22099

WSPOT8 WarSpotting API, Russian losses of 2022-03-03 (records 1948, 1949, 11098). WarSpotting, 2022-03-03. Read 2026-10-03.
https://ukr.warspotting.net/api/losses/russia/2022-03-03

WSPOT9 WarSpotting, Russian losses on 2022-03-01 (records 1428, 1570, 1571, 1599). WarSpotting, 2022-03-01. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/2022-03-01

WSPOT10 WarSpotting, Russian losses on 2022-11-05 (record 11225). WarSpotting, 2022-11-05. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/2022-11-05

WSPOT11 WarSpotting, Russian losses on 2023-02-10 (record 14048, BMP-2M Berezhok). WarSpotting, 2023-02-10. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/2023-02-10

WSPOT12 WarSpotting, Russian losses on 2023-06-12 (records 17054, 17055, 17327). WarSpotting, 2023-06-12. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/2023-06-12

WSPOT13 WarSpotting loss API, page 2022-02-27 (records 1761, 1765). WarSpotting, 2022-02-27. Read 2026-10-03.
https://ukr.warspotting.net/api/losses/russia/2022-02-27

WSPOT14 WarSpotting loss API, page 9001 (records 9114, dated 2022-03-18). WarSpotting, 2022-03-18. Read 2026-09-30.
https://ukr.warspotting.net/api/losses/russia/9001

WSPOT15 WarSpotting loss API, page 2022-09-08 (records 8032). WarSpotting, 2022-09-08. Read 2026-10-06.
https://ukr.warspotting.net/api/losses/russia/2022-09-08

WSPOT16 WarSpotting loss API, page 2022-09-09 (records 8144). WarSpotting, 2022-09-09. Read 2026-10-06.
https://ukr.warspotting.net/api/losses/russia/2022-09-09

WSPOT17 WarSpotting loss API, page 15221 (records 15365, dated 2022-11-01). WarSpotting, 2022-11-01. Read 2026-10-16.
https://ukr.warspotting.net/api/losses/russia/15221

WSPOT18 WarSpotting loss API, page 2023-02-08 (records 13949, 13972). WarSpotting, 2023-02-08. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/2023-02-08

WSPOT19 WarSpotting loss API, page 2024-06-10/ (records 30743). WarSpotting, 2024-06-10. Read 2026-10-03.
https://ukr.warspotting.net/api/losses/russia/2024-06-10/

WSPOT20 WarSpotting loss API, page 2024-10-15 (records 31085). WarSpotting, 2024-10-15. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/2024-10-15

WSPOT21 WarSpotting #3046, R-330BMV jamming station (for RB-301B Borisoglebsk-2). WarSpotting, 2022-03-12. Read 2026-09-29.
https://ukr.warspotting.net/view/3046/39064/

WSPOT22 WarSpotting #8541, R-330BMV Borisoglebsk-2B. WarSpotting, 2022-09-13. Read 2026-09-29.
https://ukr.warspotting.net/view/8541/20284/

WSPOT23 WarSpotting losses, Russia, 2 March 2022 (records 2078, 2151, 2152). WarSpotting, 2022-03-02. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/2022-03-02

WSPOT24 WarSpotting losses, Russia, API page from id 8997 (records 9025, 9141). WarSpotting, 2022. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/8997

WSPOT25 WarSpotting losses, Russia, API page from id 8565 (records 8632, 8633, 8638, 8640). WarSpotting, 2022. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/8565

WSPOT26 WarSpotting loss record #2439: R-149AKSh(-1), 2nd Guards Motor Rifle Division, 2022-03-08. WarSpotting, 2022-03-08. Read 2026-09-29.
https://ukr.warspotting.net/api/losses/russia/2439

WSPOT27 WarSpotting loss record #2440: R-149AKSh(-1), 60th Control Brigade, 2022-03-27. WarSpotting, 2022-03-27. Read 2026-09-29.
https://ukr.warspotting.net/api/losses/russia/2440

WSPOT28 WarSpotting loss record #13822: R-149MA3, 1st Guards Motor Rifle Regiment, 2022-03-01. WarSpotting, 2022-03-01. Read 2026-09-29.
https://ukr.warspotting.net/api/losses/russia/13822

WSPOT29 WarSpotting loss record #23939: R-149MA3, 1st Tank Regiment, 2022-09-29. WarSpotting, 2022-09-29. Read 2026-09-29.
https://ukr.warspotting.net/api/losses/russia/23939

WSPOT30 WarSpotting loss record #8999: R-149MA1, 27th Separate Guards Motor Rifle Brigade, 2022-09-12. WarSpotting, 2022-09-12. Read 2026-09-29.
https://ukr.warspotting.net/api/losses/russia/8999

WSPOT31 WarSpotting loss record 2442: R-166-0.5 'Artek' radio station based on BTR-80. WarSpotting, 2022-03-20. Read 2026-10-03.
https://ukr.warspotting.net/api/losses/russia/2442

WSPOT32 WarSpotting loss record 2448: R-166-0.5 'Artek' radio station based on BTR-80. WarSpotting, 2022-03-01. Read 2026-10-03.
https://ukr.warspotting.net/api/losses/russia/2448

WSPOT33 WarSpotting loss record 2453: R-166-0.5 'Artek' radio station based on BTR-80. WarSpotting, 2022-02-26. Read 2026-10-03.
https://ukr.warspotting.net/api/losses/russia/2453

WSPOT34 WarSpotting loss record 38683: 9A83M2 TELAR (for 9K81M2 S-300V4), Oleksiivka, Polohy raion, 2025-08-20. WarSpotting, 2025-08-20. Read 2026-09-29.
https://ukr.warspotting.net/api/losses/russia/38683

WSPOT35 WarSpotting loss record 47009: 9A83M2 TELAR (for 9K81M2 S-300V4), Volnukhyne, Luhansk raion, 2026-08-14. WarSpotting, 2026-08-14. Read 2026-09-29.
https://ukr.warspotting.net/api/losses/russia/47009

WSPOT36 WarSpotting, Russian losses of 2023-07-31 (record 18807, ZiL-131 with S-60 AA gun). WarSpotting, 2023-07-31. Read 2026-10-07.
https://ukr.warspotting.net/api/losses/russia/2023-07-31

WSPOT37 WarSpotting losses, Russia, 2022-11-09 (record 11376). WarSpotting, 2022-11-09. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/2022-11-09

WSPOT38 WarSpotting loss records from id 95 (Russian tanks). WarSpotting, records dated 2022-2023. Read 2026-10-16.
https://ukr.warspotting.net/api/losses/russia/95

WSPOT39 WarSpotting loss records from id 237 (Russian tanks). WarSpotting, records dated 2022. Read 2026-10-16.
https://ukr.warspotting.net/api/losses/russia/237

WSPOT40 WarSpotting loss records from id 337 (Russian tanks). WarSpotting, records dated 2022. Read 2026-10-16.
https://ukr.warspotting.net/api/losses/russia/337

WSPOT41 WarSpotting loss records, Russia, 2022-03-04 (records 574, 575). WarSpotting, 2022-03-04. Read 2026-10-02.
https://ukr.warspotting.net/api/losses/russia/2022-03-04

WW2W Ukraine ERWs All Types, p. 53 (MON-series note citing Human Rights Watch). ww2wrecks.com, 2024-08.
https://www.ww2wrecks.com/wp-content/uploads/2024/08/Ukraine-ERWs-All-Types-A4-version-TOC.pdf

WWIKI Protivotankovaya mina TM-83 (Svobodnaya entsiklopediya mirovogo vooruzheniya). wiki.worldweapons.ru.
http://wiki.worldweapons.ru/мины/тм-83

WWW1 Раскрыты характеристики самой долгожданной самоходки России «Флокс». www1.ru, 2024-12-07.
https://www1.ru/news/2024/12/07/raskryty-xarakteristiki-samoi-dolgozdannoi-samoxodki-rossii-floks.html

WWW1A Разносит танки, артиллерию и укрепрайоны врага: на что способна российская САУ 2С3М «Акация». www1.ru, 2024-06-19.
https://www1.ru/news/2024/06/19/raznosit-tanki-artilleriiu-i-ukrepraiony-vraga-na-cto-sposobna-rossiiskaia-sau-2s3m-akaciia.amp.html

WWW1A2 Hasta la vista, baby: чем хорош российский БМПТ «Терминатор» на передовой. www1.ru, 2024-07-27.
https://www1.ru/news/2024/07/27/hasta-la-vista-baby-cem-xoros-rossiiskii-bmpt-terminator-na-peredovoi.amp.html

WWW1A3 Деривация-ПВО засветилась в Нижнем Новгороде. www1.ru, 2025-05-16.
https://www1.ru/news/2025/05/16/noveisaia-zenitnaia-derivaciia-pvo-zasvetilas-v-niznem-novgorode.amp.html

WWW1A4 Putin inspected the Desertcross 1000-3 army all-terrain vehicle (English amp page). www1.ru, 2023-11-11.
https://www1.ru/en/news/2023/11/11/putin-s-interesom-osmotrel-armeiskii-vezdexod-desertcross-1000-3-mnogo-foto.amp.html

WWW1A5 «Форпосты» обнаружили опорные пункты условного противника в Калининградской области. www1.ru, 2026-05-08.
https://www1.ru/news/2026/05/08/forposty-obnaruzhili-opornye-punkty-uslovnogo-protivnika-v-kaliningradskoi-oblasti.amp.html

WWW1A6 Morskoi vertolet Ka-29 okrestili ubiitsei BEKov. www1.ru, 2026-04-15.
https://www1.ru/news/2026/04/15/morskoi-vertolet-ka-29-okrestili-ubiicei-bekov.amp.html

WWW1A7 Kalashnikov vypolnil goszakaz po postavke barrazhiruyushchego boepripasa KUB. Oruzhie Rossii (www1.ru), Kalashnikov press service, 2023-12-19.
https://www1.ru/news/2023/12/19/kalasnikov-vypolnil-goszakaz-po-postavke-barraziruiushhego-boepripasa-kub-minoborony-rf.html

WWW1A8 «Метис» с «Фаготом» против врага: Минобороны России показало работу известных ПТРК изнутри. www1.ru, 2024-06-08.
https://www1.ru/news/2024/06/08/metis-s-fagotom-protiv-vraga-minoborony-rossii-pokazalo-rabotu-izvestnyx-ptrk-iznutri.amp.html

WWW1B Гаубицы «Акация» адаптировали к новейшим высокоточным снарядам «Краснополь». www1.ru, 2025-09-03.
https://www1.ru/news/2025/09/03/gaubicy-akaciia-adaptirovali-k-noveisim-vysokotocnym-snariadam-krasnopol.amp.html

WWW1B2 Рота «Терминаторов» усилила танковую дивизию ЦВО в 2024 году. www1.ru, 2025-01-07.
https://www1.ru/news/2025/01/07/rota-terminatorov-usilila-tankovuiu-diviziiu-cvo-v-2024-godu.amp.html

WWW1B3 Desertcross 1000-3 with Igla-S mounts shown at Army-2024. www1.ru, 2024-08-17.
https://www1.ru/news/2024/08/17/smertelnyi-ukol-kitaiskii-vezdexod-desertcross-1000-3-vooruzili-pzrk-igla-s.amp.html

WWW1B4 Разработчики комплекса «Форпост» создали новую версию БПЛА с радиолокатором целеуказания. www1.ru, 2025-02-20.
https://www1.ru/news/2025/02/20/razrabotciki-kompleksa-forpost-sozdali-novuiu-versiiu-bpla-s-radiolokatorom-celeukazaniia.amp.html

WWW1B5 Ekipazh rossiiskogo vertoleta Ka-27PS unichtozhil kater-kamikadze Magura. www1.ru, 2024-06-08.
https://www1.ru/news/2024/06/08/stolb-cernogo-dyma-ekipaz-rossiiskogo-vertoleta-ka-27ps-unictozil-kater-kamikdze-protivnika-magura.amp.html

WWW1B6 Kalashnikov otpravil v voyska pervuyu v 2025 godu partiyu UB KUB. Oruzhie Rossii (www1.ru), Kalashnikov press service, 2025-03-17.
https://www1.ru/news/2025/03/17/kalasnikov-otpravil-v-voiska-pervuiu-v-2025-godu-partiiu-upravliaemyx-boepripasov-kub.html

WWW1B7 Компактность и мощь: российский ПТРК «Метис» остановит бронетехнику противника. www1.ru, 2024-07-15.
https://www1.ru/news/2024/07/15/kompaktnost-i-moshh-rossiiskii-ptrk-metis-ostanovit-bronetexniku-protivnika.amp.html

WWW1C Russian troops turned Chinese Desertcross 1000-3 into smoke vehicles. www1.ru, 2024-01-31.
https://www1.ru/news/2024/01/31/rossiiskie-voennye-prevratili-kitaiskie-motovezdexody-desertcross-1000-3-v-dymovye-masiny.amp.html

WWW1C2 Smertonosnaya ptitsa vzmyla v nebo: Kalashnikov nazval glavnye plyusy KUB. Oruzhie Rossii (www1.ru), Kalashnikov press service, 2025-03-26.
https://www1.ru/news/2025/03/26/smertonosnaia-ptica-vzmyla-v-nebo-kalasnikov-nazval-glavnye-pliusy-krylatogo-boepripasa-kub.html

WWW1D Postavki Kalashnikovym KUBa-2. Oruzhie Rossii (www1.ru), Kalashnikov press service, 2025-12-29.
https://www1.ru/news/2025/12/29/postavki-kalasnikovym-kuba-2.html

WWW1I Kontsern Kalashnikov postavil voennym partiyu KUBov povyshennogo mogushchestva. Oruzhie Rossii (www1.ru), Kalashnikov press service, 2025-05-01.
https://www1.ru/news/2025/05/01/koncern-kalasnikov-postavil-voennym-partiiu-kubov-povysennogo-mogushhestva.html

WWW1RU Скоростные десантные «Акула» и «Дюгонь» высадили шесть БТР-82А с морпехами на побережье Балтики. www1.ru, 2025-03-07.
https://www1.ru/news/2025/03/07/skorostnye-desantnye-akula-i-diugon-vysadili-sest-btr-82a-s-morpexami-na-poberege-baltiki.amp.html

WWW1S8 Бьет по танкам и БМП с воздуха ракетами: эффектные кадры боевой работы вертолета Ми-35М. www1.ru, 2024-08-23.
https://www1.ru/news/2024/08/23/bet-po-tankam-i-bmp-s-vozduxa-raketami-effektnye-kadry-boevoi-raboty-vertoleta-mi-35m-superkrokod.amp.html

WWW2 Poyavilis pervye kadry redkogo drona-kamikadze Italmas pered boevym zapuskom. www1.ru, 2025-02-09.
https://www1.ru/news/2025/02/09/poiavilis-pervye-kadry-redkogo-drona-kamikadze-italmas-pered-boevym-zapuskom.html

WWW3 Drony-kamikadze Geran-3 ... nachali zapuskat s pikapov. www1.ru, 2025-03-15.
https://www1.ru/news/2025/03/15/drony-kamikadze-geran-3-s-moshhnostiu-krylatoi-rakety-nacali-zapuskat-s-pikapov-unikalnoe-video.html

WWW12 Bezbashennye samokhodki 2S7M Malka nachali ispolzovat po-novomu. www1.ru, 2025-04-24.
https://www1.ru/news/2025/04/24/bezbasennye-samoxodki-2s7m-malka-nacali-ispolzovat-po-novomu-biut-na-dalnosti-50-km.html

WWW13 Vezdekhod-razvedchik ili ognevaya platforma: Plastun-SN. www1.ru, 2023-10-30.
https://www1.ru/news/2023/10/30/vezdexod-razvedcik-ili-ognevaia-platforma-cto-mozet-armeiskii-plastun-sn.amp.html

WWW14 Новейшую машину разминирования БМР-3М «Вепрь» на базе Т-90А применили на фронте. www1.ru, 2024-09-24.
https://www1.ru/news/2024/09/24/noveisuiu-masinu-razminirovaniia-bmr-3m-vepr-na-baze-t-90a-primenili-na-fronte.html

WWW15 Фото обновлённой российской разведывательной БРДМ-2МС засветились в сети (English version). www1.ru, 2023-11-08.
https://www1.ru/en/news/2023/11/08/foto-obnovlennoi-rossiiskoi-razvedyvatelnoi-brdm-2ms-zasvetilis-v-seti.amp.html

WWW16 Boats 1204 Shmel and 1206 Kalmar will join the Dnieper Flotilla. www1.ru (citing TASS sources), 2024-04-26 (URL path).
https://www1.ru/en/news/2024/04/26/drony-ne-strasny-katera-smel-i-kalmar-osnastiat-zashhitoi-ot-bpla.amp.html

WWW17 Photo of a Project 21980 boat fitted with a drone cage. www1.ru, 2026-05-11.
https://www1.ru/news/2026/05/11/raketnye-katera-vmf-nachali-zashchishchat-mangalami-ot-tankov-t-90m-proryv.amp.html

WWW18 Military Watch Magazine: Severnaya Koreya peredala Rossii gaubitsy M1978 Koksan. www1.ru, 2024-11-15.
https://www1.ru/news/2024/11/15/military-watch-magazine-severnaia-koreia-peredala-rossii-gaubicy-m1978-koksan.amp.html

WWW19 Bronemashina Sudnogo dnya: vysokozashchishchennuyu Ladogu na shassi T-80 zametili u rossiyskikh voennosluzhashchikh. www1.ru, 2024-03-27.
https://www1.ru/news/2024/03/27/bronemasina-sudnogo-dnia-vysokozashhishhennuiu-ladogu-na-sassi-letaiushhego-tanka-t-80-zametili-u-ross.amp.html

WWW22 Плавающий транспортёр ПТС-2 впервые попал на фото: получил мангал и комплекс РЭБ. www1.ru, 2025-10-09.
https://www1.ru/news/2025/10/09/plavaiushhii-transporter-pts-2-vpervye-popal-na-foto-polucil-mangal-i-kompleks-reb.html

WWW110 Raschety ZALA (Lancet strikes at almost 100 km). www1.ru (quoting Russian MoD), 2026-01-22.
https://www1.ru/en/news/2026/01/22/rascety-zala-minoborony.html

WWW111 Несущий зенитную артиллерию большой десантный корабль «Иван Грен» вышел на учения в Баренцевом море. www1.ru (Russian technology news site), 2024-06-23 (from the URL path).
https://www1.ru/news/2024/06/23/nesushhii-zenitnuiu-artilleriiu-bolsoi-desantnyi-korabl-ivan-gren-vysel-na-uceniia-v-barencevom-more.amp.html

WWW112 Ми-35М приблизился к потенциалу Ми-28НМ, но отсутствие бортовой РЛС станет большой проблемой в бою. www1.ru, 2024-12-20.
https://www1.ru/news/2024/12/20/mi-35m-priblizilsia-k-potencialu-mi-28nm-no-otsutstvie-bortovoi-rls-stanet-bolsoi-problemoi-v-boiu.amp.html

WWW113 Заглянет за горизонт: как работает уникальная российская РЛС «Ниобий-СВ». www1.ru, 2025-01-26.
https://www1.ru/articles/2025/01/26/zaglianet-za-gorizont-kak-rabotaet-unikalnaia-rossiiskaia-rls-niobii-sv.amp.html

WWW114 Omsktransmash presents floating transporter PTS-4 (Spanish edition). www1.ru, 2024-06-06.
https://www1.ru/es/news/2024/06/06/proizvoditel-tos-1a-solncepek-predstavil-plavaiushhii-transporter-pts-4-dlia-perevozki-kamaz.amp.html

WWW115 Российские радисты задействовали подвижные радиостанции Р-166-05 и Р-149АКШ в Таджикистане. www1.ru, 2025-08-07.
https://www1.ru/news/2025/08/07/rossiiskie-radisty-zadeistvovali-podviznye-radiostancii-r-166-05-i-r-149aks-v-tadzikistane.amp.html

WWW116 Newest R-416GM radio stations delivered to Central Military District. www1.ru (citing Russian MoD), 2023-12-08.
https://www1.ru/news/2023/12/08/noveisie-radiostancii-strategiceskogo-upravleniia-r-416gm-postupili-na-vooruzenie-cvo.amp.html

WWW117 Оружие с опытом: в войска отправили минометы «Поднос», ПТРК «Штурм-С» и гаубицы Д-30. www1.ru, 2024-05-21.
https://www1.ru/news/2024/05/21/oruzie-s-opytom-v-voiska-otpravili-minomety-podnos-ptrk-sturm-s-i-gaubicy-d-30.amp.html

WWW118 How the Russian smoke machine TDM-2K works. www1.ru, 2024-04-19.
https://www1.ru/en/news/2024/04/19/prikroiut-ot-vraga-na-kilometry-kak-rabotaet-rossiiskaia-dym-masina-dm-2k.amp.html

WWW119 Svet-KU EW complex will protect airfields from kamikaze drones. www1.ru, 2025-04-04.
https://www1.ru/news/2025/04/04/kompleks-reb-svet-ku-zashhitit-aerodromy-ot-dronov-kamikadze.amp.html

WWW120 Многослойная броня и защита «Реликт»: 23 танка Т-90М «Прорыв» отправили мотострелкам ЦВО. www1.ru, 2024-05-17.
https://www1.ru/news/2024/05/17/mnogosloinaia-bronia-i-zashhita-relikt-23-tanka-t-90m-proryv-otpravili-motostrelkam-cvo.html

WWW121 Rassekretit protivnika: Torn-MDM at Zapad-2025 (relays Russian MoD). www1.ru, 2025-09-16.
https://www1.ru/news/2025/09/16/rassekretit-protivnika-primenenie-kompleksa-torn-mdm-otrabotali-v-ramkax-ssu-zapad-2025.amp.html

WWW122 Раскрыт потенциал модернизированной РСЗО «Торнадо-Г». www1.ru, 2024-12-08.
https://www1.ru/news/2024/12/08/raskryt-potencial-modernizirovannoi-rszo-tornado-g-ekipaz-unictozit-protivnika-daze-ne-vyxodia-iz.html

WWW123 Подрывает 100-метровый шнур: «Змей Горыныч» помог российским саперам проделать проходы в минных полях. www1.ru, relaying the Russian MoD press service, 2024-10-13.
https://www1.ru/news/2024/10/13/podryvaet-100-metrovyi-snur-zmei-gorynyc-pomog-rossiiskim-saperam-prodelat-proxody-v-minnyx-polia.html

WWW124 Umnye polya «Zemledeliya»: rossiyskim voyskam peredan noveyshiy kompleks. www1.ru, 2023-10-13.
https://www1.ru/news/2023/10/13/umnye-polia-zemledeliia-rossiiskim-voiskam-peredan-noveisii-kompleks-distancionnogo-minirovaniia.amp.html

WWW132 Bronirovannoe steklo, distantsionno upravlyaemyi boevoi modul: glavkomu VMF pokazali katera BK-10 i BK-16. Oruzhie Rossii (www1.ru), Kalashnikov press service, 2024-08-13.
https://www1.ru/news/2024/08/13/bronirovannoe-steklo-distancionno-upravliaemyi-boevoi-modul-glavkomu-vmf-pokazali-katera-bk-10-i-b.amp.html

YAHOOUK Ukraine sea drones could hit Putin new boat squad to stop Dnipro crossings, say UK defence chiefs. Yahoo News Australia, 2024-03 (quotes the UK MoD update; announcement dated 20 Mar 2024 in text).
https://au.news.yahoo.com/ukraine-sea-drones-could-hit-133715833.html

YAHTEL Trapped on the Dnipro, Putin's troops tried to flee by boat - and were blown apart. The Telegraph via Yahoo News, 2025-10-21 (page metadata, datePublished).
https://www.yahoo.com/news/articles/putin-marooned-troops-tried-flee-050000903.html

YAROVAN Korrektiruemye boepripasy Smelchak i Santimetr. yarovan.ru, 2023.
https://yarovan.ru/boepripasy-smelchak-i-santimetr/

ZALA1 The ZALA Z-16 50th ... Brigade Varyag is coordinating strikes. ZALA Aero (Kalashnikov Group), undated (c. 2026).
https://zala-aero.com/en/news/raschet-zala-z-16-50-obr-«varyag»-kontroliruet-udary-po-tylovoj-infrastrukture-vsu/

ZALA2 An enemy UAV command post has been destroyed under the control of the ZALA Z-16 of the Rubicon Centre. ZALA Aero (Kalashnikov Group), undated (c. 2026).
https://zala-aero.com/en/news/punkt-upravleniya-bpla-protivnika-unichtozhen-pod-kontrolem-zala-z-16-czentra-«rubikon»/

ZALA3 Night reconnaissance with ZALA Z-16: Marines disrupted the rotation of AFU forces. ZALA Aero (Kalashnikov Group), 2025-01-29.
https://zala-aero.com/en/news/nochnaja-razvedka-s-zala-z-16-morpehi-sorvali-rotaciju-sil-vsu/

ZALA4 New generation ZALA Z-16. ZALA Aero (Kalashnikov Group), 2025-05-06.
https://zala-aero.com/en/news/novoe-pokolenie-zala-z-16/

ZALA6 Effective combination of ZALA Z-16 and Lancet against AFU equipment. ZALA Aero (Kalashnikov Group), 2024-12-06.
https://zala-aero.com/en/news/jeffektivnaja-svjazka-zala-z-16-i-lancet-protiv-voennoj-tehniki-vsu/

ZALA7 The Eyes of Our Army: Vesti report on the work of a ZALA Z-16 crew. ZALA Aero (Kalashnikov Group), 2026-01-23.
https://zala-aero.com/en/news/glaza-nashej-armii-reportazh-vestej-o-rabote-raschyota-razvedyvatelnogo-bpla-zala-z-16/

ZALA8 ZALA Lancet: UAV units have been established in artillery regiments and artillery brigades. ZALA Aero (Kalashnikov Group), 2024-12-07.
https://zala-aero.com/en/news/zala-lancet-in-artpolkah-i-artbrigadah-sozdany-podrazdelenija-bpla/

ZALAAIF Что из себя представляет разведывательный БЛА ZALA 421-16E? Argumenty i Fakty (aif.ru).
https://aif.ru/society/army/chto_iz_sebya_predstavlyaet_razvedyvatelnyy_bla_zala_421-16e

ZALAINT Беспилотный самолёт ZALA 421-16E: технологическая новинка Российской армии. Integral-Russia (repost of arms-expo.ru), 2017-01-16.
https://integral-russia.ru/2017/01/16/bespilotnyj-samolyot-zala-421-16e-tehnologicheskaya-novinka-rossijskoj-armii/

ZALAP ZALA Z-16E. ZALA Aero (Kalashnikov Group), 2024-03-02 (modified 2026-04-23).
https://zala-aero.com/en/product/zala-z-16/

ZASROB Застава (Robopedia). robotrends.ru, 2015.
https://robotrends.ru/robopedia/zastava

ZAXID На Донбасі вперше зафіксували новітній російський комплекс «Наводчик-2». zaxid.net, 2020-11.
https://zaxid.net/na_donbasi_vpershe_zafiksuvali_novitniy_rosiyskiy_kompleks_navodchik_2_n1510831/amp

ZERK Russian army uses M-46 in Kursk region (Агентство). Zerkalo.io (citing Agentstvo, Forbes, Highmarsed), 2024-08.
https://news.zerkalo.io/world/76798.html

ZGRIF Inzhenernaya podgotovka: Protivopekhotnye miny Rossiyskoy armii (chast 2), MON-50 section. zakon-grif.ru (Tula veterans of Spetsnaz), 2021.
https://zakon-grif.ru/swat/arming/articles/view/154-0.htm

ZONWAR Миномет 2Б14-1 Поднос. zonwar.ru.
https://zonwar.ru/granatomet/minomet/2B14-1_Podnos.html

ZR Акация и Гвоздика: грозные самоходки в зоне СВО. Za Rulem (zr.ru), 2024.
https://www.zr.ru/content/articles/942499-akatsiya-i-gvozdika-samokhodnaya/

ZR2 Боевые машины десанта: на чем воюют в зоне СВО. Za Rulem (zr.ru), undated, c. 2024.
https://www.zr.ru/content/articles/940956-chem-vooruzheny-desantniki-v-zon/

ZR3 Novye osobye vezdekhody Plastun-SN. Za Rulem, 2023.
https://www.zr.ru/content/news/948692-novye-osobye-vezdekhody-plastu/

ZR4 СВОшный апгрейд: как БМД-2 получила защиту от дронов и современный модуль Берег. За рулём, 2026.
https://www.zr.ru/content/articles/982867-svoshnyj-apgrejd-kak-bmd2-pol/

ZR5 Avtomobili v pogonakh (За рулём). За рулём (zr.ru).
https://www.zr.ru/content/articles/966328-voennye-gruzoviki/

ZR6 Машина с револьвером — чем уникальна российская Хризантема. Za Rulem, undated (after 2022).
https://www.zr.ru/content/articles/971047-ptrk-hrizantema/

ZR7 Компоновка — старая, машина — новая: современные версии «мотольги». Za Rulem.
https://www.zr.ru/content/articles/963485-mt-lb-motolyga/

ZR8 Республика Беларусь в зоне СВО — война технологий. Za Rulyom (zr.ru).
https://www.zr.ru/content/articles/963236-respublika-belarus-v-zone-svo/

ZR9 Вот как можно улучшить проходимость любого транспорта — опыт военных (КРВД). Za Rulyom (zr.ru).
https://www.zr.ru/content/articles/963741-kompleks-vremennyh-dorog/

ZR10 Катюши нового поколения: Ураган и Торнадо работают в зоне СВО. За рулём, undated, after 2022.
https://www.zr.ru/content/articles/942236-katyushi-novogo-pokoleniya-uraga

ZR11 В зоне СВО появились бронеавтомобили нового поколения. Za Rulem, 2024.
https://www.zr.ru/content/articles/941588-tajfun-vdv-broneavtomobil-no/

ZR16 Geroi inzhenernykh voysk. Za Rulem.
https://www.zr.ru/content/articles/616786-zashhitniki-otechestva/

ZR24 «Zemledeliye»: kak miniruyut polya po tu storonu linii fronta. Za Rulem, 2024 or later (undated page).
https://www.zr.ru/content/articles/962576-isdm-zemledelie/

ZRRU БТР-МДМ Ракушка: без башни. За рулём (zr.ru), 2015.
https://www.zr.ru/content/articles/824306-btr-mdm-rakushka-bez-bashni/

ZTMDB ZALA 421-16E (ZALA Z-16 / Z-16-E). The Military Database.
https://themilitarydatabase.com/equipment/91

ZV22 Snaryady samokhodnykh minometov 2S4 Tyulpan probivayut dazhe trekhmetrovye betonnye steny. TV Zvezda, 2022-12-19.
https://tvzvezda.ru/news/20221219528-saWQS.html

ZVEZ Расчет ПТРК «Фагот» уничтожил наблюдательный пункт националистов в зоне СВО. TV Zvezda (Russian MoD), 2023-05-25.
https://tvzvezda.ru/news/2023525052-L3tlr.html

ZVEZ2 Bezoblachnoe Nebo-M v Krymu (Sokirko). TV Zvezda (Russian MoD media), 2017-04-24.
https://tvzvezda.ru/news/201704240824-qp30.htm

ZVEZ21 Oleg Kosenkov rasskazal, kakaya novaya tekhnika i vooruzhenie postupayut v zheleznodorozhnye vojska RF. TV Zvezda (Ministry of Defence channel), 2021-08-06.
https://tvzvezda.ru/news/202186151-Llzx6.html

ZVEZDA Gibka-S: gibkoe reagirovanie na ugrozy s vozdukha. Zvezda weekly (Russian MoD media), 2020-11.
https://zvezdaweekly.ru/news/20201151549-mnQDj.html

ZVEZDA2 Tornado-G crew of the Western group destroyed a concentration of Ukrainian troops (Zvezda). Zvezda (Russian MoD TV), 2026-09-30.
https://tvzvezda.ru/news/2026930144-E0AGM.html

ZVEZDA3 Морпехи-тихоокеанцы приварили к МТ-ЛБ 57-мм пушку. TV Zvezda (Russian MoD channel), 2023-07-20.
https://tvzvezda.ru/news/20237201259-Ao8gt.html

ZVEZDA4 Комплексы ПВО уничтожили основные силы группы беспилотников «противника». Zvezda TV (Russian MoD), 2019-04-08.
https://tvzvezda.ru/news/201904080434-q4zr.htm

ZVEZDA5 Использование БПЛА «Тахион» позволит повысить боевые возможности разведывательного подразделения ЦВО. TV Zvezda (MoD channel), 2020-12-28.
https://tvzvezda.ru/news/202012281555-vnVpf.html

ZVEZDA12 Снайперы ЗВО получили первые комплексы КРУС «Стрелец-М». TV Zvezda (Russian MoD broadcaster), 2019-12-25.
https://tvzvezda.ru/news/201912251655-hFTU3.html

ZVEZDA17 Prokliatie vrazheskoi pekhoty: chem strashna mina POM-3 (interview with developer NII). TV Zvezda (Russian MoD channel), 2017-09-26.
https://tvzvezda.ru/news/201709260758-b9rq.htm

ZVEZDA19 Army-2019: cassettes KPOM-3 and KPTM-4 shown. TV Zvezda (Russian MoD channel), 2019-06-27.
https://tvzvezda.ru/news/20196271031-VYIjI.html

Picture credits

Photographs are reproduced under the licences named, from Wikimedia Commons. None is cropped or altered other than scaled. Licence texts: creativecommons.org/licenses. Each page address is a link.

1B75 Penicillin p. 174
Allocer. CC BY-SA 3.0; GFDL (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Aistenok_radar_maks2009.jpg

1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex p. 230
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Engineering_Technologies_2010_Part4_0033_copy.jpg

1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex p. 230
Simon Q from United Kingdom. CC BY 2.0 (https://creativecommons.org/licenses/by/2.0).
https://commons.wikimedia.org/wiki/File:ACRV_M_1974(2)_IV15_(7528060300).jpg

1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles p. 231
Mcoffsky. Public domain (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:1B-18.JPG

1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles, 1V119 Reostat p. 231
Olegvdv68. Public domain (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:Reostat.JPG

1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles, 1V18 Klen p. 231
Andrey Butko (1978–). GFDL; CC BY-SA 3.0 (http://www.gnu.org/copyleft/fdl.html).
https://commons.wikimedia.org/wiki/File:2014-12-06._Площадка_Военной_техники_в_парке_Ленинского_комсомола_06.JPG

2A36 Giatsint-B 152 mm towed gun p. 135
Ministry of Defense of Ukraine. CC BY-SA 2.0 (https://creativecommons.org/licenses/by-sa/2.0).
https://commons.wikimedia.org/wiki/File:Артилеристи_ВМС_виконували_практичні_стрільби_з_гармат_«Гіацинт-Б»_11.jpg

2A65 Msta-B p. 135
One half 3544. Public domain.
https://commons.wikimedia.org/wiki/File:2A65_Msta-B.JPG

2B9 Vasilek p. 135
ShinePhantom. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:2B9_Vasilek_mortar-4058.JPG

2B14 Podnos p. 136
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Oboronexpo2014part3-20.jpg

2S1 Gvozdika p. 126
Srđan Popović. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:2S1_VS2.jpg

2S3 Akatsiya p. 127
Zimin.V.G.. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:2S3_Akatsiya_3259.jpg

2S3 Akatsiya p. 127
Kitaev Aleksey. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:2S3_Akatsiya_(24-04-2021).jpg

2S3 Akatsiya p. 127
Vladislav Falshivomonetchik (Владислав Фальшивомонетчик). CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:SA_Akacia.jpg

2S3 Akatsiya p. 127
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ArtilleryExercise2020-01.jpg

2S4 Tyulpan p. 128
Boevaya mashina. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:2S4_Tyulpan_ARMY-2022.jpg

2S5 Giatsint-S p. 128
One half 3544. Public domain (https://commons.wikimedia.org/wiki/Template:PD-self).
https://commons.wikimedia.org/wiki/File:2S5_Giatsint-S.jpg

2S7 Pion / 2S7M Malka p. 129
Boevaya mashina. CC BY-SA 3.0 de (https://creativecommons.org/licenses/by-sa/3.0/de/deed.en).
https://commons.wikimedia.org/wiki/File:2S7M_Malka_ready_to_fire_at_ARMY-2022.JPG

2S9 Nona-S p. 129
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:RehearsalTula02052017-08.jpg

2S12 Sani p. 130
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Oboronexpo2014part3-29.jpg

2S12 Sani p. 130
The Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:2S12A_-_Masters_of_artillery_fire_-_2017-01.jpg

2S12 Sani p. 130
Headquarters, Department of the Army (FM 100-2-3, June 1991). Public domain.
https://commons.wikimedia.org/wiki/File:2S12_on_GAZ-86_US_Army_manual.jpg

2S19 Msta-S p. 130
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:2S19M1_Msta-S.jpg

2S23 Nona-SVK p. 131
Smell U Later. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:2S23_Nona-SVK.jpg

2S25 Sprut-SD p. 99
Boevaya mashina. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:2S25_Sprut-SD_at_Army_2016.jpg

2S31 Vena p. 131
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:2S31_Vena_-_Oboronexpo2014part3-02.jpg

2S34 Khosta p. 131
Smell U Later. GFDL; CC BY-SA 3.0 (http://www.gnu.org/copyleft/fdl.html).
https://commons.wikimedia.org/wiki/File:2S34_Chosta.JPG

2S35 Koalitsiya-SV p. 132
Kirill Borisenko. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Koalitsyja-SV_during_the_'Armiya_2020'exhibition_(bright).jpg

2S40 Floks p. 132
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:2S40_Flox.jpg

3M14 Kalibr p. 147
Ministry of Defense of Russia. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Launch_of_the_Caliber_missile_from_the_Volkhov_submarine.jpg

9K79-1 Tochka-U p. 141
Vladislav Falshivomonetchik (Владислав Фальшивомонетчик). CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Tochka-U_rep_parad_Yekat.jpg

9K79-1 Tochka-U p. 141
Vladislav Falshivomonetchik (Владислав Фальшивомонетчик). CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Точка-У.jpg

9K79-1 Tochka-U p. 141
Unknown (US DoD image). Public domain.
https://commons.wikimedia.org/wiki/File:Soviet_SS-21.JPEG

9K79-1 Tochka-U p. 141
Vitaly V. Kuzmin. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:ParkPatriot2015part5-12.jpg

9K111 Fagot / 9K111-1 Konkurs, 9P135 launcher with 9M113 Konkurs tube p. 305
Mike1979 Russia. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:9P135_Fagot_missile_launcher_at_Engineering_Technologies_2012.jpg

9K111 Fagot / 9K111-1 Konkurs p. 305
Дмитрий Шутов (Dmitry Shutov). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:9K111_Fagot_(12-05-2021)_01.jpg

9K114 Shturm-S p. 115
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016demo-027.jpg

9K114 Shturm-S p. 115
Vitaly V. Kuzmin. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:ParkPatriot2015part5-46.jpg

9K120 Svir / 9K119 Refleks / 9K119M Refleks-M, 9M119F1 HE missile (3UBK14F1) p. 306
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:9M119F1_Invar-M.jpg

9P162 Kornet-T p. 115
Yevgeny Kel. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Kornet-T_in_1000th_Training_Center_of_Rocket_and_Artillery_Troops_01.jpg

96L6 all-altitude acquisition radar p. 168
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:96L6E_radar_radar_-_100th_Anniversary_VVS-R_-01.jpg

120 mm gun-mortar rounds (3OF49, 3OF50, 3BK19) p. 311
Smell U Later. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:120_mm_3VOF110_high_explosive_round_and_3VO32_cargo_bomb.JPG

120 mm mortar bombs (OF-843B and Iranian HE bomb) p. 311
Smell U Later. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:120_mm_3OF49_and_3OF36_high_explosive_rounds.JPG

122 mm howitzer rounds p. 311
Jeffery H. Morgan and Joyce Pittman (US Army NGIC). Public domain (https://www.law.cornell.edu/uscode/text/17/105).
https://commons.wikimedia.org/wiki/File:122_mm_OF-462.jpg

122 mm rockets (Grad, Tornado-G, Prima) p. 315
MKFI. Public domain.
https://commons.wikimedia.org/wiki/File:122_mm_raketti_Hämeenlinna_1.JPG

152 mm gun and howitzer rounds p. 312
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:152mm_lime-colored_projectile.jpg

220 mm rockets (Uragan) p. 315
Андрей Хохлушин. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Кассета_9H235_реактивного_кассетного_снаряда.jpg

220 mm rockets (Uragan) p. 315
State Emergency Service of Ukraine. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Rocket_from_BM-27_Uragan_in_Babai,_Kharkiv_Oblast_(1).jpg

220 mm rockets (Uragan) p. 315
Koswova. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Конструкція_9H210.jpg

220 mm thermobaric rockets (TOS-1A, TOS-2) p. 316
Ministry of Defence of the Russian Federation (photo: Konstantin Morozov). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:NBCProtectionExercise2019-15.jpg

220 mm thermobaric rockets (TOS-1A, TOS-2) p. 316
Main Directorate of the State Emergency Service of Ukraine in Kharkiv Oblast. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Demining_in_Kharkiv_Oblast_(2022-10-14)_16.jpg

300 mm rockets (Smerch, Tornado-S) p. 316
ShinePhantom. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:BM-30_Smerch-5193.JPG

300 mm rockets (Smerch, Tornado-S) p. 316
Андрей Хохлушин. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Кассета_9H235_реактивного_кассетного_снаряда.jpg

Aleut and Plastun articulated and light tracked carriers p. 255
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-448.jpg

ARK-1M Rys p. 175
ShinePhantom. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:1RL239_in_Togliatti_Technical_museum.jpg

ARS-14, TMS-65 and TZ-74 decontamination vehicles, ARS-14 p. 222
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:ARS-14_decontamination_vehicle_-_Rehersal-Alabino-2012-04.jpg

ARS-14, TMS-65 and TZ-74 decontamination vehicles, ARS-14KM p. 222
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:ARS-14KM_(1).jpg

ARS-14, TMS-65 and TZ-74 decontamination vehicles, TMS-65U p. 222
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:282-NBC-training-center-42.jpg

ARS-14, TMS-65 and TZ-74 decontamination vehicles, TMS-65D p. 222
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ChemicalExercise2018-12.jpg

Bal p. 145
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:CoastalMissileExercise2018-01.jpg

Barnaul-T p. 233
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:9S932-1_01.jpg

Barnaul-T p. 233
Doomych. Public domain.
https://commons.wikimedia.org/wiki/File:9S932-1_at_the_MAKS-2011_(01).jpg

Barnaul-T p. 233
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:MasteringTheArmament2018-05.jpg

Bastion-P p. 146
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:K-300P_Bastion-P.jpg

Bastion-P p. 146
Anastasiya Lvova. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Военная_парадная_техника_8.05.25_на_Пискарёвском_проспекте_24.jpg

Bastion-P p. 146
Сергей Шмидт СПБ. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Санкт-Петербург,_День_ВМФ_РФ._Дворцовая_площадь._Выставка_оружия._27.07.2019.jpg

BAT-2 p. 213
Kirill Borisenko. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Track_laying_vehicle_BAT-2M_during_the_"Armiya_2021"_exhibition.jpg

BAT-2 p. 213
ArmyInform. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:UA_BAT-2_01.jpg

BK-16 p. 297
Георгий Долгопский (Georgiy Dolgopskiy). CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Транспортно-десантный_катер_БК-16.jpg

BM-21 Grad 122 mm MRL p. 122
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-504.jpg

BM-21 Grad 122 mm MRL p. 122
Robert Wray. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Russian_BM-21_Grad_in_Saint_Petersburg.JPG

BM-21 Grad 122 mm MRL p. 122
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:CombatArtilleryExercise2018-01.jpg

BM-27 Uragan p. 122
Unknown author. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Uragan_MLRS_of_the_52nd_Artillery_Brigade_(2).png

BM-30 Smerch p. 123
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016demo-065.jpg

BM-30 Smerch p. 123
Boevaya mashina. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:BM-30_Smerch_ARMY-2018.jpg

BMD-1KSh-A p. 226
Alf van Beem. Public domain (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:BMD-1KSh,_БМД-1КШ,_Saint-Petersburg_pic1.JPG

BMD-2 p. 99
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:106th_Guards_Airborne_Division_(394-1).jpg

BMD-4M p. 100
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BMD-4_Army-2022_2022-08-20_2652.jpg

BMO-T p. 101
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:БМО-Т.jpg

BMP-1 p. 101
User:Jno. CC BY-SA 1.0 (https://creativecommons.org/licenses/by-sa/1.0).
https://commons.wikimedia.org/wiki/File:BMP-1_IFV_in_Russian_service.jpg

BMP-1KSh command and staff vehicle p. 226
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:ParkPatriot2015part11-131.jpg

BMP-2 p. 102
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:BMP-2_01.jpg

BMP-3 p. 103
Mike1979 Russia. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:BMP-3_infantry_fighting_vehicle_at_Engineering_Technologies_2012_01.jpg

BMP-3 p. 103
US Army (FMSO Red Star, January 1996); individual artist not named. Public domain (U.S. federal government work) (https://www.law.cornell.edu/uscode/text/17/105).
https://commons.wikimedia.org/wiki/File:BMP-3_line_drawing.gif

BMPT Terminator p. 104
Nickel nitride. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:Terminator_tank_support_combat_vehicle_on_Army_forum_2020-06-08.jpg

BMPT Terminator p. 104
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BMPT_Army-2022_2022-08-20_2196.jpg

BMR-3M p. 214
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Russia_Arms_Expo_2013_(531-10).jpg

BMR-3M p. 214
Russian MoD. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:SpecialEngineerExercise2019-07.jpg

Borisoglebsk-2 p. 188
Russian Ministry Of Defense. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Borisoglebsk-2.png

Borisoglebsk-2 p. 188
Денис Абрамов (Denis Abramov). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ECM_station_1.jpg

Borisoglebsk-2 p. 188
Ministry of Defense of Russia. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Electronic_warfare_complex_Borisoglebsk-2.jpg

Borisoglebsk-2 p. 188
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ElectronicWarfareExercise2018-01.jpg

BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars, BPM-97 Vystrel p. 109
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BPM-97_-_InnovationDay2013part1-34.jpg

BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars, KamAZ Patrul p. 109
Kirill Borisenko. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:KamAZ-435029_"Patrul"_during_the_"Armiya_2021"_exhibition.jpg

BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars, Buran p. 109
Kirill Borisenko. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Modular_armored_vehicle_"Buran"_during_the_"Armiya_2021"_exhibition_(front_view).jpg

BRDM-2 p. 109
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BRDM-2_-_ETIF-2010_(3).jpg

BRDM-2 p. 109
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BRDM-2_-_ETIF-2010_(1).jpg

BREM and BTS armoured recovery vehicles, BREM-L p. 220
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BREM-L_-_TankBiathlon14part2-09.jpg

BRM-1K p. 104
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-33.jpg

BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines, BTM-3 p. 214
Лапоть. CC0 (https://creativecommons.org/publicdomain/zero/1.0/).
https://commons.wikimedia.org/wiki/File:BTM-3_(side)_-_UMMC_Museum_Complex.jpg

BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines, PZM-2 p. 214
User:Cooper6. GFDL; CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:PZM-2_01.JPG

BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines, EOV-4421 p. 214
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Russian_EOV-4421_-_4th_Tank_Brigade.jpg

BTM-3, MDK-3, PZM-2 and EOV earthmoving and trenching machines, MDK-3 p. 214
ShinePhantom. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:MDK-3_ditching_machine_at_the_Togliatti_Technical_Museum.jpg

BTR-80, BTR-82A p. 110
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BTR-82A.jpg

BTR-80, BTR-70 p. 110
Torin. Public domain.
https://commons.wikimedia.org/wiki/File:BTR70_004.jpg

BTR-80 p. 110
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:13April-Rehersal-Alabino-52.jpg

BTR-90 Rostok p. 111
Msgevans00. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BTR-90,_Kubinka_tank_museum.jpg

BTR-D, BTR-ZD p. 105
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:BTR-ZD.jpg

BTR-D p. 105
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-252.jpg

BTR-MDM Rakushka p. 106
KonanRus. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:БТР-МДМ.jpg

Buk-M1 / Buk-M2 / Buk-M3, Buk-M3 TELAR p. 152
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Расчеты_ЗРК_«Бук-М3»_отразили_удар_условного_противника_по_пункту_базирования_кораблей_Каспийской_флотилии_в_Дагестане.jpg

Buk-M1 / Buk-M2 / Buk-M3, Buk-M2 TELAR p. 152
Boevaya mashina. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Buk_TELAR_Moscow_2015.jpg

Captured US vehicles in Russian use: M2 Bradley, M113, MaxxPro, M88A1 p. 118
Kirill Borisenko. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:M2A2_Bradley_on_captured_equipment_exhibition_in_Moscow_(front_view).jpg

Captured US vehicles in Russian use: M2 Bradley, M113, MaxxPro, M88A1 p. 118
not stated on the file page (category PD US Army). Public domain.
https://commons.wikimedia.org/wiki/File:M113A3_side.gif

D-20 p. 137
U.S. Embassy Chisinau. Public domain.
https://commons.wikimedia.org/wiki/File:152mm_D-20_Moldova.jpg

D-30 p. 137
Unknown (US Marine Corps / DoD image). Public domain.
https://commons.wikimedia.org/wiki/File:D-30_Soviet.jpg

DJI Mavic, Air, Mini and Matrice quadcopters (China) p. 265
C.Stadler/Bwag. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:DJI_-_Drohne_Mavic_3.JPG

DJI Mavic, Air, Mini and Matrice quadcopters (China) p. 265
Gaelle1106. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:DJI_Matrice_300_RTK.jpg

Dzyudoist p. 189
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:MoscowMissileDefence2020-07.jpg

Dzyudoist p. 189
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:MKTK-1A_Judoist_ECM_vehicle.jpg

Eleron-3SV, Eleron T-16 p. 266
Ministry of Internal Affairs of Ukraine. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Russian_drone_Eleron_T-16,_downed_in_Ukraine_(2023-08-08)_01.jpg

Fath-360 short-range ballistic missile (Iran) p. 142
M. Sadegh Nikgostar (Mohammad Sadegh Nikgostar, for Fars News Agency). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Sacred_Defence_Week_parade,_2022,_in_Tehran_(101).jpg

Forpost p. 271
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Forpost_UAV_Army-2022_2022-08-20_2284.jpg

Forpost, With vehicle trailer p. 271
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:UAVMonitoringExercise2018-05.jpg

FPV drones p. 279
National Police of Ukraine. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Russian_drones_with_explosive_in_Dnipropetrovsk_Oblast,_2024-02-11_(1).jpg

FPV drones p. 279
National Police of Ukraine. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Russian_drones_with_explosive_in_Dnipropetrovsk_Oblast,_2024-02-09_(1).jpg

FPV drones p. 279
National Police of Ukraine. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Russian_drones_with_explosive_in_Dnipropetrovsk_Oblast,_2024-02-11_(2).jpg

FSB Border Service patrol boats (Mangust, Sobol, Tunets) p. 297
Aleksandr Markin (Александр Маркин). CC BY-SA 2.0 (https://creativecommons.org/licenses/by-sa/2.0).
https://commons.wikimedia.org/wiki/File:Ship_of_a_coast_guard"Mongoose"_(7981710592).jpg

FSB Border Service patrol boats (Mangust, Sobol, Tunets) p. 297
Антон Блинов (Anton Blinov). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:NavyDay2018-02.jpg

Garmon p. 169
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:9S932-1_01.jpg

Garmon p. 169
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:9S932-1_02.jpg

GAZ-66 and GAZ-3308 Sadko light 4x4 trucks, GAZ-66B p. 246
Алексей Задонский. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:ГАЗ-66_(десантный_вариант)_в_музее_техники_Вадима_Задорожного.jpg

GAZ-66 and GAZ-3308 Sadko light 4x4 trucks, GAZ-66 p. 246
Bestalex. Public domain (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:GAZ-66_truck_of_Russian_Army.JPG

GAZ-66 and GAZ-3308 Sadko light 4x4 trucks, GAZ-3308 Sadko p. 246
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Interpolitex_2013_(534-3).jpg

GAZ-66 and GAZ-3308 Sadko light 4x4 trucks, GAZ-33081 p. 246
Апатинаити. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:ГАЗ-33081_Егерь_2_ПРМ.jpg

Geran-2, Iranian Shahed-136 and -131 p. 274
S. Hossein Alaei. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:National_Aerospace_Park_in_September_2023_(13).jpg

Gerbera p. 275
State Border Guard Service of Ukraine. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Russian_drone_Gerbera,_downed_in_Ukraine_(2025-01-05).jpg

Gibka-S p. 157
Nickel nitride. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:Army-2018-52.jpg

Grachonok p. 298
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:P-104_Nakhimovets.jpg

Grachonok p. 298
Георгий Долгопский (Georgiy Dolgopskiy). CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Катер_специального_назначения_проекта_21980_«Грачонок».jpg

Granat-1 / Granat-4, Granat-4 p. 266
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Granat-4_UAV_at_Interpolitex-2015.jpg

Granat-1 / Granat-4, Granat-1 p. 266
AnthonyWK. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:БЛА_Гранат-1.png

Igla / Igla-1 / Igla-S p. 165
US Navy EOD Technology Division (via Megapixie). Public domain; PDM (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:SA-16_and_SA-18_missiles_and_launchers.jpg

IMR-2 / IMR-2M / IMR-3M combat engineer vehicle p. 215
Kirill Borisenko. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Obstacle_clearing_vehicle_IMR-3_during_the_"Armiya_2021"_exhibition.jpg

Infauna p. 199
The Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:RB-531B_Infauna_01.jpg

Infauna p. 199
Игорь Руденко. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:JointPeacekeeperExercise2018-20.jpg

IRM Zhuk p. 206
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016demo-102.jpg

ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer, GMZ-2 tracked minelayer p. 217
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:GMZ-3_at_Engineering_Technologies_2012.jpg

ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer p. 217
Ministry of Defense of Russia. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Engineering_reconnaissance_and_firing_complex_Zemledelie_on_the_march.jpg

Iskander-M p. 143
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016demo-073.jpg

Ka-27 and Ka-29 p. 290
Unknown (US Navy). Public domain (Public Domain Mark) (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:Ka-27PL-Russia-1994.jpg

Ka-52 Alligator p. 284
Peer.Gynt. CC BY-SA 2.0 (https://creativecommons.org/licenses/by-sa/2.0).
https://commons.wikimedia.org/wiki/File:Kamov_Ka-52_Alligator.jpg

KamAZ-4310, -5350 and -6350 Mustang military trucks, KamAZ-5350 p. 247
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:KAMAZ-5350_military_truck_of_Russia.jpg

KamAZ-4310, -5350 and -6350 Mustang military trucks, KamAZ-6350 p. 247
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-478.jpg

KamAZ-4310, -5350 and -6350 Mustang military trucks p. 247
Nickel nitride. CC0 (https://creativecommons.org/publicdomain/zero/1.0/).
https://commons.wikimedia.org/wiki/File:K-5350_with_a_protected_cabine_-_Army-2022_29.jpg

Kasta 35N6 / 39N6 p. 169
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:39N6E_Kasta-2E2_radar_-_100th_Anniversary_VVS-R_-01.jpg

Kasta 35N6 / 39N6 p. 169
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:35N6_Kasta_radar_(1).jpg

Kh-22 and Kh-32 air-launched missiles p. 147
George Chernilevsky. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Kh-22NA_Kyiv_Museum_2018_G1.jpg

Kh-47M2 Kinzhal p. 147
Администрация Президента России (kremlin.ru). CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:МиГ-31_с_гиперзвуковой_ракетой_«Кинжал».jpg

Kh-59 Ovod family p. 148
Xchgall. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:X-59M3.JPG

Kh-69 p. 148
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Kh-69_Army-2022_2022-08-20_2322.jpg

Kh-101 and Kh-55 air-launched cruise missiles p. 148
George Chernilevsky. Public domain (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:Kh-55_AS-15_Kent_2016_G1.jpg

Kitolov-2 and Kitolov-2M laser-guided rounds p. 313
Mike1979 Russia. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0/).
https://commons.wikimedia.org/wiki/File:Kitolov_(artillery_ammunition).jpg

KM-8 Gran p. 313
Smell U Later. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0/).
https://commons.wikimedia.org/wiki/File:Gran_(artillery_ammunition).JPG

KN-23 and KN-24 (Hwasong-11) (North Korea) p. 144
Geoarchive. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Diagram_of_KN-23.svg

Kornet p. 307
Homoatrox. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Kornet_anti-tank_missile_(1).jpg

Kornet p. 307
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:9K135_Kornet_ATGM_-_IMG_29101200.jpg

Korsar p. 271
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:VictoryDayParade2018-26.jpg

Krasnopol, Krasnopol-M1, Krasnopol-M2 p. 314
Mike1979 Russia. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0/).
https://commons.wikimedia.org/wiki/File:2K25_Krasnopol.jpg

Krasukha-2 / Krasukha-4, Krasukha-4 p. 183
The Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:1RL257E_Krasukha-4.jpg

Krasukha-2 / Krasukha-4, Krasukha-2 p. 183
The Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:1L269_Krasukha-2.jpg

Krasukha-2 / Krasukha-4 p. 183
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:1RL257E_Krasukha-4_Army-2022_2022-08-20_2459.jpg

KUB-BLA p. 276
armyinform.com.ua. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:На_Київщині_Теробороні_збила_нові_БПЛА_РФ_«КУБ».png

Lancet p. 277
Nickel nitride. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:ZALA_Lancet_1.jpg

Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren p. 294
George Chernilevsky. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BDK_Novocherkassk_2012_G1.jpg

Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren p. 294
OlegErm. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Ivan_Gren_landing_ship_(1).jpg

Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren p. 294
PH2 Edward N. Vasquez, USN. Public domain; PDM (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:Peresvet(1).jpg

Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren p. 294
ru:Участник:Водник (Vodnik, Russian Wikipedia). GFDL; CC BY-SA 3.0; CC BY-SA 2.5 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Saratov2007Sevastopol.jpg

Large landing ships: Project 775 Ropucha, Project 1171 Tapir, Project 11711 Ivan Gren p. 294
Walle83. Public domain (PD-self).
https://commons.wikimedia.org/wiki/File:Ivan_Gren_class.GIF

Leer-2 p. 189
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:85Ya6_Leer-2_(2).jpg

Leer-3 p. 190
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-47.jpg

Leer-3, Orlan-10 UAV p. 190
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-49.jpg

Lesochek p. 199
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:RP-377UVM1L_-_4thTankDivisionOpenDay17p2-66.jpg

Lesochek p. 199
Nickel nitride. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:Army-2020-268.JPG

M-46 p. 138
Satunnainen2020. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:130k54_m46_ats_01.jpg

M-46 p. 138
US Department of the Army (federal government work). Public domain (https://www.law.cornell.edu/uscode/text/17/105).
https://commons.wikimedia.org/wiki/File:Fm100-2-3_-_The_Soviet_Army,_Troops,_Organization,_and_Equipment.pdf

M1989 Koksan (North Korea) p. 133
Stefan Krasowski. CC BY 2.0 (https://creativecommons.org/licenses/by/2.0).
https://commons.wikimedia.org/wiki/File:170mm_M1989_Koksan_-_North_Korea_Victory_Day-2013_01.jpg

M1991 and M-2024 240 mm multiple rocket launchers (North Korea) p. 124
Marine Corps Intelligence Activity (US Marine Corps). Public domain.
https://commons.wikimedia.org/wiki/File:240MM_rocket_launcher_M-1991.jpg

MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks p. 254
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:ParkPatriot2015part4-31.jpg

MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks p. 254
Georg Pik. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:Седельный_тягач_Русич.JPG

MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks p. 254
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:KamAZ-65225_tank_transporter.jpg

MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks p. 254
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-476.jpg

Merlin-VR p. 267
Ministry of Defence of the Russian Federation (Commons lists Unknown author). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Merlin-VR_(1).png

Merlin-VR p. 267
Ministry of Defence of the Russian Federation (Commons lists Unknown author). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Merlin-VR_(2).png

Metis, Metis-M1 with 9M131M missile p. 308
Mike1979 Russia. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Metis-M1_with_9M131M_missile_at_Engineering_Technologies_2012.jpg

Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/Mi-17 family) p. 287
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Mil_Mi-8MTV-5-1.jpg

Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/Mi-17 family) p. 287
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:MAKS-2017part3-018.jpg

Mi-8MT, Mi-8MTV-5, Mi-8AMTSh, Mi-8MTV-2 (Mi-8/Mi-17 family) p. 287
US Department of the Army (federal government work; Commons: author information lacking). Public domain (https://www.law.cornell.edu/uscode/text/17/105).
https://commons.wikimedia.org/wiki/File:Mil_Mi-8_HIP.png

Mi-8MTPR-1 p. 288
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:MAKS2015part6-44.jpg

Mi-24P/V and Mi-35M p. 285
Srđan Popović. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Mi-35M_VKS_RF_-_Odbrana_slobode_2019_Niš_1.jpg

Mi-26 Halo p. 289
US Department of the Army (federal government work; Commons: author information lacking). Public domain (https://www.law.cornell.edu/uscode/text/17/105).
https://commons.wikimedia.org/wiki/File:Mil_Mi-26_HALO.png

Mi-28N Night Hunter p. 285
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Mi-28N_of_Russian_VKS_in_Leningrad_Region.jpg

ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns p. 139
Любо Климентов. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:122_mm_howitzer_M1938_(M-30).jpg

MLZh-VF-VT p. 207
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:RailwayExercise2017-12.jpg

MMK bridge-mechanised complex p. 208
Vitaly V. Kuzmin. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:ParkPatriot2015part7-28.jpg

MMK bridge-mechanised complex p. 208
Vitaly V. Kuzmin. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:ParkPatriot2015part7-31.jpg

Mohajer-6 p. 272
Hamid Vakili. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Mohajer-6_(2).JPG

Molniya p. 278
Unknown author (Russian Ministry of Defence). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Molniya-2.png

Molniya p. 278
User:Zenwort. GFDL; CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Atlant-Aero-Molnija_(wreckage)_молния_20260702_02cr.jpg

MON-50 p. 322
Martin Olsson. GFDL; CC BY-SA 3.0; CC BY-SA 2.5 (http://www.gnu.org/copyleft/fdl.html).
https://commons.wikimedia.org/wiki/File:Non_armed_mon50_anti-personnel_clustermine.jpg

MON-90 p. 322
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Tyumen_higher_military_command_School_of_engineering_07.jpg

MON-100 directional fragmentation mine p. 323
Unknown author (US Government ORDATA database). Public domain; PDM (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:MON-100_1_(ORDATA).jpg

MON-200 directional mine p. 324
NATO Training Mission-Afghanistan. CC BY-SA 2.0 (https://creativecommons.org/licenses/by-sa/2.0).
https://commons.wikimedia.org/wiki/File:110906-F-HS721-310_(6124670508).jpg

Moskva-1 p. 184
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:MAKS2015part6-37.jpg

Moskva-1 p. 184
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Oboronexpo2014part2-58.jpg

Moskva-1 p. 184
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Oboronexpo2014part2-65.jpg

Moskva-1 p. 184
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:MAKS2015part6-43.jpg

MT-12 Rapira p. 134
55th "Zaporozhian Sich" Artillery Brigade. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:UA_55th_artillery_brigade_training_05.jpg

MT-LB p. 107
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:MT-LBVMK_(1).jpg

Murmansk-BN p. 184
Министерство обороны России. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Комплекс_РЭБ_Мурманск-БН.png

Nebo-M, Nebo-M RLM-M p. 170
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Nebo-M_03.jpg

Nebo-M, RLM-D and KU-RLK control cabin p. 170
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Nebo-M_01.jpg

Nebo-M, 48Ya6-K1 Podlet-K1 radar p. 170
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Podliot-K1.jpg

Nebo-SVU p. 170
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:1L13_Nebo-SV_deployed.jpg

Nebo-SVU p. 170
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:MAKS_Airshow_2013_(Ramenskoye_Airport,_Russia)_(523-56).jpg

Nebo-SVU p. 170
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:1L13_Nebo-SV_radar.jpg

Nebo-U p. 171
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:55Zh6U_Nebo-U.jpg

Niobiy p. 171
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-401.jpg

Oborona-14 p. 171
A.R.. Public domain.
https://commons.wikimedia.org/wiki/File:P-14_tk.jpg

Orion p. 272
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Orion_UAV_Army-2022_2022-08-20_2412.jpg

Orlan-10 p. 268
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Orlan-10_UAV_Army-2022_2022-08-20_2287.jpg

Orlan-10 p. 268
Ministry of Defense of Russia. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Orlan-10_on_the_launch_catapult.jpg

OZM-72 bounding fragmentation mine p. 324
Sergeev Pavel. CC0 (https://creativecommons.org/publicdomain/zero/1.0/).
https://commons.wikimedia.org/wiki/File:Soviet_Anti-personnel_landmines_OZM-72.jpg

P-18 Terek p. 172
Charly Whisky. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:P-18_radar_on_Ural-4320_&_Ural-375D_trucks.jpg

Palantin p. 190
Ministry of Defense of Russia. CC BY 4.0 (also CC BY-SA 4.0) (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Развертывание_РЭБ_Палантин_на_учениях.jpg

Palantin p. 190
Ministry of Defense of Russia. CC BY 4.0 (also CC BY-SA 4.0) (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Подразделение_РЭБ_Палантин_на_марше.jpg

Pantsir-S1 p. 158
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-384.jpg

PMN, PMN-2, PMN-4 p. 327
Reedhawk. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Anti_personnel_mine.JPG

PMP heavy folding pontoon bridge park p. 210
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Openwater2016-03.jpg

PMP heavy folding pontoon bridge park p. 210
Zinnsoldat. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:KrAZ-255_PMP_Pontoon_Bridge.jpg

PMP heavy folding pontoon bridge park p. 210
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:OpenWater2017qualifying-05.jpg

Polyana-D4 p. 233
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Polyana-D4M1_-_TVM2012ch3p1photo068.jpg

Project 1176 Akula landing craft p. 295
Alex omen. CC BY 3.0 (https://creativecommons.org/licenses/by/3.0).
https://commons.wikimedia.org/wiki/File:ДКА_Д-704_в_Амурском_заливе_2010.07.25.JPG

PRP-4A Argus / PRP-4M Deytery p. 234
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Russia_Arms_Expo_2013_(531-23).jpg

PRP-4A Argus / PRP-4M Deytery p. 234
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-510.jpg

PRP-4A Argus / PRP-4M Deytery p. 234
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:PRP-4M_1.jpg

PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry p. 211
Алексей Китаев (Aleksey Kitaev). CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:PTS-4_RAE-2013_1.jpg

PU-12M7 p. 234
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Punkt_ipravleniya_PU-12M7.jpg

R-142N Deimos-N, R-142N p. 236
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:R-142N_command_vehicle.jpg

R-142N Deimos-N, R-142NSA p. 236
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Interpolitex_2012_(480-21).jpg

R-145BM Chayka command and staff vehicle p. 227
VargaA. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:R-145BM_Berekfurdo_2018_01.jpg

R-149 command and staff vehicles p. 228
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Вновь_сформированную_мотострелковую_бригаду_ЦВО_оснастили_новыми_бронемашинами_связи_Р-149МА1_01.jpg

R-149 command and staff vehicles p. 228
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:R-149AKSh_-_SignalExercise2017-01.jpg

R-149 command and staff vehicles p. 228
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:R-149BMR_-_ETIF-2010_(1).jpg

R-149 command and staff vehicles p. 228
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:RaceofHeroes072016-38.jpg

R-149 command and staff vehicles p. 228
Mike1979 Russia. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:R-149MA1_command_vehicle_at_Engineering_Technologies_2012.jpg

R-166 Artek, R-166-0.5 p. 237
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Parad2014NN-19.jpg

R-166 Artek, R-166 on KamAZ p. 237
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:R-166_radiostation.jpg

R-330B Mandat-B and R-934BMV p. 191
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:R-330B_Mandat-B.jpg

R-330B Mandat-B and R-934BMV p. 191
Денис Абрамов (Denis Abramov). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ECM_station_2.jpg

R-330M1P Diabazol p. 191
Denis Abramov. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:R-330Zh_Zhitel_jammer.jpg

R-330Zh Zhitel p. 192
Denis Abramov. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:R-330Zh_Zhitel_jammer.jpg

R-330Zh Zhitel p. 192
Vitaly V. Kuzmin. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:ParkPatriot2015part9-60.jpg

R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations, R-410-7.5 p. 237
ShinePhantom. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Part_of_R-410-7,5_tropospheric_radio_relay_communication_station._Technical_museum_Togliatti-0480.JPG

R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations p. 237
ShinePhantom. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Unknown_in_Technical_museum_Togliatti-0485.JPG

R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations p. 237
Bernhard Gröhl. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Bunker_Wollenberg-6.JPG

R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations, R-412MB p. 237
Homoatrox. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Milex-2019_exhibition_(Minsk,_Belarus)_—_Выставка_Milex-2019_(Минск,_Беларусь)_00009.jpg

R-416GM Granit-M radio relay station p. 238
Владислав Белогруд (Vladislav Belogrud). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Радиорелейный_комплекс_связи_Р-416ГМ_«Гранит-М».jpg

Raptor p. 299
Andrewrabbott. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Russian_Navy_Raptor_near_Kronstadt.jpg

Redut-2US p. 239
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ConfidentReception2018-05.jpg

Redut-2US p. 239
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ConfidentReception2018-02.jpg

Redut-2US p. 239
Georgiy Minesashvili / Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:CommandExercise2016-04.jpg

Redut-2US p. 239
Ministry of Defense of Russia. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Комплекс_Палантин_в_походном_положении.jpg

REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles p. 221
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-332.jpg

REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles p. 221
Vitaly V. Kuzmin. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Interpolitex2015part2-48.jpg

REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles p. 221
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:KT-L_-_26april_52.jpg

REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles p. 221
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-334.jpg

RKhM CBRN reconnaissance vehicles, RKhM-6 p. 222
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-495.jpg

RKhM CBRN reconnaissance vehicles, RKhM-8 p. 222
Nickel nitride. CC0 (https://creativecommons.org/publicdomain/zero/1.0/).
https://commons.wikimedia.org/wiki/File:RKhM-8_03.jpg

RKhM CBRN reconnaissance vehicles, RKhM-9 p. 222
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:RKhM-9_Army-2022_2022-08-20_2303.jpg

RKhM CBRN reconnaissance vehicles, BRDM-2RKh p. 222
ShinePhantom. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:BRDM2-RH_in_Technical_museum.JPG

Rtut-BM p. 201
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:MAKS2015part6-55.jpg

S-60 p. 159
Arest128. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:S-60_AA_gun_with_in_new_FC_radar_in_the_back.jpg

S-60 p. 159
АрміяInform. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:UA_S-60_on_KrAZ_01.jpg

S-300PM / S-300PS p. 153
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:S-300PM2_launch_vehicle,_2009_military_parade.jpg

S-300PM / S-300PS p. 153
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:414th_Guards_Anti-Aircraft_Rocket_Regiment's_S-300PS_in_Tiksi_(03-04-2020)_01.jpg

S-300V4, TELAR p. 154
Alexey Ivanov. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Army-2018-05.jpg

S-350 Vityaz, TELAR p. 154
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:S-350E_Vityaz_-_MAKS2013firstpix01.jpg

S-400 Triumf p. 155
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Alabino05042017-68.jpg

S-400 Triumf p. 155
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:S-400_Triumf-34.jpg

S-400 Triumf, radar p. 155
vitaly kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:92N6A_radar_for_S-400.jpg

Serna p. 296
Anton Blinov (Ministry of Defence of the Russian Federation, mil.ru). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:«Д-156».jpg

Shipovnik-Aero p. 196
Mike1979 Russia. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Shipovnik_ECM_vehicle_(KAMAZ-4350)_at_Engineering_Technologies_2012.jpg

SNAR-10 / SNAR-10M1 Leopard p. 176
Yevgeny Kel. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ArtilleryExercise2014-07.jpg

Sobolyatnik p. 176
Ministry of Defense of Russia. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:РЛС_Соболятник.jpg

Strela-10 and Osa short-range SAM p. 160
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016demo-081.jpg

Strelets p. 240
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:4thTankDivisionOpenDay17p2-03.jpg

Strelets p. 240
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Артиллеристы_морской_пехоты_Каспийской_флотилии_впервые_провели_учение_с_использованием_комплекса_«Стрелец».jpg

Strelets, PDU-4 p. 240
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:PDU-4_-_4thTankDivisionOpenDay17p2-33.jpg

Strelets, SBR-5M Fara-VR radar, good for that entry p. 240
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:SBR-5M_-_4thTankDivisionOpenDay17p2-34.jpg

Stupor, Garpun-3 and LPD-801 handheld jammer guns p. 201
Kirill Borisenko. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:LPD-801_UAV_suppressor_during_the_"Armiya_2023"_exhibition.jpg

Supercam S350 p. 269
Supercamaero. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:BBC_Supercam_S350.jpg

Supercam S350 p. 269
Supercamaero. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Supercam_S350.jpg

Svet-KU p. 197
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-55.jpg

Svet-KU p. 197
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-54.jpg

T-54 / T-55 p. 94
No machine-readable author provided. Ttreudler~commonswiki assumed (based on copyright claims).. Public domain (https://creativecommons.org/publicdomain/mark/1.0/).
https://commons.wikimedia.org/wiki/File:T-55A_1.jpg

T-54 / T-55 p. 94
Sergey Bobylev @ Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Army-2016_(2016-09-07)_-_08.jpg

T-54 / T-55 p. 94
Orlovic. CC BY-SA 3.0; GFDL (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:T-55_drawing.jpg

T-62 p. 95
Nickel nitride. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:T-62M_-_Army-2023-14.jpg

T-62 p. 95
Nickel nitride. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:T-62M_-_Army-2023-15.jpg

T-64A/B/BV p. 95
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:T-64BV_mod.1987.jpg

T-64A/B/BV p. 95
Донор. GFDL; CC BY-SA 3.0 (http://www.gnu.org/copyleft/fdl.html).
https://commons.wikimedia.org/wiki/File:T-64BV_(2010).jpg

T-64A/B/BV p. 95
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:T-64BVK_commander_version.jpg

T-72B3/B3M p. 96
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Alabino05042017-40.jpg

T-72B3/B3M p. 96
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:T-72B3_-_TankBiathlon2013-09.jpg

T-72B3/B3M p. 96
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:138th_Guards_Motorized_Rifle_Brigade's_exercise_(02-03-2021)_01.jpg

T-72B3/B3M p. 96
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:T-72B_mod._1989_01.jpg

T-80B/BV/BVM, T-80U p. 97
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:T-80BVM_MBT_Army-2022_2022-08-20_2400.jpg

T-80B/BV/BVM, T-80U p. 97
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:T-80BVM.jpg

T-80B/BV/BVM, T-80U p. 97
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:4thTankBrigade_-_T-80U_-45.jpg

T-80B/BV/BVM, T-80U p. 97
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:T-80BVM_(2).jpg

T-90 p. 98
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:T-90M_MBT_Army-2022_2022-08-20_2397.jpg

T-90 p. 98
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:T-90M.jpg

T-90 p. 98
Тухачевский. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:T-90M.jpg

T-90 p. 98
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:13April-Rehersal-Alabino-21.jpg

Takhion p. 269
Nickel nitride. CC0 (https://creativecommons.org/publicdomain/zero/1.0/).
https://commons.wikimedia.org/wiki/File:Army-2020-265.JPG

TDA-2K, TDA-3 and TDM-2K smoke generator vehicles p. 223
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Smoke_vehicle_TDA-3_(1).jpg

TDA-2K, TDA-3 and TDM-2K smoke generator vehicles p. 223
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ChemicalExercise2018-03.jpg

Tigr and Vodnik armoured cars, Tigr p. 112
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:12aprilrehearsal_23.jpg

Tigr and Vodnik armoured cars, Tigr-M p. 112
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Engineering_Technologies_-_2012_(3-12).jpg

Tigr and Vodnik armoured cars, Tigr-M SpN p. 112
Kirill Borisenko. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:ASN-233115_with_additional_protection_kit_during_the_"Armiya_2023"_exhibition.jpg

Tigr and Vodnik armoured cars, Vodnik p. 112
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP1-32.jpg

TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge, MTU-72 p. 212
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016demo-097.jpg

TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge, TMM-3 p. 212
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:EngineerFieldRide2017-02.jpg

TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge p. 212
Gwafton. CC BY-SA 3.0; GFDL (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Truck2_Zamárdi.jpg

TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge p. 212
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:TankBiathlon14final-92.jpg

Tor p. 161
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016demo-095.jpg

Tor p. 161
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:9A331_Tor-M1_-_Engineering_technologies_2012_(1).jpg

Tor p. 161
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:4thTankDivisionOpenDay17p1-44.jpg

Tornado-G p. 124
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016demo-061.jpg

Tornado-G p. 124
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016demo-062.jpg

TOS-1A Solntsepek p. 125
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Army2016-487.jpg

Tunguska p. 162
Boevaya mashina. CC BY-SA 3.0 de.
https://commons.wikimedia.org/wiki/File:2S6M1_Tunguska_M1_at_ARMY-2016.JPG

Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks, Typhoon-K 6x6 p. 113
Alexey Vasilenko. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:KAMA3-63968.jpg

Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks, Typhoon-K 4x4 p. 113
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:VictoryDayParade2018-13.jpg

Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks p. 113
Nickel nitride. CC0 (https://creativecommons.org/publicdomain/zero/1.0).
https://commons.wikimedia.org/wiki/File:K-4386_AMN-D_02.jpg

Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks, Typhoon-U p. 113
Boevaya mashina. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Ural_63095_right_side.jpg

Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks p. 113
General Staff of the Armed Forces of Ukraine. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Abandoned_Russian_Linza_ambulance_01.jpg

UAZ-469, UAZ-452 and UAZ-39094 utility vehicles p. 249
Novoklimov. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:UAZ-469B_(3151)_file_01.jpg

UAZ-469, UAZ-452 and UAZ-39094 utility vehicles p. 249
Alf van Beem. CC0 (http://creativecommons.org/publicdomain/zero/1.0/deed.en).
https://commons.wikimedia.org/wiki/File:UAZ-469_pic2.JPG

UR-77 Meteorit p. 216
Vladimir Sappinen. CC BY 3.0 (https://creativecommons.org/licenses/by/3.0/).
https://commons.wikimedia.org/wiki/File:Verkhnyaya_Pyshma_Tank_Museum_2012_0159.jpg

Uragan-1M p. 125
Ministerstwo Obrony Rossijskoj Federazii (Министерство обороны Российской Федерации / Ministry of Defence of the Russian Federation). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Ураган-1М_-_Тренировка_курсантов_Михайловской_военной_артиллерийской_академии_02.jpg

Ural-6370, -63706 and -532301 trucks (newer Ural family), Ural-6370 p. 251
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Ural-6370,_Engineering_technologies_2012_(1).jpg

Ural-6370, -63706 and -532301 trucks (newer Ural family), Tornado-U p. 251
GennadyL. CC0 (https://creativecommons.org/publicdomain/zero/1.0/).
https://commons.wikimedia.org/wiki/File:Автомобиль_ТОРНАДО.jpg

Ural-6370, -63706 and -532301 trucks (newer Ural family) p. 251
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:TOS-2_on_Ural-63706_Army-2022_2022-08-20_2300.jpg

Uran-6 p. 216
Kirill Borisenko. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:Multifunctional_robotic_mine_sweeping_system_"Uran-6"_during_the_"Armiya_2020"_exhibition.jpg

Uran-6 p. 216
Russian MoD. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Uran-6.jpg

Verba p. 165
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:9K333_Verba_MANPAD_at_Military-technical_forum_ARMY-2016_01.jpg

Vityaz DT-10, DT-20 and DT-30 p. 256
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:DT-10PM_-_Bronnitsy256.jpg

Vityaz DT-10, DT-20 and DT-30 p. 256
Алексей Китаев. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:DT-30P1_Vityaz_1.jpg

Vityaz DT-10, DT-20 and DT-30 p. 256
Ministerstwo Obrony Rossijskoj Federazii (Министерство обороны Российской Федерации / Ministry of Defence of the Russian Federation). CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:ДТ-10ПМ_-_Испытания_новых_и_перспективных_образцов_вооружения,_военной_и_специальной_техники_в_условиях_Арктики_03.jpg

Voronezh-DM p. 178
Vadim Savitsky. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Voronezh_radar_(2011-11-28).jpg

ZALA 421-16E p. 270
Mike1979 Russia. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:ZALA_421-16E2_Army-2022_2022-08-20_2391.jpg

ZALA 421-16E p. 270
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:ZALA_421-16E_ISSE-2012_01.jpg

Zastava p. 270
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Bird-Eye_400.jpg

ZFB-05 or Tiger 4x4 armoured personnel carrier (China) p. 118
RG72. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:ZFB-05_in_the_2nd_China_(Mianyang)_Science_&_Technology_City_International_Hi-Tech_Expo_03.jpg

ZIL-131 and KrAZ-255/260 legacy 6x6 trucks, KrAZ-255B p. 252
Vitaly V. Kuzmin. CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0).
https://commons.wikimedia.org/wiki/File:KrAZ-255B_military_truck.jpg

ZIL-131 and KrAZ-255/260 legacy 6x6 trucks, ZIL-131 p. 252
Stanislav Kozlovskiy. CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0).
https://commons.wikimedia.org/wiki/File:Zil-131-Russian-army.jpg

ZIL-131 and KrAZ-255/260 legacy 6x6 trucks, ZIL-131 tanker p. 252
Don S. Montgomery. Public domain (https://www.law.cornell.edu/uscode/text/17/105).
https://commons.wikimedia.org/wiki/File:ZIL-131_fuel_truck.JPEG

Zoopark-1 / Zoopark-1M p. 177
Boevaya mashina. CC BY-SA 3.0 de (https://creativecommons.org/licenses/by-sa/3.0/de/deed.en).
https://commons.wikimedia.org/wiki/File:1L219_Zoopark-1_radar_Tula_2016.JPG

ZSU-23-4 Shilka p. 162
Ministry of Defence of the Russian Federation. CC BY 4.0 (https://creativecommons.org/licenses/by/4.0).
https://commons.wikimedia.org/wiki/File:Anti-AircraftExercise2016_08.jpg

ZSU-23-4 Shilka p. 162
US Army (not credited on page). Public domain (US federal government work) (https://www.law.cornell.edu/uscode/text/17/105).
https://commons.wikimedia.org/wiki/File:ZSU234graphic2.gif

ZU-23-2 p. 163
Lt Col Joe B. Myers, US Army Foreign Science and Technology Center. Public domain (US federal government work) (https://www.law.cornell.edu/uscode/text/17/105).
https://commons.wikimedia.org/wiki/File:ZU-23_anti-aircraft_gun_ready_for_fire.jpg