

Janne's Guide to **Russian Ground Equipment**

Field reference for recognition and unit association

182 systems: armoured vehicles, fires, air defence, radars, electronic warfare, engineers, command and signals, logistics and uncrewed systems. What each looks like, which units hold it, how far it reaches.

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ARMoured VEHICLES	FIRES	AIR DEFENCE	RADARS	ELECTRONIC WARFARE	ENGINEERS	COMMAND AND SIGNALS	LOGISTICS	UNCREWED SYSTEMS

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About this guide

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

This is an open source (OSINT) guide to the equipment used by the Russian Ground Forces. It fills a need identified in Finnish Defence Forces reservist training exercises: lack of up-to-date, openly available guides to the equipment our most probable opponent uses that could be easily perused without Internet access, or even without any electronic devices.

It is made to be printed and carried, as an A5 booklet or on A4 sheets. 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. Entries are grouped by role, from armoured vehicles to drones, and the tables at the back let you look a system up by designation, NATO reporting name or Cyrillic name, see which unit types hold what, and compare ranges and mobility.

Everything in it comes from open sources: reference works, Russian official, industry and specialist publications, Western and Ukrainian analysis and defence journalism, and photo-documentation of equipment seen in the war in Ukraine. Each entry lists its sources by code at its foot, and the source register at the back gives them in full. Entries are researched and drafted with the help of AI tools, then checked claim by claim against their sources in a separate pass.

This is a private project, not a publication of the Finnish Defence Forces or any other authority, and it contains only openly published information.

Status of this proof. This proof holds 182 entries, all checked claim by claim against their sources. A random audit on 6–7 October drew 100 of the 3,428 printed facts (stratified by fact type, unit rows and recognition cues oversampled); 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 (90 per cent interval 0.1 to 4.7; 6 per cent counting overstatements). Figures may still be wrong. Do not use this proof operationally.

Feedback. Corrections, better photographs and suggestions are welcome by email to jannesguide@pm.me or on Signal, username [jmkorhonen.32](#). Please give the edition, its date and the page number, all printed at the foot of every page, 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; a row may name the subunit that holds it and the number held. *Numbers* gives inventory totals and confirmed losses where no holding unit is named. Each row ends with a tag of three parts, such as [D 2016 H](#): basis, date and confidence. Basis is D for doctrinal tables of organisation, O for observed with an identified unit, R for reported or claimed. Confidence is H, M or L. *Indicates* says what seeing the equipment may tell about the unit nearby, and no more than the rows above support.

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 wheel counts and small details last and marked "close only". Each starts with the part it describes. *Confused with* names the types a reader really mistakes for this one, each with one checkable cue; a lead-in such as *Full view*, *Chassis hidden*, *Deployed*, *from afar* or *From above* says when the cue works, and "not decisive alone" warns that a second cue is needed. Cues marked "from photograph" rest 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. Unknown values are printed INA. The *Sources* line names the sources by code (resolved in the source list 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.

Caution. Since 2022, army and district assets are often parcelled out to groupings of forces, new formations are under strength, and legacy or civilian vehicles appear in any unit. Equipment indicates a unit type. It does not prove it.

TR	Tracked, cross-country	TR-A	Tracked, amphibious
WH-AT	Wheeled all-terrain	WH-AT-A	Wheeled all-terrain, amphibious
WH-LT	Wheeled, limited off-road	RD	Roadbound, hard surface only
TW	Towed	MP	Man-portable
AIR-RW	Helicopter	AIR-FW	Fixed-wing aircraft
FX	Fixed installation		

1 Armoured vehicles

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	MOB.	PAGE
MBTS AND TANK SUPPORT					
BMP1 Terminator	—	БМПТ «Терминатор»	Tank support vehicle · 2018	TR	6
T-54 / T-55	—	Т-54, Т-55	Medium tank · 1946	TR	6
T-62	—	Т-62	Medium tank with 115 mm smoothbore gun · 1961	TR	7
T-64A/B/BV	—	Т-64Б	Main battle tank, 3-man crew with autoloader · 1967	TR	7
T-80B/BV/BVM, T-80U	M1989	Т-80	Main battle tank with gas turbine · 1978	TR	8
T-90	—	Т-90 «Валгунир»	Main battle tank · 1992	TR	9
TRACKED IFVS, APCS AND CARRIERS					
Aleut and Plastun articulated and light tracked carriers	—	ГА3-3344-20 «Алеут»	Two-unit unarmoured · 2018	TR	10
BMD-2	M1981/1, M1970	БМА-2	Air-droppable amphibious tracked IFV of the VDV · 1969	TR-A+AD	10
BMD-4M	—	БМА-4М	Air-droppable amphibious tracked IFV of the Airborne Forces · 2004	TR-A+AD	11
BMO-T	—	БМО-Т	Heavy flamethrower-crew carrier on T-72 chassis, carries RPO-A rocket flamethrowers · 2001	TR	11
BMP-1	M-1967	БМП-1	Amphibious tracked infantry fighting vehicle, 73 mm gun and ATGM, 3 crew and 8 infantry · 1966	TR-A	11
BMP-2	M1981	БМП-2	Tracked amphibious IFV · 1980	TR-A	12
BRM-1K	M1976/2	БРМ-1К	Tracked amphibious combat reconnaissance vehicle on BMP-1 chassis · 1972	TR-A	12
BTR-D	M1979	БТР-Д	Airborne tracked APC on a lengthened BMD-1 hull · 1974	TR+AD	13
BTR-MDM Rakushka	—	БТР-МДМ «Пакушка»	Airborne tracked amphibious APC and carrier chassis for VDV · 2016	TR-A+AD	13
MT-LB	M1970	МТ-ЛБ	Light armoured amphibious tractor and APC · 1964	TR-A	14
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	15
BRDM-2	—	БРДМ-2	Amphibious 4x4 armoured scout car for reconnaissance and patrol · 1962	WH-AT-A	15
BTR-80	M1978	БТР-80	Wheeled 8x8 amphibious APC · 1971	WH-AT-A	16
BTR-90 Rostok	—	БТР-90 «Росток»	8x8 amphibious armoured personnel carrier with 30 mm turret · 2008	WH-AT	17
Tigr and Vodnik armoured cars	—	ГА3-233014 «Тигр», «Водник»	Light 4x4 armoured cars for escort, reconnaissance, patrol and troop carriage · 2006	WH-AT	18
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	WH-AT	19
ANTI-TANK GUIDED MISSILES					
9K111 Fagot / 9K111-1 Konkurs	AT-5 SPANDREL	9K111-1 «Конкурс»	Wire-guided SACLOS anti-tank missiles on a common launcher · 1970	MP+AD	19
9K114 Shturm-S	AT-6 SPIRAL	9K114 «Штурм-С»	Self-propelled radio-command anti-tank missile launcher on MT-LB, 12 missiles · 1979	TR-A	20
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M	AT-11 SNIPER	9K119 «Рефлекс»	Laser-guided ATGM fired from a tank's 125 mm smoothbore gun · 1985	NA	20
Khrizantema-S	AT-15 SPRINGER	9K123 «Хризантема-С»	Tracked tank destroyer on BMP-3 hull · 2005	TR-A	20
Kornet	AT-14 SPRIGGAN	9K135 «Корнет»	Laser beam-riding heavy ATGM, portable or vehicle-mounted, vs tanks and bunkers · 1998	MP	21
Metis	AT-7 SAXHORN	9K115 «Мемус»	Man-portable wire-guided · 1978	MP+AD	22

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	7 Command and signals	82
BMD-1KSh-A	Airborne battalion chief-of-staff command and staff vehicle	7 Command and signals	82
R-149 command and staff vehicles	Tactical command and staff vehicles with HF/VHF radios and data terminals	7 Command and signals	83
R-145BM Chayka command and staff vehicle	Turretless radio command and staff vehicle for mobile command posts	7 Command and signals	82
VTS Ladoga	Armoured command, staff and reconnaissance vehicle for NBC conditions	7 Command and signals	83
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	Tracked command, observation and fire direction vehicles, SP howitzer battalion	7 Command and signals	83
PRP-4A Argus / PRP-4M Deytery	Mobile artillery reconnaissance post on BMP-1 chassis	7 Command and signals	85
Zoopark-1 / Zoopark-1M	Tracked radar that locates enemy guns, mortars, rockets and missile launchers	4 Radars	55
ARK-1M Rys	Artillery weapon-locating and fire-control radar	4 Radars	54
SNAR-10 / SNAR-10M1 Leopard	Tracked battlefield surveillance and artillery-adjustment radar	4 Radars	54
Borisoglebsk-2	Tactical HF/VHF/UHF radio intercept, direction-finding and jamming complex	5 Electronic warfare	60
Strela-10 and Osa short-range SAM	Short-range SAM	3 Air defence	45
Tunguska	Tracked short-range gun and missile air defence vehicle, 30 mm guns and SAMs	3 Air defence	46
Tor	Short-range tracked SAM with own radars	3 Air defence	46
IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	Tank-based heavy engineer vehicle for obstacle and minefield clearing	6 Engineers	75
BMR-3M	Armoured mine-clearing vehicle on T-90 chassis with roller tawl	6 Engineers	74
UR-77 Meteorit	Tracked mine-clearing vehicle firing rocket-towed explosive line charges	6 Engineers	75
IRM Zhuk	Amphibious engineer reconnaissance of routes, water obstacles and minefields	6 Engineers	72
BREM and BTS armoured recovery vehicles	Armoured recovery and repair vehicles for tank and infantry vehicle units	6 Engineers	77
RKhM CBRN reconnaissance vehicles	Radiation, chemical and biological reconnaissance	6 Engineers	79

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](#)

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. 9](#) 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, CCO

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

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

SOURCES ATP CNA DUA IISS25 INTFX IZV2 JANESRG MIL14 MIL15 NEWSRU2 ORYX1 PROF RUBR RWW TENC2 TWZ5 WEG24 WP-EN32 WP-RU39 WP-RU44 WP-RU45 WWW1A2 WWW1B2

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.

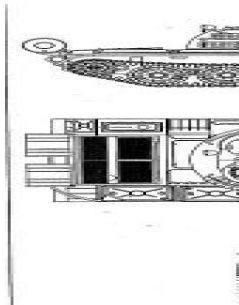
Suspension Close only: five road wheels, distinct gap between 1st and 2nd; idler front, sprocket rear; no return rollers. Hull length 6.2 m (T-55A), 6.04 m (T-54).

CONFUSED WITH T-62 [p. 7](#) 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. 7](#) 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.

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

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). 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. T-55A Hull 6.2 m (T-54 6.04 m); enlarged driver's hatch and turret hatch coamings; late ones have rubber skirts. T-55AM Add-on BDD armour with armour band round the turret, rubber side skirts, thermal sleeve on the gun. T-55AMV As T-55AM but with explosive reactive armour on glacis, turret and sides in place of the BDD armour.



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

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
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]

Road range 400 km WEG figure; fuel load not stated

Fording 1.4 m unprepared; 5.5 m with snorkel Not amphibious

Ground pressure 0.81 kg/cm2 Jane's figure is for T-54

Length, gun forward 9.00 m Jane's figure is for T-54

Vertical obstacle 0.8 m

Rate of fire, main gun 4 rounds/min 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

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]

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]

Penetration, 3BM-8 APDS 275 mm at 2 km Round introduced 1967; armour type not stated. WEG text copies ENWP: one lineage

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

SOURCES ATP BABEL DEFUA9 FAS15 IISS25 JANESRG MIL72 ORYX1 WEG91 WEG2015 WP-EN113 WP-RU175

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 [\[R 2024-02 L\]](#)

NUMBERS Holdings 600 T-62M/MV in the Army (IISS estimate), plus T-62 types among 2,900+ tanks in store [\[2024\]](#)

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. 6](#) 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.

SOURCES ATP ESPRESO FAS15 FAS16 IISS25 JANESRG MIL73 ORYX1 RSUPPLY RWW UKMOD UNIAN6 WEG92 WEG2015 WP-EN34 WP-RU176



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

T-64A/B/BV T-64s

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) 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. 8](#) 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.



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

SOURCES BCAT3 FAS17 FAS18 FAS19 IISS25 JANESRG ORYX1 TRENCH2 WEG2015 WP-EN114 not in WEG

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

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) 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. 9** 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. 7** 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.

SOURCES ATP BARENTS FAS17 FAS19 GS29 GS30 IISS25 JANESRG MILIN2 OVD RG12 RWW WEG60 WEG2015 WP-RU177 WSPOT9 WSPOT15 WSPOT18 WSPOT32



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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

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, 762 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

T-90 «Baagumup»

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** seen with 136th Guards Motor Rifle Brigade

motor rifle division **R 2020-04 M** seen with 2nd Guards Tamanskaya Motor Rifle Division, 1st Guards Tank Army

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); IIS lists the division with 2 tank regiments **R 2025 L** seen with 90th Guards Tank Division **airborne division, INA;** 7th, 76th and 106th Airborne Divisions each have one tank battalion (IIS), 30 T-90M across the Airborne Forces (IIS estimate); IIS does not say which formation holds them **R 2024 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) 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 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 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. 8 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. 6 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.

SOURCES AR86 ATP BCAT3 BCAT4 FAS19 GS31 IIS25 IZV11 JANES25 JANESRG MIL74 NI ORYX1 RWW TRENCH3 WEG24 WEG93 WEG2015 WP-EN115 WP-RU177 WP-RU178 WP-RU179 WWW113



Тысячебегуи, 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

Rate of fire, gun	7 rds/min 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

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)

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.

Aleut and Plastun articulated and light tracked carriers

ГАЗ-3344-20 «Алеум»

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.



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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 BIDECE 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 BIDECE 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; BIDECE 2017 arms fair figure, claim

Road range, Aleut **450 km** Maximum cruising range, company figure for vehicle shown at BIDECE 2017 arms fair, claim

Ground pressure, Aleut **0.2 to 0.21 kg/cm2** Army version, average; top.war.ru via Army Recognition

also 0.2 kg/cm2 WP-RU23

Length, width, height

INA

Crew and passengers, Aleut **Front cab 5 incl. driver; 12 persons total** GAZ-3344-20 as presented at BIDECE 2017 arms fair; company figure, claim

also Front cab 5 incl. driver; rear passenger module up to 15 AR15 ADU MILUA AINF22

Payload, Aleut **Front 750 kg; rear 2,250 kg** GAZ-3344-20 as presented at BIDECE 2017 arms fair; company figure, claim

also Front 500 kg; rear 2,000 kg to 2,500 kg AINF22 MILUA

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 BIDECE 2017 arms fair, claim

also YaMZ-53402-10 diesel, 190 hp AR15

SEEN WITH Trailer, towed (Up to 3 t (Aleut))

VARIANTS GAZ-3344-20 Aleut Two-unit articulated carrier; transport configuration ordered by army.

Carries 12 to 20 people or 2.5 t; amphibious; unarmoured. Rear module converts to command post, ambulance or sleeping unit. Plastun-SN Light tracked vehicle, open top (no hard roof), light armour. Carries 8; Br3 and Br4 protection; evacuation, recce or 82 mm mortar.

SOURCES ADU AINF22 AINF23 AR13 AR14 AR15 MILUA WP-RU23 WWW12 ZR3 not in WEG

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](#)

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. 13 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. 11 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.



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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

Range, 30 mm (type not stated) **2,000 m** effective, ammunition not stated by WEG

Range, 30 mm AP (BMD-2M) **4,000 m** maximum, ammunition not stated by WEG

Range, 30 mm HE (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

SEEN WITH BTR-D (INA (IISS: 150 BTR-D in VDV, estimate))

SOURCES AR22 AR23 ATP GS7 IISS25 JANESRG MIL11 ORYX3 PROFILE RBC W1RU WEG18 WEG2015 WMC5 WP-EN27 WP-RU27 WP-RU35 ZR4

BMD-4M БМД-4М

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]

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 762 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) 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.

BTR-MDM Rakushka p. 13 Same chassis family, so the running gear is not decisive. Hull-down or from above: no gun turret, only machine guns in a small roof mount.



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, 762 mm PKT 1,500 m effective, ammunition not stated; WEG gives 100-1,500 m with sight adjustments

SOURCES AR23 AR24 ARCH36 ATP GS8 GS9 IISS25 JANESRG MIL12 ORYX1 RDP2 RDP3 RG172 RWW WEG19 WEG2015 WP-EN28 WP-RU36 WP-RU37 WP-RU38 WSPOT8

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]

tank brigade, flamethrower platoon, RKhBZ company, 3 per RKhBZ company flame platoon (ATP); BMP-2-based BMO-1 may be used instead [D 2024 L]

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.

Suspension Close only: T-72 running gear, 6 road wheels and 3 return rollers per side, rear drive sprocket, hydraulic dampers on wheels 1, 2 and 5.

CONFUSED WITH T-72B tank 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.

BMPT Terminator p. 6 Hull-down or full view: BMPT has a low-profile turret with 30 mm cannon on the same tank chassis; BMO-T has no turret, only a box superstructure.



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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
 Road range 710 km

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 GS10 IISS25 ORYX1 RWW TENC2 UNIAN WP-RU39 not in WEG

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]

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 louvers 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. 12 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.

BMP-2, against the BMP-1AM p. 12 Both have a 30 mm cannon: not decisive. From above or close: BMP-2 has two troop roof hatches; the BMP-1AM is a BMP-1 with a new turret, and the BMP-1 has four.



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

SOURCES FM100 IISS25 JANESRG LENTA22 MIL13 ORYX1 RG20 RG23 RG222 RIA222 VPK4 WEG20 WEG2015 WP-EN29 WP-RU40 WP-RU41

BMP-2БМП-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 Berezchok) (O 2023-02 M)

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. 11 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 p. 11 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 p. 11 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. 85 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. 10 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.

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).

SOURCES AR25 ATP D24 FM100 IISS25 JANESRG MILUA22 MILUA24 ORYX1 ROSTEC23 ROSTEC25 RWW WEG23 WEG2015 WP-EN30 WP-EN31 WP-RU43 WSPOT4 WSPOT9 WSPOT10 WSPOT11 WSPOT12



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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/cm ²
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

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)

SEEN WITH 9P135M-series launcher for 9M113 Konkurs / 9M111 Fagot (WEG15: 9P135M1 or 9P135M3) (1 per vehicle, 4 missiles carried); B05Ya01 Berezchok combat module (1 per BMP-2M); BMO-1 flamethrower vehicle (BMP-2 based)

BRM-1KБРМ-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)

tank division, reconnaissance battalion, 3 per reconnaissance battalion (ARMYREC) (R 2021 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.

Hull fittings Two small rear roof hatches, against four on the BMP-1; log on the right side; antenna mast at the hull rear.

CONFUSED WITH BMP-1 p. 11 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.

BMP-1AM Basurmanin p. 11 Russian state press: the 30 mm BRM-1KM looks very like the BMP-1AM, a BMP-1 with the BTR-82A module. From above or close: two small rear roof hatches; the BMP-1 has four.

SOURCES AR31 CNA IISS25 JANESRG MIL20 ORYX1 RG23 RGRU4 RIA23 WEG30 WEG2015 WP-EN35 WP-RU57 WSN7



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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
Speed, swimming	7 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
Reconnaissance depth, BRM-1KM	50–80 km intended, Front-line reconnaissance, distance from own troops' positions, claim

SEEN WITH PSNR-5K (1RL133-1) Tall Mike radar (1 per vehicle)

BTR-D БТР-А

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]
air assault brigade, 57 in 2000 listing [R 2000 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.
Suspension Close only: six road wheels and five return rollers each side (BMD-1: five and four); hydropneumatic, ground clearance adjustable 100-450 mm.
CONFUSED WITH BMD-2 (Oryx bucket BTR-D/BMD-2) p.10 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.
BMD-1 p.10 Hull-down or from above: turret with a 73 mm gun and a Sagger rail above it. Full view: five road wheels and four return rollers, not six and five.

SOURCES ATP FAS7 IISS25 JANESRG NIKIT ORYX1 WEG33 WEG2015 WP-EN22 WP-EN37 WP-EN38 WP-RU34 ZRRU



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BTR-ZD, Mil.ru, CC BY 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
Road range	500 km WEG's 450 km treated as a transcription error (WEG 2015, FAS, ru Wikipedia give 500)
Range, 7.62 mm API (bow machine gun)	
Crew	1,000 m maximum effective, Day; 400-500 m on the move
Troop capacity	
Armament, bow machine guns	
Ammunition, 7.62 mm	
3 (driver, commander, bow machine gunner) WEG spec table '1 ea' treated as a transcription error; WEG text and WEG 2015 give three	
10 troops WEG spec table '13 ea' treated as a transcription error; WEG text and WEG 2015 give ten	
2 × 7.62 mm WEG text says PKB, ru Wikipedia says PKT or PKTM	
2,000 rounds	

BTR-MDM Rakushka БТР-МДМ «Ракетка»

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]
air assault regiment, Air assault or parachute battalion, issued with BMD-4M in a battalion set, 8 per battalion set of 31 BMD-4M (June 2020); 6 in a 2021 set; some earlier sets 16 [O 2021-07 M] seen with 234th Guards Air Assault Regiment, 76th Guards Air Assault Division (sets Jan and Jun 2020), 137th Guards Airborne (parachute) Regiment, 106th Division (first battalion set)
airborne division, Battalion sets in regiments; some units mix BMD-4M and BTR-MDM companies [O 2021-07 M] seen with 98th Guards Airborne Division (Ivanovo): 6 BTR-MDM with 31 BMD-4M to one regiment, 2021-07-26
airborne division, 150 in Airborne Forces (IISS estimate) [R 2024 M]
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.13 No gun turret on either. Full view: BTR-D has six road wheels each side, not five, and no roof MG turret.
BMD-4M p.11 Same chassis family, so the running gear is not decisive. Hull-down or from above: a turret with a 100 mm gun and a 30 mm cannon.
VARIANTS BTR-MDM with ZU-23-2 Twin 23 mm gun mounted on the carrier, as on BTR-ZD. Adds anti-aircraft and ground fire; shown in a September 2021 exercise. Fit seen in Ukraine: INA. BTR-MDM Rakushka-M 2024 delivery batch: Nakidka camouflage coating and upper-hemisphere protection kit, per Rostec release as reported by Army Recognition. Drone-suppression equipment and night vision devices added, per manufacturer claim. 9S931-2 MRU-D INA. Air surveillance radar vehicle for Verba MANPADS teams; Russian Wikipedia only. 9S931-3 MP-D INA. Air defence command vehicle with Barnaul-T; Russian Wikipedia only. Andromeda INA. Artillery fire control vehicle on BTR-MDM, development work (ROC) reported by Concern Tractor Plants in 2015; service INA.

SOURCES AR33 ATP GS12 GS13 IISS25 JANESRG MIL22 NIKIT ORYX1 RGRU1 RGRU22 VPK5 WEG34 WP-RU59 ZRRU



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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
Speed, dry unpaved road	45-50 km/h average, Dry dirt road; RGRU2 [state media] gives up to 45-50 km/h, claim
Range, road	500 km at least, On fuel; 350 km on dry ground per NIKIT, claim
Swimming speed	10 km/h maximum, Two waterjets; at least 7 h afloat per NIKIT; VPK gives at least 10 km/h, claim
Fording	Amphibious
Ground clearance	130-530 mm adjustable
Engine power	500 hp (UTD-29) NIKIT 368 kW (500 hp); same figure in RGRU2 [state media]; VPK names UTD-29 only, claim also 450 hp WEG34
Range, 7.62 mm PKTM	
Range, 7.62 mm PKTM	
Range, 23 mm ZU-23-2 ammunition	
Altitude, 23 mm ZU-23-2 ammunition	
Crew	
Passengers	
Payload	
Armament	
Armour	
SEEN WITH BMD-4M (31 per battalion set with 8 BTR-MDM (2020)); 9S931-3 MP-D; 9S931-2 MRU-D radar vehicle	
1,500 m effective, Ground targets; remote roof MG; WEG BTR-MD sheet	
4,000 m maximum, Ground targets; remote roof MG; WEG BTR-MD sheet	
2,500 m claimed, Ground targets; ZU-23-2 fit on BTR-MDM, 2021 exercise, claim	
1,500 m claimed, Air targets; ZU-23-2 fit on BTR-MDM, 2021 exercise, claim	
2 (commander, driver)	
13 paratroopers	
2 t Cargo, not more than 2 t, claim	
2 × 7.62 mm PKTM: remote roof MG and bow MG claim	
also Roof turret 7.62 mm or 12.7 mm MG ATP	
Welded aluminium; protects against small arms and shell splinters	
BMD-4M (31 per battalion set with 8 BTR-MDM (2020)); 9S931-3 MP-D; 9S931-2 MRU-D radar	

MT-LB MT-Λ5

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](#)

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. 54](#) 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. 13](#) 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. 20](#) 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. 45](#) Full view: same hull with a launcher carrying four missile boxes on the roof.

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.

SOURCES ATP BAR15 FAS11 IISS25 JANESRG MIL52 MIL53 MIL54 MISS12 ORYX1 RWW UKDI WEG33 WEG67 WEG2015 WP-EN82 WP-RU56 WP-RU122 WP-RU123 ZR7



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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-RU56

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 WEG67

Fording **amphibious**

Ground pressure **0.46 kg/cm2** standard 350 mm track; 0.28 with wide track

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 × 7.62 mm PKT in turret basic MT-LB

Ammunition, 7.62 mm

2,000 rounds basic MT-LB

also 2,500 rounds WP-EN82

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 WEG67

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)

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]** seen with Chechen forces under Kadyrov (Akhmat)

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]** seen with FSB Border Guard Service

Rosgvardia unit, Patrul: special-purpose police units (SOBR, OMON); Rosgvardia, Zaporizhzhia region, INA (3 to Khanty-Mansi in 2023) **[R 2023 L]** seen with SOBR Rosgvardia Saint Petersburg (2017 prototype), Rosgvardia Khanty-Mansi SOBR and OMON, Rosgvardia Zaporizhzhia region

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. 18 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.

SEEN WITH Tornado-G rocket launcher on VPK-Ural; BM-30D remote turret (30 mm 2A42, AG-30) on Vystrel; Arbalet-DM module with 12.7 mm Kord on Z-STs; KamAZ-4326 truck (Vystrel base) (1 per vehicle); KamAZ-5350 6x6 truck (Z-STs base) (1 per vehicle); GAZ-3308 Sadko truck (Buran base) (1 per vehicle); KamAZ-4350 truck (Patrul base) (1 per vehicle); Repeynik surveillance radar on Sarmat-3 (INA (one seen lost, Oryx))

VARIANTS BPM-97 KamAZ-43269 Vystrel Separate engine and crew compartments; side and rear doors and roof hatches; weapon varies from pintle to turret. 10.5 t, 4x4, 2 crew plus 8 to 12 passengers; originally for border guards. AMN-590951 VPK-Ural Spartak Front seat rows with own side doors, rear stern door; Kord in armoured box. 14.5 t, 4x4, 10 seats (WEG); shown 2019, in Ukraine from 2022. KamAZ-435029 Patrul Bonnet-type, frame-built modular body on KamAZ-4350 chassis; 7,400 mm long. 4x4, 260 hp Cummins; 7 troops plus crew (9 in total). LSTC-1944 Sarmat-3 Small 4x4 with open cargo area; Sarmat-3ME has a closed casualty-evacuation compartment. 3.5 t, crew of four, 900 kg cargo; can mount 7.62 mm PKM, 12.7 mm Kord, AGS-17 or Kornet. Z-STs Akhmat 6x6 on KamAZ-5350 frame, crew area set back from the front, roof hatch. 18 t, 2 crew plus 8 passengers; built for Chechen forces, shown May 2022.



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



VPK-Ural. Nickel nitride, CCO



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
Weight, Sarmat-3	3.5 t
Weight, Buran ASV	7.6 t Shown at MAKS 2017, claim
Road speed, Vystrel (BPM-97)	90 km/h
Road speed, VPK-Ural	100 km/h
Road speed, Z-STs Akhmat	100 km/h

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)
Mine protection, VPK-Ural	8 kg TNT Declared, under a wheel or body, claim
Mine protection, Z-STs Akhmat	6 kg TNT V-shaped bottom, claim
Ballistic protection, VPK-Ural	Front 14.5 mm, other sides 12.7 mm Habitable compartment
Ballistic protection, Z-STs Akhmat	7.62 mm claim
Ballistic protection, Buran ASV	STANAG 4569 level 2, 7.62 mm claim

SOURCES AR57 AR58 DBSAR DEFUA4 IIS25 LEXCN MIL44 ORYX1 WEG63 WP-EN73 WP-EN74 WP-RU114 WP-RU115

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]**

RKKhBZ 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.

CONFUSED WITH BTR-60PB, BTR-70, BTR-80 p. 16 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. 19 Same hull. Full view: no turret; five ATGM tubes on a launcher raised from the roof, retracted for travel.



Vitaliy 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 (KPV)
Range, 7.62 mm ball (PKT)

Detection range, TPKU-2B commander's sight
Detection range, TKN-1S night sight

2,000 m effective, ground target, day
100-1,500 m effective (with sight adjustments), ground target, day; FAS calls 1,500 m maximum aimed range
3,000 m observation range, day; 5x periscope, target not stated
250-300 m observation range, night, with OU-3 infrared illuminator; target not stated

SOURCES D24A D24B FAS6 IIS25 JANESRG ORYX1 RWW WEG27 WEG2015 WP-EN33 WP-RU50 WWW14

BTR-80 BTP-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**
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**
Russian force in Syria, INA; CNA reports BTR-82s guarding artillery with T-90A (2018) **R 2024 M**

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. 17 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.

VARIANTS BTR-70 Small low door between 2nd and 3rd wheels; BTR-60PB/BRDM-2 conical turret; exhaust each side at rear. Two 120 hp petrol engines; machine guns elevate only to +30°.

BTR-70M BTR-70 with the rear hull of the BTR-80. Single 260 hp KamAZ-7403 diesel and BTR-80 transmission in place of two petrol engines. **BTR-80** Two-part side door, higher rear roof with near-horizontal exhaust, six smoke dischargers on turret rear. Single diesel; KPVT elevates to +60° for use against slow aircraft and helicopters. **BTR-80A** New turret with externally mounted 30 mm cannon. 30 mm 2A72 and 7.62 mm PKT replace the KPVT; adopted 1994.

SOURCES AR34 ATP CNA DIND GS14 GS15 GS16 IISS25 JANESRG KOLESA ORYX1 RWW WEG32 WEG2015 WP-EN21 WP-EN39 WP-RU60 WP-RU61 WP-RU62 WP-RU63 WSPOT15 WSPOT16 WSPOT17 WSPOT18



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



BTR-70. Torin, public domain

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
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
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	

BTR-90 Rostok БТР-90 «Росмолк»

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 seen with 38th Research Institute, Kubinka
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.16 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.
BMP-2 p.12 Hull-down: not decisive, the BTR-90 carries a BMP-2 type turret. Full view: eight wheels, not tracks.
VARIANTS BTR-90 Rostok BMP-2 type turret with 30 mm 2A42, PKTM, AGS-17 and Konkurs-M launcher. No fire control system or thermal imager (ru Wikipedia). The variant seen in Ukraine in Oct 2023.



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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 <i>also 20.92 t WEG2015</i>
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, maximum <i>also over 100 km/h WP-RUS8 AR32</i>
Road range	800 km WEG 2015 and Russian sources give 800 km; WEG online 850 km kept as 'also' (likely transcription error) <i>also 850 km WEG31</i>
Swimming	amphibious, no preparation; 9 km/h afloat maximum, two water jets <i>also 12 km/h afloat WP-RUS8 AR32 MIL21 DEFUA1</i>
Bridge load class	21 wheeled weight 22 t x 0.94, rounded up, estimated
Ground clearance	0.51 m
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 <i>also 2,000 m WEG31</i>
Range, 30 mm APFSDS-T	2,500 m maximum effective, 2A42 gun; day and night
Range, 30 mm grenade (AGS-17)	800 to 1,700 m effective, AGS-17 (WEG: AG-17) automatic grenade launcher; ground targets <i>also up to 1,700 m AR32</i>
Crew	3 crew (driver, commander, gunner) plus 7 infantry
Main gun, 2A42 30 mm	500 rounds Rostok variant, BMP-2 type turret
Armament	30 mm 2A42, 7.62 mm PKT/PKTM coaxial, AGS-17 30 mm grenade launcher, four ATGM Rostok variant as seen in Ukraine; ATGM is Konkurs-M per Russian sources and ARECOG; WEG15 lists AT-5 Konkurs or AT-5B Konkurs-M
Armour	Defeats 14.5 mm over frontal arc welded steel hull; AP 7.62 mm and fragments over other arcs (DEFUA2)

SOURCES AR32 DEFBL0G DEFUA1 DEFUA2 MIL21 WEG31 WEG32 WEG2015 WP-EN36 WP-RUS8

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. 16 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. Accepted for General Staff units by order of 6 Mar 2007; used in Crimea 2014 (Wikipedia). **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. YaMZ-534 diesel and NBC protection; in army service from 2013. **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. Special-forces version, STANAG 4569 level 1 (ru-Wikipedia); 2023 kit resists 7.62 mm, MoD order 14 Aug 2023, seen in Ukraine Oct 2023. **SPM-1 and SPM-2** Interior Ministry police versions; SPM-2 has two extra roof glass hatches. SPM-1 5 mm armour, SPM-2 7 mm all-round (Wikipedia, WEG). **GAZ-39371 Vodnik** Wider amphibious hull, nose forward of wheel arches, three-seat cab. Swims on its wheels; armed with 14.5 mm KPVT and 7.62 mm PKT if turret fitted.



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



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



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



Vodnik, Vitaliy 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

also 7,200 kg WP-EN116

7,500 kg combat

also 6,600 to 7,500 kg WP-EN117

Weight, Vodnik

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)

L × W × H

Road speed, Tigr

140 km/h maximum

also 125 to 140 km/h AR89

Road speed, Vodnik

120 km/h maximum

also 110 km/h AR88

Road range, Tigr

900 km

also 1,000 km WP-EN116

Road range, Vodnik

1,000 km

also 700 to 1,000 km WP-EN117

Fording, Tigr

1.2 m

also 1.3 m AR89 WEG2015

Swimming speed, Vodnik

4 to 5 km/h afloat, wheel propulsion

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'

also 1 WEG94

Crew, Vodnik

2

also up to 8 passengers AR88 WEG94

Armament, Tigr

7.62 or 12.7 mm MG, or 30 mm AGL, roof mounted crew-served

Armament, Tigr-M with Arbalet-DM

12.7 mm Kord (150 rounds) or 7.62 mm PKTM (250 rounds) remote station, in service from Jan 2017, claim

Armament, Vodnik

14.5 mm KPVT and 7.62 mm PKT BPU-1 type turret where fitted; some with 30 mm 2A72

Protection, armoured Tigr

5 mm armour plates; 7 mm on SPM-2 armoured versions

Engine power, Tigr-M

215 hp YaMZ-5347-10

SOURCES AR88 AR89 AR90 ATP CNA IHSS25 RWW WEG94 WEG2015 WP-EN116 WP-EN117 WP-RU181

Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks

Урал-63095 «Тайфун»

KamAZ-63968, KamAZ-53949, KamAZ-4386,

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]

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. 18 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).

SOURCES BMPD16 IISS25 IZV13 RG213 RT6 WEG94 WEG99 WP-EN126 WP-RU192 WP-RU193 WP-RU194 WP-RU195 WP-RU196 ZR9



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



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



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

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

9K111 Fagot / 9K111-1 Konkurs

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]

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. 22 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. 21 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.

SOURCES ATP FM100 IISS25 IZV13 IZV24 JANESEMG MISS11 MISS12 MISS13 MISS14 MISS15 MPER2 ORYX1 RG5 RWW WEG57 WEG2015 WP-RU102 WP-RU103 ZVEZ



Vitaly V. Kuzmin, CC BY-SA 4.0



Mike1979 Russia, CC BY-SA 3.0

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**

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

SEEN WITH 9P135 / 9P135M / 9P135M1 portable launcher (1 per team)

9K114 Shturm-S

9K114 «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]

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. 14 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. 45 Same MT-LB chassis: a turret with four ready missile boxes, against a single missile on the 9P149 launcher arm.

SOURCES APA6 AR50 AR80 CNA FAS14 IISS25 IZV233 JANESRG MILIN MISS11 MISS12 MISS18 ORYX1 OSN22 SHEP18 WEG85 WEG2015 WP-RU101 WP-RU123 WP-RU164 WWW110



Vitaly V. Kuzmin, CC BY-SA 3.0



Vitaly V. Kuzmin, CC BY-SA 4.0

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

Road speed

65 km/h

maximum

Road range

500 km

on fuel

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

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

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]

NUMBERS Losses 30 rounds captured by Ukraine from Russian positions, Kharkiv oblast, Sep 2022 (Wikipedia citing @UAWeapons) [2022-09]

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.

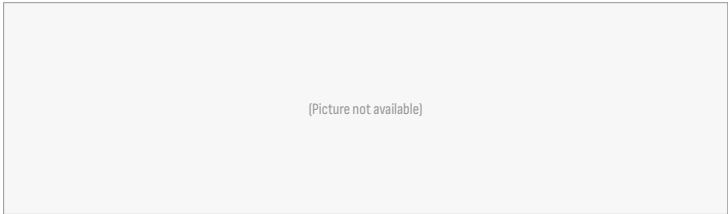
Platform Svir: T-72B, gunner's night sight 1K13-49; T-72B1 lacks the missile and has TPN-3-49 instead. Refleks, Refleks-M: T-72B3/B3M, T-80U/BVM, T-90/A/M.

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.

9K116-1 Bastion / 9K116-2 Sheksna (AT-10 Stabber / AT-12 Swinger) p. 37 Close only: also laser beam-riding, but 100 mm (Bastion) or 115 mm (Sheksna) rounds for 100 or 115 mm guns, against 125 mm.

SOURCES AMAL2 ATP ODETIE RGAZ2 RIA3 RWW VPK21 WEG90 WEG2015 WP-EN112 WP-RU172 WP-RU173 WP-RU174



(Picture not available)

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

Diameter

125 mm

gun calibre

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

Practical range, 9M119M1 Invar-M

4,815 m

to 6,830 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, observed

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]

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.

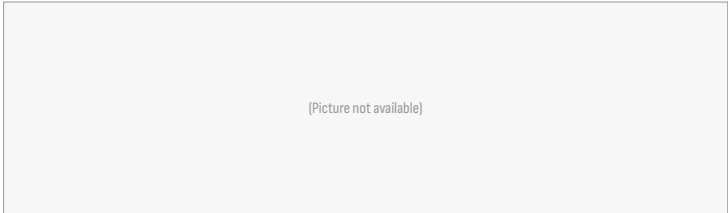
Turret None. A millimetre-wave radar antenna extends beside (left of) the launcher; both retract into the hull for travel.

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. 21 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 / 9P149M Shturm-SM p. 20 Full view: BMP-3 running gear has three return rollers, the MT-LB none. Chassis hidden: Khrizantema-S raises two containers, the 9P149 one missile on its arm.

SOURCES AR50 ARMYINF3 ATP CNA DEF242 IISS25 IZV19 IZV22 JANESRG MISS11 MISS12 RWW UKRINF2 WEG56 WEG2015 WP-RU101 ZR6



(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

Road speed

70 km/h

maximum

Road range

600 km

maximum

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

SEEN WITH 9P157-3 platoon commander combat vehicle; 9P157-4 battery commander vehicle

VARIANTS 9P157 INA.

Kornet 9K135 «Корнет»

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 Khризantema-S batteries [D 2016 M]

artillery regiment, anti-tank platoon (MoD claim via RT) [O 2024-01 L]

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]

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]

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. 19 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. 22 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 Khризantema-S p. 20 Launcher raised: Khризantema-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. 20 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. 43 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.

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 AR51 ATP CNA DEF242 FM100 IIS25 IZ24 B JANESRG MISS11 MISS12 MPER2 ORYX1 RG22B RG225 RGAZ RT24 RWW WEG58 WEG2015 WP-RU101 WP-RU104 WP-RU105



Yevgeny Kel [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

Weight, 9P163M-1 launcher alone

Weight, missile in tube

Time into action

Length, missile in tube

Reload time

Operating altitude

63.7 kg WEG figure; components not stated

25 kg launcher as stated by source; thermal sight (11 kg) and missile listed separately, claim

29 kg 9M133-1, claim

under 1 min portable launcher, from travel to firing position, claim

1,210 mm WEG 2015 'length, firing'; WEG Kornet-EM page 'length'; neither says in tube. Missile alone 1,200 mm (MISSIL, WPRU)

30 s portable launcher, claim

0 to 4,500 m above sea level claim

Range, 9M133 HEAT

Minimum range, 9M133 HEAT

Range, 9M133-1 tandem HEAT

Minimum range, 9M133-1 tandem HEAT

Range, 9M133-1 tandem HEAT (night)

Range, 9M133F-1 thermobaric

Range, 9M133M-2 tandem HEAT

Minimum range, 9M133M-2 tandem

HEAT

Range, 9M133FM-2 thermobaric

Minimum range, 9M133FM-2

thermobaric

Range, 9M133FM-3 HE

Range, Kornet HEAT, missile type not

stated (observed)

Detection range, 1PN79M Metis-2

thermal sight

Penetration, 9M133-1 tandem HEAT

5,000 m maximum, original 9M133 missile

100 m original 9M133 missile

5,500 m maximum, day, claim

100 m day or night, claim

3,500 m maximum, night, with thermal sight, claim

5,500 m maximum, day

8,000 m maximum, day; Kornet-D/EM launchers, claim

150 m Kornet-D/EM launchers

8,000 m maximum, day; Kornet-D/EM launchers, claim

150 m Kornet-D/EM launchers

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

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

4,000 m MBT-type target; recognition 2,500 m; export

sight, claim

1,000-1,200 mm RHA behind ERA Kornet-E, claim

Metis 9K115 «Memuc»

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. 19 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. 21 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. Tandem HEAT 9M131 (about 800-900 mm behind ERA) to 1,500 m; thermobaric 9M131F option. 9K115-2 Metis-M1 No visible difference stated; 9P151M launcher, same 130 mm tube. 9M131M to 2,000 m day and night, 900-950 mm behind ERA; adopted by Russia 2016.



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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
Weight, thermal sight	5.5 kg	1PN86-VI Mulat-115 (Metis-M), claim
L × W × H	0.865 × 0.4 × 0.525 m	Metis on tripod
Time into action	15-20 s	Metis-M
Time out of action	15-20 s	Metis-M

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	
Weight, 9M115 in container	6.0 kg	
Armour penetration, 9M131 tandem HEAT	900 mm behind ERA	Metis-M, 9M131
Average speed, 9M131	200 m/s	
Weight, 9M131 in container	13.8 kg	
Warhead weight, 9M131F thermobaric	4.95 kg	claim

SOURCES AR59 FM100 IISS25 MISS11 MPER2 RBASE RBASEM RWW WEG64 WEG2015 WP-EN76 WP-EN77 WP-RU117 WWW1A6 WWW1B5

2 Fires

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	MOB.	PAGE
MRLS AND HEAVY FLAMETHROWERS					
BM-21 Grad 122 mm MRL	M1964	БМ-21 «Град»	Truck-mounted 40-tube 122 mm area-fire rocket launcher · 1963	WH-AT	24
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	WH-AT	24
BM-30 Smerch	280MM M1983	9А52-2 «Смерч»	Heavy 300 mm 12-tube rocket launcher for deep area fire · 1987	WH-AT	25
Tornado-G	—	9К51М «Торнадо-Г»	122 mm 40-tube truck MRL · 2012	WH-AT	25
TOS-1A Solntsepek	—	ТОС-1А «Солнцёпёк»	Tracked 220 mm thermobaric and incendiary rocket launcher of the RKhBZ troops · 1988	TR	26
Uragan-1M	—	9К512 «Ураган-1М»	Heavy 220/300 mm MRL with swappable rocket pods · 2007	WH-AT	26
SELF-PROPELLED GUNS AND MORTARS					
2S1 Gvozdika	M1974	2С1 «Гвоздика»	122 mm amphibious tracked self-propelled howitzer · 1970	TR-A	26
2S3 Akatsiya	M1973	2С3 «Акация»	152 mm tracked self-propelled howitzer of brigade and division artillery battalions · 1971	TR	27
2S4 Tyulpan	M-1975	2С4 «Тюльпан»	240 mm self-propelled breech-loading heavy mortar for destroying fortified targets · 1971	TR	27
2S5 Giatsint-S	M1981	2С5 «Гиацинт-С»	Army-level 152 mm self-propelled gun for long-range counter-battery and deep fire · 1975	TR	28
2S7 Pion / 2S7M Malka	M-1975	2С7 «Пион»	203 mm heavy self-propelled gun for long-range fire on high-value targets · 1975	TR	28
2S9 Nona-S	M1981	2С9 «Нона-С»	Airborne 120 mm self-propelled gun-mortar · 1981	TR-A+AD	28
2S12 Sani	M-120	2С12 «Сани»	Truck-borne, towable 120 mm muzzle-loading mortar complex of the battalion mortar battery · 1979	WH-AT	29
2S19 Msta-S	M1990 FARM	2С19 «Мста-С»	152 mm tracked self-propelled howitzer of brigade, division and army artillery · 1989	TR	29
2S23 Nona-SVK	—	2С23 «Нона-СВК»	Battalion-level 120 mm self-propelled gun-mortar on BTR-80 8x8 chassis · 1991	WH-AT-A	29
2S31 Vena	—	2С31 «Вена»	120 mm tracked amphibious gun-mortar for close and direct fire support · 2010	TR	30
2S34 Khosta	—	2С34 «Хоста»	120 mm self-propelled gun-mortar on a modernised 2S1 hull · 2012	TR-A	30
2S35 Koalitsiya-SV	—	2С35 «Коалиция-СВ»	152 mm self-propelled howitzers · 2023	TR	31
2S40 Floks	—	2С40 «Флокс»	120 mm wheeled self-propelled gun-mortar, indirect and direct fire · 2023	WH-AT	31
ANTI-TANK GUNS					
2S25 Sprut-SD	—	2С25 «Спрут-СД»	Airborne self-propelled anti-tank gun, 125 mm, amphibious · 2005	TR-A+AD	31
MT-12 Rapira	—	MT-12 «Рапира»	Towed 100 mm smoothbore anti-tank gun, also used for indirect fire · 1970	TW	32
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	TW	32
2A65 Msta-B	M1987	2А65 «Мста-Б»	Towed 152 mm howitzer for army-level artillery brigades and regiments · 1986	TW	33
2B9 Vasilek	—	2Б9 «Василёк»	82 mm automatic gun-mortar, vehicle-carried, battalion-level fire support · 1970	TW	33
2B14 Podnos	—	2Б14 «Поднос»	82 mm smoothbore muzzle-loading light mortar, man-portable in three packs · 1983	MP	33
D-20	M1955	А-20	152 mm towed gun-howitzer, manually loaded · 1955	TW	34
D-30	M1963	2А18	122 mm towed howitzer for indirect and direct fire support · 1960	TW+AD	34
M-46	M1954	М-46	130 mm long-range towed field gun for counter-battery and general support fire · 1951	TW	34
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns	—	МЛ-20, А-1, М-30, БС-3, А-44	Towed 85 to 152 mm WWII-design field guns and howitzers, drawn from storage since 2022 · 1937	TW	35
BALLISTIC MISSILES					
9K79-1 Tochka-U	SS-21 SCARAB B	9К79-1 «Точка-У»	Tactical ballistic missile system, one missile per launcher, 120 km · 1976	WH-AT-A	35
Iskander-M	SS-26 STONE	9К720 «Искангер-М»	Army-level operational-tactical ballistic and cruise missile system for deep strike · 2007	WH-AT	36
COASTAL MISSILE SYSTEMS					
Bal	SSC-6 SENNIGHT	3К60 «Бал»	Mobile coastal anti-ship missile system firing Kh-35/Kh-35U · 2008	WH-AT	36
Bastion-P	SSC-5 STOOGE	3К55 «Бастуион-П»	Mobile coastal anti-ship missile system firing P-800 Oniks · 2010	WH-AT	37

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	7 Command and signals	83
PRP-4A Argus / PRP-4M Deytery	Mobile artillery reconnaissance post on BMP-1 chassis	7 Command and signals	85
1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	Artillery battery and battalion command, observation and fire direction vehicles	7 Command and signals	84
Zoopark-1 / Zoopark-1M	Tracked radar that locates enemy guns, mortars, rockets and missile launchers	4 Radars	55
ARK-1M Rys	Artillery weapon-locating and fire-control radar	4 Radars	54
SNAR-10 / SNAR-10M1 Leopard	Tracked battlefield surveillance and artillery-adjustment radar	4 Radars	54
1B75 Penicillin	Passive acoustic-thermal gun locator	4 Radars	53
Orlan-10	Catapult-launched recon UAV for artillery spotting and EW	9 Uncrewed systems	99
Lancet	Loitering munition for precision strikes on artillery, air defence and armour	9 Uncrewed systems	104

BM-21 Grad 122 mm MRL

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**

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. 67 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.

SOURCES ATP CNA IISS25 MISS7 RUSIPL RVIA RWW WEG47 WEG2015 WP-EN57 WP-RU87



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-210F) HE-fragmentation rocket

Minimum range, 9M22U HE-frag **5 km** 9M22U (M-210F) 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

BM-27 Uragan

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**

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. 24 Chassis hidden: two separate exchangeable pods (15 x 220 mm or 6 x 300 mm) instead of one fixed 16-tube pack.

SOURCES CNA D246 FAS20 GS36 IISS25 IZ17 MIL81 MIL82 MIL110 MPER3 ORYX1 RUSIPL RWW W1R WEG104 WEG2015 WP-EN131 WP-EN132 WP-RU200



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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

SEEN WITH 9T452 transloader; ZIL-135LM (1)

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** p. 67 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. 24 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. 26 Chassis hidden: two separate six-tube pods, not one fixed 12-tube package. Full view: MZKT-7930 8x8.

9A52-4 Tornado p. 67 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.

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); IV168 ASUNO-S fire control; 1T12-2M survey vehicle; 1B44 meteorological complex; Zoopark counter-battery radar (INA; reported cueing Smerch fire 2024-03)

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. IIS25 lists none in Russian service.

SOURCES AIF10 ATP IIS25 IZ7 JANES2 KOLESA4 MAILRU3 MISS19 MISS20 MK2 ORYX1 RG10 RUSIPL RVIA RWW STOL WEG86 WEG2015 WP-EN107 WP-EN108 WP-RU165 WP-RU166



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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
Range	850 km 9A52-2; also 850 km on the WEG Tornado-S page
Fording	1.1 m unprepared
Time into action	3 min from march to ready to fire
Time out of action	3 min
Ground pressure	INA

Range, 9M55K cluster

70 km maximum, unguided, range-corrected rocket with fragmentation submunitions

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

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

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

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

CEP, 9M544 and 9M549 guided

5-10 m inertial and GLONASS; official claim, claim

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](#) seen with 20th Guards Separate Motor Rifle Brigade

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. 24 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.

SOURCES CNA D245 EDR4 GS33 IIS25 JF18 MAILRU4 MISS7 ORYX1 RBASE2 RDP7 RVIA RWW TASS24 WEG95 WEG2015 WMC35 WP-RU186 WWW115 ZR8



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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

TOS-1A Solntsepek

ТОС-1А «Солнце́пек»

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 [\[D 2024 M\]](#)

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.

SOURCES AR92 AR93 ATP CNA EMP GS34 MIL77 MIL78 MIL79 MISS24 RVIA RWW TASS25 TASS26 TASS27 TASS28 WEG96 WMC36 WP-EN118 WP-EN121 WP-EN122



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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 × 220 mm

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 axes (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 p. 24 Full view: three axes (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. 24 Chassis hidden: one fixed rack of 16 tubes, not two detachable pods. Full view: ZIL-135 8x8.

9A52-2 Smerch p. 25 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. 25 Chassis hidden: one six-tube module, not two pods. Full view: KamAZ-63501 8x8 truck.

SOURCES AR95 CNA D24A2 D24B2 IISS25 IZ17 ORYX1 RAND RWW U2412 W1A3 W1C3 W1E2 WEG103 WEG2015 WP-EN130 WP-RU199 ZR8



Ministerstvo Obrony Rossijskoj Federacii (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

SEEN WITH 9T249

2S1 Gvozdika

2С1 «Гвозди́ка»

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 [\[O 2025 L\]](#)

NUMBERS Holdings 400 2S1 in Army service, 1,000 in store (IISS estimates) [\[2024\]](#)

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. 30 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. 27 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.



Srdan 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, 30F56 etc.), full charge
Minimum range, HE 4.2 km HE-frag
Range, HE rocket-assisted 21.9 km maximum, HE rocket-assisted projectile
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

Crew 4

SEEN WITH 1V14(M) (1 per battery); 1V13

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

2S3 Akatsiya 2С3 «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 per battalion, 2 battalions per brigade **[D 2024 M]**

artillery regiment, self-propelled artillery battalion, 18 per battalion (Soviet

standard, 3 batteries of 6) **[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 two [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

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 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.**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. 29 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. 26 Full view: seven road wheels, no return rollers. From above: 2S3 barrel overhangs the hull front; 2S1 barrel does not.

2S5 Giatsint-S p. 28 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.

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.

Zimin.V.G., CC BY-SA 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, 30F25 HE-frag also 17.05 km WP-RU12
Range, HE-frag rocket-assisted	20.5 km maximum, 30F22 rocket-assisted HE-frag also 24 km JANESRG WP-EN12
Range, Krasnopol guided	20 km maximum, 30F39 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 -4 to +60 deg, 360 deg 3-4 rds/min also 1.9-3.5 rds/min WP-RU12
Projectile weight, HE-frag	43.56 kg OF-540 / 30F25
Ammunition carried	46 rounds 2S3M and later also 40 rounds WP-RU12 AR8 60 rounds
Unit of fire	7.62 mm PKT, 1,500 rounds
Secondary armament	
SEEN WITH	Object 123 chassis [2K11 Krug]; 1V514-1 Mechanizator-M (1 per gun [2S3M2]); Senior battery officer vehicle (MSOB); Krasnopol guided projectile

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

2S4 Tyulpan 2С4 «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 in45th 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)**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. 28 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. 28 Shares the name M-1975. Full view: 203 mm gun with no muzzle brake; seven road wheels a side against six.



Vitaly V. Kuzmin, CC BY-SA 4.0

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 mine	9.65 km maximum, HE mine 130.7 kg, full charge
Minimum range, 53-F-864 HE mine	0.8 km HE mine, smallest charge
Range, 3F2 rocket-assisted HE mine	18 km maximum, 228 kg rocket-assisted HE mine; WEG and GS do not name the round, 3F2 per RUWIKI
Minimum range, 3F2 rocket-assisted HE mine	0.8 km rocket-assisted HE mine
Range, 3F5 Smel'chak laser-guided mine	9.2 km maximum, laser-guided mine, target designated by 1D15 from 0.2-5 km

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-RU17 WP-RU18 WP-RU19 ZV22

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)

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. 28 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. 27 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 30F29

28.4 km maximum, HE-frag 30F29, full charge

Range, HE-frag 30F29 reduced charge

21.5 km maximum, HE-frag 30F29 with reduced charge 4Zh48

Range, HE-frag 30F59

30.5 km maximum, HE-frag 30F59, improved aerodynamic shape, full charge

Range, rocket-assisted HE-frag 30F30

33 km maximum, rocket-assisted HE-frag

Range, Krasnopol guided 30F39

20 km maximum, laser-guided HE-frag Krasnopol

SEEN WITH 2A37 152 mm gun (1)

SOURCES BMPD3 FAS3 FM3 GS4 IISS25 IZ26 IZ233 JANESRG MF1 RIA22 RUSIPL RWW WEG6 WEG8 WP-EN4 WP-RU18 WP-RU19

2S7 Pion / 2S7M Malka 2C7 «Пюи»

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)

artillery brigade, 2S7 battalion (IZ17, 2017); 2S7M Malka (mil.ru via RDP18), 1 battalion; 12 x 2S7 (RUWIKI, 2019) (O 2018-04 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.

Suspension Close only: seven twin rubber-tyred road wheels and six return rollers per side; drive sprocket front, idler rear; idlers lowered to the ground when firing.

CONFUSED WITH 2S5 Giatsint-S p. 28 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.

2S4 Tyulpan p. 27 Shares the name M-1975. Full view: 240 mm mortar folded on the roof, muzzle only level with the first road wheel; six road wheels 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

Road range 500 km cruising

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 rds/min (2S7); 2.5 rds/min (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

SEEN WITH Ammunition transport vehicle with the rest of the crew; carries the main load (40 rounds, RUWIKI; WIKI: 4); 1V12M command vehicle (2S7M)

SOURCES ATP CNA CNA21 DEF24 FAS4 FM100 GS4 IISS25 IZ17 IZ23B IZ232 LENTA16 LENTA23 MILN RDP1 TASS1 TWZ2 WEG6 WP-EN18 WP-RU19 WWW1

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), 18 per battalion (6 per battery) (D 2000 L)

INDICATES A 2S9 usually indicates Airborne Forces (VDV) artillery: its battalions sit in VDV artillery and airborne/air assault regiments. Naval Infantry 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. 29 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. 29 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 8.7 t 2S9

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 30F49

8.85 km maximum, rifled HE-frag shell 30F49

Minimum range, HE-frag shell 30F49

1.7 km HE-frag shell; ACADEM does not name the shell type

Range, HE-frag rocket-assisted shell 30F50

12.8 km maximum, rocket-assisted HE-frag shell 30F50

Minimum range, HE-frag rocket-assisted shell 30F50

1.7 km rocket-assisted HE-frag shell OF-50

Range, 120 mm HE mortar bomb

7.15 km maximum, smoothbore HE-frag mortar bomb (53-OF-843B)

SOURCES ACADEM AIF1 AR1 ARMINF ATP FAS5 FM100 FOCUS2 IISS25 JANESRG MIL5 ORYX1 RG RWW TENC WEG9 WEG10 WEG11 WEG2015 WP-RU11 WP-RU13 WP-RU20 WP-RU21 WSN3 ZR2

2S12 Sani 2C12 «Са́ну»

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)

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.

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. 92 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. 33 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.



Mil.ru, CC BY 4.0

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 30F843B)

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

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

2S19 Msta-S 2C19 «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)

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.

CONFUSED WITH 2S35 Koalitsiya-SV (152 mm SP howitzer) p. 31 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.

2S3 Akatsiya (152 mm SP howitzer) p. 27 Full view: 2S3 turret at the far rear, engine at the front; 2S19 turret central, powerpack rear. Chassis hidden: 2S3 turret front curved, 2S19's vertical.



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, 30F45 (OF-45) HE-frag, full charge

Range, HE-frag base bleed

29 km maximum, 30F61 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

SOURCES AG5 ARMYT ATP CNA GS4 GS21 IISS25 JANESRG MIL51 ORYX1 RWW TASS10 TASS11 WEG66 WP-EN12 WP-EN14 WP-EN79 WP-RU16

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)

motor rifle brigade, mortar batteries of motor rifle battalions, 18 (2018 report) (O 2024-10 H)

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.

Details Close only: three smoke grenade dischargers each side of the turret; thermal screens on hull and turret on some vehicles; wave vane at front, waterjet at rear.

CONFUSED WITH Nona/Vena 120 mm gun-mortar family (2S9, 2S31, 2S34) p. 30 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.

2S9 Nona-S p. 28 Full view: tracked BTR-D-based hull. Chassis hidden: 2S9 turret has two hatches and no commander's cupola.



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

Speed, swimming

10 km/h maximum

Range, HE-frag 30F49 (rifled)

8.85 km maximum, 30F49 HE-frag, indirect fire

Range, rocket-assisted 30F50

12.8 km maximum, 30F50 rocket-assisted HE-frag, indirect fire

Minimum range, rocket-assisted 30F50

1,700 m 30F50 rocket-assisted HE-frag, indirect fire

Range, mortar bomb OF-843B

7.15 km maximum, OF-843B smoothbore mortar bomb

Minimum range, mortar bomb OF-843B

400 m OF-843B smoothbore mortar bomb

SEEN WITH BTR-80 (1 per vehicle (modified hull))

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

2S31 Vena 2C31 «Вена»

TR

120 mm tracked amphibious gun-mortar for close and direct fire support In service 2010

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**

NUMBERS Holdings 'some' 2S31 Vena listed for Airborne Forces; no count given (IISS 2025, with 230 2S9 Nona-S and 30 2S9 Nona-SM) (2024)

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. 29 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.

BMP-3 Same running gear. Chassis hidden: BMP-3 turret has a 100 mm gun with a coaxial 30 mm cannon; 2S31 a single 120 mm gun.

2S9 Nona-S p. 28 Full view: BMD-type hull with six road wheels and five return rollers, against three on the 2S31.



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 **19,500 kg**

L × W × H **7.511 × 3.366 × 3.439 m** gun forward; hull 6.856 m

Road speed **70 km/h**

Road range **600 km**

Range, HE-frag 3VOF110 (rifled)

13 km maximum, rifled HE-frag shell

Range, mortar bomb (smoothbore HE)

7,200 m maximum, smoothbore 120 mm HE bomb

Range, Kitolov-2 guided

12 km maximum, 3VOF112 Kitolov-2 laser-guided projectile, rifled

Minimum range, ammunition not stated

0.5 km RUWIKI infobox gives firing range 0.5 to 14 km without naming the round

Range, HEAT direct fire

500 m effective, HEAT round, direct fire against armoured vehicles

SOURCES AIFRU ARI1 AR6 BMDP1 IISS25 JANESRG MIL3 ORYX2 RGRU2 VPK1 WEG2 WP-EN13 WP-RU11 WSN3 WSN4

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**

seen with 27th Guards Motor Rifle Division (ex-21st Brigade)

motor rifle brigade **R** 2015 **L** seen with 21st Separate Guards Motor Rifle Brigade

(Totokoye), 20th Separate Guards Motor Rifle Brigade (Volgograd)

NUMBERS Holdings 40 2S34 in Russian Army service (IISS, late 2024) (2024);

Losses About 5 lost since Feb 2022, at least 2 captured (Ukrainian press claim) (2024-07)

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.

29 Chassis hidden: 2S34 gun has a square muzzle brake; 2S9 turret has no machine gun; 2S31 has 6 smoke dischargers a side against 3.

2S1 Gvozdika p. 26 Same hull. Chassis hidden: 2S1 has a 122 mm howitzer with double-baffle muzzle brake and fume extractor; 2S34 a 120 mm gun with a square brake.

2S9 Nona-S p. 28 Full view: BMD-type hull, six road wheels, five return rollers. From above: 2S9 turret in hull centre, engine rear; 2S34 engine and driver in the nose, turret behind.

2S31 Vena p. 30 Full view: BMP-3 hull with six road wheels and three return rollers per side, against seven and none on the 2S34.

2S23 Nona-SVK p. 29 Full view: wheeled 8x8 BTR-80 hull. From above: 2S23 turret centred on the hull roof; 2S34 engine and driver in the nose, turret behind them.



Vitaly V. Kuzmin, CC BY-SA 4.0

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

Speed afloat

about 4.5 km/h Amphibious, propelled by tracks; needs preparation before entering water

Road range

also 5 km/h WSN3

Ground pressure

500 km

Time into action

0.49 kgf/cm2 RUWIKI gives 0.492; same figure for the 2S1 in JANESRG (0.49)

Time out of action

INA

Range, standard 120 mm mortar bomb

7.2 km maximum, Standard (non rocket-assisted) 120 mm mortar rounds, indirect fire

also 7.5 km ARMEDC

Range, rocket-assisted 120 mm round

13 km maximum, Rocket-assisted 120 mm rounds (WSNET)

also 14 km WP-RU13 RAMBLER ARI1

Minimum range, standard 120 mm mortar bomb

0.5 km RUWIKI and ARSHEET give 0.5 km for all 120 mm types; ARMEDC

Rate of fire, maximum

500 m for mines, 1.8 km for gun-fired shells

8-10 rounds/min WSNET calls it an estimate by analogy with the 2S31, estimated

also 9 rounds/min RAMBLER

Ammunition stowed

40 rounds 120 mm, in the fighting compartment

Gun elevation / traverse

-2 to +80 deg / 360 deg 2A80-1 120 mm gun-mortar in a fully

traversing turret

Crew

4 Commander, driver, gunner, loader (WSNET)

also 5 ARI0

SEEN WITH 2S1 Gvozdika; 3VOF112 Kitolov-2 guided round

SOURCES ARI1 AR6 ARI0 ARMEDC IISS25 JANESRG MIL4 RAMBLER RWW VPK2 WEG3 WP-RU8 WP-RU11 WP-RU13 WSN3 WSPOT7

2S35 Koalitsiya-SV 2С35 «Коалиция-СВ»

152 mm self-propelled howitzers: tracked autoloader 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 [\[R 2020-05 M\]](#)

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.

CONFUSED WITH 2S19 Msta-S / 2S19M2 Msta-SM2 p. 29 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 rds/min maximum, claim
Rate of fire, 2S43 7 rds/min maximum, claim

SOURCES AG2 AR11 ATP BMPD2 BMPD3 CNA IISS25 IZ23 IZMAL KZ1 KZ2 ORYX1 REDSTAR RG24 RGMAL RGMAL2 RGPAP RWW SHEP VMUS WEG4 WP-EN14 WP-EN15 WP-RU14 WP-RU15 WP-RU16 WSN5

2S40 Floks 2С40 «Флокс»

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 [\[R 2023-10 L\]](#)

Unidentified unit, Rossiyskaya Gazeta (state media) said the system was under trial in the operation zone, spring 2023 [\[R 2023-06 L\]](#)

NUMBERS Holdings Some 2S40 Phlox in Russian Army SP gun/mortar holdings, no count given (IISS) (2024)

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. 29 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.

2S43 Malva p. 31 Full view: four axles (BAZ 8x8) with a 152 mm gun at the rear, against three axles (Ural 6x6) on the 2S40.



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
Road range 1,000 km maximum

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
Elevation -2 to +80 degrees
Traverse 35 degrees (each side per DEFUA)

SEEN WITH Command post vehicle (type not named)

SOURCES AR5 AR7 AR12 DEFUA FOCUS IISS25 LIGA RGMAL RGRU3 WEG4 WEG7 WP-EN17 WP-RU9 WP-RU15

2S25 Sprut-SD 2С25 «Спрут-СД»

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 [\[R 2025 L\]](#) seen with 217th Guards Airborne Regiment, 98th Guards Airborne Division

NUMBERS Holdings 36+ 2S25 Sprut-SD in Airborne Forces; no other Russian force lists the type (2024); Holdings 24 in four batteries with Airborne Forces in 2009 (TASS claim, via English Wikipedia) (2009)

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.

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.

Suspension Close only: drive sprocket at rear, idler at front; hydropneumatic suspension changes ride height in about 7 s.

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.

BMD-4M p. 11 Full view: five road wheels and four return rollers a side. Chassis hidden: turret with a 100 mm gun and coaxial 30 mm cannon.

T-72 and T-90 tanks p. 9 Same 125 mm calibre. Full view: tanks have six road wheels a side against seven on the 2S25.

PT-76B Full view: six road wheels, no return rollers, turret well forward on the hull; 76.2 mm gun.



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
Speed, swimming 10 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

SEEN WITH BMD-3 (chassis basis)

SOURCES AMLN AR23 AR84 ATP IISS25 JANESRG ORYX2 RWW VPK19 WEG89 WEG2015 WP-EN109 WP-RU169

MT-12 Rapira

MT-12 «Panupa»

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 seen with Zapad Group of Forces, Vostok Group of Forces

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); Losses 42 MT-12 anti-tank guns lost, photo-confirmed (Oryx, Russia list, Towed Artillery) (2026-10)

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.

D-44 85 mm divisional gun Towed: travel length 8.34 m and width 1.73 m, against 9.65 m and 2.3 m for the MT-12.

2A45M Sprut-B 125 mm anti-tank gun Towed: 125 mm gun, 7.12 m long and 2.09 m high in travel, against 9.65 m and 1.6 m for the MT-12.

SEEN WITH MT-LB tracked tractor; Ural-375D and Ural-4320 trucks; ATGM batteries (9M123 Khризantema or 9M133 Kornet; RWW: 9P162 Kornet-T) (2 batteries of 6 per battalion); 9K116 Kastet guidance unit (tripod-mounted laser)

VARIANTS MT-12K 2A29K Separate tripod-mounted laser guidance unit used with the gun; gun itself not described as changed. Fires 9M117 laser-guided missile from the bore (9K116 Kastet, from 1981). MT-12R 2A29R Small 1A31 Ruta radar sight fitted on the gun itself, not on a separate vehicle. All-weather radar sight; engages at up to 3,500 m (ENWIKI). Produced 1981-1990. T-12 2A19 Original D-48-type narrow carriage with small equilibrator and six-bolt wheels; truck-towed. Same gun; carriage limits cross-country towing to about 15 km/h. In store; IISS also lists the T-12 with Naval Infantry. MT-LB with MT-12 Gun mounted on an MT-LB hull. Ukrainian conversions (MT-LB-12) used a T-12 gun, without the MT-12 equilibrator. Self-propelled; Ukrainian versions reportedly given more elevation. Oryx lists 3 MT-LB and 1 MT-LBu with MT-12 among Russian losses.

SOURCES AR61 ARMEDM ATP IISS25 ORYX1 RWW WEG2015 WP-EN80 WP-EN81 WP-RU121 not in WEG



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)

Cross-country speed, towed **25 km/h** MT-12 carriage; T-12 about 15 km/h

Ground clearance **330 mm**

Road range **INA**

Fording **INA**

Time out of action **INA**

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 rounds/min** RUWIKI: practical about 10 rounds/min

Elevation **-6 to +20 degrees** Traverse 27 degrees left or right (ENWIKI)

Crew **6** Commander, driver of towing vehicle, gun layer, loader, two ammunition handlers (RWW)

Ammunition carried **20 rounds** 10 APFSDS, 4 HE-frag, 6 HEAT when towed by MT-LB

Sights **OP4M-40U (direct), PG-1M panoramic (indirect), APN-5-40 or APN-6-40 (night)**

2A36 Giatsint-B 152 mm towed gun

2A36 «Гуацинм-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

Airborne Forces, INA; IISS lists the type with Airborne Forces without a count R 2024-12 L

NUMBERS Holdings 150 in service, 350 in store, Ground Forces total (IISS estimate) (2024-12)

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. 33 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.

D-20 152 mm gun-howitzer p. 34 Full view: 29-calibre tube with a double-baffle brake; caster wheel at each trail end and a central emplacement jack under the front.

M-46 130 mm field gun p. 34 Full view: one pair of large single wheels against four; cylindrical pepperpot muzzle brake, not multi-slot. Travels on a limber, barrel pulled back.



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

Off-road speed, towed **35 to 45 km/h**

Range, HE-frag 3VOF39 **28.5 km** maximum, HE-frag 30F29, full charge

Range, rocket-assisted 3VOF41 **33.5 km** maximum, active-rocket projectile 30F30

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**

SEEN WITH KrAZ-260 6x6 truck (or KrAZ-255B, Ural-4320)

SOURCES ATP FM3 GS1 IISS25 ORYX1 RUSARMY RUSIPL RWW VMUS WP-EN1 WP-EN2 WP-EN3 WP-EN4 WP-RU2 WSN1 not in WEG

2A65 Msta-B 2A65 «Mcma-5»

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**

Russian forces in Syria, Russian deployment in Syria; unit not named **R** 2024 **M**

NUMBERS Holdings 50 2A65 with Naval Infantry (Coastal Troops of the Navy) (IISS 2024 figures) [2024]

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 Giatint-B p. 32 Full view: four-wheeled carriage, against two wheels on the 2A65.

D-20 152 mm gun-howitzer p. 34 Full view: 29-calibre tube with a double-baffle brake against 47 calibres and a three-chamber brake. Both have trail caster wheels and a central jack.

M-46 130 mm field gun p. 34 Full view: cylindrical pepperpot muzzle brake, not a three-chamber brake; travels on a two-wheeled limber with the barrel pulled back.

SOURCES ATP CNA FM3 GS2 IISS25 JANESRG ORYX1 RWW WP-EN2 WP-EN5 WP-EN6 WP-RU3 not in WEG



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

Time into action **2 to 2.5 min** claim

Range, OF45 HE-frag **24.7 km** maximum, OF45 (30F45) 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 (30F61) HE-frag with base-bleed gas generator, round 3V0F91, claim

Rate of fire **up to 7 rounds/min** maximum, claim

2B9 Vasilek 2B9 «Васулёк»

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 **D** 2016 **L**

Soviet airborne, air assault and some motor rifle battalions, mortar company, second mortar platoon (Afghanistan, 1979-89), 3 per platoon **R** 1989 **L**

Unidentified unit, mortar battery holding a battalion defence line; Ivanovo VDV formation, April 2023 (Russian MoD claim) **R** 2023-04 **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.

Self-propelled Field conversion: gun fitted at the rear of an MT-LB tracked carrier, wheels removed.

CONFUSED WITH 2B14 Podnos 82 mm mortar p. 33 In action: tube, bipod and round baseplate on the ground; the 2B9 fires from a wheeled two-trail carriage, wheels lifted.

2S12 Sani 120 mm mortar p. 29 In transit: also a mortar in a GAZ-66 bed. In action the 2B11 stands on bipod and baseplate, carriage detached; the 2B9 fires from its wheeled carriage.

SOURCES FM3 IISS25 MIL1 ORYX1 OSN RWW VS WEG2015 WP-EN8 WP-RU4 WP-RU5 not in WEG



Vitaly V. Kuzmin, CC BY-SA 4.0

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

Road speed, 2F54 carrier **60 km/h** 2K21 on road

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 **100-120 rd/min**

Rate of fire, technical maximum **170 rd/min** maximum technical

Crew **4**

SEEN WITH 2F54 transport vehicle (GAZ-66-05 base) [1 per mortar (2K21 complex)]

2B14 Podnos 2B14 «Погнос»

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**

naval infantry brigade, battalion tactical exercise, Pechenga range, Murmansk Oblast, 2020-04-16; 2B14 named in Commons English caption only **O** 2020-04 **L**

NUMBERS Holdings 800+ 2B14 in Russian Army, 150 in Airborne Forces (IISS, late 2024) [2024]

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. 33 In action: the 2B9 fires from a wheeled split-trail carriage with its wheels lifted; the 2B14 stands on bipod and baseplate.

2B11 / 2S12 Sani p. 29 Same tube, bipod and baseplate triangle; bore 120 mm against 82 mm. The 2B11 travels on a detachable wheeled carriage, the 2B14 breaks down into three man-packs.

SOURCES ATP FM3 IISS25 MILPER RWW VS WMC1 WMC2 WP-EN7 WP-RU4 WSN2 ZONWAR not in WEG



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MOBILITY Carried by crew in three packs; also carried on GAZ-66 (RWW) or UAZ-469 based 2127 (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**

Weight, bipod pack **13.9 kg**

Range, 82 mm mine **4,270 m** maximum, mine type not stated by RWW; WSYS: with newer ammunition

Minimum range, 82 mm mine **87 m** mine type not stated by RWW

Rate of fire **24 rounds/min** RWW table; WSYS gives maximum 24 to 30

Calibre **82 mm**

D-20 A-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)

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.

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. 33 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.

SOURCES AR37 FAS8 FM3 FM23 FM100 FOCUS3 IISS25 IZV3 ORYX1 RU6R2 WEG40 WP-EN2 WP-EN42 WP-EN43 WP-RU3 WP-RU67



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

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	

SEEN WITH Ural-375D or Ural-4320 6x6 truck (1 per gun)

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)

NUMBERS Holdings 200 D-30 in Army service; 1,000+ in store (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
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SEEN WITH Ural-375/Ural-4320 truck

SOURCES AMIC AR38 ATP CNA FAS9 FM100 IISS25 IZV4 MAILRU MIL2 ORYX1 RG2 RWW VM2 WEG41 WP-EN44 WP-EN45 WP-RU68 WP-RU69

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)

NUMBERS Holdings 50 M-46 in Russian Army service, 300 in store (IISS, late 2024) (2024)

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 59-1130 mm gun Same 130 mm barrel on the lighter D-74-type carriage (6.3 t).

SOURCES CMH DEX FAS10 FM3 FM100 IISS25 IZ4 KP12 KP22 LB NEWSRU3 ORYX1 WP-EN2 WP-EN43 WP-EN75 WP-RU116 ZERK not in WEG



Drawing: US Department of the Army, FM 100-2-3 (1991), public domain



Satunnainen2020, CCO

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 30F33 or OF-482M, full charge
Range, HE-frag OF-33 (reduced charge 3VOF44)	22,500 m	maximum, HE-frag 30F33, 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

SEEN WITH AT-S tracked artillery tractor (ATS-59)

ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns

ML-20, D-1, M-30, BS-3, D-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](#)Unidentified unit, D-44 destroyed by Ukrainian drone, footage posted 27 Sep 2023; unit not named, 1 [R 2023-09 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.**ML-20 152 mm** Barrel L/29 against the D-1's L/23, with a large slotted muzzle brake; barrel usually pulled back for towing, on a limber.**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.**D-1 (152 mm)** Against the ML-20: no slotted brake but a double-baffle one, and a shorter barrel (L/23 against L/29); towed without a limber.

Lyubo Klimentov (Любо Климентов), CC BY 4.0



Zala, CC BY-SA 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
Weight, combat, BS-3	3,650 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)
Range, HVAP-T, D-44	1,150 m	effective, HVAP-T (BR-365PK in WEG 2015), direct fire, day

SEEN WITH Artillery truck or tractor (1 per gun (inferred))**SOURCES** AR98 DEF243 DEFML20 DEFUA13 FAS8 FAS9 IISS25 MILM30 WEG108 WEG2015 WP-EN43 WP-EN45 WP-EN136 WP-EN137 WP-EN138 WP-EN139 WP-EN140 WP-EN141 WP-EN142 WP-EN143 WP-EN144 WP-EN145 WP-EN146 WP-EN147 WP-EN148 WP-EN149 WP-EN150 WP-EN151 WP-EN152 WP-EN153 WP-EN154 WP-EN155 WP-EN156 WP-EN157 WP-EN158 WP-EN159 WP-EN160 WP-EN161 WP-EN162 WP-EN163 WP-EN164 WP-EN165 WP-EN166 WP-EN167 WP-EN168 WP-EN169 WP-EN170 WP-EN171 WP-EN172 WP-EN173 WP-EN174 WP-EN175 WP-EN176 WP-EN177 WP-EN178 WP-EN179 WP-EN180 WP-EN181 WP-EN182 WP-EN183 WP-EN184 WP-EN185 WP-EN186 WP-EN187 WP-EN188 WP-EN189 WP-EN190 WP-EN191 WP-EN192 WP-EN193 WP-EN194 WP-EN195 WP-EN196 WP-EN197 WP-EN198 WP-EN199 WP-EN200 WP-EN201 WP-EN202 WP-EN203 WP-EN204 WP-EN205 WP-EN206

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

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. 45 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. 36 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.**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 radars; acquisition at 15 km or more.

Vladislav Falshivomonetchik, CC BY-SA 3.0



Vladislav Falshivomonetchik, 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	MISS22
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	MISS22 WSN9
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	WSN9

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-RU184
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 × 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

SOURCES ATP BCAT5 CNA CSIS6 FM23 GICHD IISS25 LENTA8 MDB MILNYI MISS22 RUSIPL RVIA RWW VPK3 WP-EN120 WP-RU184 WSN9 not in WEG

Iskander-M 9K720 «Искангер-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]** army corps, corps missile brigade, 1 missile brigade (12 launchers) **[O 2021 M]** combined arms army, army missile brigade, 12 launchers per brigade **[O 2023 M]** missile battalion, 4 launchers **[O 2008 M]**

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. 37 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. 26 Rear carries two rocket pods of six tubes each instead of two missiles.

9K79-1 Tochka-U launcher p. 35 Carries one missile, not two, on an amphibious launcher.

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 (MRT0), 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

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.

SOURCES AR48 ATP CNA CNA21 CSIS4 CSIS5 CSIS6 ESD IIS25 KI4 MDB MIL34 MISS10 RDP5 RUSI4 RUSIPL RWW TASS6 TE TH VPK3 WEG2015 WP-EN24 WP-EN25 WP-EN60 not in WEG



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launcher with 9M728 cruise missiles. Boevaya mashina, CC BY-SA 3.0

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

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

Fording

1.4 m

Time into action

16 min to first launch from the march; 4 min from highest readiness claim

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

Range, 9M723 ballistic missile

up to 500 km maximum, 9M723, domestic Iskander-M

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

Accuracy (CEP), 9M723

10 to 30 m reported, With electro-optical terminal seeker

Warhead mass, 9M723

480 to 700 kg Depends on warhead type

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

Missile length and diameter, 9M723

7.3 m; 0.92 m

Missiles per launcher

2 ballistic (9M723) or 2 cruise (9M728); 4 x 9M729 in special configuration claim

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

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 (губузуюн), 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]** seen with

72nd Separate Coastal Missile Brigade, Pacific Fleet

coastal missile brigade, Bal battalion reported moved to Bryansk region (Ukrainian NRC claim) **[O 2023-06 L]** seen with 11th Separate Coastal Missile and Artillery Brigade, Black Sea Fleet

(Utash)

Unidentified unit, Black Sea coast, April 2022: four missiles at land targets (Russian MoD) **[R 2022-04 H]**

NUMBERS Holdings 40 3K60 Bal in Navy Coastal Missile and Artillery Forces (IIS5) (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 Stoooge) p. 37 Same MZKT-7930 chassis. Count the containers: Bastion carries two Oniks, Bal eight Kh-35.

SOURCES AIF16 AIF22 AR18 AR19 DFRLAB ESP23 ESP24 IIS25 JREW02 NAVNEWS RUSIPL RWW TWZ4 UNN23 WEG14 WP-EN23 WP-RU28



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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 (go), Kh-35U missile (KNIIE 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

Bastion-P 3K55 «Басмун-П»

NATO: SSC-5 Stoooge **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 (гуðвуон): 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

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. 36 Chassis hidden: eight Kh-35 containers against two Oniks containers. Full view: same MZKT-7930 chassis.

9K720 Iskander-M p. 36 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. **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.



Sergey Schmidt, 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
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
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
Speed, P-800 Oniks	Mach 2.6 maximum
Cruise altitude, P-800 Oniks	14,000 m maximum
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
Terminal altitude, P-800 Oniks	5-10 m final approach to ship target
Warhead, P-800 Oniks	200-250 kg 200 kg HE or 250 kg semi-armour-piercing
Missile weight, P-800 Oniks	3,100 kg
Missile length, P-800 Oniks	8.9 m
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

SOURCES AIF16 AR20 CNA21 CSIS1 HVI IIS25 KI1 KP1 KP2 MDB ORYX1 RAMB2 RUSIPL RWW SVOB TWZ4 VALKA2 VPK3 WEG16 WP-EN24 WP-EN25 WP-RU31

3 Air defence

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	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	TR	40
S-300PM / S-300PS	SA-20 GARGOYLE	C-300ПМ	Long-range SAM system of the Aerospace Forces for area defence of fixed objects · 1982	WH-AT	41
S-300V4	SA-23	C-300В4	Tracked long-range SAM and theatre anti-ballistic-missile system of Army air defence · 1988	TR	41
S-350 Vityaz	SA-28	C-350 «Витязь»	Wheeled medium-range SAM against aircraft, cruise missiles, UAVs and ballistic missiles · 2019	WH-AT	42
S-400 Triumf	SA-21 GROWLER	40P6 «Триумф»	Long-range SAM system against aircraft, cruise missiles and ballistic missiles · 2007	WH-AT	42
SHORT-RANGE SAMS AND GUNS					
2S38 Derivatsiya-PVO	—	2С38 «Деривация-ПВО»	Self-propelled 57 mm anti-aircraft gun on BMP-3 chassis · 2017	TR-A	43
Gibka-S	—	9K334 «Гибка-С»	Armoured-car launcher for Igla-S or Verba MANPADS, with a command and radar vehicle · 2022	WH-AT	43
Pantsir-S1	SA-22 GREYHOUND	96K6 «Панцирь-С1»	Short-range gun and missile air defence of S-400/S-300 battalions and key sites · 2012	WH-AT	44
S-60	—	C-60	Towed 57 mm anti-aircraft gun, used in Ukraine for ground fire · 1950	TW	44
Sosna	—	«Сосна»	Short-range SAM, tracked chassis · 2019	TR	45
Strela-10 and Osa short-range SAM	SA-13 GOPHER	9K35, 9K33 «Стрела-10», «Оса»	Short-range SAM · 1971	TR	45
Tor	SA-15 GAUNTLET	9K330 «Тор»	Short-range tracked SAM with own radars · 1986	TR	46
Tunguska	SA-19 GRISON	2K22 «Тунгуска»	Tracked short-range gun and missile air defence vehicle, 30 mm guns and SAMs · 1982	TR	46
ZSU-23-4 Shilka	—	3СУ-23-4 «Шилка»	Radar-directed self-propelled quad 23 mm AA gun · 1962	TR	47
ZU-23-2	—	2А13	Twin 23 mm towed AA gun, often truck- or MT-LB-mounted · 1960	TW+AD	47
MAN-PORTABLE SAMS					
Igla / Igla-1 / Igla-S	SA-18 GROUSE	9K38 «Игла»	Shoulder-fired IR-homing SAMs against low-flying aircraft, helicopters and cruise missiles · 1981	MP+AD	47
Verba	SA-29 GIZMO	9K333 «Верба»	Man-portable infrared-homing SAM against aircraft, helicopters, UAVs and cruise missiles · 2014	MP	48

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	7 Command and signals	84
PU-12M7	Air defence battery command post	7 Command and signals	85
Barnaul-T	Automated command and control set for tactical short-range air defence, battery...	7 Command and signals	84
Nebo-M	Mobile multiband air surveillance radar complex	4 Radars	51
96L6 all-altitude acquisition radar	3D C-band acquisition and target designation radar for S-300PM/PMU2 and S-400...	4 Radars	50

Buk-M1 / Buk-M2 / Buk-M3 9K37M1; 9K317; 9K317M «Byk-M1»; «Byk-M2»; «Byk-M3»

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. 41 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. 46 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. 9K37M1-2 Buk-M1-2 Looks like Buk-M1: TELAR 9A310M1-2 with 9S35M1-2 radar and bare missiles. 9K317 Buk-M2 TELAR 9A317 with flat phased-array radar, four bare missiles; adds 9S36 radar on a 21–22 m mast. 9K317M Buk-M3 Missiles in containers: 6 on TELAR 9A317M, 12 on launcher 9A316M. All vehicles on GM-5969 chassis.



Buk-M2 TELAR. Boevaya mashina, CC BY-SA 3.0



Buk-M3 TELAR. Ministry of Defence of the Russian Federation, CC BY 4.0



9S36M radar on mast. Boevaya mashina, CC BY-SA 4.0

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

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

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

radar (M2/M3)

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)

SOURCES ATP BMPd4 BMPd5 CNA IIS25 JIT MIL23 MISS1 MISS2 MISS3 MISS4 MISS5 ORYX1 ROE RWW TWZ6 WEG35 WEG36 WEG37 WEG38 WP-EN40 WP-EN41 WP-RU64

S-300PM / S-300PS C-300PM

NATO: SA-20 Gargoyles **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)
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.

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. 42 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. 42 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. 41 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).

SOURCES APA2 AR75 AR76 AR77 ATP CSIS8 FAS12 IIS25 IZV21 IZV223 JREW02 KOLESA4 KYIVPOST ORYX1 OSN3 RUSIPL RWW TRUCKENC VALKA7 VM4 WEG81 WP-RU155 not in WEG



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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

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

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

Minimum range, 48N6E2 **3 km** aerodynamic target; S-300PMU2, claim

Range, 5V55R **5-75 km** engagement zone, aerodynamic target; S-300PS/PMU, claim

Detection range, 64N6E **260 km** MiG-21 sized target; export 64N6E, claim

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

Detection range, 36D6 **120 km** 1 m² target at 1,000 m altitude, claim

Detection range, 96L6E **300 km** max, target size not stated; export 96L6E, claim

Altitude, 48N6 **10 m-27 km** aerodynamic target; S-300PMU1, claim

Altitude, 48N6E2 **10 m-27 km** aerodynamic target; S-300PMU2, claim

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; 96L6 all-altitude radar; 40V6M / 40V6MD radar mast (2 per S-300PS system)

VARIANTS S-300PS 5N63S radar and 5P85S TEL with tall equipment cabin plus cabin-less 5P85D slaves. S-300PM1 30N6 radar with revised array; TELs without the large cabin; 64N6 radar; towed 5P85T option. S-300PM2 Favorit Looks like S-300PM1; differences are internal.

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]**

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.

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.

SOURCES APA2 APA12 AR77 ATP BMPD10 CSIS8 IIS25 IZV10 JREW02 MISS2 MISS3 MISS17 RUSIAD RWW TASS17 VKS VKS2 VKS3 WEG37 WEG82 WEG83 WP-EN101 WP-RU156 WP-RU157 WSPOT28 WSPOT29



TELAR, Alexey Ivanov, CC BY 4.0



radar, Vitaly V. Kuzmin, CC BY-SA 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

SEEN WITH 9S457M command post (1 per battalion); 9S15M/9S15MV Obzor-3 all-round surveillance radar (Bill Board) (1 per battalion)

S-350 Vityaz C-350 «Вунязб»

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) [\[R 2020-02 M\]](#)

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. 41 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.

Buk-M3 9A316M launcher (SA-27) Also 12 containers, but on a tracked GM-5969 chassis, split over two arms raised at an angle; the 50P6 is an 8x8 truck with one pack raised upright.

SOURCES AIF9 AINF4 APA1 AR78 ATO GS26 GS27 GS28 IJSS25 IZ21 IZ202 MISS3 R69 RUSIAD TW123 WEG81 WMC32 WMC33 WP-EN102 WP-EN103 WP-RU158



TELAR. Vityaly V. Kuzmin, CC BY-SA 4.0



radar. Vityaly 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

SEEN WITH 50K6A command post (1 per battalion)

S-400 Triumph 40P6 «Триумф»

NATO: SA-21 Growler

WH-AT

Long-range SAM system against aircraft, cruise missiles and ballistic missiles

OPERATED BY military district, SAM regiments of the district's Air Force and Air Defence Army, IJSS 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 (division), 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, IJSS: 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, IJSS: 64 S-400 in Navy; 3 SAM regts: 2 Baltic Fleet, 1 Pacific Fleet (naval aviation) [\[R 2024 M\]](#)

air defence missile battalion, IJSS: 2 SAM bn in Belarus; 1 SAM bty in Syria [\[R 2024 M\]](#)

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. 41 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. 41 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. 42 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. 41 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.

VARIANTS 5P85SM2-01 Self-propelled launcher on MAZ-543M 8x8; no separate tractor. 5P85T2 Launcher on a semitrailer towed by a BAZ-6402-series 6x6 tractor. 5P90S Self-propelled TEL on BAZ-6909-022; new gantry, folding mast with directional antenna, satnav antennas on a longer baseline. 51P6 Launcher on MZKT-7930 chassis (RU Wikipedia only); Oryx lists 51P6 TELs among S-400 losses. S-400E INA.

SOURCES APA1 APA2 AR77 ATP CSIS9 IJSS25 JREW02 LENTAG MIL68 MIL69 ORYX1 RUSIAD STRASAM TASS18 WEG81 WEG83 WP-EN104 WP-RU159 WP-RU160



Vityaly V. Kuzmin, CC BY-SA 4.0



radar. vityaly 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
Cruising range, 5P85TE2 launcher	800 km	estimated
Time into action	5-10 min	from travelling position; 3 min to ready from deployed position
Weight, launcher	INA	
Fording	INA	
Time out of action	INA	
Ground pressure	INA	
Length, launcher	INA	

Range, 40N6	400 km	maximum, aerodynamic targets (STRASAM); APA brochure figure is for export 40N6E, 215 nmi, claim
Altitude, 40N6	30-35 km	maximum, 40N6; the 27 km often quoted is reported for the 48N6DM missile specifically, claim
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
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)
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

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

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.

CONFUSED WITH BMP-3 Chassis hidden: BMP-3 has a two-man circular turret with 100 mm gun and a 30 mm cannon beside it; 2S38 has a remote module with one 57 mm gun.

SOURCES AR39 BMPD6 CNA EDR19 IIS25 JANESRG OVERT REDSTAR2 RGRU5 SPAGE TADV VZRU WP-RU71 WP-RU72 WWW1A3 not in WEG

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, 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

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; 9V9005 maintenance vehicle (Ural-4320-1812-31)

Gibka-S 9K334 «Губка-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**

Unidentified unit, One vehicle reported destroyed near Avdiivka, Feb 2024; unit not named, 1 **R 2024-02 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.

Complex One 9S937 radar vehicle with up to six 9A332 launcher vehicles, or with four MANPADS sections carrying 9S935 automation kits.

CONFUSED WITH 9K35 Strela-10 p. 45 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. 9P163-3 Kornet-D/D1 p. 21 Same Tigr-M. Launcher raised: Kornet-D/D1 has two separate four-round launchers, each with its own sighting module; Gibka-S has one mount with one sighting station.

SOURCES APA6 AR45 BMPD7 DEFBLOG2 DEFM IIS25 IZ24 MISS6 MOD1 ORYX1 RGAZ VALKA4 VPK7 WEG45 WEG46 WP-RU85 WP-RU86 ZVEZDA

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	
Speed while firing	30 km/h	maximum, MoD trial claim, Kapustin Yar range, 2019, claim

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



Nickel nitride, CCB

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 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)

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. 46 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. 46 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.

SOURCES APA10 AR64 AR65 ARMADA8 CSIS7 IISS25 LENTA4 MIL60 MISS16 ORYX1 RSTAR RUSIAD RWW TASS14 TASS15 WEG38 WEG71 WP-EN90 WP-RU134



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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
L × W × H	10.3 × 2.5 × 3.27 m	
Road speed	90 km/h	maximum
Road range	1,000 km	maximum
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
Time out of action	INA	
Ground pressure	INA	

Range, 57E6 missile	20 km	maximum, aircraft-type targets; KBP figures for export 57E6-E, claim
Minimum range, 57E6 missile	1.2 km	KBP figures for export 57E6-E, claim
Altitude, 57E6 missile	5 m to 15 km	maximum, KBP figures for export 57E6-E; 5 m only in optical mode over water, claim
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
Detection range, 1RS2-1 tracking radar	28 km	maximum, target size not stated; WEG and Armada, claim
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

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)

S-60

C-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]

naval infantry brigade, Volunteer detachment 'Tigr', one MT-LB with S-60, South Donetsk axis, 1 vehicle seen [O 2023-07 L]

motor rifle brigade, Zil-131 truck with S-60, damaged, Donetsk raion, 31 Jul 2023 (WarSpotting record 18807; brigade listed as ex-DNR), 1 vehicle seen [O 2023-07 L]

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.

Complex A battery is six guns with one fire-control radar and one director; Russian state media report up to eight guns in a centrally controlled battery.

CONFUSED WITH ZU-23-2 (23 mm) p. 47 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.

ZSU-57-2 Two 57 mm barrels side by side in an open-top turret on a modified T-54 hull; the S-60 and its field mounts, the T-55 hull conversion included, have one.

SOURCES AR79 ARMOUR FAS13 FM100 IISS25 JREW02 ORYX1 ORYX2 TASS WP-EN105 WP-RU161 WSPOT30 ZVEZDA2 not in WEG



Arest128, CC BY 4.0



Apwainform, 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
Road range	750 km Prime mover cruising range

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
Penetration, UBR-281 APCBC-HE-T	96 mm	RHA at 1,000 m
	stated, Armour-piercing round, one source	

SEEN WITH PUAZO-5A fire director (1 per battery)

Sosna «Cocha»

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. 45 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.

SOURCES

APA6 ATP BMPD13 EDR3 FOCUS13 IISS25 RWW SHEP21 SHEPHRD TASS19 WEG46 WP-RU168 not in WEG

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

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

SEEN WITH

Sborka-M1-2 (9S80M1-2) battery command post; MT-LB; BMP-3

Strela-10 and Osa short-range SAM 9K35, 9K33 «Смерча-10», «Оса»

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](#)

air defence missile regiment

division air defence regiment (Osa-AKM, being deactivated in 2019) [D 2019 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.

Complex

Strela-10 battery: one 9A35, three 9A34, PPRU-1M command post with Dog Ear radar. Osa battery: four launch vehicles and two reload vehicles with crane.

CONFUSED WITH

Sosna p. 45 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.

9K31 Strela-1 (SA-9 Gaskin)

Full view: four-wheeled BRDM-2 (Strela-1) against tracked MT-LB (Strela-10). Both carry four missiles, so the launcher alone does not settle it.

SOURCES

APA6 APA13 ATP CNA EDR3 FOCUS13 IISS25 JANESRG JREW02 MISS21 RWW WEG38 WEG46 WEG2015 WP-EN110 WP-EN111

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

Road speed

60 km/h maximum, 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

Detection range, Land Roll surveillance radar

30 km acquisition range, Osa; target type not stated in source



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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)

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. 45 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. 44 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. 46 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. 45 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

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

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

SOURCES APA6 AR91 ATP BMPD15 CNA CSIS10 EDR3 IISS25 IZV12 JREW02 MISS23 ORYX1 RG175 RG192 RG233 RG245 RG252 RWW WEG38 WEG46 WP-RU185

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]

tank brigade, anti-aircraft missile-artillery battalion, SA-19 battery; ATP 4-161 gives this battalion to tank brigades, but the battery figure is for brigades generally, 6 per battery (generic brigade figure: RWW 'maneuver brigade', ATP fig. 4-19) [D 2024 L]

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.

Complex Battery of six vehicles with six 2F77 transloaders and a Ranzhir or PPRU command post.

CONFUSED WITH Pantsir-SM-SV (tracked) p. 44 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).

96K6 Pantsir-S1 (SA-22 Greyhound) p. 44 Chassis hidden: 12 missile tubes in two blocks of six; Tunguska has 8, four each side of the turret. Full view: Russian Pantsir-S1 is on an 8x8 truck.



Vitaly V. Kuzmin, CC BY-SA 4.0

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, road	500 km cruising range

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

SEEN WITH 2F77 / 2F77M transporter-loader (6 per battery (WEG; RUWIKI: one per 2S6); APA 2 to 3, WIKI up to 3)

SOURCES APA10 ATP FM100 IISS25 JREW02 MIL80 MISS16 ROE2 RWW USER80CT WEG38 WEG98 WP-EN125 WP-RU191

ZSU-23-4 Shilka 3CY-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]

NUMBERS Holdings 100 ZSU-23-4 in store, Russian Army (IISS) (2024)

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.

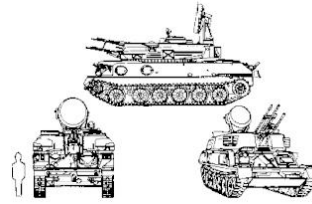
Chassis Tracked GM-575 hull, driver front left, engine at rear; not amphibious. Close only: six road wheels and no track return rollers, as on PT-76 and ASU-85.

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. 46 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. 47 Two 23 mm barrels side by side between ring trunnions, ammunition boxes outside each turret side; open mount on wheels, truck or armoured vehicle, no turret or radar.

SOURCES AINFS ATP FM100 IISS25 JREW02 MIL70 MIL71 ORYX1 UKRINF7 W1RU3 WEG84 WP-EN106 WP-RU162 ZVEZDA3



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

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]

NUMBERS Holdings Towed ZU-23-2 in Army service, number not given; 150 BTR-ZD in Airborne Forces (IISS) (2024)

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.

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. 47 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



Alexey Ivanov, Mil.ru (Russian MoD), CC BY 4.0

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

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 rd/min both barrels
Rate of fire, practical 400 rd/min 10-30 round bursts

SEEN WITH GAZ-66 truck; UAZ-69 (GAZ-69) light vehicle

VARIANTS BTR-ZD Skrezhnet Gun mount carried on a BTR-D: turretless tracked airborne APC with six road wheels, longer and with a higher roof than the BMD-1.

SOURCES AIF14 ATP DMNTV FAS21 FM100 IISS25 IZV15 JANESRG ORYX1 RG248 WEG111 WP-EN141 WP-RU209

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]

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.

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. 48 Outwardly alike: laid out like Igla-S, with tube, grip stock and sight; only the markings tell them apart.

SOURCES AR46 ATP IISS25 IZK IZV232 MIL33 MISS6 MISS8 MISS9 NI360 RG224 RGGIB RTGIB RUSIAD RWW SAS WEG49 WP-EN58 WP-RU90



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

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

SEEN WITH 9B238 ground power source (1 per missile tube)

Verba 9K333 «Берба»

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**

NUMBERS Holdings 3 brigade and 2 divisional sets delivered by 2015 (English Wikipedia) (2015)

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.

CONFUSED WITH 9K338 Igla-S / 9K38 Igla (Igla family) p. 47 Outwardly alike: laid out like Igla-S, with tube, grip stock and sight; only the markings tell them apart.

SOURCES AR46 ATP AVIAT IIS25 IZ212 IZ242 MIL33 MISS25 RG176 RG247 RG253 RIA17 RIA17B RUSIAD RWW VPK22 WEG107 WMC38 WP-EN133 WP-RU203



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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**

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

SEEN WITH 1L122 Garmon portable radar (INA (in MANPADS platoon))

4 Radars

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	MOB.	PAGE
AIR SURVEILLANCE RADARS					
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	WH-AT	50
Garmon	—	1А122 «Гармонь»	Portable L-band 3D air surveillance radar for short- and medium-range air defence · 2012	MP+AD	50
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	WH-AT	51
Nebo-M	TALL RACK	55Ж6М «Небо-М»	Mobile multiband air surveillance radar complex · 2012	WH-AT	51
Nebo-SVU	—	1А119 «Небо-СВУ»	Mobile VHF air surveillance radar for army air defence · 1986	TW	51
Nebo-U	TALL RACK	55Ж6У «Небо-У»	Transportable VHF 3-D air surveillance radar for medium and high altitude, long range · 1995	TW	52
Oborona-14	TALL KING C	5Н84А «Оборона-14»	Mobile metric-band 2D early-warning radar · 1974	TW	52
P-18 Terek	SPOON REST D	П-18 «Терек»	Mobile 2D VHF early-warning radar · 1970	WH-AT	53
COUNTER-BATTERY AND GROUND SURVEILLANCE RADARS					
1B75 Penicillin	—	1Б75 «Пенициллин»	Passive acoustic-thermal gun locator · 2020	WH-AT	53
1K148 Yastreb-AV	—	1К148 «Ястреб-АВ»	Counter-battery radar · 2019	WH-AT	53
ARK-1M Rys	SMALL FRED	1РЛ239 «Рысь»	Artillery weapon-locating and fire-control radar · 1977	TR	54
SNAR-10 / SNAR-10M1 Leopard	BIG FRED	СНАР-10М1 «Леопард»	Tracked battlefield surveillance and artillery-adjustment radar · 1975	TR	54
Sobolyatnik	—	1А277 «Соболятник»	Portable ground surveillance and fire-correction radar · 2021	MP	55
Zoopark-1 / Zoopark-1M	—	1А219, 1А219М; 1А260 «Зоопарк-1», «Зоопарк-1М»	Tracked radar that locates enemy guns, mortars, rockets and missile launchers · 2007	TR	55
STRATEGIC EARLY-WARNING RADARS					
Voronezh-DM	—	77Я6-ДМ «Воронеж-ДМ»	Fixed UHF early-warning radar for missile attack warning and space surveillance · 2009	FX	56

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	7 Command and signals	85
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	Tracked command, observation and fire direction vehicles, SP howitzer battalion	7 Command and signals	83

96L6 all-altitude acquisition radar 96Л6 «Всевысотный обнаружитель»

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](#)

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.

Chassis MZKT-7930 8x8: array pedestal behind the cab, equipment container at the rear, ground jacks lowered when deployed. A two-semi-trailer version also exists.

Complex Found with a 92N6 (S-400) or 30N6 (S-300PM) engagement radar, towed or self-propelled TELs and a command post; S-400 sets also have a 91N6 Big Bird.

CONFUSED WITH 48Ya6-K1 Podlet-K1 [p. 51](#) 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.

76N6 Clam Shell Deployed, from afar: separate shielded transmit and receive arrays on the head of a 23.8 m (40V6M) or 38.8 m (40V6M2) mast.



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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

SOURCES APA1 APA2 APA3 ARMADA1 ATP ESP GS5 JREW02 MIL6 MILRU ORYX1 PVO RS RT RUS11 RUSIAD RWW TWZ3 U241 WEG12 WMC3 WP-RU22

4

RADARS

Garmon 1Л122 «Гармонь»

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](#) seen with Mountain motor rifle formation, 41st Combined Arms Army, Central MD (Tuva)

military base [R 2020 L](#) seen with 201st Russian base, Tajikistan

Air defence units of airborne and air-assault brigades, six trial sets, Novorossiisk, Ivanovo and Tula garrisons (MoD, Apr 2012), 6 (total, trial) [R 2012-04 L](#)

Unidentified unit, Occupied Zaporizhzhia Oblast, Jan 2025: radar, vehicle and crew destroyed (GUR claim) [R 2025-01 L](#)

Unidentified unit, Kursk region, Mar 2026: one 1Л122 destroyed by UAVs (Ukrainian 78th Air Assault Brigade claim), 1 [R 2026-03 L](#)

NUMBERS Losses 1 portable 1Л122Е-1, used against Ukrainian UAVs, hit by Ukraine's 413th Regiment 'Raid'; place not given (ArmyInform, Ukrainian claim) (2026-01)

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 1Л122Е-1; 1900 x 1800 mm reported for the Е-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. 1Л122Е-2 is on an MT-LBu tracked chassis.

Complex Antenna post, technical post with display and a separate power unit; also fitted to the Gibka-S command vehicle.

CONFUSED WITH 9S932-1 Barnaul-T battery command post [p. 84](#) Same MT-LBu hull and 1Л122 radar. On the 9S932-1 the array sits on the top rear of the hull, folded down in transit; the 1Л122Е-2 raises it on a boom.

1Л277 Sobolyatnik (portable) [p. 55](#) Deployed: one rectangular antenna block on a folding tripod, 36 kg set carried by two scouts; the portable 1Л122Е-1 is 150 kg in several containers.

1Л271 Aistenok [p. 53](#) Deployed: single-curvature parabolic antenna on a rotary tripod pedestal; the 1Л122Е-1 has a flat 1200 x 800 mm array.



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Ministry of Defence of the Russian Federation, CC BY 4.0

MOBILITY Portable set carried in 30 kg containers; tracked 1Л122Е-2 variant on MT-LBu. Air-dropping stated for components (RT).

Weight, 1Л122Е-1 **150 kg** Export designation; whole set; each container up to 30 kg, claim

Weight, 1Л122Е-2 **900 kg** Export designation; radar equipment only, not the MT-LBu chassis, claim

Time into action **5 min** 1Л122Е-1, crew of three, claim

Time out of action **5 min** crew of three; Rostec figure as quoted by RT, claim

Detection range, 1Л122Е-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 1Л122, claim

Detection range, 1Л122Е-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

also UHF (1Л122-2Е) INDRA

Crew **3** 1Л122Е-1 portable set, claim

Power consumption, 1Л122Е-1 **800 W** Export designation 1Л122Е-1; 22-30 V DC; 1Л122Е-2: 5 kW, claim

Data update period **2 s or 4 s** 1Л122Е-1 per TOPWAR; GSEC gives 2 (4) or 4 (10) s for E-1 (E-2), claim

Targets detected simultaneously **31** Within 45 km, per Rostec as quoted by RT; detection, not tracking; exceeds the 40 km range given elsewhere, claim

Elevation coverage **-5 to +45 deg (E-1); 0 to +60 deg (E-2)** Azimuth 360 deg, claim

also +5 to +45 deg (E-1) TOPWAR3

SEEN WITH MT-LBu tracked chassis (1Л122Е-2) (1 per set); Gibka-S recon and command vehicle; Strela-10, Osa-AKM, Tunguska-M1, Tor, Igla-S; GAZ Tigr air defence command module with 1Л122Е radar (shown Oboronexpo 2014)

VARIANTS 1Л122Е-1 Portable; tripod, 1200 x 800 mm array, containers of up to 30 kg. 40 km, 10 km altitude, 150 kg, 800 W (export-designation figures, TOPWAR). 1Л122Е-2 On MT-LBu chassis with lifting boom; larger array per TOPWAR. 80 km, 20 km altitude, 900 kg, 5 kW (export-designation figures, TOPWAR).

SOURCES AINF1 AINF2 DEFUA22 DTALK GS6 INDRA LIGA3 RADTUT RGRU6 RTRU SDN2 TOPWAR3 TWZ1 WP-RU80 not in WEG

Kasta 35N6 / 39N6 35H6; 39H6 «Kacma»; «Kacma-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.**Complex** 35N6: hardware vehicle, antenna vehicle with power units, reserve generator on one-axle trailer, remote operator post (up to 300 m). 39N6 adds a diesel power 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.**P-19 Flat Face B** Full view: ZiL-131 truck with the electronics in a second truck, not KamAZ. Its two open-frame elliptical reflectors match the 35N6, its modernisation.

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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
Fording	1.75 m	WEG, KamAZ-5350 chassis

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 m ² 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 MIL35 MIL36 PATR PPTO RBC18 RUSARMY3 U244 VPK8 WEG55 WP-EN64 WP-EN65 WP-RU99 WP-RU100

Nebo-M 55K6M «He6o-M»

NATO: Tall Rack **WH-AT**

Mobile multiband air surveillance radar complex; paired low-altitude radar Podlet-K1 In service 2022

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.**CONFUSED WITH** Nebo family (1L13, 1L119, 55Zh6U, 55Zh6M) p. 51. 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. 52 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.**SOURCES** AIF5 ANNA APA1 APA8 APA9 ARMADA7 ESP GS22 JREW02 MRLJ RS RUSIAD TRUCK TWZ3 TWZ10 U247 VPK11 WEG69 WP-PU127 WP-RU128 ZVEZ2

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

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.

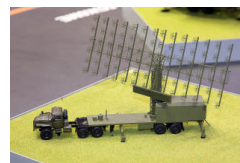
Road speed, KamAZ-6350	95 km/h	maximum, base truck, Podlet-K1 carrier
Height, Podlet-K1 antenna deployed	12 m	Podlet-K1, radar fully deployed
Time into action, Nebo-M	15 min	Nebo-M, manufacturer cited stow and deploy time, claim
Time into action, Podlet-K1	20 min	Podlet-K1, deployment or stowage, claim

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

Nebo-SVU 1L119 «He6o-CBY»

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)**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. 52 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.**SOURCES** APA8 APA9 AR62 DEFUAS IZV7 JREW02 LJRU MIL56 MRLJ ORYX1 VRF10 WP-EN83 WP-RU124 not in WEG

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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 m ² aircraft or ballistic target at 20 km altitude	380 km	claimed, RCS 1 m ² ; target at 20 km altitude; export sheet, claim
Detection range, 1 m ² target at 10 km altitude	270 km	claimed, RCS 1 m ² ; export sheet, claim
Detection range, 1 m ² target at 0.5 km altitude	65 km	claimed, RCS 1 m ² ; fighter-type per Almaz-Antey as quoted by WPRU, claim
Detection range, 0.1 m ² target	100 km	claimed, RCS 0.1 m ² ; altitude not stated, claim
Upper limit of coverage, altitude	100 km search; 180 km tracking	minimum, circular scan search / tracking mode, claim

Nebo-U 55Ж6У «He6o-Y»

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 [\[O 2011 L\]](#) seen with 874th Radio-technical Troops Training Centre, Vladimir

Radio-technical troops formation, Western MD [\[R 2016-05 L\]](#) seen with Radio-technical troops formation (soedinenie), Western MD (Nebo-U, 2016-05)

Unidentified unit, one 55Zh6U reported struck near Yevpatoriia, Crimea, 2026-02-12 (Ukrainian General Staff claim), 1 [\[R 2026-02 L\]](#)

Unidentified unit, one 55Zh6U among four radars reported struck in Crimea, reported 2026-03-09 (Ukrainian SSO claim), 1 [\[R 2026-03 L\]](#)

military district, Nebo-U entered service with district troops, summer 2017; holding unit not named [\[R 2017 L\]](#) seen with Central Military District

military district, Nebo-UM (with Nebo-M) reported delivered, 2015; holding unit not named [\[R 2015 L\]](#) seen with Eastern Military District

NUMBERS Losses 2 55Zh6U Nebo-U lost in Ukraine war per Oryx list quoted by Wikipedia (as of 2025-10-25) [\[2025-10\]](#)

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.

Complex Antenna base on a semi-trailer, control cabin, diesel power station; remote operator unit on its own vehicle up to 1,000 m away.

CONFUSED WITH Nebo family (1L13, 1L119, 55Zh6U, 55Zh6M) p. 51 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).

1L119 Nebo-SVU p. 51 Deployed, from afar: flat 14 x 6 Yagi grid on one semi-trailer mast; the Nebo-U shows a cross-shaped array on a 43 m guyed mast.

1L13 Nebo-SV (Box Spring) p. 51 Full view: array on one Ural truck. Deployed: 72 horizontally polarised Yagis in four rows; the Nebo-U raises a cross-shaped array on a 43 m guyed mast.

RLM-M Nebo-M VHF component p. 51 Full view: self-propelled BAZ-6909-015 8x8. Deployed: a flat 24 x 7 element array on the truck, not a cross on a 43 m guyed mast.

VARIANTS 55Zh6UM Nebo-UM INA. Further modernisation of Nebo-U: metre band only, 3-D; to 600 km radius and 80 km altitude (state claim). Delivered from 2017 (2018 per another source). Nebo-T INA. Deep modernisation of Nebo-U; in AD service from 2020; on duty with an AD division of Central MD (Volga, Urals) from Jan 2022.



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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 *also 28 h MRLJ*

Transport units **6** without remote unit, claim

Antenna height **43 m** guyed in two tiers

Weight **INA**

Road speed **INA**

Time out of action **INA** not given in sources read

Detection range, fighter-type target, 500 m altitude **70 km** export 55G6-UE; fighter-type target at 500 m, claim *also 65 km MRLJ*

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

Detection range, fighter-type target, 20,000 m altitude and above **400 km** export 55G6-UE; fighter-type target at 20,000 m and above; RCS 2.5 m² per Military Russia sheet, claim

Detection range, hypersonic cruise missile **250-300 km** RCS 0.9 m²; 250 km at 10,000 m, 300 km at 20,000-50,000 m, claim

Detection range, maximum **700 km** maximum range stated for 55Zh6U; target not stated, claim

Detection range, air targets incl. stealth and hypersonic **600 km** claimed, Nebo-U; Russian MoD release, May 2016; target size not stated, claim

Detection range, Nebo-UM **600 km** claimed, aerodynamic and ballistic targets, altitude to 80 km; Nebo-UM; Russian state-media figure, claim

Upper limit of coverage, altitude **70 km** export 55G6-UE; above 16 deg elevation, detection without height to 20 km height and 45 deg, claim

Frequency band **VHF (metre band), 13 working points** 30-300 MHz

Elevation coverage **to 16 degrees height-finding** above 16 degrees detection only, to 45 degrees

Peak power **500 kW** average 5 kW, claim

Crew **3** per shift

Power consumption **100 kW**

SEEN WITH Equipment cabin (1); Diesel power station (1); Remote operator unit (VU) (1); Antenna-mast device semi-trailers (3)

SOURCES APA9 ARMADA7 DEFUA6 GS22 JREW02 KIG MRLJ U246 WP-EN74 WP-EN84 WP-EN85 WP-RU125 WP-RU126 not in WEG

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, Yevpatoriia, Crimea; reported struck Jan 2024 [\[R 2024-01 L\]](#)

Unidentified unit, Yevpatoriia, occupied Crimea; one radar claimed destroyed by Ukrainian SSO, Mar 2026, 1 [\[R 2026-03 L\]](#)

NUMBERS Losses 1 5N84A Oborona-14 destroyed (Oryx, photo-confirmed) [\[2026\]](#)

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 Yevpatoriia, 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.

SEEN WITH Semi-trailers (equipment, antenna, power generation) (6 (2 each type)); Command post trailer (1, up to 1 km away); IFF interrogator (NRS-12 or 1L22 Parol for the P-14 family; presumed NRZ-4 Parol beside a museum 5N84) (optional)

SOURCES APA7 JREW02 KPOST MIL57 ORYX1 SAFAN STARCOM U246 U248 UINF WP-EN86 WP-RU129 not in WEG



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

Weight **INA**

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

Altitude coverage, low-beam mode **45 km** low-beam mode, elevation coverage 12 deg (17 deg high-beam), claim

P-18 Terek П-18 «Тепек»

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 [\[R 2026-09 L\]](#)

NUMBERS Losses Oryx photo-confirmed Russian losses: 3 P-18T, 4 P-18-2, 3 1RL131-2 P-18-2 Prima, 1 support vehicle for 1RL131 [\[2026-10\]](#)

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.

P-12 (Spoon Rest A-C) Full view: trailer van (A), ZiL-157 (B) or van or Ural-375 (C), with a Fish Net IFF antenna. The P-18 uses two Ural trucks.

1L13 Nebo-SV (Box Spring) p. 51. Deployed: 72 Yagi elements on one Ural-4320, against 16 Yagis in two tiers of eight on the P-18.

SOURCES APA7 APA9 JREW02 ORYX1 RUSARM RUSIPL U244 U249 UKRIN2 WEG70 WP-EN89 WP-RU126 WP-RU131



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**

Length **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

Altitude, P-18 **35 km** maximum, Target type not stated; unmodernised P-18

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 (1B75), 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 [\[R 2017 L\]](#)

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. 55. 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.



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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

SOURCES AIF6 AR66 ATP BMPD8 BMPD9 DEFEX GS24 IZV20 IZV22 ORYX1 RADTUT RG152 RG212 RG243 RWW SHEP3 TASS16 TOPWAR3 WP-EN91 WP-EN92 WP-RU80 WP-RU135 WP-RU136 not in WEG

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.

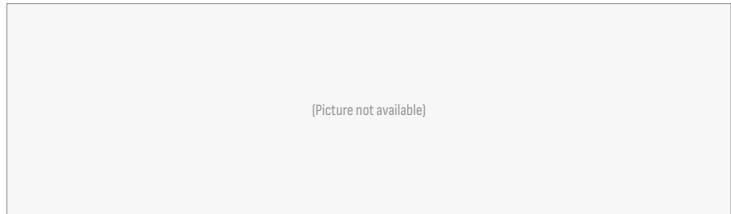
Antenna post The antenna post takes up the rear part of the chassis.

Chassis Four-axle all-wheel-drive BAZ-6910-025 special wheeled chassis (Bryansk Automobile Plant).

CONFUSED WITH Zoopark-1 / Zoopark-1M (1L219, 1L260) p. 54 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. 51 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.

SEEN WITH BAZ-6910-025 (1); 1L260 Zoopark-1M



(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**

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

Location accuracy **INA**

Crew **INA**

SOURCES A126 AR99 ESP FOCUS17 IZV20 MIL84 MIL85 MIL86 MIL87 ORYX1 OSM4 RIA5 TOPWAR2 TW23 not in WEG

ARK-1M Rys 1PΛ239 «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. 54 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 762 mm PKT machine gun.

Zoopark-1 / Zoopark-1M (1L219, 1L260) p. 55 Deployed: a flat phased-array panel, not a parabolic antenna. The 1L260 rides the GM-5955 tracked chassis, not the MT-LBu.

1K148 Yastreb-AV p. 53 Full view: four-axle wheeled BAZ-6910-Q25, not tracked. Deployed: a large-area flat array on a rotating post at the rear, not a parabolic antenna.

VARIANTS ARK-1 INA. ARK-1M INA.

SOURCES ATP JREW02 MIL7 MIL8 ORYX1 PMUL TOPWAR1 TOPWAR2 WEG13 WEG2015 WP-EN19



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
Road range	500 km cruising

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)

Frequency band

NATO H band (6-8 GHz)

Track capacity

3 tracks/min

SEEN WITH MT-LBu tracked chassis (1)

4

RADARS

SNAR-10 / SNAR-10M1 Leopard CHAP-10M1 «Aeonapp»

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 762 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. 14 Stowed: canvas cover extending to the rear and extra radios; the SNAR-10 carries its reflector folded forward on the roof.

1L219 / 1L219M Zoopark-1 p. 54 Deployed: Zoopark-1 raises an electronically scanned flat panel; the SNAR-10 reflector rises from a turret with a 762 mm PKT machine gun.

ARK-1M Rys (1RL239) p. 54 Not decisive from afar: also a parabolic antenna on an MT-LBu. ARK-1M shows an emitter in a radio-transparent housing beside a large receiving antenna.

SOURCES AR82 ARMYINF8 ATP BMPD11 FOCUS12 JANESRG JREW02 MILUAS PERISC RWW SHEPH TOPWAR1 UKRIN3 VPK17 VPK18 WEG22 WEG88 WEG2015 WP-RU167



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
Time into action	5 min	claimed, SNAR-10, prepared position; up to 20 min unprepared, claim

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

Sobolyatnik 1Л277 «Соболятник»

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)** seen with 21st Separate Guards Heavy Motor Rifle Brigade, Totskoye range, July 2019
military district, Delivery to reconnaissance subunits (with Fara radar sights), March 2021, 20 sets (with Fara) **(R 2021-03 M)** seen with Southern Military District
Unidentified unit, Reconnaissance subunit of Group of Forces West with UAV crews, Kupyansk direction, Jan 2024 **(R 2024-01 L)**
military district, Sets entered an unnamed formation (obyedineniye) of Eastern MD, Amur region; operator training July 2016 **(R 2016-07 L)** seen with Eastern Military District

Airborne Forces air assault formations, Air assault formations at Ulan-Ude, Ulyanovsk, Kamyshin, Ussuriysk (planned 2020 delivery), About 10 sets, 2020 **(R 2020-06 L)** seen with air assault formations at Ulan-Ude, Ulyanovsk, Kamyshin and Ussuriysk
military district, Unnamed motor rifle formation (soyedineniye); delivery reported Aug 2018 (MoD item cited by Russian Wikipedia, not read) **(R 2018-08 L)** seen with Western Military District

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. 53 Deployed: single-curvature parabolic antenna on a rotary tripod pedestal; the Sobolyatnik antenna is one rectangular block on a folding tripod.

1L122E-1 Garmon, portable p. 50 Deployed: flat 1200 x 800 mm array on a tripod, 150 kg in several containers with a separate power unit, against 36 kg for the Sobolyatnik.



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
Continuous operation	6 h On the standard accumulator battery, claim
Length	INA
Width	INA
Height	INA

Detection range, 1L277 radar (tank)	at least 17 km stated minimum, Moving tank target; catalogue gives 'not less than', claim <i>also >17 km ATP</i>
Detection range, 1L277 radar (vehicles)	>20 km stated, Vehicles; ATP chart <i>also 20 km AR83</i>
Detection range, 1L277 radar (personnel)	at least 7 km stated minimum, Moving person; catalogue 'not less than', claim <i>also >7 km ATP</i>
Detection range, 1L277 radar (small objects)	up to 30 km maximum claimed, Small objects (MoD, 2020); moving and stationary objects of various sizes (Southern MD, 2021), claim
Instrumented range	20 km 1L277 radar, claim
Simultaneous tracks	20 targets claim
Measurement accuracy, distance	10 m claim
Azimuth accuracy	0.18 degrees claim
Frequency band	J (as printed by catalogue) Catalogue letter band, not checked against a second source, claim
Crew	2 Scouts carry and operate, claim

SEEN WITH Fara portable radar sight

SOURCES AR83 ATP BMPD12 KUBNEWS RADTUT RG162 RG244 TOPWAR3 VESTNIK VRF15 WP-RU80 not in WEG

Zoopark-1 / Zoopark-1M 1Л219, 1Л219M; 1Л260 «Зоопарк-1», «Зоопарк-1М»

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)**

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: 1J30 (1L219M) or 1J38 (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. 54 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. 54 Deployed: ARK-1M carries a parabolic antenna, Zoopark-1 an electronically scanned flat panel. Both ride the MT-LBu, so the antenna decides.

SOURCES AR101 AR102 AR103 ARMADA12 ATP BMPD17 DOGS FAS1 FISH GWARA2 IZ9 JREW02 MIL84 MIL93 MIL94 ORYX1 RUMOD RWW SAIDPVO WEG2015 WMC42 WMC43 WP-RU208 not in WEG



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

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.



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-EN134
Detection altitude, early warning radar **8000 km** claimed, Vertical coverage into near space; target not stated, claim
also 150-4000 km WP-RU204 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

SEEN WITH Quick-erect personnel building (1 per radar); Equipment containers (several per site (number INA))

SOURCES ACA ARMADA7 RF26 RFARM RFKAL RFPOT RFSPRN RUELEC SDELANO SVOB2 WP-EN134 WP-EN135 WP-RU204 not in WEG

5

Electronic warfare

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	MOB.	PAGE
RADAR, SATELLITE AND STRATEGIC JAMMING					
Krasukha-2 / Krasukha-4	—	1Л269; 1РЛ257 «Красуха-2»; «Красуха-4»	Truck radar jammers · 2013	WH-AT	58
Moskva-1	—	1Л267 «Москва-1»	Passive ELINT and automated control of counter-air jammers and air defence cueing · 2014	WH-AT	58
Murmansk-BN	—	«Мурманск-БН»	Strategic HF · 2014	WH-AT	59
Tirada-2	—	«Тирада-2»	Mobile ground jammer of communications-satellite links · 2019	WH-AT	59
Tobol	—	14Ц227 «Тобол»	Ground satellite electronic warfare complex · 2012	FX	60
COMMUNICATIONS JAMMING					
Borisoglebsk-2	—	РБ-301Б «Борисоглебск-2»	Tactical HF/VHF/UHF radio intercept, direction-finding and jamming complex · 2013	TR-A	60
Dzyudoist	—	МКТК-1А «Дзюдоист»	Truck-mounted technical control · 2012	WH-AT	61
Leer-2	—	85ЯБ «Леер-2»	Mobile technical control, radio reconnaissance and jamming vehicle on Tigr-M chassis · 2012	WH-AT	61
Leer-3	—	РБ-341Б «Леер-3»	UAV-borne cellular · 2015	WH-AT	62
Palantini	—	«Палантин»	Operational-tactical HF/VHF comms jamming and SIGINT complex · 2019	WH-AT	63
R-330B Mandat-B and R-934BMV	—	P-330Б; P-934БМВ «Мангат-Б»	Ground VHF/UHF radio and air-communication jammers, tactical level · 1996	WH-AT	63
R-330M1P Diabazol	—	P-330M1П «Диабазол»	Wheeled VHF/UHF, cellular and satellite-navigation jamming complex with direction finding	WH-AT	64
R-330Zh Zhitel	—	P-330Ж «Житель»	Truck-and-trailer jammer and direction finder against satcom, GPS and GSM user equipment · 2008	WH-AT	65
EW COMMAND AND SIGNALS RECONNAISSANCE					
R-381T Taran	—	P-381Т «Таран»	HF/VHF/UHF radio intercept and direction-finding complex on MT-LBu chassis · 1980	TR	65
RB-109A Bylina	—	РБ-109А «Былина»	Automated command post linking an EW brigade's intercept and jamming systems · 2017	WH-AT	66
Shipovnik-Aero	—	«Шиповник-АЭРО»	Truck-mounted UAV control-link jammer and radio monitor · 2016	WH-AT	66
Svet-KU	—	РБ-636 «Свет-КУ»	Mobile radio monitoring and direction-finding · 2012	WH-AT	67
Torn	—	«Торн»	Mobile HF/VHF/UHF radio reconnaissance and direction-finding system · 2012	WH-AT	67
GNSS, DRONE AND IED JAMMING					
Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	—	Гроза-04К / СЕРП-ВС6А / Силок-01 «Чистюля» / «Стриж-3»	Small man-portable and tripod jammers against FPV and reconnaissance drones · 2018	MP	67
Infaua	—	РБ-531Б «Инфауна»	Vehicle-mounted radio jammer and IED jammer, with smoke self-screening · 2012	WH-AT-A	68
Lesochek	—	РП-377УВМ1А «Лесочек»	Small jammer vs radio-controlled IEDs and drone links · 2013	MP	68
Pole-21	—	P-340РП «Поле-21»	Networked GNSS jamming posts protecting fixed sites from GNSS-guided weapons and UAVs · 2016	FX	68
Repellent-1	—	Репеллент-1	Wheeled counter-UAV EW complex · 2016	WH-AT	68
Rtut-BM	—	1Л262З «Ртуть-БМ»	Vehicle jammer against radio proximity fuses and VHF radio · 2013	TR	69
Stupor, Garpun-3 and LPD-801 handheld jammer guns	—	ЛПА-801 «Смугор», «Гарпун-3»	Man-portable directional jammers against small UAV control and navigation links · 2018	MP	70
Volnoretz, Saniya and Sapfir vehicle anti-drone jammers	—	«Волнорез», «Сания», «Сафир»	Jammers on armour and vehicles, and a mobile set · 2023	NA	70

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	9 Uncrewed systems	99

Krasukha-2 / Krasukha-4 1Λ269; 1ΡΛ257 «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)

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. 58 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. 51 Deployed, from afar: flat rectangular planar array or Yagi array on the same heavy BAZ 8x8 family, not a parabolic dish.

VARIANTS 1L269 Krasukha-2 (Krasukha-20) 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.



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

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 AR53
Krasukha-2: weight	40,000 kg
Krasukha-4: road speed	95 km/h
Krasukha-2: road speed	80 km/h
Krasukha-4: road range	1,000 km
Krasukha-2: road range	1,000 km
Krasukha-4: fording	1.75 m
Krasukha-2: fording	1.4 m
Krasukha-4: time into action	less than 20 min

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 13.4–177 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 AR53	

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)

SOURCES 3G APA5 APA8 AR53 ARMADA3 ATP CRFS FOI ICDS MIL37 MIL38 MIL39 REACH ROE2 RWW TOPWAR8 TW28 WEG59 WMC11 WMC12 WMC13 WMC14 WP-EN66 WP-RU107

Moskva-1 1Λ267 «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

Unidentified unit, 1 claimed destroyed **R 2022-09 L**

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-20 p. 58 Full view: Krasukha-20 is on the BAZ-6910 chassis, not KamAZ, and raises an antenna block; Moskva-1 shows none.

Other KamAZ-6350 box-body vehicles p. 93 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.



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

SOURCES 3G AEX17 ARMADA4 ARMADA5 ATP CH97 DLG22 FOI ICDS IEEE22 IZ234 RIA15 RWW SDU13 TOPWAR8 VPK10 WEG65 WP-RU97 WP-RU119 WP-RU120

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 пагуономех); 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) [\[O 2019 M\]](#)

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. 63 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.

SOURCES 3G ARMADA6 B02 CRFS FOI ICDS IISS25 IZ5 KZ3 MIL55 PAS RG16 RG174 RGPAL RWW UKRINF3 WEG68



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

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

Tirada-2 «Тупага-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)

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).

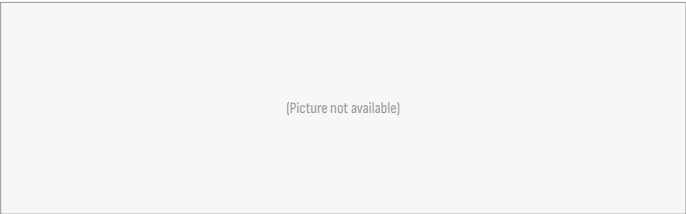
Antenna Directional antennas giving a narrow beam (reported).

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. 63 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.

SOURCES 3G AIF12 AINF6 DFR2 FOC2 FOI IFX IISS25 JT21 KP4 MK3 NOV6 RG13 RG232 RIA4 SBX TSR TV242 not in WEG



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 communications satellites (uplink)
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. Tirada-2.3 RB-371A INA.

5
EW

Tobol 14Ц227 «Тобол»

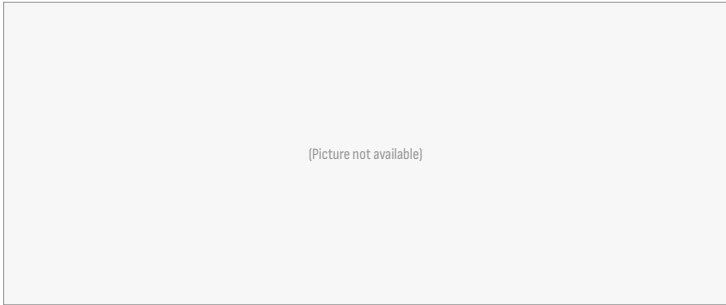
FX

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] Unidentified unit, Kaliningrad: an Estonian analyst tied GPS interference over Poland and the Baltic states (late Dec, 16 to 18 Jan) to a Tobol there [R 2024-01 L] **NUMBERS** Holdings 6 Tobol sites located in procurement and court papers, plus design-work (OKR) infrastructure (Hendrickx) [2020]; Holdings At least 7 Tobol complexes in Russia (Secure World Foundation analysts, Apr 2023; repeated by SpaceNews 2025) [2025-04] **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). **Chassis** Fixed 'stationary specialised complex'; one report says a container version is possible. Papers for two sites call the hardware mobile. **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. Tirada-2 p. 59 Named by WaPo as another possible cause of Starlink outages. Tirada-2 is truck-mounted; Tobol is a fixed site with several dishes. RPK-2 Tobol (Gun Dish) p. 47 Name clash: RPK-2 Tobol is the fire-control radar of the ZSU-23-4 Shilka, a 1 m dish on a tracked gun vehicle; 14Ts227 dishes are 2 to 9.1 m.

SOURCES AINF5 BMPD14 DEFUA10 JREW02 LENT47 SPREV2 STRIPES TOPWAR12 not in WEG



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 Crew

INA No open source gives a figure; the mode of jamming is analyst inference **INA**

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)

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) **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-330KMBV 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. 63 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. 65 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. 54 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

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-330KMBV command post **4** 2 of them at automated workstations
Vehicles per complex **up to 9**
Jammer stations controlled **up to 4 pairs** per R-330KMBV 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-330KMBV 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 AINF AR27 AR28 AR29 ATP CRFS FOI ICDS IZ22 JANESRG JREW02 MIL16 MIL17 MIL18 ORYX1 RG173 RG223 RUSTAME RWW VRF3 VRF3 WEG26 WEG2015 WMC6 WP-RU49 WP-UK1 WSPOT13 WSPOT14

Dzyudoist

MKTK-1A «A3logoucm»

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 seen with Airborne Forces (VDV) EW units

Strategic Rocket Forces, Strategic Rocket Forces

R 2013 L seen with Strategic Rocket Forces

military district, Western Military District, data collection and processing stations

R 2016 L seen with Western Military District

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.

SEEN WITH

Palantin-K network (Moskva-1, Zhitel, Dzyudoist)



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

Road range

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

Power consumption

3.5 kW claim

SOURCES

3G AIF2 ATP FOI ICDS LENTA MIL VRF7 not in WEG

Leer-2

85R6 «Aeep-2»

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. 62 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.

Infaua (RB-531B) p. 68 Full view: Infaua is an 8x8 K1Sh1 hull based on the BTR-80; Leer-2 is a 4x4 Tigr-M armoured car with an antenna platform on the roof.

Tigr-M armoured car p. 18 Full view: Leer-2 carries a roof platform of EW antennas and no armament; when static it raises two telescopic antennas from the roof.

SOURCES

3G AIRBASE AR56 CNA FOI GAGADG ICDS MIL41 ORYX1 RG2018 VPK9 WEG61 WEG2015 WP-RU109



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

Road range

1,000 km cruising

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

SEEN WITH

GAZ Tigr-M (1 per vehicle)

Leer-3 ПБ-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

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. 61 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. 99 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.



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 also 120 km/h WP-RU110

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 also 1,000 km WP-RU110

Time into action **30 min** whole complex, claim

Weight **INA**

Time out of action **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 also over 100 km IZ222 MASH

Endurance, Orlan-10 **10 h** maximum, maximum flight time of the Orlan-10 in the Leer set, claim also about 12 h (half a day) IZ222

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 also GSM, 3G, 4G IZ20

Cellular subscribers blocked simultaneously **2,000** claim

Cellular operators blocked simultaneously **3** claim

UAVs controlled simultaneously **2** claim

Crew **5** whole complex, claim also 4 RG15

Speed, Orlan-10 **70-130 km/h** depends on modification, claim also 90-150 km/h MIL42

Take-off weight, Orlan-10 **18 kg** claim also 14 kg MIL42

SEEN WITH Orlan-10 (3 per complex); KamAZ-5350 (1 per complex); UAV catapult launcher (1 per complex); Expendable ground jammers

SOURCES 3G ATP CNA CRFS DFR FOI ICDS IZ20 IZ22 IZ222 MASH MIL42 ORYX1 RG15 RG223 RWW UNIAN3 UZST VRF9 WEG61 WMC15 WMC16 WP-RU110 not in WEG

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. 59 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. 65 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.



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 MIL59
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
SEEN WITH Palantin mobile station (four-axle KamAZ) (22 per complex (reported, Palantin-K)); Moskva EW complex; R-330Zh Zhitel; MKTK-1A Dzyudoist	

SOURCES AIF2 AR29 ATP FOI IHS25 JANES19 JT21 MEZHA2 MIL58 MIL59 ORYX1 RG19 RG22B2 RG202 RGPAL RIAVRN RS19 TASS13 U2410 UKRINF4 WMC18 WP-RU133 not in WEG

R-330B Mandat-B and R-934BMV P-330B; P-934BMB «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)

EW company, At least one Russian EW company deployed to Ukraine in 2014 had two R-934B for airborne radio jamming; company not named, 2 R-934B in one EW company (2014) (R 2014 L)

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. 60 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.

R-330Zh Zhitel (Diabazol) p. 64 Deployed: Zhitel's four antenna masts stand on its trailer, parked away from the truck; R-330T raises a telescoping mast on the truck and tows a generator trailer.



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

Road range 1,000 km R-934B on Ural-43203; WEG chassis figure

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

SEEN WITH R-330KMV command post (1 per Borisoglebsk-2 set)

SOURCES 3G APA5 AR29 ATP CRFS DEFBLOG3 FOI ICDS MIL16 MIL17 MIL18 MIL31 MIL32 RWW TOPWAR6 TOPWAR7 UKRINF VRF3 WEG48 WP-RU49

5
EW

R-330M1P Diabazol P-330M1П «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. 65 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. 60 Full view: same role, but on nine tracked MT-LB carriers; Diabazol stations are wheeled Ural-43203 trucks.

R-330T Mandat-B (wheeled) p. 63 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



Vitaly V. Kuzmin, CC BY-SA 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

also less than 40 min RWW

Weight

INA

Road speed

INA

Road range

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
also 25 km FOCUS4

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

Jamming frequencies, Zhitel

0.8-0.96, 1.227, 1.575, 1.5-1.7, 1.7-1.9 GHz R-330Zh station; GSM, satellite and GPS bands, claim

Transmitter power, R-330Zh station

10 kW R-330Zh station, claim

Jamming frequencies, R-934UM

100-400 MHz VHF radio telephone and trunked base stations; up to 4 signals at once, claim

Crew, R-934UM station

3 peacetime, 4 wartime claim

Crew, R-330Zh station

4 Standard crew per Voennoe obozrenie (via Focus) and RWW table

Continuous operation time

24 h Complex; figure attributed to Protek, claim

SEEN WITH R-330KMA control post; R-330Zh Zhitel jamming station; R-934UM jamming station; R-378UM jamming station; Altaets-AM jamming station

SOURCES 3G APAS ATP DEFUA3 DFNC FOCUS4 FOI ICDS ORYX1 PARK RWW UKRIN WP-EN46 WP-RU49 not in WEG

R-330Zh Zhitel P-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**
motor rifle brigade **R 2014 L** seen with 18th motor rifle brigade (Army Recognition claim, undated; not in WEG; AR article dated 2014 per RUSIAD footnote)

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. 60

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. 64 Full view: also on Ural-43203 trucks. Look for Zhitel's two-axle trailer carrying an antenna container with four telescopic masts.

R-330T Mandat (wheeled) p. 63 Deployed: R-330T raises a telescoping mast on the truck and its two-axle trailer carries the generator; Zhitel's trailer carries the four antenna masts.

SEEN WITH Antenna trailer with four phased-array antennas and diesel generator (1 per station); Second R-330Zh (paired master/slave for synchronous DF) (1 when paired); R-330KMA EW command post (controls up to 20 stations); R-330M1P Diabazol automated jamming complex (with R-934UM, R-378UM, Altaets-AM); Ural-43203 6x6 [1]; KamAZ-43114 6x6 [1]

VARIANTS R-330Zh on Ural-4320-family chassis Bonneted Ural cab with long nose; spare wheel on rear of box body. None reported. FOI and WEG give Ural-43203 as the standard carrier. R-330Zh on KamAZ-43114 chassis Flat-fronted KamAZ cab-over cab. Seen at Army-2015 and in Ukraine 2022. None reported.



Mil.ru (D. Abramov), CC BY 4.0

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

Payload **4,500 kg** maximum, Truck chassis

Weight, combat **INA**

Road range **INA**

Fording **INA**

Ground pressure **INA**

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

6,000 W or more Total energy potential of the four phased arrays, claim

12 or fewer Quasi-simultaneous, claim

Simultaneous jamming signals **2 degrees or better** RMS bearing error, claim

DF accuracy **800 MHz/s or more (detection); 400 MHz/s or more (DF)** claim

Scan speed **Spot, spot-barrage and barrage** claim

Beam width, azimuth **–90 to 120 deg** WEG labels this azimuth search coverage

Beam width, elevation **–15 to +20 deg** WEG labels this elevation search coverage

Jamming signal types **220/380 V 50 Hz from towed diesel generator or mains; 24 V**

Power supply **batteries for emergency** claim

SOURCES 3G APAS AR29 ATP CRFS FOI ICDS MIL92 ORYX1 PRO RUSIAD RWW TOPWAR7 TOPWAR14 VRF18 WEG110 WMC39 WMC40 WMC41

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**

NUMBERS Losses 5 R-381T2M recorded by Oryx: 4 destroyed, 1 captured (visually confirmed, no unit named) (2026-10)

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.

SOURCES ATP ICDS OKRU ORYX1 TANKAFV TWZ15 WP-EN19 WP-RU180 not in WEG

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

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

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))

RB-109A BylinaРБ-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.

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-34IV); Leer-2; R-330Zh Zhitel

SOURCES 3G AR35 ATP DFRLAB2 FOI ICDS IZV23 JTOWN LBUA LIGA2 ORYX1 RG232 TASS3 not in WEG

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.



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
also up to 40 min RUSI7 IUS

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
also up to 10 km DFNC2

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

Time from detection to suppression **25 s** Per Topwar 2012 table; if frequencies known in advance under 1 s. RUSI (June 2022 examination): about 25 s to analyse a new UAV, about 2 s for one met before

Direction-finding accuracy **2–3 deg**

Takeover time, known UAV **about 1 s; unknown UAV several minutes** Developer claim: hacking on-board computer, claim

Simultaneous targets **2 UAVs** RUSI technical examination in Ukraine, June 2022; two workstations, observed

Jamming sector width **about 3 deg** Bearing width of the jamming effect; RUSI technical examination in Ukraine, June 2022, observed

SEEN WITH KamAZ-4320 truck (1 (equipment fits in one truck body)); Remote working place with remote antennas

SOURCES 3G DFNC2 FOI ICDS IFAX2 IUS IZ6 RUSI5 RUSI7 WP-RU163 not in WEG

Svet-KU P5-636 «C8em-KY»

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]

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]

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.

SOURCES 3G AINF24 AINF232 ARMADA10 ATP D244 DEXP ESPR FOCUS15 FOI ICDS ORYX1 VRF16 WMC34 WWW112 not in WEG



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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
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
SEEN WITH Svet-VSG; Less	

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]

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).

CONFUSED WITH Tornado-G and Tornado-S rocket launchers p. 25 Name clash: Tornado-G and -S are multiple rocket launchers, listed apart from Torn by Oryx; Torn is a pair of radio reconnaissance trucks.

SOURCES 3G ARMADA11 ARMYINF11 DEFUA11 DFR FOI ICDS MIL76 ORYX1 RG14 RG26 UKRINF8 WMC15 WP-RU110 WP-UK3 WW3W114 not in WEG

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

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

Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers Гроза-04.K / СЕРП-BC6А / Сулок-01 «Чучмоля» / «Смпух-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] seen with unspecified Russian assault units, Ukraine

Units in the war zone (Rostec statement), Groza-04K [R 2024-03 L] seen with unspecified Russian units, Ukraine

Russian forces in Ukraine (Forbes via RG), Serp-VS6D and Silok-01 named together [R 2025-04 L] seen with unspecified Russian forces, Ukraine

Unidentified unit, Silok-01 hidden in a ruined house, Donetsk oblast, reported by SBU Oct 2022, 1 [R 2022-10 L] seen with unnamed Russian unit, Donetsk oblast

Front-line units (Ukrainian report), Strizh-3 photographed on the front line; 'delivered now to all fronts' [R 2024 L] seen with unspecified Russian units, Ukraine

Unidentified unit, Silok-01 spotted and destroyed by a Ukrainian National Guard drone, Kharkiv region, June 2022, 1 [R 2022-06 L] seen with unnamed Russian unit, Kharkiv region

NUMBERS Losses Oryx lists 5 Silok-01 (destroyed, damaged or captured) and 1 Strizh-3 destroyed in Ukraine, visually confirmed [2026-10]

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.

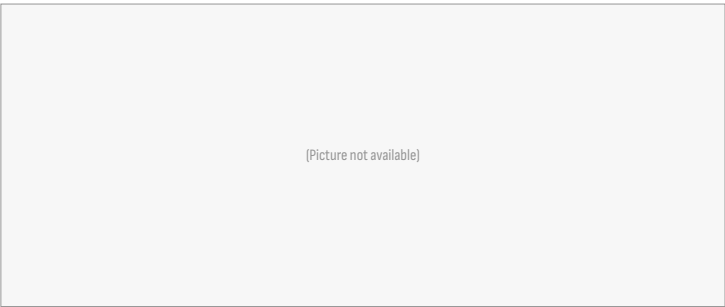
Antenna Chistyulya: antennas of three types. Strizh-3: six sectors, all radio parts combined in one unit.

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.

Commercial Chinese jammers (Drone-180, Garpiya 1000) Hard to tell apart: Defence Express calls them visually almost identical to Chistyulya; the Russian version adds a remote control panel.

SOURCES ANTIKOR CNEWS DEFUA7 DETSYS2 FOCUS9 GAGA LIGA4 MIL62 MIL63 ORYX1 RG8 TOPWAR10 not in WEG



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)
Jamming range, UAV control and navigation channels (Strizh-3)

Jamming range, UAV control, telemetry and communication links (Silok-01)

Jamming range, UAV communication and navigation links (Serp-VS6D)
Channels, Serp-VS6D

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. Third version of Chistyulya, in production Aug 2024; differences INA.

up to 1,000 m claimed, Radius over the upper hemisphere; Chistyulya; also blocks drone photo and video links, claim
up to 2,000 m claimed, Blocking range; detection to 2,500 m. Retailer sheet copying maker (NTT) data, claim
also up to 1.5 km MIL62
3-4 km claimed, Maker (Sozvezdie) presentation figure per Defence-UA; Gagadget gives 'claimed range 4 km', claim
up to 5 km claimed, Forbes as summarised by Rossiyskaya Gazeta (state media); original source not stated, claim
6 claim

Infauна 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]

military base, Russian military base in Armenia: MoD release title, 27 May 2015 (via FOI); filmed at Alagyaz range, 2019 (state media) [R 2019-04 M] seen with Russian military base in Armenia (the 102nd Military Base; number not given by the sources)
airborne division, VDV electronic countermeasures units (RIA Novosti 2012); the two divisions are named only by Russian Wikipedia [R 2012 L] seen with 7th Guards Air Assault Division, 98th Guards Airborne Division

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. 83 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 Infauна has a camera.
Standard BTR-80 p. 16 Full view or from above: roof dome and no turret; the BTR-80 has a small turret on the roof.

SOURCES 3G AR47 ATP DFRLAB3 FOI GS18 ICDS RDP4 RG4 RWW VRF8 WEG51 WEG2015 WP-RU93



Исаев Pygenko, 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 x W x H **7.65 x 2.90 x 2.46 m**
Road speed **80 km/h** maximum
Road range **600 km** 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); Lesochek portable EW system

Lesochek ПП-377YBM1A «Лесочек»

MP

Small jammer vs radio-controlled IEDs and drone links; man-portable or vehicle-fitted In service 2013

OPERATED BY EW brigade [R 2022-09 L] seen with 16th Separate EW Brigade, Kursk (probable; from packaging of a kit captured in Kharkiv Oblast, Sep 2022)

NUMBERS Holdings 1,150 Lesochek units delivered by 2015; deliveries to Airborne Troops formations began early 2013 (FOI, citing RVO 2016) (2015)

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 its shape.

CONFUSED WITH RP-377VM family (VM1, VM2, VM3, UVM2, UVM3) Not decisive: Militarynyi 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 Krynyk claim named Lorandit; Militarynyi judged it Lesochek or an RP-377VM.
Infauна (BTR-80 K1Sh1) p. 16 Full view: Infauна is a BTR-80 with the turret removed and a roof dome antenna; its IED jamming part is based on Lesochek, which is fitted to a carrier.



Vitaly V. Kuzmin, CC BY-SA 4.0

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

SOURCES 3G AR47 ARMYINF4 BPSZ FOI MIL43 MONOCLE RG7 RT4 RWW TAKT TASS9 not in WEG

Pole-21 Р-340РП «Поле-21»

FX

Networked GNSS jamming posts protecting fixed sites from GNSS-guided weapons and UAVs

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]

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.

CONFUSED WITH R-330Zh Zhitel p. 65 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.

SOURCES 3G AIF8 ATP DPSU FERG FERG2 FOCUS8 FOI IZRU IZV8 KPOST2 TOPWAR9 UKRINF1 WEG73 WP-UK2

In service 2016

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

SEEN WITH Jamming posts (up to 100 per complex); jamming modules (1 to 3 per post)

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. 66 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.

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 x W x H **9.4 x 2.7 x 3.35 m**
Road speed **85 km/h** maximum
Road range **1,000 km** maximum

Detection range, UAV control-link signals
Jamming range, small UAV control and telemetry links
Simultaneous UAV targets

up to 30 km up to, ground-station command signals; UAV telemetry up to 10 km; target size and altitude not given, claim
up to 30 km up to, air target: small UAVs; telemetry and satellite-navigation links; control link up to 10 km, claim
up to 12; detect and jam in up to 25 s claimed, brochure claim, claim

SOURCES 3G ARMADA9 ARMYINF7 BCAT2 IZV9 LIGA6 OSCE RUSIPL UASV UKRINF6 UKRINF22 WEG80 WP-EN100

Rtut-BM 1A2623 «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**

EW groups in Donbas, EW assets sent for Ilovaysk, Aug 2014; Rtut-BM supported Infauna 1-3 km from contact **R 2014-08 L**

military district, Western MD; received with Borisoglebsk-2 (in service 2015); holding unit not named **R 2017 L** seen with Western Military District

NUMBERS Holdings 10 delivered in 2013; KRET: several dozen in service and over 20 more planned (manufacturer claim) (2013-11); **Losses** 1 destroyed, photo-confirmed (Oryx, Jammers And Deception Systems) (2026-10); **Losses** 1 captured by Ukrainian forces (Defence Express, photo dated 20 Mar 2022 by 3G); 1 reported destroyed (Twitter post, 2 Apr 2022, via 3G) (2022-04)

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
Road speed	INA
Road range	INA
Length	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 <i>also Hemisphere of 400 m radius (500,000 m2) 3G</i>
Continuous operation time	Up to 6 h claimed, KRET figure for the 50 ha cover, claim
ECM energy potential	250 W claimed, Source term 'potential of electronic countermeasures'; not transmitter power, claim
Probability of suppressing a projectile	0.8 claimed, Per projectile; TOPWAR and reference-site table (same manufacturer data), claim
Crew	2 claimed, Vehicle crew; TOPWAR says one operator controls the equipment, claim
Employment distance from line of contact	1-3 km practical, Supporting Infauna, Donbas 2014-15, observed
SEEN WITH MT-LBu (1 per station)	
VARIANTS SPR-2 Rtut-B Predecessor on BTR-70 or BTR-80 wheeled chassis, turretless with a large telescopic antenna mast. 1129, in service 1985. 95-420 MHz, energy potential at least 300 W, 0.5 km protected area, deploys under 4 min, works on the move.	

SOURCES 3G ATP DEFBLOG4 DEFUA8 FOI ICDS LENTA5 ORYX1 RWW TOPWAR11 VRF13 WEG2015 not in WEG

Stupor, Garpun-3 and LPD-801 handheld jammer guns

ЛПА-801 «Смунор», «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

MVD (police) for event security, incl. 2018 World Cup, Stupor R 2018 L

Unidentified unit, LPD-801 carried by Russian front-line troops in trenches, destroyed by a Ukrainian drone-dropped grenade; video Feb 2023, place not stated, 1 R 2023-02 L seen with unnamed Russian front-line unit (attacker: UA 110th Mechanised Brigade)

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.

Complex Close only: Stupor and LPD-801 can take a collimator or optical sight. **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.

LPD-802 Bullpup layout (maker, Nov 2022); LPD-801 has a service-rifle outline.

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

L × W × H **970 m × 320 m × 100 m m** claim

Length, Garpun-3 **900 mm** 900 x 315 x 190 mm (L x W x D); RG gives 'over 1 m', claim also over 1 m RG25

Length, Stupor **1,160 mm**

Endurance, Stupor **up to 4 h** Per battery charge

Endurance, LPD-801 **60 min** Per battery; retailer sheet, TASS-derived press gives about 60 min, claim

Endurance, Garpun-3 **at least 60 min** With two batteries, full charge; one battery at least 30 min, claim

Jamming range, small UAV, LPD-801 **1 km** effective, Air target: small UAV; manufacturer sheet, claim also 1 to 1.5 km AIF4

Jamming range, small UAV, Garpun-3 **1,500 m** not less than, Air target: small UAV; manufacturer sheet, claim also 3.5 km; 2 km at high frequencies RG25

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

Frequency bands, LPD-801 **1575-1602, 2400-2483.5, 5725-5825 MHz** Control, Wi-Fi and satellite navigation bands, claim also 5725-5925 MHz (band II) AIF4

Frequency range, Garpun-3 **433-5875 MHz; 7 channels** Navigation: GPS, GLONASS, Beidou, Galileo, claim also 433-5800 MHz RG1

Beamwidth, LPD-801 **30 / 24 deg (bands I / II); band III 35 deg** DETSYS gives 25 deg for band II also 25 deg band II DETSYS

Output power, LPD-801 **10 W, band I** Nominal power to antenna, not less than; band II 5 W, band III 4 W, claim also about 10 W maximum radiated AIF4

Crew **1** No source states crew; sources say it is carried like a rifle by one soldier

SEEN WITH Spare battery packs (LPD-801: magazine-type, 0.6 kg); Garpun-3 stationary two-axis remote mount

SOURCES AIF4 DEFPOST DETSYS FOCUS6 GARP IZ3 LENTA3 RG1 RG25 WEG53 WP-RU95

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

NUMBERS Losses 1 Sapfir anti-drone system destroyed, visually confirmed (Oryx list; no unit or date read) (2026-10)

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.

Complex Saniya has a built-in radio-reconnaissance module that finds the drone link and selects the jamming; Sapfir is a mobile detect-and-jam complex.

CONFUSED WITH Saniya vs Volnorez p. 29 Saniya: one box with eight antennas on a bracket. Volnorez: breakwater-shaped antenna housings on magnetic bases, one or several per vehicle.

Unnamed tetrahedral magnet-mounted vehicle jammer Not decisive alone: tetrahedral housing attached by magnets. Volnorez also sits on a magnetic base, in a housing shaped like a harbour breakwater block.

SOURCES AMAL4 DEVUA MILIN2 ORYX1 RG14 RG234 RGRU7 RT7 TADV3 TOPWAR13 TWZ18 UAS not in WEG

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

6 Engineers

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	MOB.	PAGE
CROSSING					
IRM Zhuk	—	ИРМ «Жук»	Amphibious engineer reconnaissance of routes, water obstacles and minefields · 1980	TR-A	72
PMP heavy folding pontoon bridge park	—	ПМП	Truck-carried folding pontoon park for 60-t floating bridges and 40-170 t rafts · 1961	WH-AT	72
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	—	ПТС-4	Amphibious carrier for cargo and vehicles · 2007	TR-A	73
TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge	—	TMM-3	Bridging · early 1970s	WH-AT	73
OBSTACLE CLEARING AND EARTHMOVING					
BAT-2	—	БАТ-2	Armoured route-clearing tractor and dozer on MT-T chassis · 1987	TR	73
BMR-3M	—	БМР-3М «Вепрь»	Armoured mine-clearing vehicle on T-90 chassis with roller tawl · 2000	TR	74
BTM-3, MDK-3, PZM-2 and EOY earthmoving and trenching machines	—	БТМ-3; МДК-3; ПЗМ-2; 308-3521; 308-3523; 308-4421	Machines that dig trenches, pits and shelters for troop and vehicle positions · 1963	TR	74
IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	—	ИМР-2	Tank-based heavy engineer vehicle for obstacle and minefield clearing · 1980	TR	75
UR-77 Meteorit	M1979	УР-77 «Метеорит»	Tracked mine-clearing vehicle firing rocket-towed explosive line charges · 1978	TR-A	75
Uran-6	—	Уран-6 «Уран-6»	Remote-controlled tracked demining and obstacle-clearing vehicle · 2016	TR	76
MINE LAYING					
ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer	—	ИСДМ «Земледелие»	Remote minelaying by 122 mm rockets · 2020	WH-AT	76
UMZ	—	УМЗ Универсальный минный заградитель	Truck-mounted remote scatterable minelayer · 1979	WH-AT	77
RECOVERY AND REPAIR					
BREM and BTS armoured recovery vehicles	—	БРЭМ	Armoured recovery and repair vehicles for tank and infantry vehicle units · 1975	TR	77
REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles	—	РЭМ-КА; КТ-А; МТП-А2.1; МТО-АТ	Wheeled field repair, recovery and towing of unit vehicles on truck chassis · 2016	WH-AT	77
CBRN DEFENCE					
ARS-14, TMS-65 and TZ-74 decontamination vehicles	—	АРС-14КМ	Truck-mounted decontamination and smoke vehicles of RKHBZ · 1969	WH-AT	78
RKhM CBRN reconnaissance vehicles	—	PXM-4, PXM-6, PXM-8, PXM-9	Radiation, chemical and biological reconnaissance · 2006	WH-AT-A	79
TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	—	ТАА-2К	Truck-mounted thermal aerosol generators that screen troops and sites from view and IR · 1982	WH-AT	79

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
MT-LB	Light armoured amphibious tractor and APC	1 Armoured vehicles	14

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]

motor rifle brigade, engineer-sapper battalion, separate engineer reconnaissance platoon

[R 2017 L]

NUMBERS Losses 1 destroyed, 1 captured by Ukraine (Oryx) [2026]

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. 11 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. IPR Stowed: IPR carries a folding snorkel on the rear deck for driving submerged; the IRM has none.

2S1 Gvozdika p. 26 Full view: 2S1 has a turret with a 122 mm howitzer at the hull rear, no detector arms; both have seven road wheels. The West took the IRM for a 2S1 type until 1986.

SOURCES ARMFORC ATP FM100 IIS25 JANESRG ORYX1 RUSARMY2 WEG52 WEG2015 WP-EN30 WP-RU94



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
Road range	500 km	on land (ARMFORC 'на зручнме'); WEG gives no condition

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	

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 (Боюковая часть) of Eastern Military District, INA (new PMP-M park to be received) [R 2017-02 L]

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.

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. 73 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. 73 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.

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).

SOURCES AIF7 ATP FM23 GS25 MIL61 ORYX1 RWW SPT TI2 VPK12 VRF11 WEG72 WEG2015 WMC19 WP-EN93 WP-RU137 WP-RU138



Zimnsoldat, 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
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	
Weight, carrier with link	INA	
Road speed	INA	maximum
Road range	INA	cruising
Fording	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
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
Load capacity, bridge	60 t	full-width bridge; 20 t on split-link bridge
Roadway width	6.5 m	60-t bridge
Rafts	40, 60, 80, 110, 170 t	2, 3, 4, 5+1 shore, 8+1 shore links
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)

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]

Unidentified unit [R 2017-09 L] seen with Russian forces in Syria: PMM-2M sent for the Euphrates crossing near Deir ez-Zor (MoD Road Service operation, TASS)

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.

Chassis PTS-4: tracked amphibious hull with a forward armoured cab; T-80 tracks and torsion bars, T-72 engine and gearbox.

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.

PMM-2 vs PTS-2 Stowed: PMM-2 has a similar cab and boat bow but two box pontoons stacked on top of the hull, no open cargo area.

SOURCES AR68 AR69 IISS25 RWW WEG75 WEG2015 WP-EN96 WP-RU141 WP-RU142 WP-RU143 WWW17 WWW22



Aleksey Kumaev (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

Road speed, PTS-4 60 km/h maximum

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

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]

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.

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-90 Deployed: bridge 25 m long against 20 m on the MTU-72; T-90 hull in place of the T-72.



TMM-3. Mil.ru (Ministry of Defence of the Russian Federation), CC BY 4.0



MTU-72. Vitaliy 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 ARMYINF10 ATP IISS25 JANESRG JFRC KOLESA2 MIL75 ORYX1 RWW TRENCH4 WEG50 WEG2015 WP-EN118 WP-EN119 WP-RU182 WP-RU183 WSN6

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]

engineer-sapper battalion, new-look brigade battalion: engineer-road platoon, CP equipment section, shore section, 7 per battalion (4 road platoon, 2 CP equipment section, 1 shore section) [R INA L]

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 equipped armoured dozer with bullet-proof windows front, sides and rear.

Working equipment Hydraulic cab 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.

Deployed Blade at 4.5 m as bulldozer, 4.2 m for road clearing, 4.1 to 4.35 m for grading; wings can be angled to one side. Blade tilts 10 degrees.

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.

IMR-2 / IMR-2M p. 75 Full view: T-72 hull with six road wheels and a boom on a rotating mount mid-hull; BAT-2 has seven road wheels and a crew cab with windows at the front.

SOURCES AR21 ATP IISS25 KAT MIL10 ORYX1 PRIZ RWW U242 WEG17 WEG2015 WP-EN26 WP-RU32 WP-RU33 WSN6



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

Speed, cross-country 28 to 35 km/h WSNET: 35 km/h on dirt roads

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

SEEN WITH DZ-180A wheeled road grader (2 per engineer battalion)

BMR-3M BMP-3M «Берпы»

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. 75 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.

Vitaliy V. Kuzmin, CC BY-SA 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

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

SEEN WITH KMT-7 track-width mine roller trawl (1 per vehicle)**SOURCES** AIF AR26 IJSS25 JANESRG RWW TECHINS VM WEG25 WP-RU46 WP-RU47 WP-RU48 WWW13**BTM-3, MDK-3, PZM-2 and EOY earthmoving and trenching machines** BTM-3; MДK-3; ПЗМ-2; 30B-3521;

30B-3523; 30B-4421

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 EOY-3521. Command-post squad: 2 EOY-3521 **D 2008 L**engineer-sapper battalion, engineer-position company, engineer-position platoon (division battalion), Table lists 2 each of BTM, MDK, PZM, EOY (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****NUMBERS** Losses 3 MDK-3, 2 PZM-2, 1 BTM-3, 29 EOY-3521, 24 EOY-3523, 12 EOY-4421 lost (losses recorded, Oryx) [2026]**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; EOY-4421 on KrAZ-255B, EOY-3521 on Ural, EOY-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** EOY-4421 and EOY-3521: one-bucket backhoe on a rotating platform with its own operator cab, frame with outriggers. EOY-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.**Deployed** BTM-3 star throwers cast spoil to the sides; PZM-2 throws it to both sides as parapets. MDK-3 digs a pit while reversing. EOY-4421 sets its outriggers.**CONFUSED WITH** **BAT-2** engineer vehicle p. 73 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.**SEEN WITH** Ural-5557 dump truck (2 per engineer-position squad); BAT-2 engineer vehicle (2 in the command-post equipment squad)**VARIANTS** **BTM-4M** Larger chassis from 2S7M; bucketless rotor laid flat on the chassis platform for travel; dozer blade; armoured cab. **MDK-2M** on an AT-T-based chassis (item 409MU), 8.0 m long, 28 t; MDK-3 is on the larger MT-T. **EOY-3521M** Ural-4320-1058-31 chassis and a changed excavator cab. **PZM-2VDV** INA.

BTM-3. Ananoe, CCO



MDK-3. Mil.ru, CC BY 4.0



PZM-2. Cooper6, CC BY-SA 4.0



EOY-4421. Vitaliy V. Kuzmin, CC BY-SA 4.0



EOY-3523. Vitaliy V. Kuzmin, CC BY-SA 4.0



EOY-3521. Vitaliy 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 EOY 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, EOY-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 m³/h technical output, depends on soil

Output, BTM-3, trench 1.5 m deep

270–560 m³/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**SOURCES** ATP CYBER EXK FOCUS5 KAT ORYX1 PRIZ RWW WEG43 WEG2015 WP-RU33 WP-RU73 WP-RU74

IMR-2 / IMR-2M / IMR-3M combat engineer vehicle IMR-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.

Deployed Blade works as a dozer, V-blade or grader; boom traverses 360 deg. IMR-3M has a remote 12.7 mm gun mount; IMR-2 a machine gun on the operator's cab.

CONFUSED WITH BREM-1 armoured recovery vehicle p. 77 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.

BMR-3M mine-clearing vehicle p. 74 Full view: also a turretless T-90 hull, but with two roller-trawl frames at the bow and an armoured wheelhouse; no boom.



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	
Road speed, IMR-2	50 km/h	maximum

Crew	2	(commander-operator, driver-mechanic)
Boom lifting capacity	2 t	
Boom reach	8.4 m	IMR-2M
Dozer capacity	200 to 250 m ³ /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

SEEN WITH UR-77 mine clearing vehicle (2 per mine clearing platoon); BAT-2 combat engineer vehicle (4 per brigade engineer battalion)

VARIANTS IMR T-54/55 tank chassis; articulating dozer blade and telescoping crane.

SOURCES ATP IISS25 JANESRG RWW TASS5 TSAMTO WEG29 WEG50 WEG2015 WP-EN26 WP-EN59 WP-RU46 WP-RU48 WP-RU91 WP-RU92 WSN6

UR-77 Meteorit YP-77 «Memeopum»

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]
engineer-sapper brigade [R 2023 L] seen with 1st Guards Engineer Brigade (Murom, MUN 11105)

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. 26 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. 77 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.

UR-07M Full view: launcher on a BMP-3 hull, not the 2S1 hull.

SEEN WITH UZP-77 / UZ-67 line charge (2 per vehicle); IMR-3M combat engineer vehicle (2 per mine clearing platoon); 2S1 Gvozdika-derived chassis (1 per vehicle); ZRShch line charge (INA; third charge type listed with UZ-67 and UZP-77)



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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	
Road range	500 km	cruising
Cross-country range	250 km	maximum, rough terrain

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 ESPR2 GS35 IISS25 JANESRG MILUA7 ORYX1 RBTH RWW TWZ17 WEG102 WEG2015 WP-EN26 WP-EN59 WP-EN129 WP-RU48 WP-RU198 WWW116

Uran-6 Уран-6 «Уран-6»

TR

Remote-controlled tracked demining and obstacle-clearing vehicle In service 2016

OPERATED BY engineer-sapper regiment R 2021-01 M seen with separate engineer regiment, Guards Red Banner Combined Arms Army, Western Military District
Engineer units of the Southern and Eastern Military Districts, engineer units R 2015-11 L seen with engineer units, Southern Military District, Eastern Military District

Mine action centre, International Mine Action Center R 2022-05 L seen with International Mine Action Center of the Russian Armed Forces (Mariupol coast, per MoD)

NUMBERS Holdings Over 20 Uran-6 and Uran-14 robots delivered to engineer troops in 2022 (state claim, Chief of Engineering Troops) (2022)

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



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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 also 6–7 t depending on fit AIF13
L × W × H	4.56 × 2.01 × 1.47 m with tool, claim
Road speed	5 km/h maximum, tracked, unmanned, claim
Endurance	5 h continuous operation, claim
Obstacle, vertical wall	1.2 m claim also 1 m JFOR
Trench crossing	1.5 m claim also 172.5 cm WEG106
Gradient and side slope	20 degrees claim
Working speed	0.5 km/h while clearing, claim also 2 km/h ARTECH
Road range	INA

Remote control distance 1 km claimed maximum, by radio from a control panel, claim
also 800 m JFOR

Crew Unmanned; one remote operator
Blast resistance 60 kg TNT equivalent manufacturer figure, claim
also 4 kg TNT JFOR

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
also 1.72 m ARTECH

Clearing depth 35 cm flail fitted, claim

Bulldozer blade width 1.8 m claim

Gripper lifting capacity 1,000 kg claim

Cameras 4, 360 degree view

Engine 240 hp diesel claim

SEEN WITH Remote control unit (1); Interchangeable tools (5 types) (5 in full set); KamAZ four-axle truck with hook-lift (Multilift) transport platform

VARIANTS Uran-6 upgraded INA. Armour strengthened and communications improved for longer control range after combat use (announced 2023; official 2025).

SOURCES AIBUS AIF13 AR97 ARTECH ATP CNA JFOR RGNEWS TASS29 WEG106 WP-RU202

ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer ИСДМ «Земледеліе»

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

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.

CONFUSED WITH BM-21 Grad p. 24 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.



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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, 762 mm PKT (GMZ-3)	2,000 m max effective, day
Rocket calibre, ISDM	122 mm claim

SOURCES ARMINF3 ATP IJSS25 IZV224 JANES3 M360 MPER4 ORYX1 OVC RWW T13 WEG109 WEG2015 WP-EN139 WP-EN140 WWW117 ZR16 ZR24

UMZ УМЗ Универсальный минный заградитель

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.

CONFUSED WITH UMZ-K Full view: six rotary launchers on a newer truck, KamAZ-63501 8x8 (Army-2015) or Astey's 6x6 (Army-2019), with an armoured mine body; a ZIL-131 bonnet marks the UMZ.

ISDM Zemledeleye p. 76 Full view: four-axle KamAZ-6560 with two 25-tube box containers; UMZ is a three-axle ZIL-131 with six 30-tube blocks.

SOURCES AR74 AR94 ATP DEFUA12 KYIVP3 MILUA6 ORYX1 RTRU2 RWW WEG101 WEG2015 ZR24

WH-AT

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**

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)

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)

BREM and BTS armoured recovery vehicles БРЭМ

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]

tank battalion, armoured tracked recovery vehicles with the battalion on the march; type not named [D 2016 L]

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.

Deployed Spade or blade lowered as anchor; crane slewed; winch cable run out. BREM-1 crane reach 4.4 m. BREM-L crane reach 4.85 m. BREM-2 crane slews 270 degrees.

CONFUSED WITH IMR-2 / IMR-3M engineer vehicles p. 75 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.

BMR-3M mine-clearing vehicle p. 74 Full view: also a turretless tank hull (T-90), but with two roller-trawl frames at the bow and an armoured wheelhouse; BREM-1 has a front blade.



BREM-L, Vitaliy 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**
Weight, BREM-D **8 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**

SEEN WITH BREM-KL wheeled repair-recovery vehicle (Ural-532362) (1 per motor rifle battalion support platoon)

SOURCES AR30 ATP IIS25 JANESRG MIL19 ORYX1 RWW WEG28 WEG29 WP-EN34 WP-RU46 WP-RU48 WP-RU51 WP-RU52 WP-RU53 WP-RU54 WP-RU55 WP-RU56

REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles ПЭМ-КА; КТ-А; МТП-А2.1; МТО-АТ

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. 77 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.

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)

VARIANTS REM-KL 8x8 cab-over-engine Ural-532362; workshop body, crane, winch. MTP-A2.1 Ural-43202-31 with BAKM-890 crane-manipulator (360° slew) and semi-lift transport device; Oryx lists MTP-A2 separately. KT-L Ural-4320 with semi-lift towing device, ballast box and rigid tow bar; Oryx also lists a KrAZ-260 version.



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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

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
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

Winch pull, REM-KL **10.5 t** REM-KL
Crew, REM-KL **3** REM-KL

Recovery pull, 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

Crew, MTO-UB1 **14 t** KT-L (model TK6A); pulling out stuck vehicles on evacuation routes
5: squad leader/mechanic, crane operator, mechanic, machinist, driver

Crane lifting capacity, MTO-UB1 **2.5 t** MTO-UB1 (not a member of this entry; MTO-UB2 crew INA)

SOURCES JANESRG ORYX1 OZLIB PARMKT RVODKU RWW SILARF VPK16 WEG79 WEG2015 WP-EN99 WP-RU54

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** seen with Eastern Military District RKhBZ regiment (Amur Region)

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. 94 Full view: older base model on the ZIL-131 6x6; ARS-14KM is on a KamAZ-43114.

TDA-3 smoke generator p. 79 Full view: KamAZ-5350 with three rectangular modules in line behind the cab; TMS-65 carries its turbine on a turntable on a Ural.

SEEN WITH PTs-4.2-754V water-tank trailer (with TMS-65) (1 per vehicle); DKB-1K decontamination vehicle (2 per RKhBZ company); TDA-2K aerosol generator (5 per RKhBZ company); RKhM-6 reconnaissance vehicle (13 per RKhBZ company)

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. TMS-65M / TMS-65U Ural-4320 chassis with diesel engine.



ARS-14. Vitaly V. Kuzmin, CC BY-SA 4.0



ARS-14KM. Vitaly V. Kuzmin, CC BY-SA 4.0



TMS-65D. Ministry of Defence of the Russian Federation, CC BY 4.0



TMS-65U. Vitaly V. Kuzmin, CC BY-SA 4.0



TMS-65. Vitaly V. Kuzmin, CC BY-SA 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**

Road speed, TMS-65 **76 km/h** Ural-375 chassis alone

Crew, ARS-14KM

Crew, TMS-65 and TZ-74

Liquid capacity per fill, ARS-14KM

Throughput, TMS-65, decontamination and disinfection

Throughput, TMS-65, degassing

Fuel carried, TMS-65

Water and solution carried, TMS-65

Engine movement, TMS-65

Tanks, TZ-74

1

2

2,500+1,000 L Water or aqueous decontamination solution

30-40 vehicles/h One vehicle takes 150-200 L water or suspension

10-15 vehicles/h

900 L For the VK-1A engine

1,500 L plus 4,000 L trailer Vehicle plus trailer

90 deg traverse each side, +12 / -23 deg

5,000 L solution, 200 L fog oil, 2,000 L fuel Fog oil 200 L from WEG15 only

SOURCES ATP AVIAROS CYCLO L0L54 MOCR ORYX1 SDN STUD1 STUD2 STUD2A SVRHBZ TOPWAR5 WEG42 WEG2015 WP-RU70

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]

RKhBZ regiment [R 2025 L] seen with 26th Guards RKhBZ Regiment, 36th Combined Arms Army, Buryatia

NUMBERS Losses 2 RKhM-4, 11 RKhM-6 (10 destroyed, 1 captured), 5 BRDM-2-2RKhB (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-2-2RKhB).

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-2-2RKhB 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. 16 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. 14 Full view: tracked hull of MT-LB components with a raised superstructure, a 762 mm MG cupola and boxes for dispensing pennants. **BRDM-2 (other variants)** p. 15 Full view: BRDM-2-2RKhB has two rectangular racks at the rear, one each side, for lane-marking poles with pennants; the base BRDM-2 has none.

Tigr-M armoured car (against RKhM-8) p. 18 Close only: RKhM-8 carries its detectors on the roof and two banks of two smoke dischargers at the front of the roof.

VARIANTS RKhM-4 BTR-80 8x8 with KPVT and PKT turret. Chemical and radiation reconnaissance; no remote sampling. RKhM-4-01 Same chassis as RKhM-4. Updated biological, chemical and radiological detection equipment (WEG). RKhM-4-02 Same BTR-80 chassis as RKhM-4. Further incremental upgrade of the RKhM-4 NBC reconnaissance equipment (WEG); details INA. RPM-2 Based on the RKhM-4 (BTR-80 chassis). Radiation survey and reconnaissance vehicle; first appeared in 2000 (WEG 2015). RKhM-6 Povorotka BTR-80 chassis; carries a PKhRDD-2B remote chemical detector. Adds non-specific biological detection and data transfer to the command system.

SOURCES AG4 AMAL AR36 IISS25 JANESRG ORYX1 RG21 RG2108 RT21 RWW TOPWAR4 U243 USERBOCT VPK6 VRF4 VRF5 VRF6 WEG39 WEG2015 WP-RU65 WP-RU66



RKhM-6. Vitaly V. Kuzmin, CC BY-SA 4.0



RKhM-9. Mike1979 Russia, CC BY-SA 4.0



RKhM-8. Nickel nitride, CCO



BRDM-2-2RKhB. 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
	also 13.5 t VRF5 WP-RU66
Weight, RKhM-4 full	13.5 t claim
Weight, RKhM-8 combat	7.5 t claim
Weight, RKhM-9 gross	20 t claim
L × W × H	7.7 × 2.9 × 2.41 m
Road speed, RKhM-6	80 km/h maximum
Road speed, RKhM-8	50 km/h maximum
Road speed, RKhM-9	105 km/h maximum, claim
Speed while reconnoitring, RKhM-8	20-50 km/h road; 5-20 km/h cross-country claim

Detection range, PKhRDD-2B remote chemical detector (RKhM-6)
Chemical monitoring radius, RKhM-6
Detection range, UAV reconnaissance complex (RKhM-9)
Crew, RKhM-4, -6, -8
Armament, RKhM-4 and RKhM-6
Speed, chemical and radiation reconnaissance, RKhM-6

about 3 km claimed, Remote vapour detection; target and conditions not stated
up to 6 km claimed, around troop positions, chemical situation, claim
up to 25 km claimed, Terrain survey distance of the onboard unmanned aerial complex, claim
3
14.5 mm KPVT and 7.62 mm PKT machine guns
less than 50 km/h
also 30 km/h VRF5

SEEN WITH ARS-14KM special treatment vehicle; TMS-65U thermal treatment vehicle; Unmanned aerial reconnaissance complex (1 on RKhM-9; RKhM-8 also reported to use a drone)

TDA-2K, TDA-3 and TDM-2K smoke generator vehicles TDA-2K

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] seen with NBC protection 'large unit' of Western Military District, not named [district press office via TASS]; brigade inferred

Unidentified unit, RKhBZ unit of the Central Military District, exercise [R 2019 L] seen with RKhBZ unit, Central Military District (photo caption)

RKhBZ aerosol counteraction units, aerosol counteraction subunits; TDM-2K named [R 2024-04 L]

NUMBERS Losses Oryx: 1 TDA-2K, 4 TDA-3 (3 destroyed, 1 captured), 1 TDM-2K destroyed (photo-confirmed) (2026-10)

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. 78 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.

SOURCES AR81 ATP FOCUS11 MILBY ORYX1 STUD1 TOPWAR5 TWZ14 VRF14 WEG87 WEG2015 WWW111



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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
Road speed	100 km/h	maximum, 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
SEEN WITH KamAZ-5350 truck (TDA-3 chassis) (1 per vehicle); KamAZ-4310 truck (TDA-2K chassis) (1 per vehicle)

7 Command and signals

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	MOB.	PAGE
COMMAND AND STAFF VEHICLES					
BMD-1KSh-A	—	БМД-1КШ-А «Сорока»	Airborne battalion chief-of-staff command and staff vehicle · 1975	TR-A	82
BMP-1KSh command and staff vehicle	M1978	БМП-1КШ «Помок-2»	Command and staff vehicle for regimental and battalion commanders · 1972	TR	82
R-145BM Chayka command and staff vehicle	—	Р-145БМ «Чайка»	Turretless radio command and staff vehicle for mobile command posts · 1960	WH-AT-A	82
R-149 command and staff vehicles	—	Р-149	Tactical command and staff vehicles with HF/VHF radios and data terminals · 1990s	WH-AT-A	83
VTS Ladoga	—	ВТС «Ладога»	Armoured command, staff and reconnaissance vehicle for NBC conditions · 1980s	TR	83
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	TR-A	83
1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	M1979-28	1В18, 1В19, 1В119, 1В152, 1В1003 «Клён-1», «Клён-2», «Реостат», «Снегирь», «Канустник-Б»	Artillery battery and battalion command, observation and fire direction vehicles · 1979	WH-AT	84
Barnaul-T	—	«Барнаул-Т»	Automated command and control set for tactical short-range air defence, battery to brigade · 2015	TR-A	84
Pol yana-D4	—	9С52 «Поляна-Д4»	Automated command post of an Army air defence missile brigade · 1986	WH-AT	84
PRP-4A Argus / PRP-4M Deytery	—	ПРП-4А «Аргус»	Mobile artillery reconnaissance post on BMP-1 chassis · 1988	TR-A	85
PU-12M7	—	9С482М7 ПУ-12М7	Air defence battery command post · 1977	WH-AT-A	85
RADIO AND SIGNALS					
P-240I-4 Pereselenets	—	П-240И-4 «Переселенец»	Digital field communications vehicle linking command posts · 2015	WH-AT	86
R-142N Deimos-N	—	Р-142Н «Деймос-Н»	Truck-mounted HF/VHF command and staff vehicle for regiment, brigade and division staffs · 1976	WH-AT	86
R-161 Poisk HF radio station	—	Р-161 «Поиск»	Medium and high power HF/VHF radio stations on trucks for operational-level links	WH-AT	86
R-166 Artek	—	Р-166 «Артек»	Medium-power HF/VHF mobile radio station for command post signal nodes · 1996	WH-AT	86
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	WH-AT	87
R-416GM Granit-M radio relay station	—	Р-416ГМ «Гранит-М»	Truck-mounted digital radio relay station for field command networks · 2018	WH-AT	87
R-439 Legenda-2	—	Р-439 «Легенда-2»	Military satellite communication stations	WH-AT	87
Redut-2US	—	«Регуль-2УС»	Mobile digital radio-relay and broadband wireless communications complex for command posts · 2011	WH-AT	88
Strelets	—	КРУС «Стрелец»	Soldier-worn reconnaissance, command and communications set · 2007	MP+AD	89

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	7 Command and signals	85
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	Tracked command, observation and fire direction vehicles, SP howitzer battalion	7 Command and signals	83

BMD-1KSh-AБМА-1КШ-А «Сопка»

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)

signal battalion, 6 to 8 per independent signal battalion in the 2000 list (R 2000 L)

NUMBERS Losses 12 lost: 8 destroyed, 4 captured (Oryx) (2026)

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. 13 Base carrier: bow machine guns, firing ports and officers' roof hatches over the centre; no armoured windows in the superstructure. 1V119 artillery command vehicle p. 84 BMD-family hull with an observation turret; BMD-1KSh has no turret, only a commander's cupola and a raised centre compartment.



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, road 500 km 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

Power supply AB-0.5-P/30 petrol generator

Armament None as standard

SEEN WITH BTR-D

SOURCES AR16 JANESRG ORYX1 WEG2015 WP-EN22 WP-RU26 WP-RU27 WP-RU34 not in WEG

BMP-1KSh command and staff vehicleБМП-1КШ «Помок-2»

NATO: M1978TR

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)

motor rifle regiment, 501st signal company (O 1986 L)

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.

Armament No gun or missile rail; one 762 mm PK fired from the rear-door port. Most firing ports blocked.

CONFUSED WITH BMP-1 IFV p. 11 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.

BMP-1K p. 11 Keeps the 73 mm gun in a rotating turret, with extra antennas

(BMP-1K3 adds a 10 m mast); on the KSh the mast stands in place of the gun.

PRP-3 artillery reconnaissance vehicle Enlarged two-man turret set towards the rear, with a 762 mm MG and a folding rectangular radar antenna on the turret rear.



Vitaliy 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

Road range 550 km

Swimming speed 7 km/h

Fording Amphibious, swims

Crew 3 crew plus 4 staff officers

Armament 1 x 762 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

VARIANTS BMP-1KShM Extra power sources on top of the troop compartment (VALKA). MP-31 INA.

SOURCES FM23 GS11 IISS25 JANESRG ORYX1 VALKA3 VALKACZ WEG21 WEG22 WEG2015 WP-EN30 WP-RU40 WP-RU42

R-145BM Chayka command and staff vehicleР-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)

NUMBERS Losses 2 R-145BM lost in Ukraine, no unit or date given (Oryx) (2026-09)

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 762 mm MGs on the forward roof above the second wheel station; R-145BM has no turret.

BTR-60PU-12 (9S482) air defence command vehicle p. 85 Also turretless, but a large stowage box on the right hull side and the mast at the right front of the roof; R-145BM has a frame antenna on the left of the roof.

BTR-60 1V18/1V19 p. 84 Unarmed turret with observation devices; R-145BM has no turret. 1V19 also has a stowage box on each hull side.



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

Road range 500 km

Swimming speed 10 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

VARIANTS BTR-60PUM INA.

SOURCES ACONF145 ARINF FM100 IISS25 JANESRG ORYX1 RUSARMY4 UNIAN4 WEG77 WEG2015 WP-EN20 WP-EN21 WP-EN97 WP-RU146 WP-RU149 WP-RU150

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)

command brigade, R-149AKSh-1 (O 2022-03 L)

motor rifle division, R-149AKSh-1 (O 2022-03 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.

CONFUSED WITH K1Sh1 family (R-166-0.5, BMM-80, 1V152, Kushetka-B) p. 83

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. 86 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. 68 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.



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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

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

SOURCES 3G ACONF AR42 AR47 AR70 ARMYINF5 ARMYINF6 ATP DFRLAB3 ELSIG GAGA2 JANESRG K17 MIL65 ORYX1 RUSARMY5 UNIAN5 VPK15 WEG78 WEG2015 WMC21 WMC22 WMC23 WMC24 WP-EN21 WP-RU60 WP-RU93 WP-RU151 WP-RU152 WSPOT16 WSPOT17 WSPOT19 WSPOT20 WSPOT21 WSPOT22 WSPOT23 WSPOT24

VTS Ladoga BTC «Λagoza»

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)

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.

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

Road range 350 km maximum

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

Crew 2 crew plus 4 in the passenger compartment

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 AR55 FOCUS7 JANESRG NAKED2 ORYX1 TECHIN TRENCH TWZ9 USER8OCT WEG60 WP-RU39 WWW15 not in WEG

1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex 1B12 «Машуна-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)

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.

CONFUSED WITH MT-LB p. 14 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. 54 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.



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 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

SOURCES AG1 ARMF13 ARMF14 ARMF15 ARMF16 FAS1 JANESRG JREW02 MILINF ORYX1 RWW TWZ1 VRF1 WP-RU1 not in WEG

1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles

1B1003 «Клён-1», «Клён-2», «Ресамат», «Снекмп», «Канустнук-Б»

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]

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 762 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.

SOURCES ACONF145 AR16 AR17 JANESRG ORYX1 RUWK152 RWW TASS2 WEG2015 WIKR18 WP-EN20 WP-EN21 WP-EN22 WP-RU24 WP-RU25 WP-RU26 WP-RU27 not in WEG



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

Weight, 1V119 **6.7 t** combat weight, BMD-1 chassis

Weight, 1V152 **12.6 t** combat weight, BTR-80 chassis

L × W × H **7.22 × 2.82 × 2.06 m** hull

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

Crew, 1V119

6

Barnaul-T «Барнаул-Т»

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]

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. 50 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. 85 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.



Doomych, Public domain

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, maximum

Road range **500 km** cruising, 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

SEEN WITH 1L122-1E Garmon (1 per 9S932-1)

SOURCES APA4 BO DB FAS1 GS6 KZ MIL9 ORYX1 SDU TOPWAR3 TWZ1 VALKA WEG15 WMC4 WP-RU29 WP-RU30

Polyana-D4 9C52 «Поляна-Д4»

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]

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.

SOURCES APA4 APA11 ATP IISS25 KZ2019 KZ2021 NASHAVT RDP6 RUSAR1 RUSARMM USER80CT VPK13 VRF12 WEG74 WP-EN94 WP-EN95 WP-RU139



Vitaliy 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

PRP-4A Argus / PRP-4M Deytery ПРП-4А «Арзyc»

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)

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.

CONFUSED WITH BMP-2 p. 12 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.



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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

SOURCES AR67 ATP GS11 JANESRG JREW02 MIL64 ORYX1 RWW WEG22 WEG2015 WP-EN30 WP-RU140

PU-12M7 9C482M7 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)

Tor-M1 batteries (export composition), Tor-M1 battery (9S737M, export composition), 1 per battery of up to 4 Tor-M1 combat vehicles (D 2003 L)

Air defence batteries (Tor, Tunguska, Strela-10), air defence battery of Tor/Tor-M1, Tunguska(-M1) or Strela-10M2/M3 (9S737 battery command post), 1 per battery (R 1989 L)

NUMBERS Losses 1 BTR-60PU-12 (legacy variant) captured by Ukraine (Oryx) (2026-09)

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. 83 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.

RB-531B Infauna (K1Sh1) p. 68 Also a dome on a mast, but the turret is removed and the dome sits on the roof itself; PU-12M7 keeps a cupola with a sensor box (from photograph).

R-166-0.5 Artek (K1Sh1) p. 86 From photograph: railed frame on the forward roof and cable drums at the rear; no mast with a dome-shaped head.

BTR-60PU-12, PU-12M (BTR-60) p. 82 Older PU-12 on the BTR-60: large stowage box on the right hull side, exhaust pipe each side at the rear at 45°; PU-12M6/M7 use the BTR-80 (K1Sh1).

SEEN WITH 9K35M2/M3 Strela-10M2/M3 (up to 6 per PU-12M7); 2K22M1 Tunguska-M1 (up to 6 per PU-12M7); 9K331 Tor-M1 (up to 4 per PU-12M7 or 9S737M); ZSU-23-4 Shilka (up to 4 per PU-12M7 (telephone link)); 9K33 Osa-AK (up to 4 per PU-12M7 (telephone link)); 9K38 Igla (up to 6 teams per PU-12M7); 1L110 portable electronic plotting board (MANPADS team terminal); 9S18M1 Kupol; P-19 (1RL134)

VARIANTS PU-12M6 Same BTR-80 base as PU-12M7. PU-12M BTR-60 base (ARMF: BTR-60PB; JANESRG: BTR-60PA) with large stowage box on right side, generator and 6 m telescopic mast.

9S737 Ranzhir Tracked MT-LBu chassis instead of wheeled BTR-80. 9S737M Ranzhir-M Larger tracked GM-5965 chassis shared with Tor-M1; about 31 t.

SOURCES 3G APA4 AR47 ARMF JANESRG ORUZH ORYX1 ROE2 RUSA1 RUSA2 TWZ1 VPK14 WEG76 WMC20 WMC21 WMC22 WMC23 WMC24 WP-RU30 WP-RU60 WP-RU144 WP-RU145 WP-RU146



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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
Road speed, PU-12M7 80 km/h maximum
Road speed, 9S737 (WEG figure) 65 km/h maximum, WEG lists a Tata LPK 2518 truck chassis
Road speed, 9S737M 65 km/h maximum, claim
Road range, PU-12M7 600 km maximum, road
Road range, 9S737M 500 km maximum, road, claim

Coordinates measurement envelope, PU-12M7 (connected radars)
Data link range, PU-12M7 by radio

Data link range, PU-12M7 by field cable
Data link range, 9S737 to higher post
Data link range, 9S737 to fire units
Crew, PU-12M7
Targets received, PU-12M7
Targets tracked by operator, PU-12M7
Target altitude limit, PU-12M7
Target speed limit, PU-12M7
Radar inputs, PU-12M7

Radios, PU-12M7
Fire units controlled, PU-12M7

Navigation accuracy, PU-12M7

up to 100 km maximum, coordinates measurement envelope from connected radars; PU-12M7 has no radar of its own, claim
up to 40 km maximum, radio link to higher and subordinate posts, claim
up to 15 km maximum, field telephone cable, claim
up to 30 km maximum, radio, claim
up to 5 km maximum, radio, claim
4 commander, driver, radio operator, operator
up to 99 export catalogue figure, claim
up to 9 PU-12M6: 5-7, claim
up to 25 km claim
up to 787 m/s claim
1 analogue + 3 coded coded sources include higher command posts and AEW, claim
5 VHF, 2 HF
up to 6 Strela-10M2/M3, Tunguska-M1 or Igla; up to 4 Tor-M1, Shilka or Osa-AK claim
1.2% of distance travelled TNA-4 navigation equipment, claim

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. 88 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.

SOURCES AR63 ARMYINF5 CNA ORYX1 TASS12 VALKA5 WEG2015 WP-EN21 WP-EN62 WP-RU132 WPBTR60 not in WEG

MOBILITY Truck chassis, all-wheel drive; no figures found for this fit.

Weight	INA
Road speed	INA
Road range	INA
Time into action	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
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.

R-142N Deimos-N П-142Н «Де́ймос-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. 86 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-142N, Vitaliy V. Kuzmin, CC BY-SA 4.0



R-142NSA, Vitaliy 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

SEEN WITH GAZ-66 (1)

SOURCES ARMSNET ATP CRYPTO DUDAK KOLESA3 ORYX1 RWW VPK15 WEG2015 WMC25 WP-EN71 WP-RU98 WP-RU147 WP-RU148 not in WEG

R-161 Poisk HF radio station П-161 «По́иск»

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]

NUMBERS Losses 1 R-161 destroyed (Oryx, photo-confirmed; record undated, variant unknown) (2022)

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.

CONFUSED WITH R-166 Artek (truck) p. 86 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.

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

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

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)

SOURCES AR29 ARMYRAD DUDAK ORYX1 RSIG RWW UTIN VPK15 WEG2015 WP-EN71 WP-RU98 WP-RU113 WP-RU148

R-166 Artek П-166 «Арте́к»

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. 83 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. 86 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. 86 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-166-0.5, Vitaliy V. Kuzmin, CC BY-SA 4.0



R-166 on KamAZ, Vitaliy 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
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Time into action	5 min	duplex roof antennas, claim
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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

SEEN WITH UNSh-10 / K1Sh1 armoured chassis (1)

SOURCES AR29 AR71 AR72 ARMSNET DBLOG2 DUDAK MIL66 ORYX1 RIA2 RUSARMY6 RWW VPK15 WMC24 WMC26 WMC27 WMC28 WP-EN71 WP-EN98 WP-RU98 WP-RU122 WP-RU148 WP-RU153 WSPOT25 WSPOT26 WSPOT27 WWW18 not in WEG

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)

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. 87 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. R-412F R-412A plus I601 mast vehicle on ZIL-131 raising antennas to 20 m. R-412B Mounted in MT-LB tracked carriers.

SOURCES FOCUS10 ORYX1 SLOVO U2411 VALKA6 VNTU WMC37 WP-RU189 WP-RU190 not in WEG



R-410-7.5. ShinePhantom, 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

SEEN WITH I613M power vehicle (Ural-375A, two ASD-20T generators) (1 per R-412A)

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)

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. 87 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.



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

SOURCES AR63 ARMYINF5 CAMTO CNA FOCUS10 FUTZ KYIVP2 LIGA5 MILUA4 ORYX1 PUBLIC RAMD2 SLOVO U2411 VALKA6 WEG2015 WMC29 WP-EN62 WP-RU132 WP-RU154 WWW19 not in WEG

R-439 Legenda-2

P-439 «Легенда-2»

WH-AT

Military satellite communication stations: portable, container and BTR-80-based

OPERATED BY Unidentified unit (R 2022-04 M) seen with Unit not stated; R-439-MD2 destroyed at Yahidne, Chernihiv region, 2022-04

Unidentified unit (R 2022-08 L) seen with Unit not stated; 'Legenda-2' complex reported destroyed near Blahodatne, Mykolaiv region, 2022-08 (Operational Command South claim)

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.

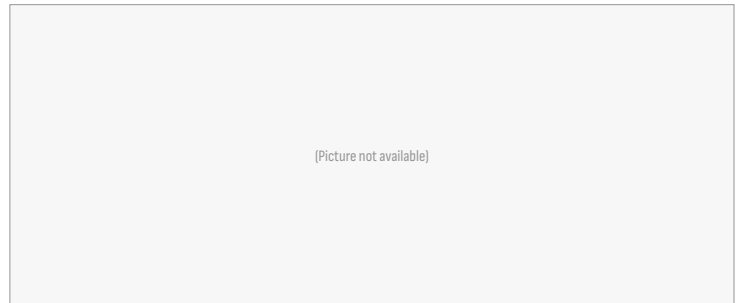
Complex R-439-KUL hub: container on a KK-2.02 base with a 2.5 m five-segment dish that can stand up to 25 m from the container. R-439-MD3 packs into three aluminium cases.

CONFUSED WITH R-149BMR and other K1Sh1 command vehicles p. 83 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. 87 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.

VARIANTS R-439-P Legenda-2P Transportable set, 1.2 m dish in five segments; carried by any transport. C band (4/6 GHz), one link, 1.2 to 9.6 kbit/s; company or battalion level; deploys in 15 min. R-439-BK Legenda-2BK BTR-80 (K1Sh1) hull with one 1.5 m dish. Jam-resistant C-band links via ESSS-2 relays, 4 phone and 1 telegraph channel; regiment level; deploys in 20 min. R-439-BK1 INA. Improved R-439-BK; details INA. R-439-MD1 0.5 m phased-array antenna on a command vehicle. 4/6 and 7/8 GHz with automatic tracking; works on the move; up to 4 digital phone channels. R-439-MD2 K1Sh1 hull with 1.2 m and 0.8 m dishes and an antenna array. Three bands: 0.2/0.4 GHz on the move, 7/8 GHz at short halts, 4/6 and 7/8 GHz parked.



(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 also 90 kg WP-RU154

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 also 15 to 20 min RAMD3

Time into action, R-439-KUL

1 h Plus up to 20 min warm-up after power-on, claim

Weight, vehicle (K1Sh1)

INA

Time out of action

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

Links, R-439-KUL

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

Anti-jam method

10 directions claim

Power use, R-439-MD1

Frequency hopping uplink; spread-spectrum PSK downlink MD1 and MD3, claim

Crew, R-439-BK and MD2

INA

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

SOURCES ARMYINF5 DUJ2 KPN MILUA4 ORYX1 RAKUL RAMD1 RAMD2 RAMD3 WEG32 WEG2015 WP-EN62 WP-RU154 not in WEG

Redut-2US «Pegym-2YC»

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. 86 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. 87 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. 63 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 p. 87 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.



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Georgy Minesashvili, 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
Length	INA
Width	INA
Height	INA

Radio-relay data rate	5-155 Mbit/s claimed, multi-hop radio-relay lines, 4 directions simultaneously; official documents quoted, claim also up to 155 Mbit/s BORG
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; P-260-T transit communications vehicle; P-261 communications control vehicle; KamAZ-63501 8x8

SOURCES AIF2 AR63 AR73 AR74 ARMYINF5 BORG CNA HABR MIL39 MIL67 OLUA ORYX1 RG202 RGPAL RWW UKRINF5 WMC30 WMC31 WP-EN62 not in WEG

Strelets КРРС «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.



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PDU-4, Vitaliy V. Kuzmin, CC BY-SA 4.0



SBR-5M Fara-VR, Vitaliy 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 also 5.4 kg VPK20
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 also 1 m AR85
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 also 200 km with ground relay; 300–400 km with aircraft relay at 9–10 km altitude VPK20
Range, PDU-4 laser rangefinder	3–5 km operating range, Operating range (дальность действия); target type not stated, claim
Accuracy, target designation	2–3 m from aiming point claimed, Strelets-M laser designation for Kh-29L and Kh-38ML; anonymous source, claim
Detection to engagement time	under 4 min doctrinal, Brigade UAV and Strelets-linked C2
Crew	INA Worn by one soldier; crew not stated

SEEN WITH R-853-V2M radio; PDU-4 rangefinder with tripod; SBR-5M Fara-VR radar; Orlan-10 UAV; R-168-SUN-2 radio; R-438-M satellite radio; SVP-24 Gefest

VARIANTS Strelets-M INA. Version for the Ratnik soldier outfit; laser designation of targets for semi-active laser missiles reported. Strelets C3 variant INA. Distributes targeting information to linked terminals.

SOURCES AR85 ATP CNA FOCUS14 RG11 VPK20 WP-RU170 ZVEZDA19 not in WEG

8

Logistics

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	MOB.	PAGE
TRUCKS AND UTILITY VEHICLES					
GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	—	ГАЗ-66; ГАЗ-3308 «Шушута»; «Сажко»	Light 4x4 general cargo truck and prime mover for mortars · 1964	WH-AT+AD	92
KamAZ-4310, -5350 and -6350 Mustang military trucks	—	КАМАЗ-4310, КАМАЗ-5350, КАМАЗ-6350 «Мусман»	General-purpose 6x6 and 8x8 cargo and tractor truck chassis for supply and special bodies · 1980	WH-AT	93
UAZ-469, UAZ-452 and UAZ-39094 utility vehicles	—	УАЗ-469; УАЗ-452; УАЗ-39094 «Козлик»; «Буханка»; «Дермер»	Light 4x4 command, liaison, cargo and resupply vehicles · 1971	WH-AT	93
Ural-6370, -63706 and -532301 trucks (newer Ural family)	—	Урал-63706 «Торнадо-У»	Heavy 6x6 and 8x8 cargo trucks and tractors · 2012	WH-AT	94
ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	—	ЗИЛ-131	Legacy 6x6 cargo trucks and carriers · 1966	WH-AT	94
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	WH-AT	95

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	6 Engineers	77
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	Amphibious carrier for cargo and vehicles	6 Engineers	73

GAZ-66 and GAZ-3308 Sadko light 4x4 trucks

GA3-66; GA3-3308 «Шушуга»; «Cagko»

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 1V17 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**

NUMBERS Losses Oryx lists 117 GAZ-66, 42 GAZ-3308, 1 GAZ-33081 Eger-II and 2 Sadko Next as Russian losses, photo-confirmed, as of fetch date (2026-10)

INDICATES Doctrinal sources list GAZ-66 among MTO transport trucks, 1V17 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. 93 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).

ZiL-131 p. 94 Full view: three axles (6x6) against two on the GAZ-66 and GAZ-3308. GAZ-3309 Close only: same bonnet cab; GAZ-3308 front wings have enlarged wheel arches.

SEEN WITH 2S12 Sani 120 mm and 2B9 Vasilek 82 mm mortars; BM-21V Grad-V (GAZ-66B chassis, 12 rounds); 1V17 Mashina-B battery fire control vehicles (1V110 or 1V18) (3 per battalion set); Twin Box radar intercept and DF set (army version on GAZ-66, c. 2001); R-125 and R-142 command and staff vehicles; Gusar armoured vehicle (reported Nov 2025, built at an MoD repair plant)

VARIANTS GAZ-66B Open canvas-top cab, windscreen folds over the bonnet. Air-droppable; built for airborne forces. GAZ-66-40 INA. Final GAZ-66 model with 123 hp turbodiesel (GAZ-5441). GAZ-3308 Bonnet cab, 4x4, four tyres, single on rear axle. Replaced GAZ-66-40 in the Army; payload 2,000 kg (WEG), 2,300 kg (ru Wikipedia). GAZ-33081 Eger-II Five-seat double cab. Turbodiesel MMZ D-245.7; carries crew in cab; seen lost in Ukraine. GAZ-33085 / GAZ-33086 Zemlyak Twin tyres on rear axle. 4,000 kg payload; weaker cross-country than Sadko.



GAZ-66. Bestalex, Public domain



GAZ-3308 Sadko. Vitaly V. Kuzmin, CC BY-SA 4.0



GAZ-66B. Aleksey Zagonskiy, CC BY-SA 4.0



GAZ-33081. Апатинаити, CC BY-SA 3.0



GAZ-66 with ZU-23. Kirill Borisenko, CC BY-SA 4.0



Tanker on GAZ-3308. Sergeev Pavel, GFDL, 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
	also 90 km/h WP-EN53
Road speed, GAZ-3308	90 km/h
Road range, GAZ-66	875 km cruising
Road range, GAZ-3308	950 km cruising
Fording, GAZ-66	1.2 m unprepared
	also 1 m WP-EN53
Fording, GAZ-3308	1.0 m unprepared
Length, GAZ-3308	6.25 m
	also 6.347 m WP-EN54 WP-RU81

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
	also 2,300 kg WP-RU81
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

SOURCES ATP JREW02 ORYX1 RWW WEG44 WEG2015 WMC7 WMC8 WP-EN53 WP-EN54 WP-RU81 WP-RU82 ZR5

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

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.

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-5350. Vitaliy V. Kuzmin, CC BY-SA 4.0



KamAZ-6350. Vitaliy V. Kuzmin, CC BY-SA 4.0

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
L × W × H	7.85 × 2.5 × 3.29 m	KamAZ-5350

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

SEEN WITH Pantsir-S1 (96K6) (INA; chassis stated differently, see open_questions); 9A52-4 Tornado MRL; Redut-2US relay

VARIANTS KamAZ-5350 Mustang 6x6, 7.96 m long, 6 t payload; standard platform. KamAZ-53501 Longer 6x6 (8.5 m) than 5350.

SOURCES ATP CNA D243 KYIV ORYX1 OSONE RWW WEG54 WEG2015 WMC8 WMC10 WP-EN62 WP-EN63 WP-RU96 WP-RU97 WP-RU98 ZRS

UAZ-469, UAZ-452 and UAZ-39094 utility vehicles

YA3-469; YA3-452; YA3-39094 «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

motor rifle brigade, UAZ fighting pickups for desert and steppe R 2019 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.

Axles Close only: wheelbase UAZ-469 2,380 mm, UAZ-39094 2,550 mm, UAZ-3741 van 2,300 mm.

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.

UAZ-3909 Fermer combi Full view: closed van body, rear compartment behind a window, where the UAZ-39094 has an open load bed.



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
Weight, combat, UAZ-39094	3,070 kg	gross

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

SEEN WITH Vest 9M133 Kornet launcher (UAZ Hunter based); R-125B1 / R-125B2 command vehicle with radio station (UAZ-469 based)

SOURCES ATP CNA DEFPST3 FORCES ORYX1 WEG100 WEG2015 WP-EN127 WP-EN128 WP-RU197

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. 19 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. Gennadiy L, CC0

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 AR96 MIL83
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-RU201

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. 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.

SOURCES AR96 DEFLOGS IZRUZ MIL83 ORYX1 OSONE RG214 RG246 RWW STKT WEG83 WEG105 WP-EN72 WP-RU201 not in WEG

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)

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.



KrAZ-255B. Vitaly V. Kuzmin, CC BY-SA 4.0



ZIL-131 tanker. Don S. Montgomery, US Department of Defense, public domain



ZIL-131. Stanislav Kozlovskiy, CC BY-SA 3.0

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

SOURCES ATP JREW02 KOLES2A2 ORYX1 RWW WEG62 WEG2015 WMC17 WP-EN69 WP-EN70 WP-EN71 WP-EN72 WP-RU111 WP-RU112 WP-RU113

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**

military district, automotive units, Kaliningrad, a batch, size **INA** **R 2016-12 M**

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).

SOURCES HSCHL IZV17 MINFORM ORYX1 RIA16 RWW WEG97 WP-EN123 WP-EN124 WP-RU166 WP-RU187 WP-RU188



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
Weight, KamAZ-65225	11.15 t	curb weight, commercial specification, claim
L × W × H	11.7 × 3.07 × 2.92 m	

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
Semi-trailer mass, KZKT-7428	70 t	maximum, lead text; the -011, -013 and -74287 table rows give 100 t, claim
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
Fifth-wheel load, MAZ-537	25 t	base model; 27 t for MAZ-537G
Cab seating, MAZ-537	driver and 3	four-seat cab

SEEN WITH ChMZAP-9990 and ChMZAP-5247G semi-trailers

9 Uncrewed systems

QUICK REFERENCE: EVERYTHING IN THIS CHAPTER

SYSTEM	NATO / US	CYRILLIC	WHAT IT IS	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	TR+AD	98
SMALL RECONNAISSANCE DRONES					
Eleron-3SV	—	Элерон-3СВ «Элерон»	Man-portable short-range electro-optical reconnaissance and artillery-spotting UAV · 2013	AIR-FW	98
Granat-1 / Granat-4	—	Гранат-1 / Гранат-4 «Гранат»	Small reconnaissance UAVs for artillery target acquisition and spotting · 2010	AIR-FW	98
Merlin-VR	—	Мерлин-ВР	Long-endurance reconnaissance and artillery-spotting UAV · 2021	AIR-FW	99
Orlan-10	—	«Орлан-10»	Catapult-launched recon UAV for artillery spotting and EW · 2010	AIR-FW	99
Supercam S350	—	«Суперкам»	Small electric fixed-wing reconnaissance and artillery fire-adjustment UAV · 2014	AIR-FW	100
Takhion	—	Тахион «Тахион»	Small electric reconnaissance and fire-correction UAV · 2015	AIR-FW	100
ZALA 421-16E	—	ZALA 421-16E	Short-range electric reconnaissance and fire-correction UAV · 2011	AIR-FW	100
Zastava	—	Застава «Застава»	Short-range reconnaissance and fire-adjustment mini-UAV · 2012	MP	101
LARGER RECONNAISSANCE AND STRIKE DRONES					
Forpost	—	«Форпост»	Medium-range reconnaissance UAV · 2013	AIR-FW	101
Korsar	—	Корсар «Корсар»	Medium reconnaissance UAV, fixed wing · 2015	AIR-FW	101
Mohajer-6	—	Мохагжер-6	Iranian-built medium reconnaissance and light strike UAV used by Russia · 2018	AIR-FW	102
Orion	—	«Орион»	Medium-altitude long-endurance reconnaissance and strike UAV · 2019	AIR-FW	102
LOITERING MUNITIONS AND ONE-WAY ATTACK					
Geran-2	—	Герань-2 «Герань»	Long-range one-way attack drone · 2022	AIR-FW	103
Gerbera	—	«Гербера»	Cheap foam one-way drone · 2024	AIR-FW	103
Italmas	—	Италмас	One-way attack drone · 2023	AIR-FW	104
KUB-BLA	—	КУБ-БЛА «КУБ»	Catapult-launched electric loitering munition, 3 kg warhead, tactical strike · 2022	AIR-FW	104
Lancet	—	Изделие 51 «Ланцет»	Loitering munition for precision strikes on artillery, air defence and armour · 2019	AIR-FW	104
Molniya	—	«Молния»	Cheap fixed-wing FPV one-way attack drone · 2024	AIR-FW	105
FPV DRONES					
FPV drones	—		Pilot-flown one-way attack quadcopters, radio- or fibre-optic-controlled · 2023	AIR-RW	105

LOOKING FOR THESE? THEY ARE IN OTHER CHAPTERS

SYSTEM	WHAT IT IS	CHAPTER	PAGE
Leer-3	UAV-borne cellular	5 Electronic warfare	62
Repellent-1	Wheeled counter-UAV EW complex	5 Electronic warfare	68
Pole-21	Networked GNSS jamming posts protecting fixed sites from GNSS-guided weapons...	5 Electronic warfare	68

Kurier / Omich-2 / Bogomol-7V ground robotic complexes

TR+AD

Remotely driven tracked robots for fire support, resupply and casualty evacuation In service 2024

OPERATED BY volunteer formation, NRTK company Q 2026 M

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 (762 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.

SOURCES AMAL3 DONNM IZOM IZV14 LENTA9 MODRT RBC2 RGTV RMBG VZ not in WEG

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

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

SEEN WITH P-7 parachute platform (3 complexes dropped from P-7 platforms at Tsentr-2026; number per platform INA)

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

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.

CONFUSED WITH **ZALA 421-16E** p. 100 Also an electric flying wing with a pusher propeller, catapult-launched; larger: span 2,815 mm against 1.47 m.

Takhion p. 100 Also an electric flying wing, catapult-launched and parachute-recovered; larger: span 2 m against 1.47 m, with winglets at the wingtips.

Granat-1 p. 98 Smaller flying wing: span 0.82 m against 1.47 m, propeller at the front; Eleron-3SV is a pusher.

SOURCES 3G AR40 AR41 AR42 ARMYFIN ATP BG69 BG137 CNA DBLOG GRROB01 GS17 IISS25 KI2 MF2 MILUA2 MILUA23 PROF2 RT18 RWW SHEP2 WP-EN47 WP-RU75 WP-RU76 WP-RU77 ZALAAIF ZALAINT ZASROB not in WEG



Eleron T-16. Ministry of Internal Affairs of Ukraine, CC BY 4.0



Eleron-3SV. Mil.ru, 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

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

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

motor rifle regiment, Attached Granat or Eleron platoon from the brigade or division UAV company; also battalions, at times companies D 2019 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. 99 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).

Eleron-3SV p. 98 Granat-1 has the propeller at the front and span 0.82 m; Eleron-3SV is a pusher flying wing, span 1.47 m.

Takhion p. 100 Same maker (Izhmash); also a flying wing, but larger than Granat-1: span 2 m against 0.82 m, with winglets at the wingtips.

SOURCES ATP AV21 CHARTER CNA DEFNDR GRROB01 GS17 IISS25 MF2 MIL30 ROB04 RWW TADV2 WMC9 WP-EN47 WP-RU77 WP-RU88 WP-RU89 ZAXID not in WEG



Granat-1. AnthonyWK, CC BY-SA 4.0



Granat-4. Vitaliy V. Kuzmin, 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

Time into action, Granat-1 5 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, 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

SEEN WITH Granat-4 system: UAVs, ground control station, KamAZ van launch and transport vehicle (2 UAVs, 1 control station, 1 vehicle)

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. ISS 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. 99 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

Flight speed **70–140 km/h** Cruise to maximum; single aggregator source

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 DEFPOST2 IIS25 KYIVP PLANDIY W1RU25 W1RU26 not in WEG

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**

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. 100 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. 100 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. 98 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. 105 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.

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.



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 under 15 min crew deploys equipment and launches UAV, claim

Wingspan, Orlan-10 **3.1 m** also just over 1 m KI2

Wingspan, Orlan-30 **3.9 m** export Orlan-30, claim

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-RU130

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 over 100 km distance from unit deployment site, Russian MoD statement, after Feb 2022, claim

Practical range, Leer-3 EW tasks **200–8000 m** range of measured distances, measured distance, 1064 nm laser, export Orlan-30, claim

Laser range, Orlan-30 designator-rangefinder **6** crew chief, 2 UAV pilots, 2 payload operators, 1 technician, claim up to 4 simultaneous control

Crew **4 HE-frag bomblets** converted VOG-25 grenades in underwing blocks; Russian MoD video, May 2022, claim

Bomb load, Orlan-10 strike version

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

SOURCES ATP CNA EDR24 FN FOI GS17 IIS25 KI2 KP262 MASH MIL42 MIL922 MOLKP PLANDIY RUSIPL RWW SCDSA SCMFR STC15 TV24 W1030 W171 WP-EN47 WP-EN88 WP-RU130 ZALAAIF ZTMDB not in WEG

Supercam S350 «Cyneпkaм»

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), Dneps 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.

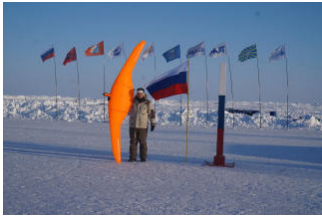
CONFUSED WITH ZALA 421-16E p. 100 In flight: also an electric flying wing, catapult-launched and parachute-recovered, but span 2,815 mm against 3.2-3.5 m.

Orlan-10 p. 99 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.

SOURCES AIF11 GS17 ISS25 IZ8 KI2 LIGA7 MEDUZA MFRAB NEWSRU4 REFORM RWW SCDSA SCMFRR TASS20 TASS21 TASS22 W1A2 W1B2 W1C2 W1D2 W1E W1F W1G W1H W1I W1J WP-RU171 WSPOT31 ZALAAIF ZTMDB not in WEG



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

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

Takhion Тахуон «Тахуон»

AIR-FW

Small electric reconnaissance and fire-correction UAV In service 2015

OPERATED BY combined arms army O 2022-11 M seen with 49th Combined Arms Army, Southern Military District

military base, UAV unit O 2022-05 L seen with Russian military base in South Ossetia, 58th CAA, Southern MD

Unidentified unit, Anti-underwater-saboteur unit, trials (mil.ru 2016 via Wikipedia)

O 2016 L seen with Northern Fleet anti-saboteur unit

Unidentified unit, reconnaissance unit of a motor rifle formation R 2020-12 M seen with Motor rifle formation (soyedineniye), 41st Combined Arms Army, Central MD, Altai Krai (number not given)

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.

Launch Catapult launch from ground station; lands by parachute.

CONFUSED WITH Eleron-3SV p. 98 Smaller electric flying wing with a pusher propeller: span 1.47 m against 2 m.

ZALA 421-16E p. 100 Electric flying wing with a pusher propeller; larger: span 2,815 mm against 2 m.

Granat-1 p. 98 Same maker (Izhmash); a flying wing with the propeller at the front, but much smaller: span 0.82 m against 2 m.

SOURCES AR87 ARMYINF9 FOCUS16 GRROB01 GS32 ISS25 KALCLUB MF2 RIASV RWW TASS23 USER80CT VRF17 WP-EN47 WP-RU77 ZALAAIF ZALAINZ ZVEZDA4 not in WEG



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

Radius of action 40 km claimed, kalashnikov.club: within direct radio line of sight, claim

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

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. 100 In flight: also an electric flying wing, but span 3.2-3.5 m against 2,815 mm.

Orlan-10 p. 99 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.



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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

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

SOURCES AR100 ATP GS17 GS37 ISS25 KI2 LENTA10 MF2 MIL88 MIL89 MIL90 MIL91 RG18 ROBOT RUSI2 SCDSA SCMFRR TAD VPK23 WP-EN47 WP-RU77 ZALA1 ZALA2 ZALA3 ZALA4 ZALA6 ZALA7 ZALA8 ZALAAIF ZALAINZ ZALAP ZTMDB not in WEG

Zastava Засмага «Засмага»

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. 98 Smaller: span 1.47 m against 2.2 m; Eleron-3SV is a tailless flying wing with a pusher propeller.

Granat-1 p. 98 Smaller: span 0.82 m against 2.2 m; a flying wing with the propeller at the front.



Milru, 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
Length	0.8 m
Wingspan	2.2 m
Height	0.24 m

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 GRROB01 IIS25 RWW UASV2 UKRIN4 WP-EN47 WP-RU207 ZASROB not in WEG

Forpost «Фопночм»

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) [\[R 2014-01 M\]](#)

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.

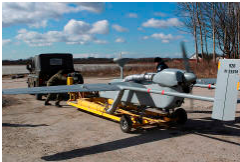
CONFUSED WITH Mohajer-6 p. 102 Same layout in both descriptions: twin booms, top-mounted tailplane, straight high wing set to the rear, pusher. Mohajer-6 is larger: span 10 m against 8.55 m.

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.

SOURCES ARMINF2 ATP BCAT1 CALIB D242 EAN EDR IFAX IIS25 IZV5 JANES MAILRU2 MIL24 MK MPER ORYX1 RT2 TASSNN VIKNA WP-EN48 WP-EN49 WP-EN50 WP-EN51 WP-RU78 WP-RU79 WWW1A4 WWW1B3 not in WEG



Mike1979 Russia, CC BY-SA 4.0



With vehicle trailer. Milru, 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

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
SEEN WITH Forpost UAV (3 per complex)	

Korsar Копсар «Копсар»

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. 101 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.

SEEN WITH Ground control post and several UAVs per system; UAV transport truck, shown with ATGM containers at 2018 parade

VARIANTS Korsar-M INA. Seaborne variant for the Navy (Navy Recognition, Oct 2019, via English Wikipedia); service status unknown. Korsar (export) INA. Export figures, shown 2019: 100 to 180 km/h, range up to 100 km, ceiling 100 to 4,000 m, endurance 75 h. Not the domestic figures.



Milru, 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 also 400 kg WP-EN51
Maximum speed	150 km/h claim
Flight range, radius from control post	120 km claimed, terrain reconnaissance mission, claim also up to 200 km WP-RU106
Length	4.2 m claim
Wingspan	6.5 m claim
Height	1.2 m claim
Cruise speed	120 km/h 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

SOURCES AR52 ARMADA2 ARMINF2 CNA HOTNEWS IIS25 ORYX1 WP-EN50 WP-EN51 WP-RU106 not in WEG

Mohajer-6 Moxagkep-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](#)

Russian Navy, Reportedly delivered to the Russian Navy (Guardian via Iran International); operator INA [R 2023-02 L](#)

NUMBERS Holdings 6 reportedly delivered to the Russian Navy (Guardian via Iran International) (2023-02)

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).

Forpost p. 101 Same layout in both descriptions: twin booms, top-mounted tailplane, straight high wing set to the rear, pusher. Forpost is smaller: span 8.55 m against 10 m.

Orion (Inokhodets) p. 102 From below: single fuselage with a V-tail and a two-blade pusher, span 16.3 m, against twin booms, flat tailplane, three blades and 10 m.



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
also 600 to 670 kg WP-EN49

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
also 200 km MIL45 MIL47 IRIINTL

Length 5.67 m Iran Ministry of Defense sheet, as cited by Wikipedia, claim
also 7.5 m WP-EN49

Wingspan 10 m Iran MoD sheet per Wikipedia; Army Recognition gives the same, claim

Endurance 12 h maximum

Maximum altitude 5,400 m 'Open data' figure in Ukrainian press
also 16,000 to 18,000 ft WP-EN49

Payload 100 kg maximum

also 100 to 150 kg WP-EN49

Data link range, line of sight 200 km claimed, Ground control station data link, direct line of sight, claim
also 500 km WP-EN49

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
also 12 to 20 km AR60

Release altitude, Qaem-series guided bomb 1,219 to 3,048 m claimed, Release height 4,000 to 10,000 ft, same Iranian statement, claim
also 5 km or higher AR60

Payload munitions up to 4 maximum, Guided bombs or missiles

Crew 2 operators per ground control station

EO turret, Oghab-4 36x optical zoom, laser rangefinder, thermal camera Oghab-4H or 4D; which fit Russian examples carry is INA, claim

SEEN WITH Ground control station (INA (2 operators per station)); Qaem-series guided bombs (2 to 4 per aircraft); Almas anti-tank missile (INA (four hardpoints))

VARIANTS Mohajer-6 A Two hardpoints, one under each wing. Carries two munitions. Which variant Russia uses is INA. Mohajer-6 B Four hardpoints, two under each wing. Carries four munitions.

SOURCES AR60 ARMINF2 EDR IISS25 IRIINTL K12 MIL45 MIL46 MIL47 VIKNA WP-EN49 WP-EN50 WP-RU79 WP-RU118 not in WEG

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](#)

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. 101 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

SOURCES AMR ARMINF2 ATP D242 DPOST EDR GS23 IISS25 KP3 MEZHA MIL95 ORYX1 RT5 RUSIPL TWZ11 UPDIU WP-EN49 WP-EN50 WP-EN87 WP-RU79 WP-RU118 not in WEG

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. 103 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. 104 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.

SEEN WITH Truck-mounted launch container (rocket booster) (up to 5 drones per container (Iranian-shown launcher)); Gerbera decoy and reconnaissance drone

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 b 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).



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

Launch weight, Geran-1

Launch weight, Geran-3

Speed, Geran-3

Flight range, Geran-2

Flight range, Geran-2 with BCh-90

Flight range, Geran-1

Flight range, Geran-3

Length, Geran-2

Range, Geran-2

Flight altitude, Geran-2

Flight altitude, Geran-2 observed

Ceiling, Geran-3

Flight time to target, observed

Warhead, Geran-2

Warhead, Geran-2 heavy

Warhead, Geran-1

Warhead, Geran-3

Guidance

200 kg

135 kg

250–370 kg Shahed 238 figure

300–370 km/h maximum, Telefly JT80 turbojet; maximum reached in defended zones and terminal dive, claim

1,350 km reported, standard 50 kg warhead; figure from leaked Alabuga

(manufacturer) documents, claim

650 km reported, 90 kg warhead, smaller fuel tank; leaked Alabuga documents, claim

700–1,000 km estimated, estimate; DIA estimate 900 km, estimated

up to 1,000 km operational, U-series, Telefly JT80 turbojet; Ukrainian intelligence, claim

3.3–3.5 m

1,350 km reported, 50 kg warhead; leaked Alabuga documents; see mobility data for alternatives, claim

60–4,000 m operating, Ukrainian General Staff handbook, claim

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

up to 7 km maximum

15–30 min average practical, Ukrainian General Staff handbook, Shahed-136 use 2022–23, claim

40–50 kg (BCh-50) HE-fragmentation; leaked Alabuga slide; Ukrainian General Staff handbook (state claim) gives 40 kg, claim

90 kg (BCh-90) reduces range; combat-tested Nov 2023 per leaked Alabuga documents; reported fielded autumn 2025, claim

10–20 kg

50 kg expert view; some Russian variants reported at 90 kg

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

SOURCES AINFP3 CSIS2 CSIS3 IISS25 ISIS ISISD JAMES LBUA2 MIL26 MIL27 MIL28 PROF3 RUSI3 TWZ7 UAHB W1ITAL WP-EN55 WP-EN56 WP-RU83 not in WEG

Gerbera «Гербера»

AIR-FW

Cheap foam one-way drone: Shahed decoy, reconnaissance, small-warhead strike, relay In service 2024

OPERATED BY 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. 103 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. 104 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. Gerbera (reconnaissance) Gimbal camera (Topotek KHY10S90) in nose; 4G or mesh-network modem and antennas. Gerbera (strike) Warhead in the nose; camera for operator terminal guidance on some.

SOURCES ARMYINF2 CAPSS FAKTY ISISD KP24 KP25 KP26 MIL29 MILUA3 TSN TWZ7 W1ITAL WP-EN56 WP-RU84 not in WEG



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

Operating altitude up to 1 km maximum, Espresso 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 (Xing kai XK-F358) on some observed

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.
CONFUSED WITH Geran-2 (Shahed 136) p. 103 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. 103 In flight: pusher propeller at the rear with one central fin just ahead of it; Italmas has its propeller in the nose.
SOURCES AR49 TW27 UNIAN2 W1ITAL WP-EN55 WP-EN61 WWW2 WWW3 not in WEG

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
Warhead mass 50 kg claimed, as claimed in a Russian news report (2025-01), claim
Warhead type Shaped-charge (cumulative) warhead claimed, claimed against armoured vehicles incl. HIMARS; artillery and personnel also named as targets; Rossiya 1 TV, claim

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. 104 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
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
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

SOURCES AR54 EDR25 EDR25 EDRL F45 IIS25 KYIV2 MIL40 NAKED ORYX4 RAMBLER2 RG242 SNOB TASS7 WP-EN67 WP-RU108 WWW1A5 WWW1B4 WWW1C WWW1D WWW1I not in WEG

Lancet Изгелаш 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
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. 104 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. 105 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.
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. Izdeliye 51 Larger-span front X-wing, smaller rear wing set. Izdeliye 53 Four large front wings at 45 degrees, folding; launched from a four-round container, no catapult. Lancet-1 Smaller airframe of the same tandem X-wing layout. Lancet-E Export set. 51-E has a larger-span front X-wing; 52-E has two X-wings of equal span; pneumatic launcher.
SOURCES ATP EDR2 EDR23 EDRL GS19 GS20 IZV6 KYIV2 MIL40 MOLKP ORYX1 RAMB3 RG6 RT3 RUS15 RUS16 TASS8 UAHB VM3 WP-EN67 WP-EN68 WWW16 not in WEG



Nickel nitride, CCO

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)
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
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
Range, Lancet-3 (Izdeliye 52) 40 km flight range with 3 kg warhead
Range, Izdeliye 51 50 km communication range, control link range, 5 kg warhead; ZALA website figure reported by RT, claim
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
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
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

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. 104 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. 99 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. Molniya-2 Two electric motors under the wings. Molniya-2R INA.

SOURCES BI BN GS17 GWARA ISW2 KI5 MIL40 MIL48 MIL49 MIL50 MODMR MOLKP U245 USER8OCT VIKNA2 W1A W1B W1C W1D WP-EN78 not in WEG



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
Speed 120 km/h Molniya-2, serviceman in MoD video, claim
Wingspan 1.5 m Variant not stated
Endurance up to 40 min maximum, Variant not stated

Range, Molniya-2 with warhead up to 50 km maximum, Molniya-2; MoD figure, control link not stated, claim
Range, Molniya-1 with warhead about 40 km maximum, Kharkiv regional prosecutor's office; manual FPV control, no GPS, claim

Warhead mass, Molniya-2 up to 6 kg explosive claim
Warhead types shaped-charge, fragmentation, thermobaric; also improvised: grenades, RPG rounds, anti-tank mines, thermite

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 Rubikon 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]

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.



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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 MIL25

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.

SOURCES AIF3 AR43 AR44 CYCLO2 ESP2 ISW1 IZ IZ2 KI3 KP LENTA2 MIL25 NGE PRIME RG3 RIA RUSI2 TASS4 TEXTY W1KVN W1PROV W1RU2 WP-EN52 not in WEG

Table 1. Master list of designations

Every system, vehicle, component and munition in this guide's lexicon, 963 in all, sorted by designation (digits sort as numbers). NATO reporting names and codes and US designations are set in **BLUE CAPITALS**, for example **STONE**, **SS-26** or **M1974**. NATO designations and reporting names can also be looked up in Table 1b. **(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 it belongs to. 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	PAGE
1B44		1Б44	meteorological station - of 9K58 Smerch	25
1B75 1B75E	Penicillin	«Пенициллин»	acoustic-thermal locating system (UA)	53
1K113 3F5, 3VF4	Smelchak	1К113 «Смелчак», 3Ф5	guided mortar bomb - of 2S4 Tyulpan (UA)	27
1K148	Yastreb-AV	1К148 «Ястреб-АВ»	counter-battery radar (UA)	
1K148	Yastreb-AV	1К148, Ястреб-АВ	counter-battery radar: locates firing guns, mortars and rock	53
1L13-3 1L13	Nebo-SV BOX SPRING	1Л13, «Небо-СВ»	air surveillance radar	
1L119	Nebo-SVU	«Небо-СВУ» 1Л119	air surveillance radar (UA)	
1L119 1L13-3, 1L13	Nebo-SVU, Nebo-SV	1Л119, Небо-СВУ	mobile vhf air surveillance radar for army air defence 1L11	51
1L122	Garmon, Garmony	1Л122 «Гармонь»	portable air surveillance radar (UA)	
1L122 1L122E-1, 1L122E-2	Garmon	1Л122, Гармонь	portable l-band 3d air surveillance radar for short- and med	50
1L125	Niobium-SV		multifunction radar (UA)	51
1L219 Zoopark-1	Zoopark-1	1Л219 «Зоопарк-1», 1Л219М	counter-battery radar (UA)	55
1L222	Avto baza-M	«Автомобаз»	ELINT system	
1L259		1Л259	counter-battery radar (UA)	55
1L260 Zoopark-1M	Zoopark-1M	1Л260, «Зоопарк-1М»	counter-battery radar (UA)	55
1L261			counter-battery radar (UA)	55
1L262E SPR-2M	Rtut-BM, Mercury-BM	1Л262Э «Ртуть-БМ»	proximity-fuze jammer (UA)	
1L262E SPR-2M, 1L262	Rtut-BM, Mercury-BM	1Л262Э, Ртуть-БМ	vehicle jammer against radio proximity fuses and vhf radio	69
1L265		1Л265	ELINT system	58
1L266		1Л266	EW command post	58
1L267	Moskva-1	«Москва-1»	EW command post (UA)	58
1L269 Krasukha-20	Krasukha-2	1Л269 «Красуха-2»	radar jammer (UA)	58
1L271	Aistenok, Aistyonok	1Л271 «Аистенок»	portable counter-battery radar (UA)	53
1L277	Sobolyatnik		portable ground surveillance radar (UA)	
1L277 1L227	Sobolyatnik	1Л277, Соболятник	portable ground surveillance and fire-correction radar	55
1RL144M 1RL144M1, 1RL144, 1RL138	HOT SHOT	1РЛ144М1	fire-control radar (UA)	46
1RL239 ARK-1, ARK-1M	Rys SMALL FRED (disputed)	1РЛ239 / РПК-1 / «Рысь»	counter-battery radar (UA)	54
1RL257	Krasukha-4, Krasukha-4S	1РЛ257 «Красуха-4»	radar jammer (UA)	58
1T12-2M		1Т12-2М	topographic survey vehicle - of 9K58 Smerch	25
1V13 1V13M, M1974/1		1В13	artillery battery fire control centre (UA)	83
1V14 1V15, 1V15M, 1V16			artillery command vehicle (UA)	83
1V18 1V19, M1979-2B	Klyon-1, Klen-1, Klen-2		artillery command vehicle (UA)	
1V18/1V19 1V119, 1V152, M1979-2B	Klyon-1, Klen-1	1В18, 1В19	artillery battery and battalion command, observation and fir	84
1V110			artillery command vehicle - of 9K51 Grad <i>legacy</i> (UA)	24
1V119	Spektr	1В119	artillery command vehicle (UA)	
1V126 1V126M, 1V152, 1V153, 1V152M	Kapustnik-B, Kapustnik-BM	1В126 «Капустник-Б»	artillery fire control system - of 9K59 Prima	
1V152		1В152	artillery command vehicle	
1V1003			artillery command vehicle (UA)	
2A36 M1976	Giatsint-B	2А36 «Гиацинт-Б»	152 mm towed gun (UA)	32
2A45M 2A45MR	Sprut-B		125 mm towed anti-tank gun <i>legacy</i>	
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D-30 2A18, D-30A, 2A18M		Д-30, А-30А	122 mm towed howitzer UA	
D-30 2A18, D-30A, M1963	Lyagushka	2А18, А-30	122 mm towed howitzer for indirect and direct fire support	34
D-44		Д-44	85 mm towed gun <i>legacy</i> UA	
Desertcross 1000-3 Desertcross-1000-3	Desertcross, Odes Desertcross		Chinese 4x4 all-terrain utility buggy UA	
DIM			vehicle-mounted mine detector <i>legacy</i>	
DShK 38/46	DShK, DShKM	ДШК	12.7 mm heavy machine gun <i>legacy</i> UA	
DT-10PM	Vityaz		articulated tracked carrier UA	42
DT-30 DT-30PM, DT-10PM	Vityaz	ДТ-30, ДТ-30ПМ	articulated tracked carrier UA	42
Eleron-3 Eleron-3SV		Элерон-3, Элерон-3СВ	reconnaissance UAV UA	
Eleron T-16			reconnaissance UAV UA	
EOV-3521			military excavator UA	
EOV-3523			military excavator UA	
EOV-4421			military excavator UA	
Essa	Essa		Belarusian thermal tank gunner's sight	
ESU TZ	YeSU TZ	ЕСУ ТЗ	tactical-level command and control system	
EVO	Autel EVO, Autel Evo		Chinese commercial quadcopter UAV UA	
Fateh-360	Fath-360		short-range ballistic missile	
Forpost	Forpost, Searcher II	Форпост	reconnaissance UAV UA	
Forpost	Forpost, Forpost-R	Форпост, Форпост-Р	medium-range reconnaissance uav; forpost-r adds light guided	101
Forpost-R	Forpost-R		reconnaissance and strike UAV UA	
FPV KVN, VT-40	Knyaz Vandal Novgorodsky, Provod	Князь Вандал Новгородский, Провод	pilot-flown one-way attack quadcopters, radio- or fibre-opti	105
FPV drones	FPV drones, FPV kamikaze drones	FPV-дроны	first-person-view attack drones (family) UA	
Garpiya-A1	Garpiya		one-way attack drone, Shahed-derived UA	
Garpun-3	Garpun-3, Harpoon-3	Гарпун-3	UAV jammer UA	
GAZ-51		ГАЗ-51	cargo truck 4x2 <i>legacy</i> UA	
GAZ-66		ГАЗ-66	cargo truck 4x4 <i>legacy</i> UA	
GAZ-66 GAZ-3308, GAZ-33081	Shishiga, Sadko	ГАЗ-66, ГАЗ-3308	light 4x4 general cargo truck and prime mover for mortars; g	92
GAZ-2330 GAZ-233014, GAZ-233114	Tigr, Tigr-M	ГАЗ-233014, Тигр	light 4x4 armoured cars for escort, reconnaissance, patrol a	18
GAZ-3307		ГАЗ-3307	cargo truck 4x2 UA	
GAZ-3308 GAZ-33081	Sadko, Eger-II	ГАЗ-3308 «Садко»	cargo truck 4x4 UA	
GAZ-3344-20	Aleut		articulated tracked carrier UA	
GAZ-3344-20	Aleut, Plastun-SN	ГАЗ-3344-20, Алеут	two-unit unarmoured (aleut) and light-armoured open-top (pla	10
GAZ-39371	Vodnik		armoured utility vehicle UA	
GAZ-233014 GAZ-2330, VPK-233136, GAZ-233036	Tigr	ГАЗ-233014, ГАЗ-2330	armoured car UA	
GAZ-233036 SPM-2	Tigr SPM-2	ГАЗ-233036, СПМ-2	armoured car - of GAZ-233014 Tigr UA	
Geran-1 Shahed-131, Shahed 131	Geran-1	Герань-1	one-way attack drone UA	
Geran-2 Shahed-136, Shahed 136	Geran-2	Герань-2	one-way attack drone UA	
Geran-2	Geran-2, Geran-1	Герань-2, Герань	long-range one-way attack drone (iranian shahed design), use	103
Geran-3 Shahed-238	Geran-3		Iranian-design jet one-way attack drone UA	
Gerbera	Gerbera	Гербера	one-way attack drone UA	
Gerbera	Gerbera, Gerber	Гербера	cheap foam one-way drone: shahed decoy, reconnaissance, smal	103
GMZ-3 Object 318		ГМЗ-3	minelayer UA	76

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Granat-1		Гранат-1	reconnaissance UAV UA	
Granat-1	Granat-1, Granat-4	Гранат-1, Гранат-4	small reconnaissance uavs for artillery target acquisition	98
Granat-4		Гранат-4	reconnaissance UAV UA	
Groza.04.K	Groza-04K	Гроза.04.K	UAV jammer UA	
Groza.04.K	Groza-04K, Silok	Гроза.04.K, СЕРП-BC6A	small man-portable and tripod jammers against fpv and reconn	67
GSP Object 55		ГСП	ferry <i>legacy</i>	
GT-01	Murmansk-BN	Мурманск-БН	HF communications jammer UA	59
Harpya	Harpya		UAV jammer	
IMR IMR-1			combat engineer vehicle <i>legacy</i> UA	75
IMR-2 IMR-2M, IMR-2M1, Object 637		ИМР-2, ИМР-2М	combat engineer vehicle UA	75
IMR-3 IMR-3M		ИМР-3М	combat engineer vehicle UA	75
Iranian 120 mm HE mortar bomb	Iranian 120 mm HE mortar bomb		Iranian 120 mm HE mortar bomb UA	
Irbis	Irbis		counter-battery radar	
IRM	Zhuk		engineer reconnaissance vehicle UA	
IRM IPR	Zhuk, Beetle	ИРМ, Жук	amphibious engineer reconnaissance of routes, water obstacle	72
ISDM	Zemledeliye	ИСДМ, Земледелие	truck-mounted remote mining system UA	76
Izdeliye 51	Izdeliye 52	Ланцет, Изделие 51/52	loitering munition UA	
Izdeliye 53			loitering munition - of Izdeliye 51 Lancet UA	
K1Sh1 GAZ-59032	UNSh	K1Ш1	command vehicle chassis (BTR-80)	
K155M	Krasnopol-M2		guided artillery round - of 30F39 Krasnopol UA	
K-53949 K-63968, K-4386	Typhoon-K, Typhoon-U	КамаЗ-63968, КамаЗ-53949	mine-protected 4x4 and 6x6 armoured trucks: troop carrier, r	19
KamAZ-4310		КАМАЗ-4310	cargo truck 6x6 <i>legacy</i>	
KamAZ-4310 KamAZ-5350, KamAZ-53501	Mustang, Medved	КАМАЗ-4310, КАМАЗ-5350	general-purpose 6x6 and 8x8 cargo and tractor truck chassis	93
KamAZ-4386	Typhoon-VDV		mine-resistant ambush-protected vehicle UA	
KamAZ-5350	Mustang	КАМАЗ-5350	cargo truck 6x6 UA	
KamAZ-6350		КАМАЗ-6350	cargo truck 8x8 UA	
KamAZ-6560		КАМАЗ-6560	heavy truck chassis 8x8	
KamAZ-43269 BPM-97	Vystrel	КамаЗ-43269, БПМ-97	armoured car UA	
KamAZ-53501		КАМАЗ-53501	cargo truck 6x6 UA	
KamAZ-53949 Typhoon-K 4x4	Typhoon-K	КамаЗ-53949, Тайфун-К	mine-resistant ambush-protected vehicle UA	
KamAZ-53949	Linza	КамаЗ-53949, Линза	armoured ambulance UA	
KamAZ-63501		КАМАЗ-63501	cargo truck 8x8 UA	
KamAZ-63968 Typhoon-K 6x6	Typhoon-K	КамаЗ-63968, Тайфун-К	mine-resistant ambush-protected vehicle UA	
KamAZ-65225		КАМАЗ-65225	tractor truck 6x6	
Kapustnik-BM	Kapustnik-BM	Капустник-БМ	artillery fire-control system - of 9K51M Tornado-G	24
Kh-22 AS-4	Burya KITCHEN	X-22 «Буря»	air-launched anti-ship missile UA	
Kh-32		X-32	air-launched cruise missile UA	
Kh-47M2 AS-24	Kinzhal KILLJOY	X-47M2, Кинжал	air-launched ballistic missile UA	
Kh-55 Kh-55SM, AS-15	KENT	X-55	air-launched cruise missile UA	
Kh-59 Kh-59M, AS-13, AS-18	Ovod KINGBOLT, KAZOO	X-59 «Обод»	air-launched cruise missile UA	
Kh-69		X-69	air-launched cruise missile UA	
Kh-101 AS-23A	KODIAK	X-101	air-launched cruise missile UA	
KM-8	Gran	КМ-8, «Грань»	guided mortar bomb UA	
KMM			bridgelaye <i>r legacy</i>	
KMT-5			mine plough and roller set	
KMT-7			mine roller	
KMT-8			mine plough	
KMT-10			mine roller	
KN-23 Hwasong-11A			short-range ballistic missile UA	
KN-24 Hwasong-11B			North Korean short-range ballistic missile UA	
Korsar	Korsar	Корсар	reconnaissance UAV UA	
Korsar	Korsar, Korsar-M	Корсар, Корсар-М	medium reconnaissance uav, fixed wing: strike and ew payload	101
KPV KPV		КПВ	14.5 mm heavy machine gun UA	
KrAZ-255 KrAZ-255B		КрАЗ-255Б	cargo truck 6x6 <i>legacy</i> UA	
KrAZ-260		КрАЗ-260	cargo truck 6x6 <i>legacy</i> UA	
Kredo-1E Credo-1E, RP-200, 1RL133-3, PSNR-8	Kredo-1, Credo-1	1РА133-3 «Кредо-1»	ground surveillance radar	
Kredo-M1 PSNR-8M, PSNR-9	Kredo-M1		portable ground surveillance radar UA	
KRUS	Strelets, Strelets-M	КРУС, Стрелец	soldier-worn reconnaissance, command and communications set;	89
KRUS-VR	Strelets, Strelets-M	Стрелец, Стрелец-М	soldier command and control terminal UA	
KRVD			temporary road deployment kit UA	
KT-L			recovery vehicle UA	
KUB KUB-2, KUB-10E		КУБ, КУБ-2	catapult-launched electric loitering munition, 3 kg warhead,	104
KUB-BLA	Kub-BLA	Куб-БЛА	loitering munition UA	
Kurganets-25	Kurganets-25	Курганец-25	infantry fighting vehicle <i>trial</i>	
KZKT-7428	Rusich		tank transporter <i>legacy</i>	
L550E	Xiamen Limbach L550E		Chinese engine for Garpiya-A1 attack drone UA	
Ladoga	Ladoga, VTS Ladoga		heavy command and reconnaissance vehicle UA	
Lancet	Lancet, Izdeliye	Изделие, Ланцет	loitering munition for precision strikes on artillery, air d	104
Lancet launcher	Lancet launcher		UAV control station - of Izdeliye 51 Lancet UA	
LPD-801			UAV jammer UA	
LPD-801	Stupor, Garpun-3	ЛПД-801, Стыпор	man-portable directional jammers against small uav control a	70
M2A2 ODS-SA M2A2 ODS	Bradley		Captured US infantry fighting vehicle <i>legacy</i> UA	
M-30 M-1938		M-30	122 mm towed howitzer <i>stored</i> UA	
M-46		M-46	130 mm towed gun UA	
M-46 52-P-482, M1954		M-46	130 mm long-range towed field gun for counter-battery and ge	34
M88A1			Captured US armoured recovery vehicle <i>legacy</i> UA	
M113		M113	Captured US armoured personnel carrier <i>legacy</i> UA	
M-160 M1949, 52-M-853		M-160	160 mm mortar <i>stored</i>	
M-1938 PM-38		ПМ-38	120 mm mortar <i>stored</i>	
M1977			armoured recovery vehicle	24

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M1989 M-1989, M1978	Koksan, Chuch'ep'o		North Korean 170 mm self-propelled gun UA	
M1991 M-1991	Juche 100, Chuch'e		North Korean 240 mm multiple rocket launcher UA	
M-2024	Chuch'e		North Korean 240 mm multiple rocket launcher UA	
Matrice 300 RTK Matrice 30T, DJI Matrice 30T	DJI Matrice 300 RTK		Chinese enterprise quadcopter UAV (Matrice 300 RTK, 30T) UA	
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	
MaxxPro	MaxxPro		Captured US mine-protected vehicle <i>legacy</i> UA	
MAZ-537		MA3-537	tank transporter <i>legacy</i> UA	
MAZ-537 KZKT-7428, KZKT-537	Rusich, Oplot-T	MA3-537, K3KT-7428	heavy tractor trucks that tow semi-trailers carrying tanks a	95
MAZ-543 MAZ-7310		MA3-543/MA3-7310	heavy truck chassis 8x8 <i>legacy</i>	
MAZ-63172			tractor truck UA	
MAZ-74101	Oplot-T		tractor truck UA	
MAZ-531605			cargo truck UA	
MDK-3		МДК-3	trench digger UA	
Merlin-VR	Merlin-VR		reconnaissance UAV UA	
Merlin-VR	Merlin-VR	Мерлин-ВР	long-endurance reconnaissance and artillery-spotting uav	99
MKTK-1	Plavsk	«Плавск»	radio monitoring station	
MKTK-1A	Dzyudoist, Judoist	«Дзюдоист»	SIGINT system UA	
MKTK-1A	Dzyudoist, Judoist	МКТК-1А, Дзюдоист	truck-mounted technical control (ktk) system: own-emission a	61
ML-20 M-1937		МЛ-20	152 mm towed gun-howitzer <i>stored</i> UA	
ML-20 D-1, M-30, M-1937, M1943		МЛ-20, Д-1	towed 85 to 152 mm wwii-design field guns and howitzers, dra	35
MLZh-VF-VT	MLZh-VF-VT		railway pontoon bridge UA	
MO.1.01.04			220 mm thermobaric rocket - of TOS-1A Solntsepek	26
MO.1.01.04M			220 mm thermobaric rocket, extended range - of TOS-1A Solntsepek UA	26
MO.1.01.04M2			220 mm thermobaric rocket, heavier warhead - of TOS-2 Tosochka	26
Mohajer-6			reconnaissance and strike UAV UA	
Mohajer-6	Mohajer-6, Qods Mohajer-6	Мохажер-6	iranian-built medium reconnaissance and light strike uav use	102
Molniya	Molniya, Molniya-1	Молния, Молния-1	cheap fixed-wing fpv one-way attack drone; also recon, fire	105
Molniya-1 Molniya-2	Molniya		FPV drone UA	
MON-50		МОН-50	directional anti-personnel mine UA	
MON-90		МОН-90	directional anti-personnel mine UA	
MON-100			directional anti-personnel mine UA	
MON-200			directional anti-personnel mine UA	
MP-32M1 MP32M1			command post vehicle - of 9S729M1 Slepok-1 UA	
MRO-A	Borodach		72.5 mm disposable thermobaric launcher UA	
MRTO	MRTO	MPTO	maintenance vehicle - of 9K720 Iskander-M	36
MT-12 2A29, T-12A	Rapira	MT-12, 2A29	100 mm anti-tank gun UA	
MT-12 2A29, T-12A	Rapira	MT-12, Panupa	towed 100 mm smoothbore anti-tank gun, also used for indirec	32
MT-12R 2A29R	Ruta		100 mm anti-tank gun - of MT-12 Rapira <i>legacy</i>	
MT-55A			bridgelaye	
MT-LB		MT-ЛБ	tracked armoured transporter UA	
MT-LBM 6MA MT-LBM-6MA, Object 6MA		Объект 6MA	tracked armoured transporter - of MT-LB UA	
MT-LBM 6MB MT-LBM-6MB, Object 6MB		Объект 6MB	tracked armoured transporter - of MT-LB UA	
MT-LBV		MT-ЛБВ	tracked armoured transporter - of MT-LB <i>legacy</i> UA	
MT-LBVM MT-LBVMK, MT-LB VM1K, MT-LBVM1K		MT-ЛБВМ, MT-ЛБВМК	tracked armoured transporter - of MT-LB UA	
MTK-2 MTK			mine-clearing vehicle UA	
MTO-AT			repair vehicle UA	
MTU-UB2 MTO-UB			repair vehicle UA	
MTP-A2.1 MTP-A2			recovery vehicle UA	
MTP-A2.1 MTP-A2, MTO-UB2		МТП-А2.1	wheeled field repair, recovery and towing of unit vehicles o	77
MTP-LB		МТП-ЛБ	repair vehicle	
MTU-20 Object 602		MTY-20	bridgelaye UA	
MTU-72 Object 632		MTY-72	bridgelaye UA	73
MTU-90		MTY-90	bridgelaye	
Mugin-5 Mugin-5 Pro	Mugin		Chinese commercial fixed-wing UAV <i>legacy</i> UA	
MZKT-7930	Astrolog	МЗКТ-7930, Астролог	heavy truck chassis 8x8	44
Nebo-T	Nebo-T		air surveillance radar	
NRTK	Kurier, Omich-2	НРТК, Курьер	remotely driven tracked robots for fire support, resupply an	98
NSV NSVT, NSVS	Utyos	НСВ, Умёс	12.7 mm heavy machine gun UA	
Object 6 MT-LBVM1K, 6MA, M1970		MT-ЛБВМ1К, Объект 6MA	light armoured amphibious tractor and apc; base for many arm	14
Object 10	MT-LBu	MT-ЛБу	tracked armoured transporter - of MT-LB UA	
Object 564	Firebug	Объект 564	heavy flamethrower-crew carrier on t-72 chassis, carries rpo	11
Object 925 BMD-1KSh, BMD-1R, M1979	Robot, Skrezhet	БМД-1КШ, БМД-1Р	airborne tracked apc on a lengthened bmd-1 hull; base of a v	13
OF-843B 53-OF-843B, 30F843B		53-OF-843B	mortar bomb	
Oreshnik RS-SS-28 MOD	Oreshnik	Орешник	intermediate-range ballistic missile UA	
Orion	Orion, Inokhodets	Орион, Иноходец	reconnaissance and strike UAV UA	
Orion	Orion, Inokhodets	Орион, Иноходец	medium-altitude long-endurance reconnaissance and strike uav	102
Orlan-10		Орлан-10	reconnaissance UAV UA	
Orlan-30		Орлан-30	reconnaissance UAV UA	
OZM-72	Lyagushka, Vedma	ОЗМ-72	bounding anti-personnel mine UA	
P-18 1RL131, P-18M	Terek SPOON REST D	П-18 «Терек», 1РЛ131	early warning radar UA	
P-18 1RL131, P-18M	Terek, Prima SPOON REST D	П-18, Терек	mobile 2d vhf early-warning radar	53
P-19 1RL134	Dunai FLAT FACE B	П-19 «Дунай», 1РЛ134	air surveillance radar	
P-35 P-37, 1RL110, 1RL139	Saturn, Mech BAR LOCK	П-35 «Сатурн»	early warning radar <i>legacy</i> UA	
P-240 P-240I-4	Pereselenets, Pereselenetz		digital communications vehicle UA	
P-240I-4 P-240, P-240I4	Pereselenets, Pereselents	П-240И-4, Переселенец	digital field communications vehicle linking command posts (	86
P-260-O P-260-U, P-260-T	Redut-2US	Pegum-2YC	mobile digital radio-relay and broadband wireless communicat	88
P-260-U P-260			signals vehicle - of Redut-2US UA	

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P-800 3M55, SS-N-26	Oniks STROBILE	П-800 «Оникс»	anti-ship cruise missile - of 3K55 Bastion UA	
PAK-200 PAK-200M			field kitchen UA	
Palantin	Palantin, Palantin-K	«Палантин», «Палантин-К»	communications jammer UA	63
Pantsir-S1M	Pantsir-SM, Pantsir-S1M	Панцирь-СМ	gun-missile air defence system UA	44
Pantsir-S2 SA-22	Pantsir-S2 GREYHOUND	Панцирь-С2	gun-missile air defence system UA	44
Pantsir-SM-SV	Pantsir-SM-SV	Панцирь-СМ-СВ	gun-missile air defence system	44
Pantsir-SMD-E	Pantsir-SMD-E	Панцирь-СМД-Е	short-range SAM system	
Parodist	Parodist		radar and communications jammer <i>trial</i>	
PAZ-32053			bus UA	
PDM-1			anti-landing mine <i>legacy</i>	
PFM-1 PFM-1S	Lepestok	ПФМ-1, ПФМ-1С	scatterable anti-personnel mine UA	
PKM			man-portable minelaying kit	
Plastun-SN	Plastun-SN		light tracked all-terrain vehicle UA	
Plisa	Plisa		Belarusian tank gunner's sight	
PMM-2 PMM-2M		ПММ-2, PMM-2M	amphibious ferry	73
PMN PMN-1, PMN-2, PMN-4		ПМН	anti-personnel blast mine UA	
PMP PMP-M		ПМП, ПМП-М	heavy folding pontoon bridge UA	72
PMR-3			towed minelayer <i>legacy</i>	
PMZ-4			towed minelayer	
POM-2 POM-2S		ПОМ-2	scatterable anti-personnel mine UA	
POM-2R		ПОМ-2Р	scatterable anti-personnel mine - of POM-2 UA	
POM-3	Medalyon		scatterable anti-personnel mine UA	
PP-91		ПП-91	pontoon park <i>legacy</i> UA	72
PP-91M PP-2005		ПП-91М, ПП-2005	pontoon park UA	72
PPS-84		ППС-84	pontoon park <i>legacy</i>	
Predel-E	Predel-E		coastal defence radar UA	
Prokhod-1	Prokhod-1		remote-controlled mine-clearing system UA	
PRP-3 1Zh3, Object 767	Val SMALL FRED (disputed)	ПРП-3 «Вал»	artillery reconnaissance vehicle UA	
PRP-4 1V121, 1V125, Object 779	Nard	ПРП-4 Нарг	artillery reconnaissance vehicle UA	85
PRP-4A	Argus	ПРП-4А «Арзус»	artillery reconnaissance vehicle UA	85
PRP-4M PRP-4MU, 1V145	Deyteriy	ПРП-4М «Дейтерий»	artillery reconnaissance vehicle UA	85
PSNR-5 PSNR-5M, 1RL133	Kredo-M TALL MIKE		ground surveillance radar - of PRP-4M Deyteriy	85
PT-76		ПТ-76	light amphibious tank <i>legacy</i>	
PTM-1 PTM-1S, PTM-1G		ПТМ-1	scatterable anti-tank mine UA	
PTM-3 KPTM-3		ПТМ-3	scatterable anti-tank mine UA	
PTM-4	Nokaut-2	ПТМ-4, Нокгайм-2	scatterable anti-tank mine UA	
PTS-2 PTS, PTS-M		ПТС-2, ПТС-М	amphibious transporter UA	73
PTS-3		ПТС-3	amphibious transporter <i>legacy</i>	73
PTS-4		ПТС-4	amphibious transporter	73
PU-12 BTR-60PU-12, PU-12M, PU-12M6, PU-12M7		ПУ-12	air defence command post UA	85
PZM-2		ПЗМ-2	trench digger UA	
R-142N R-142NM, R-142NMR, R-142NSA	Deimos-N	Р-142Н, Деймос-Н	command and staff vehicle UA	
R-142N R-142, R-142NM	Deimos-N, Deimos-NMR	Р-142Н, Деймос-Н	truck-mounted hf/vhf command and staff vehicle for regiment, command and staff vehicle UA	86
R-145BM R-145BM1, R-145BMA			command and staff vehicle UA	82
R-149AKSh-1			command and staff vehicle UA	83
R-149BMR R-149BMRg	Kushetka-B	Р-149БМР, Кушетка-Б	command and staff vehicle UA	83
R-149MA3 R-149MA1			command and staff vehicle UA	83
R-161 R-161A2, R-161A2M	Poisk	Р-161, Поиск	radio station UA	
R-161 R-161A2, R-161A2M	Poisk, Ekvator-3M	Р-161, Поиск	medium and high power hf/vhf radio stations on trucks for op	86
R-166 R-166-0.5, R-166S	Artek	Р-166, Артек	radio station UA	
R-166 R-166-0.5, R-166-05	Artek, Artek-1A	Р-166, Артек	medium-power hf/vhf mobile radio station for command post si	86
R-168 R-168E	Akveduk	Р-168, Аквегук	radio set family UA	
R-187 R-187-P1	Azart		radio set family UA	
R-325UMV R-325BMV		Р-325УМВ	communications jammer - of RB-301B Borisoglebsk-2 UA	60
R-330	Mandat	Р-330 «Мангат»	communications jammer complex <i>legacy</i>	
R-330B	Mandat-B	Р-330Б «Мангат-Б»	communications jammer <i>legacy</i>	63
R-330BMV		Р-330БМВ	communications jammer UA	63
R-330KMA		Р-330КМА	EW command post - of R-330M1P Diabazol	
R-330KMV		Р-330КМВ	EW command post - of RB-301B Borisoglebsk-2	60
R-330M1P	Diabazol	Р-330М1П «Диабазол»	communications jammer complex UA	
R-330M1P	Diabazol	Р-330М1П, Диабазол	wheeled vhf/uhf, cellular and satellite-navigation jamming c	64
R-330T		Р-330Т	communications jammer <i>export</i>	63
R-330Zh	Zhitel	Р-330Ж «Житель»	GNSS and cellular jammer UA	65
R-340RP Pole-21M, Pole-21E	Pole-21	Р-340РП «Поле-21»	GNSS jammer UA	68
R-378A R-378B		Р-378А(Б)	communications jammer - of R-330 Mandat <i>legacy</i> UA	
R-378BMV		Р-378БМВ	communications jammer - of RB-301B Borisoglebsk-2	60
R-378UM			communications jammer - of R-330M1P Diabazol	
R-381T R-381TM, R-381TZM	Taran, Taran-M	Р-381Т, «Таран»	SIGINT system UA	
R-381T R-381TM, R-381TI	Taran, Taran-M	Р-381Т, Таран	hf/vhf/uhf radio intercept and direction-finding complex on	65
R-410-75			tropospheric scatter station UA	
R-410-75 R-412A/AM, R-412A	Torf, Rezoner	Р-412А, Р-412АМ	beyond-line-of-sight radio relay link between headquarters	87
R-412A R-412AM	Torf, Rezoner	Р-412АМ, Резонер	tropospheric scatter station UA	
R-416GM			radio relay station UA	
R-416GM R-416G-MS, R-416GM2	Granit-M	Р-416ГМ, Гранит-М	truck-mounted digital radio relay station for field command	87
R-417 R-417S	Baget		tropospheric scatter station UA	
R-431AM			radio relay antenna module - of Redut-2US UA	
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	
R-439 R-439-P, R-439-BK	Legenda-2, Legenda-2P	Р-439, Легенда-2	military satellite communication stations: portable, contain	87
R-934B	Sinitsa	Р-934Б «Синица»	communications jammer UA	63

DESIGNATION	NAME	CYRILLIC	WHAT IT IS	PAGE
R-934BMV		P-934БМВ	communications jammer (UA)	63
R-934UM	Sinitsa		communications jammer (UA)	63
RB-105B	Less		SIGINT system	
RB-108S			EW command post	
RB-109A	Bylina	P5-109A «Былина»	EW command post (UA)	
RB-109A RB-109	Bylina	P5-109A, Былина	automated command post linking an ew brigade's intercept and	66
RB-301B	Borisoglebsk-2	P5-301Б «Борисоглебск-2»	communications jammer complex (UA)	60
RB-341V	Leer-3	P5-341B «Леер-3»	cellular jammer (UA)	62
RB-371A Tirada-2.3, Tirada-2.2	Tirada-2, Tirada-2S	Tupaga-2, Tupaga-2C	mobile ground jammer of communications-satellite links (upli	59
RB-531B	Infaua	P5-531Б «Инфауна»	counter-IED jammer (UA)	68
RB-636 RB-636AM2	Svet-KU	P5-636, СВем-КУ	mobile radio monitoring and direction-finding (technical con	67
RB-636AM2 RB-636	Svet-KU	P5636 «СВем-КУ»	SIGINT system (UA)	
RB-636 Svet-VSG	Svet-VSG		SIGINT system - of RB-636AM2 Svet-KU	
REBovets Valley	REBovets Valley		UAV jammer <i>trial</i>	
Redut-2US			signal and communications system (UA)	
REM-KL			recovery vehicle (UA)	
Repellent-1	Repellent-1	Репеллент-1	UAV jammer (UA)	68
Repeynik	Repeynik		portable counter-UAS radar (UA)	
Rezonans-N	Rezonans-N, Rezonans-NE		early warning radar	
RKhM-4		PXM-4	CBRN reconnaissance vehicle (UA)	
RKhM-4 RKhM-4-01, RKhM-4-02	Povozka	PXM-4, PXM-6	radiation, chemical and biological reconnaissance; marks con	79
RKhM-6	Povozka	PXM-6	CBRN reconnaissance vehicle (UA)	
RKhM-8		PXM-8	CBRN reconnaissance vehicle	
RKhM-9		PXM-9	CBRN reconnaissance vehicle	
RLM-D		PAM-Д	UHF radar module - of 55Zh6M Nebo-M (UA)	51
RLM-M		PAM-M	VHF radar module - of 55Zh6M Nebo-M (UA)	51
RLM-S		PAM-C	S-band radar module - of 55Zh6M Nebo-M (UA)	51
RM-G			armoured recovery vehicle	
RP-377L RP-377LA	Lorandit, Lorandit-M		communications jammer (UA)	
RP-377UVM1 RP-377UVM2, RP-377UM2	Lesochek		counter-IED jammer (UA)	
RP-377UVM1L RP-377UVM1, RP-377UVM2	Lesochek	РП-377УВМ1Л, Лесочек	small jammer vs radio-controlled ieds and drone links; man-p	68
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 <i>legacy</i> (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, Клюкба	125 mm disposable anti-tank launcher (UA)	
RPG-29 TKB-0175	Vampir	РПГ-29 «Вампир», ТKB-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)	
RPO-A RPO-M, RPO	Shmel	РПО-А «Шмель»	thermobaric rocket launcher (UA)	
Rys	Rys, Iveco LMV	Рысь	armoured utility vehicle (UA)	54
S-60 AZP-57		C-60, АЗП-57	57 mm anti-aircraft gun (UA)	
S-60 AZP-57		C-60, АЗП-57	towed 57 mm anti-aircraft gun, used in ukraine for ground fi	44
S-300PM S-300PM1, S-300PM2, S-300PMU1, S-300PMU2, SA-20	S-300PM, Favorit GARGOYLE	C-300ПМ, C-300ПМУ1	long-range SAM system (UA)	
S-300PM S-300PS, 3SR6, SA-20, SA-10B	Favorit GARGOYLE, GRUMBLE	C-300ПМ, C-300ПС	long-range sam system of the aerospace forces for area defen	41
S-300PS 75R6, S-300PMU, SA-10	S-300PS GRUMBLE	C-300ПС, 75P6	long-range SAM system <i>legacy</i> (UA)	
S-300V 9K81, SA-12A, SA-12B	S-300V, Antey-300 GLADIATOR, GIANT	C-300B, 9K81	long-range SAM system (UA)	41
S-300V4 S-300VMD, SA-23	S-300V4	C-300B4	long-range SAM system (UA)	41
S-350 50P6A	S-350, Vityaz	C-350 «Витязь», 50P6A	medium-range SAM system (UA)	42
S350 S350M	Supercam	Суперкам	small electric fixed-wing reconnaissance and artillery fire-	100
S-400 40R6, SA-21	S-400, Triumph GROWLER	C-400 «Триумф», 40P6	long-range SAM system (UA)	42
S-500 55R6M	S-500, Prometey, Triumfator-M	C-500 «Прометей», 55P6M	long-range SAM and missile defence system <i>trial</i> (UA)	
SA-14RM/SM			encryption command post (UA)	
Saniya	Saniya, Sania	«Саня»	UAV jammer (UA)	
Sapfir	Sapfir		UAV jammer (UA)	
Sarmat-2 Sarmat-3, LSTC-1944	Sarmat, STS Sarmat		armoured utility vehicle (UA)	
SBA-60K2	Bulat	«Булат»	armoured personnel carrier	
SBR-5M	Fara-VR		portable battlefield surveillance radar (UA)	
SERP-VS6D	Serp	СЕРП-ВС6Д	UAV jammer (UA)	
Shahed-107	Shahed 107		Iranian one-way attack drone (UA)	
Shipovnik-Aero	Shipovnik-Aero	«Шуповник-АЭРО»	UAV jammer (UA)	
Shipovnik-Aero	Shipovnik-Aero, Rosehip-Aero	Шуповник-АЭРО	truck-mounted uav control-link jammer and radio monitor	66
Silok-01	Silok	«Силок-01»	UAV jammer (UA)	
SNAR-10 1RL232, 1RL-127-1	Leopard BIG FRED	CHAP-10 «Леопард», 1PA232 «Леопард»	battlefield surveillance radar (UA)	54
SNAR-10M SNAR-10M1, 1RL232-1M	Pantera	CHAP-10M, 1PA232-1M «Пантера»	battlefield surveillance radar (UA)	54
Sopka-2 12A6	Sopka-2		air surveillance radar	
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 <i>legacy</i>	
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	
Strizh-3	Strizh-3		UAV jammer (UA)	
Stupor	Stupor		UAV jammer (UA)	
Supercam S350			reconnaissance UAV (UA)	

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Syuzhet-MF	Syuzhet-MF		meteorological station <i>trial</i>	
T-12 2A19		T-12, 2A19	100 mm anti-tank gun <i>stored</i>	
T-14 Object 148	Armata	T-14, Объект 148	main battle tank · of Armata <i>trial</i>	
T-15	Armata	T-15	infantry fighting vehicle · of Armata <i>trial</i>	
T-16	Eleron-3SV, Eleron-3	Элерон-3СВ, Элерон	man-portable short-range electro-optical reconnaissance and	98
T-54 Object 137		T-54, Объект 137	main battle tank <i>legacy</i> UA	
T-54 T-55, Object 155		T-54, T-55	medium tank; reserve stock, reactivated since 2023	6
T-54-T			armoured recovery vehicle <i>legacy</i>	
T-55		T-55	main battle tank <i>stored</i> UA	
T-55A		T-55A	main battle tank · of T-55 <i>stored</i> UA	
T-55AM T-55AMV		T-55AM, T-55AMB	main battle tank · of T-55 <i>legacy</i>	
T-62 Object 166		T-62, Объект 166	main battle tank <i>legacy</i> UA	
T-62 Object 166, T-62M		T-62, T-62 обр. 1967	medium tank with 115 mm smoothbore gun; cold war reserve typ	7
T-62M		T-62M	main battle tank · of T-62 UA	
T-62MV		T-62MB	main battle tank · of T-62 UA	
T-64A Object 434		T-64A, Объект 434	main battle tank UA	
T-64A/B/BV Object 434, Object 447A		T-64Б, T-64A	main battle tank, 3-man crew with autoloader (older kharkiv	7
T-64B Object 447, T-64BV		T-64Б, Объект 447	main battle tank UA	
T-64BV			main battle tank · of T-64B UA	
T-64BVK			armoured command vehicle · of T-64B <i>legacy</i> UA	
T-72 T-72 Ural, Object 172M	Ural	T-72, T-72 «Урал»	main battle tank UA	
T-72A		T-72A	main battle tank · of T-72 Ural UA	
T-72AV		T-72AB	main battle tank · of T-72A UA	
T-72B Object 184		T-72Б, Объект 184	main battle tank · of T-72 Ural UA	
T-72B1 T-72B1K		T-72Б1, T-72Б1K	main battle tank · of T-72B UA	
T-72B3		T-72Б3	main battle tank · of T-72B UA	
T-72B3A			main battle tank · of T-72B3 <i>legacy</i> UA	
T-72B3M		T-72Б3М	main battle tank · of T-72B3 UA	
T-72BA		T-72БA	main battle tank · of T-72B UA	
T-72BM		T-72БМ	main battle tank · of T-72B <i>legacy</i> UA	
T-72M1 T-72M		T-72М1, T-72М	main battle tank · of T-72 Ural <i>legacy</i>	
T-80B Object 219R		T-80Б, Объект 219P	main battle tank <i>stored</i> UA	
T-80B/BV/BVM T-80U, T-80B, M1989		T-80, T-80Б	main battle tank with gas turbine; 125 mm gun that also fire	8
T-80BV		T-80БВ	main battle tank · of T-80B UA	
T-80BVK		T-80БВК	armoured command vehicle · of T-80BV <i>legacy</i> UA	
T-80BVM		T-80БВМ	main battle tank · of T-80BV UA	
T-80U Object 219AS		T-80У, Объект 219AC	main battle tank UA	
T-80UE-1		T-80УЕ-1	main battle tank · of T-80U <i>legacy</i> UA	
T-80UK		T-80УК	armoured command vehicle · of T-80U <i>legacy</i> UA	
T-80UM2		T-80УМ2	main battle tank · of T-80U <i>legacy</i> UA	
T-90 Object 188		T-90, Объект 188	main battle tank UA	
T-90 Object 188, T-72BU	Vladimir, Proryv-3	T-90, Владимир	main battle tank; 125 mm gun-launcher with autoloader	9
T-90A		T-90A	main battle tank · of T-90 UA	
T-90AK		T-90AK	armoured command vehicle · of T-90A UA	
T-90M Proryv-3	Proryv-3	T-90М, Прорыв-3	main battle tank · of T-90A UA	
T-90S T-90SK		T-90С, T-90СК	main battle tank · of T-90 UA	
Tachyon	Tachyon, Takhion	Тахион	reconnaissance UAV UA	
Takhion	Takhion, Tachyon	Тахион	small electric reconnaissance and fire-correction uav	100
TBS-M3		ТБС-М3	220 mm thermobaric rocket, long range · of TOS-2 Tosochka UA	26
TDA-2K TDA-2M		ТДА-2К, ТДА-2М	smoke generator vehicle UA	
TDA-2K TDA-3, TDM-2K		ТДА-2К, ТДА-3	truck-mounted thermal aerosol generators that screen troops	79
TDA-3			smoke generator vehicle UA	
TDM-2K			smoke generator vehicle UA	
Tetrazdr	Tetrazdr		UAV jammer <i>trial</i>	
Tirada-2S Tirada-2.3, RB-371A	Tirada-2	«Турпада-2С», «Турпада 2.3»	satellite communications jammer UA	
TM-46		TM-46	anti-tank blast mine <i>legacy</i>	
TM-57		TM-57	anti-tank blast mine <i>legacy</i>	
TM-62 TM-62M		TM-62	anti-tank blast mine UA	
TM-83		TM-83	side-attack anti-tank mine	
TMM-3 TMM		TMM-3	truck-mounted bridgelayer UA	73
TMM-6		TMM-6	8x8 heavy bridgelayer UA	73
TMS-65 TMS-65M, TMS-65U		TMC-65	decontamination vehicle	
Tobol	Tobol	«Тобол»	satellite communications jammer UA	
Torn	Torn, Torn-MDM		SIGINT system UA	
Torn	Torn, Torn-MDM	Торн, Торн-МДМ	mobile hf/vhf/uhf radio reconnaissance and direction-finding	67
Toros	Toros		armoured utility vehicle	
TOS-1 Object 634	Buratino	ТОС-1 «Буратино»	220 mm heavy flamethrower system <i>legacy</i> UA	26
TOS-1A Object 634B	Solntsepek	ТОС-1А «Солнцепо́к»	220 mm heavy flamethrower system UA	26
TOS-2	Tosochka	ТОС-2 «Тосочка»	220 mm heavy flamethrower system UA	26
TOS-3	Drakon	ТОС-3 «Дракон»	heavy flamethrower system, tracked <i>trial</i> UA	26
TS-3132	Gusar		armoured utility vehicle UA	
TZ-74			decontamination and smoke vehicle <i>legacy</i>	
TZM-T		ТЗМ-Т	rocket transloader · of TOS-1A Solntsepek UA	26
UAZ-452	Bukhanka	УАЗ-452, Буханка	utility van UA	
UAZ-469 UAZ-3151	Kozlik	УАЗ-469	utility vehicle UA	
UAZ-469 UAZ-452, UAZ-3151	Kozlik, Goat	УАЗ-469, УАЗ-452	light 4x4 command, liaison, cargo and resupply vehicles	93
UAZ-469RKh UAZ-469RKhB			CBRN reconnaissance and decontamination vehicle UA	
UAZ-39094	Fermer		utility pickup UA	
UMPB D-30SN			jet-powered glide bomb UA	
UMPK		УМПК	glide bomb guidance kit UA	
UMZ		УМЗ	truck-mounted minelayer UA	
UMZ UMZ-3		УМЗ	truck-mounted remote scatterable minelayer	77
UMZ-G UMZ-K, UMZ-T	Kleshch-G, Klesch-G		universal tracked remote minelayer <i>trial</i>	

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UR-67		УР-67	mine-clearing line charge legacy UA	
UR-77 Object 256, M1979	Meteorit	УР-77	mine-clearing line charge vehicle UA	75
UR-83P		УР-83П	portable mine-clearing line charge	
Ural-375D Ural-375		Урал-375Д	cargo truck 6x6 legacy UA	
Ural-4320 Ural-43203		Урал-4320	cargo truck 6x6 UA	
Ural-4320-7810	Motovoz-M		cargo truck UA	
Ural-6370 Ural-6370-0121-30			cargo truck 6x6 UA	
Ural-6370	Ural-6370, Ural-63706-0010	Урал-63706, Топнаго-У	heavy 6x6 and 8x8 cargo trucks and tractors; tornado-u has a	94
Ural-43206		Урал-43206	cargo truck 4x4 UA	
Ural-63095	Typhoon-U	Урал-63095, Тайфун-У	mine-resistant ambush-protected vehicle	
Ural-63706-0122 Ural-63706-0011	Tornado-U		cargo truck 6x6 UA	
Ural-432009	Ural-VV	Урал-432009, Урал-BB	armoured truck UA	
Ural-532301			cargo truck with armoured cab UA	
Ural-542301			tank transporter UA	
Uran-6		Уран-6	remote-controlled mine-clearing robot UA	
Uran-6	Uran-6	Уран-6	remote-controlled tracked demining and obstacle-clearing veh	76
Vesna-K	Vesna-K		Belarusian multichannel gunner's sight	
Volna Kupol Garant	Volna Kupol Garant		satellite communications jammer UA	
Volnoretz	Volnoretz	«Волнорез»	UAV jammer UA	
Volnoretz	Volnoretz, Saniya	Волнорез, Саня	jammers on armour and vehicles, and a mobile set (sapfir), a	70
VPK-7829 K-16, K-17	Bumerang, Boomerang	Бумеранг	armoured personnel carrier trial	
VPK-233136 SBM	Tigr SBM	ВПК-233136	armoured car of GAZ-233014 Tigr UA	
VSM-1		BCM-1	helicopter remote mining system	
VT-72A			armoured recovery vehicle	
VTs	Ladoga, Debut	ВТС, Ладога	armoured command, staff and reconnaissance vehicle for nbc c	83
Z-STS	Akhmat, Remdiesel Z-STS Akhmat		armoured utility vehicle UA	
ZALA 421-16E, Z-16		421-16E, 421-16E2	short-range electric reconnaissance and fire-correction uav;	100
ZALA 421-16 Z-16			reconnaissance UAV UA	
Zaslon-REB	Zaslon-REB		cellular jammer	
Zastava	Zastava	Застава	reconnaissance UAV UA	
Zastava	Zastava, Bird-Eye	Застава	short-range reconnaissance and fire-adjustment mini-uav	101
Zavarukha	Zavarukha		portable acoustic reconnaissance system UA	
ZFB-05	Tiger, Xinxing		Chinese 4x4 armoured personnel carrier UA	
ZIL-131		ЗИЛ-131	cargo truck 6x6 legacy UA	
ZIL-131 KrAZ-255B, KrAZ-255B1		ЗИЛ-131, КраЗ-255Б	legacy 6x6 cargo trucks and carriers: zil-131 3	94
ZIL-157		ЗИЛ-157	cargo truck 6x6 legacy	
ZSU-23-4 2A6	Shilka	ЗСУ-23-4, 2А6	23 mm self-propelled anti-aircraft gun stored UA	
ZSU-23-4 2A6, RPK-2	Shilka, Gun Dish	ЗСУ-23-4, Шилка	radar-directed self-propelled quad 23 mm aa gun; also fires	47
ZU-23-2 ZU-23, 2A13		ЗУ-23, ЗУ-23-2	23 mm anti-aircraft gun UA	
ZU-23-2 2A13, ZU-23	Skrezhet, Ural-4320	2A13, ЗУ-23	twin 23 mm towed aa gun, often truck- or mt-lb-mounted, fire	47

Table 1b. Other names and designations

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1B75E → 1B75	53	3V030 → 3-O-23		9M33M → 9M33	45	52-P-482 → M-46	34		
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1L13 → 1L13-3		3V0F33 → 30F25		9M33M3 → 9M33	45	53-OF-843B → OF-843B			
1L13 → 1L119	51	3V0F34 → 30F43	28	9M37M → 9M37	45	55G6-UE → 55Zh6U	52		
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1L122E-1 → 1L122	50	3V0F39 → 30F29	28	9M79-1 → 9M79		55R6M → S-500			
1L122E-2 → 1L122	50	3V0F40 → 30F29	28	9M82M → 9M82	41	55Zh6ME → 55Zh6M	51		
1L227 → 1L277	55	3V0F42 → 30F43	28	9M82MD → 9M82	41	55Zh6UM → 55Zh6U	52		
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Vystrel → KamAZ-43269	
Witch (English) → OZM-72	
Xiamen Limbach L550E → L550E	
Xinxing → ZFB-05	
Yastreб-AV → 1K148	
YeSU TZ → ESU TZ	
Z-16 → ZALA 421-16	
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1В119 → 1V119		2С1 «Возгук» → 2S1		421-16Е → ZALA	100	9К115 → 9K115			
1В119 → 1V18/1V19	84	2С1М1 → 2S1	26	421-16Е2 → ZALA	100	9К115-1 → 9K115-1			
1В119 → Object 925	13	2С23 → 2S23	29	48Н6ДМ → 48N6	42	9К115-1 → 9K115	22		
1В126 «Канустник-Б» → 1V126		2С23 «Нона-СВК» → 2S23		48Н6Е → 48N6	42	9К115-2 → 9K115-2			
1В13 → 1V13	83	2С25 → 2S25		48Н6Е2 → 48N6	42	9К116 → 9K116			
1В152 → 1V152		2С3 → 2S3	27	48Н6-К1 «Поглѐм» → 48Ya6-K1	51	9К119 → 9K120	20		
1В18 → 1V18/1V19	84	2С31 → 2S31	30	50К6А → 50K6A	42	9К119М → 9K119			
1В19 → 1V18/1V19	84	2С31 «Вена» → 2S31		50Н6А → 50N6A	42	9К120 → 9K120	20		
1К113 «Смелычак» → 1K113	27	2С33 «Мста-СМ» → 2S19M2	29	50П6А → 50P6A	42	9К123 → 9K123			
1К148 → 1K148	53	2С34 → 2S34	30	50Р6А → S-350	42	9К123-1 → 9K123			
1К148 «Ястреб-АВ» → 1K148		2С34 «Хоста» → 2S34		51П6 → 51P6	42	9К128-1 → 9P162			
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1Л122 → 1L122	50	2С38 → 2S38		55Ж6МЕ → 55Zh6M	51	9К132 → 9K114	20		
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1Л122Е-1 → 1L122	50	2С3М → 2S3M		55Ж6У → 55Zh6U	52	9К310 → 9K310			
1Л13 → 1L13-3		2С3М → 2S3	27	55Ж6УМ → 55Zh6U	52	9К310 → 9K38	47		
1Л13 → 1L119	51	2С40 → 2S40		55К6 → 55K6	42	9К317 «Бук-М2» → 9K317	40		
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1Л219М → 1L219	55	2С4 «Тюльпан» → 2S4	27	55Р6М → S-500		9К32 → 9K32			
1Л259 → 1L259	55	2С5 «Гиацинт-С» → 2S5	28	5736Е → 57E6	44	9К33 → 9K33	45		
1Л260 → 1L260	55	2С5М → 2S5M	28	5В55К → 5V55R		9К330 → 9K330	46		
1Л2623 → 1L262E	69	2С6 → 2S6	46	5В55Р → 5V55R		9К331 «Тор-М1» → 9K331	46		
1Л2623 «Ртуть-БМ» → 1L262E		2С6М → 2S6	46	5Н63С → 5N63S		9К332 3РК «Тор-М2» → 9K332	46		
1Л265 → 1L265	58	2С6М1 → 2S6	46	5Н84А → 5N84A	52	9К333 → 9K333			
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1Л271 «Аистенок» → 1L271	53	2С9 → 2S9	28	5П85С → 5P85SD		9К33М2 → 9K33	45		
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1РЛ134 → P-19		2Ф77М → 2F77	46	77Я6-ДМ → 77Ya6-DM	56	9К35 «Стрела-10» → 9K35	45		
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1РЛ232-1М «Пантера» → SNAR-10M	54	35Н6 «Каста» → 35N6		85Я6 «Леер-2» → 85Ya6	61	9К37М1-2 «Бук-М1-2» → 9K37M1-2	40		
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1РЛ239 / АРК-1 / «Рысь» → 1RL239	54	39Н6Е «Каста-2Е2» → 39N6		92Н6Е → 92N6A	42	9К38 → 9K38			
1РЛ257 «Красуха-4» → 1RL257	58	39Н6 «Каста-2-2» → 39N6		96К6 → 96K6	44	9К512 «Ураган-1М» → 9K512	26		
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2Б14 «Поднос» → 2B14		30Ф29 → 30F29	28	9А38 → 9A310	40	9К720 → 9K720	36		
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Чистюля → Chistyulya			

Table 2. Unit type to equipment

Tag gives basis, date and confidence. See page 4 for explanations.				
UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
Aerospace Forces	Korsar	Aerospace Forces holding; unit not stated	R 2024 L	101
	Mohajer-6	Aerospace Forces (IISS list, p.38); subunit INA	R 2024-12 M	102
Aerospace Forces (VKS)	Orion	Aerospace Forces (VKS) UAV holdings; IISS lists 'some Inokhodets'	R 2024 M	102
aerospace forces air defence regiment	96L6 all-altitude acquisition radar	3rd SAM battalion. INA (photographed deployed and stowed)	O 2010-02 M	50
	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	50
	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	40
	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	44
	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	44
	Pantsir-S1	Pantsir-S1 gun-missile battalion; each battery covers one S-400 battalion	O 2020-02 M	44
	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	44
	S-300PM / S-300PS	SAM battalions	D 2024-11 H	41
	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	41
	S-300PM / S-300PS		R 2021-07 M	41
Aerospace Forces missile attack warning system	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	41
	S-400 Triumf	IISS: 13 Aerospace Forces regts with S-400 and Pantsir-S1, plus 2 mixed with S-300	R 2024 M	42
	Voronezh-DM	separate radio-technical centre of the missile attack warning system (SPRN). 1 or 2 radars per site (Podvig table)	R 2026 M	56
Aerospace Forces UAV units	Forpost	Aerospace Forces UAV units	R 2024-11 H	101
air assault brigade	BTR-D	57 in 2000 listing	R 2000 L	13
	ZU-23-2	anti-aircraft battery (Soviet structure). 6 per brigade	D 1991 M	47
air assault division	Kornet	reconnaissance troops, Kornet on buggies (RIA photo caption in RT; formation identified as 7th Gds Air Assault Div (Mountain) via WPVVDV7)	O 2024 L	21
	Lancet		O 2023-07 L	104
air assault regiment	BMD-1KSh-A	2 to 7 BMD-1KSh per regiment in the 2000 list	R 2000 L	82
	BTR-D	42 in 247th regiment (2017 table); 26-38 per regiment in a 2000 listing	R 2017 L	13
	BTR-MDM Rakushka	Air assault or parachute battalion, issued with BMD-4M in a battalion set. 8 per battalion set of 31 BMD-4M (June 2020); 6 in a 2021 set; some earlier sets 16	O 2021-07 M	13
Air defence batteries (Tor, Tunguska, Strela-10)	PU-12M7	air defence battery of Tor/Tor-M1, Tunguska(-M1) or Strela-10M2/M3 (9S737 battery command post). 1 per battery	R 1989 L	85
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	41
	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	42
	S-400 Triumf	IISS: 2 SAM bn in Belarus; 1 SAM bty in Syria	R 2024 M	42
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	40
	Buk-M1 / Buk-M2 / Buk-M3	battalion TELAR. INA per battalion; brigade had 3 operational battalions in 2014 (JIT)	O 2014-07 M	40
	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	40
	Buk-M1 / Buk-M2 / Buk-M3	air defence missile battalion	R 2018 L	40
	Nebo-SVU	one unit of the brigade, Kherson area (military unit 54821)	R 2024-01 L	51
	Polyana-D4	brigade command post (combat control post MP06 and command-staff vehicle MP02)	D 2021-12 H	84
	Polyana-D4	brigade command post; vehicle captioned as 9S52M Polyana-D4M	O 2010-12 M	84
	S-300PM / S-300PS		R 2024-11 M	41
	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	41
	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	41
air defence missile regiment	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	40
	Pantsir-S1	30 held by the Navy (IISS p. 187)	R 2024 M	44
	Pantsir-S1	INA (1 SAM regt with S-400 and Pantsir-S1)	R 2024 M	44
	PU-12M7	Osa regiment main control means (PU-12, from late 1970s per ARMF)	D 1979 L	85
	S-400 Triumf	about 12 launchers reported at the unit site; 4 launchers and 96L6 and 92N6 radars reported destroyed	O 2025-11 M	42
	S-400 Triumf	air defence missile battalion (division). usually 2 battalions of 8 launchers each (16 per regiment); 2012 press report relaying MoD press service	R 2012 M	42
	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	42
	Strela-10 and Osa short-range SAM	division air defence regiment (Osa-AKM, being deactivated in 2019)	D 2019 L	45
Air defence units of airborne and air-assault brigades	Garmon	six trial sets, Novorossiisk, Ivanovo and Tula garrisons (MoD, Apr 2012). 6 (total, trial)	R 2012-04 L	50
Air Force and Air Defence Army, Northern Fleet	Nebo-SVU	subunits attached to the army	R 2021-04 L	51
airborne division	2S12 Sani	mortar battery of airborne regiments, towed 2B11 (Soviet era). 6 or 8 per battery	D 1991 M	29
	2S9 Nona-S	artillery regiment, self-propelled artillery battalion (3 batteries). 18 per battalion (6 per battery)	D 2000 L	28
	Barnaul-T	air defence missile regiment. one full divisional set	O 2018-06 M	84
	Barnaul-T	air defence missile regiment	O 2018 L	84
	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	10
	BMD-2	parachute regiment (Kostroma); MoD claim via RIA	O 2021 M	10
	BMD-2	parachute regiment	O 2011-09 L	10
	BMD-4M	lost at Hostomel, 3 Mar 2022, as the 31st Guards Air Assault Brigade	O 2022-03 M	11
	BMD-4M	parachute battalion of a parachute regiment (battalion set). 31 per battalion (nominal battalion set)	R 2021-07 M	11

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	BTR-D	150 BTR-D in all Airborne Forces (IISS estimate); per-division count INA	R 2024-12 M	13
	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	13
	BTR-MDM Rakushka	Battalion sets in regiments; some units mix BMD-4M and BTR-MDM companies	O 2021-07 M	13
	BTR-MDM Rakushka	150 in Airborne Forces (IISS estimate)	R 2024 M	13
	D-30	artillery regiment: howitzer battalion (18) and composite battalion (12 with 6 BM-21V). 30 per artillery regiment	D 1991 M	34
	Infaua	VDV electronic countermeasures units (RIA Novosti 2012); the two divisions are named only by Russian Wikipedia	R 2012 L	68
	Lancet		O 2023-07 L	104
	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	61
	Supercam S350	separate unmanned systems battalion	O 2026-03 L	100
	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	9
	Verba	air defence missile regiment	O 2024-01 H	48
	ZU-23-2	anti-aircraft artillery battalion (Soviet structure). 18 per division	D 1991 M	47
Airborne Forces	2A36 Giatsint-B 152 mm towed gun	INA; IISS lists the type with Airborne Forces without a count	R 2024-12 L	32
	2S31 Vena	Listed under Airborne Forces equipment; holding unit not stated	R 2024 L	30
	BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	Toros: on Airborne Forces AUV list; no unit named	R 2024-12 M	15
Airborne Forces (VDV)	2S5 Giatsint-S	Airborne Forces artillery; unit not named	R 2024 M	28
	Kornet	mobile ATGM crews working with UAV spotters (MoD claim via RG, Jun 2022)	R 2024 H	21
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	92
Airborne Forces (VDV) EW units	Dzyudoist	EW units of the Airborne Forces (VDV)	R 2012-07 M	61
Airborne Forces (VDV) units	2S25 Sprut-SD	battery. 24 in four batteries in 2009 (TASS claim via English Wikipedia)	R 2009 L	31
	BRDM-2	Airborne Forces (VDV) units; no formation named	R 2023 L	15
Airborne Forces air assault formations	Sobolyatnik	Air assault formations at Ulan-Ude, Ulyanovsk, Kamyshevo, Ussuriysk (planned 2020 delivery). About 10 sets, 2020	R 2020-06 L	55
airborne regiment	2S25 Sprut-SD	regimental anti-tank battery	R 2025 L	31
anti-tank battalion	Khризantema-S	ATGM battery (two per battalion, Khризantema-S or Kornet), motor rifle brigade. 6 per battery	D 2024 M	20
	MT-LB	anti-tank gun battery (prime mover for 100 mm MT-12)	D 2024 M	14
	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	82
Anti-tank units of divisions	Kornet	Kornet-D being fielded	R 2019 M	21
Anti-tank units of motor rifle brigades	Kornet	9P162 Kornet-T or Khризantema-S batteries	D 2016 M	21
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	15
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	43
army corps	Iskander-M	corps missile brigade. 1 missile brigade (12 launchers)	O 2021 M	36
	Lancet	Kaskad unit	O 2023-07 L	104
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	84
	GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	battery fire control vehicles of the 1V17 Mashina-B set (towed and MLRS artillery). 3 battery vehicles per battalion set (1V110 or 1V18; RWW inconsistent)	D 2016 L	92
artillery brigade	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	32
	2A36 Giatsint-B 152 mm towed gun	gun brigade of the front artillery division; 2A36 or 2S7. 72 per brigade	D 1991 M	32
	2A65 Msta-B	artillery battalions (several per brigade; 2S19 or 2A65)	D 2019 M	33
	2S4 Tyulpan	heavy (high-power) battalion. 1 battalion per brigade (CNA: batteries); vehicle count INA	R 2017 M	27
	2S5 Giatsint-S	gun battalion (152 mm). 18 per battalion (24 in forward armies); 2S5 or 2A36 or M-46	D 1991 M	28
	2S5 Giatsint-S	gun battalions (self-propelled). 24 to 72 per brigade (1990)	R 1990 L	28
	2S7 Pion / 2S7M Malka	2S7 battalion (IZ17, 2017); 2S7M Malka (mil.ru via RDP18). 1 battalion; 12 x 2S7 (RUWIKI, 2019)	O 2018-04 M	28
	9K114 Shturm-S	18 per brigade (2000-2009)	O 2021-03 M	20
	BM-27 Uragan	rocket artillery battalion	R 2019 L	24
	D-20	gun-howitzer battalion. 18 per battalion (D-20, ML-20 or M1987); most army brigades had three such battalions	D 1991 M	34
	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	34
	Eleron-3SV	UAS company of an army artillery brigade; each platoon flies Orlan-10, Eleron-SV or Granat-4	D 2019 L	98
	FPV drones	FPV drone crews; a subunit of the anti-tank battalion works with UAVs	O 2026-05 L	105
	Khризantema-S	anti-tank battery (not yet in all brigades, 2019)	O 2021-12 M	20
	M-46	gun battalion (alternative to 2A36 or 2S5). 18 per battalion, 36 per brigade	D 1991 M	34
	Orlan-10	UAV company, UAS platoon (BKAR artillery reconnaissance version)	D 2019 M	99
	R-145BM Chayka command and staff vehicle	1 per brigade	O 1994 L	82
	Uragan-1M	MRL battalion (Uragan 'being succeeded' by Uragan-M1; no holding confirmed)	R 2019-10 L	26
artillery regiment	ZALA 421-16E	UAV reconnaissance-strike subunit (Z-16 with Lancet)	R 2024-12 L	100
	2S3 Akatsiya	self-propelled artillery battalion. 18 per battalion (Soviet standard, 3 batteries of 6)	D 2019 M	27
	2S31 Vena	Artillery regiment of 98th Airborne Division	O 2023-09 L	30
	BM-21 Grad 122 mm MRL	one Grad MRL battalion in division field artillery regiment, being replaced by Tornado-G	D 2019 M	24
	BMD-1KSh-A	0 to 2 per regiment in the 2000 list	R 2000 L	82
	D-20	18-24 per regiment; 36-48 per brigade (WEG, undated organisation text)	D 2025 L	34
	Kornet	anti-tank platoon (MoD claim via RT)	O 2024-01 L	21
	ZALA 421-16E	UAV reconnaissance-strike subunit (Z-16 with Lancet)	R 2024-12 L	100
Assault units (Roselectronics statement)	Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	Chistyulya	R 2024-08 L	67
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	101

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
aviation regiment	Orion	Naval Aviation UAV regiment (also holds Forpost)	R 2024 M	102
Central MD formations (MoD claim)	Garmon	Air defence subunits; five Central MD formations (Chelyabinsk, Samara, Kemerovo, Tuva, Tajikistan)	R 2018-08 M	50
coastal defence brigade	Bastion-P		R 2022-03 L	37
coastal missile brigade	Bal	coastal missile battalion (губузюон). 4 launchers per battalion (ESP24); RWW: four systems per battery	D 2016 H	36
	Bal	Bal battalion on Kunashir, Kuril Islands	O 2016-11 M	36
	Bal	Bal battalion reported moved to Bryansk region (Ukrainian NRC claim)	O 2023-06 L	36
	Bastion-P	coastal missile battalion (губузюон): 4 launchers, 1-2 command vehicles, 1 duty-support vehicle, 4 reloaders. 4 launchers per battalion	D 2024 M	37
	Bastion-P	missile battalion. 12 launchers per brigade (Wikipedia)	R 2026-02 M	37
	Bastion-P	12 launchers per brigade (Wikipedia)	R 2022 L	37
Cold War HQ links	R-410-75, 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	87
combined arms army	1B75 Penicillin	1L271 in rocket, missile and tube artillery units	R 2017 L	53
	Iskander-M	army missile brigade. 1 missile brigade (12 launchers) per army	D 2024 H	36
	Iskander-M	army missile brigade. 12 launchers per brigade	O 2023 M	36
	Lancet	56th separate special-purpose battalion	O 2024 L	104
	Palantin	EW units of a Western MD combined arms army in Voronezh Oblast (army not named)	R 2019-04 M	63
	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	63
	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	68
	Polyana-D4	army air defence and aviation command post (SKP PVO i aviatsii)	R 2021-12 M	84
	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	77
	Strelets	Strelets-M: sniper companies and subunits. over 200 sets (first batch)	R 2019-12 L	89
	T-62	army units with T-62MV obr. 2022 (mine ploughs, cages, RP-377), per Forbes as retold by UNIAN	R 2024-02 L	7
	Takhion		O 2022-11 M	100
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	separate special-purpose (deep reconnaissance) company	R 2021 L	19
	ZALA 421-16E	Z-16 reconnaissance UAV crews	O 2026-01 L	100
Combined arms brigades	P-240I-4 Pereselenets	command company or battalion	D 2019 M	86
Combined-arms formations of the Western Military District	Redut-2US		R 2015 L	88
command brigade	KamAZ-4310, -5350 and -6350 Mustang military trucks	communications company (Redut-2US on KamAZ-6350I)	D 2019 M	93
	R-149 command and staff vehicles	R-149AKSh-1	O 2022-03 L	83
	Redut-2US		O 2017 M	88
	Redut-2US	communications company	R 2019 M	88
Dedicated EW units and manoeuvre reconnaissance units	Infatuna		D 2024 L	68
Division reconnaissance battery (Soviet era)	ARK-1M Rys	division's reconnaissance battery (WEG wording, identical to Wikipedia; Soviet-era)	R 2024 L	54
Engineer troops units	BMR-3M	engineer troops units (not named)	R 2024 M	74
Engineer units of the Southern and Eastern Military Districts	Uran-6	engineer units	R 2015-11 L	76
engineer-sapper battalion	BAT-2	route construction and clearing section; usually in the movement support detachment (OOD). 4 per battalion	D 2016 M	73
	BAT-2	new-look brigade battalion: engineer-road platoon, CP equipment section, shore section. 7 per battalion (4 road platoon, 2 CP equipment section, 1 shore section)	R INA L	73
	BTM-3, MDK-3, PZM-2 and EOY 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 EOY-3521. Command-post squad: 2 EOY-3521	D 2008 L	74
	BTM-3, MDK-3, PZM-2 and EOY earthmoving and trenching machines	engineer-position company, engineer-position platoon (division battalion). Table lists 2 each of BTM, MDK, PZM, EOY (layout unclear)	D 2017 L	74
	IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	mine clearing platoon (brigade engineer battalion). 2 IMR-3M per platoon	D 2016 M	75
	IRM Zhuk		D 1990 M	72
	IRM Zhuk	naval engineer battalion	D 1990 L	72
	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	76
	TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge	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	73
	UR-77 Meteorit	mine clearing platoon (organic engineer battalion of a maneuver brigade). 2 per platoon	D 2016 M	75
	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	94
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	75
	ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer		D 2024 L	76
	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	72
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	assault and obstacle-clearing battalion	O 2017 L	19

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
engineer-sapper regiment	UR-77 Meteorit		R 2023 L	75
	ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer		D 2024 L	76
	TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge	engineer and bridge subunit (press-release wording)	O 2020-11 M	73
EW battalion	Uran-6		R 2021-01 M	76
	Infaua	EW battalions of the Airborne Forces (VDV) (WEG 2015); RIA 2012 and FOI say VDV EW units	R 2015 M	68
	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	58
	Leer-3	Leer-3 drone/EW company	R 2019 M	62
EW brigade	Orlan-10	Leer-3 crews [battalion or company of a combined arms army]	D 2019 M	99
	Dzyudoist	KTK complexes provided by the REB (EW) brigades	D 2024 M	61
	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	58
	Krasukha-2 / Krasukha-4		R 2015 M	58
	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	58
	Leer-3	Leer-3 platoon. platoon operates the complex; number per brigade INA	D 2024 H	62
	Lesochek		R 2022-09 L	68
	Moskva-1	REB-S (counter-air EW) battalion, reported	D 2018 H	58
	Moskva-1	INA (ARM22 lists one Moskva-1 among five brigade systems)	R 2023-09 L	58
	Murmansk-BN	Probably a company of the REB-N (anti-ground) battalion (FOI assessment)	D 2018 H	59
	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	59
	Orlan-10	Leer-3 platoon. 3 per Leer-3 complex	D 2024 H	99
	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	64
	R-330Zh Zhitel	REB-S (anti-aircraft communications and navigation) battalion	D 2018 M	65
	RB-109A Bylina	brigade command post (main and reserve CP). one five-truck complex per brigade	D 2024 M	66
	Svet-KU		D 2024 M	67
	Tirada-2		R 2020 M	59
EW company	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	63
	R-330B Mandat-B and R-934BMV	At least one Russian EW company deployed to Ukraine in 2014 had two R-934B for airborne radio jamming; company not named. 2 R-934B in one EW company (2014)	R 2014 L	63
	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	64
	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	65
	R-330Zh Zhitel	EW company deployed to Ukraine. 2 in the deployed company	R 2014 L	65
EW groups in Donbas	Rtut-BM	EW company of motor rifle and tank formations (FOI: 'probably')	D 2018 M	69
	Rtut-BM	EW assets sent for Ilovaysk, Aug 2014; Rtut-BM supported Infaua 1-3 km from contact	R 2014-08 L	69
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	63
Front-line units (Ukrainian report)	Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	Strizh-3 photographed on the front line; 'delivered now to all fronts'	R 2024 L	67
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	15
Ground Forces	Kornet	9K135, 9K128-1 Kornet-T and 9P163-3 listed	R 2024 H	21
	UMZ		D 2024 L	77
Ground Forces (SV); holding unit not named				
Ground Forces artillery batteries	2S40 Floks	artillery batteries (Rostec, state claim: first batch for equipping artillery batteries)	R 2023-10 L	31
Ground Forces EW units	Leer-2	'possibly' in FOI; state media: Southern MD column Mar 2018	R 2018 M	61
Ground Forces reconnaissance subunits	Strelets	first recipients	R 2021 M	89
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	26
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	95
high-power artillery brigade	2S4 Tyulpan	2S4 battalion. Groups of 6 and 4; 8 reported in 45th brigade (2017)	D 2024 H	27
	2S4 Tyulpan	heavy mortar battalion (240-mm); brigade allocated to a front (Soviet RVGK)	D 1991 M	27
	2S4 Tyulpan		O 2026-02 M	27
	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	28
	2S7 Pion / 2S7M Malka	16 x 2S7 Pion (with 8 x 2S4 Tyulpan)	O 2017-12 M	28
Higher-echelon or Aerospace Forces reconnaissance assets	Lancet	unmanned systems troops Lancet reconnaissance-strike crew	O 2026-06 L	104
	Forpost	higher-echelon or Aerospace Forces reconnaissance assets (ATP fig. 5-8)	D 2024-02 L	101
Manoeuvre units	BMP-2	combat reconnaissance patrol, platoon-sized, task-organised from a manoeuvre unit (ATP example). 2 per patrol	D 2024 M	12
Materiel support (MTO) subunits	Ural-6370, -63706 and -532301 trucks (newer Ural family)		R 2020-06 L	94
materiel support battalion	GAZ-66 and GAZ-3308	MTO transport trucks (ATP Table H-1 lists GAZ-66 among SV logistic vehicles)	D 2024 M	92
materiel support brigade	Sadko light 4x4 trucks			
	KamAZ-4310, -5350 and -6350 Mustang military trucks		D 2016 L	93
military base	Borisoglebsk-2	EW units	O 2018 M	60
	BTR-80	about 100 BTR-82A planned for delivery in 2015	R 2015 M	16
	Garmon		R 2020 L	50
	Infaua	Russian military base in Armenia: MoD release title, 27 May 2015 (via FOI); filmed at Alagyaz range, 2019 (state media)	R 2019-04 M	68

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	Leer-3		R 2015 M	62
	R-166 Artek	signal and EW subunits	R 2025-08 L	86
	Takhion	UAV unit	O 2022-05 L	100
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	6
	Dzyudoist	Western Military District, data collection and processing stations	R 2016 L	61
	Leer-3	Leer-3 crews	R 2022-11 M	62
	MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks	automotive units, Kaliningrad. a batch, size INA	R 2016-12 M	95
	Nebo-U	Nebo-U entered service with district troops, summer 2017; holding unit not named	R 2017 L	52
	Nebo-U	Nebo-UM (with Nebo-M) reported delivered, 2015; holding unit not named	R 2015 L	52
	R-166 Artek	signal units	R 2018 L	86
	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	87
	Rtut-BM	Western MD; received with Borisoglebsk-2 (in service 2015); holding unit not named	R 2017 L	69
	S-400 Triumf	SAM regiments of the district's Air Force and Air Defence Army. IJSS 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	42
	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	54
	Sobolyatnik	Delivery to reconnaissance subunits (with Fara radar sights), March 2021. 20 sets (with Fara)	R 2021-03 M	55
	Sobolyatnik	Sets entered an unnamed formation (obyedineniye) of Eastern MD, Amur region; operator training July 2016	R 2016-07 L	55
	Sobolyatnik	Unnamed motor rifle formation (soyedineniye); delivery reported Aug 2018 (MoD item cited by Russian Wikipedia, not read)	R 2018-08 L	55
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks		R 2021 L	19
Military police units	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	sent to Syria with KamAZ-63968, early 2017	R 2017 L	19
Mine action centre	Uran-6	International Mine Action Center	R 2022-05 L	76
missile battalion	Iskander-M	4 launchers	O 2008 M	36
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	35
	9K79-1 Tochka-U		O 2008 M	35
	9K79-1 Tochka-U		O 2008 M	35
	9K79-1 Tochka-U	launchers and transloaders at garrison open day and parade	O 2021-05 M	35
	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	36
Motor rifle and tank regiments	2S38 Derivatsiya-PVO	planned for air defence battalions	D 2017 L	43
motor rifle battalion	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	33
	2B9 Vasilek	mortar battery; chart gives 2S12 Sani, 2B14 Podnos or 2B9 Vasilek as the battery's mortar	D 2016 L	33
	2S12 Sani	mortar battery. 8 per battery	D 2016 M	29
	2S9 Nona-S	in place of the 2S12 Sani mortar (some battalions)	D 2016 M	28
	9K111 Fagot / 9K111-1 Konkurs	antitank platoon (BTR battalions). 4 Fagot teams, 6 in high-readiness battalions (1991)	D 1991 H	19
	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	11
	BMP-2	motor rifle companies, one vehicle per squad. 37 per BMP battalion (BMP-2 or BMP-3); 3 per platoon	D 2016 M	12
	BREM and BTS armoured recovery vehicles	support platoon (evacuation squad). 3 BREM-L (RWW organisation chart)	D 2016 M	77
	BTR-80	motor rifle companies. about 44 BTR-80/BTR-82/MT-LB per BTR-mounted battalion	D 2016 M	16
	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	92
	KamAZ-4310, -5350 and -6350 Mustang military trucks	logistical support platoon (KamAZ-4350)	D 2016 M	93
	Metis	antitank platoon of BTR/MT-LB-based battalions (some documents put the ATGM squads in the companies)	D 2016 M	22
	Metis	motor rifle company. 3 per company	D 1996 L	22
	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	14
	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	D 2016 M	77
motor rifle brigade	Zastava	several complexes	R 2014-01 L	101
	2B14 Podnos	exercise, Roshchinsky training ground, 2020-10-06; Commons video filed under 2B14, video not watched	O 2020-10 L	33
	2S1 Gvozdika	self-propelled howitzer artillery battalion	O 2025 L	26
	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	29
	2S23 Nona-SVK	mortar battery attached to each motor rifle battalion. 6 per battery; 18 per brigade	D 2018 M	29
	2S23 Nona-SVK	mortar batteries of motor rifle battalions. 18 (2018 report)	O 2024-10 H	29
	2S3 Akatsiya	two self-propelled artillery (howitzer) battalions. 18 per battalion, 2 battalions per brigade	D 2024 M	27
	2S3 Akatsiya	Kharkiv oblast, captured 2022-09-10	O 2022-09 L	27
	2S3 Akatsiya	36 2S3M in most brigades, 18 in two (2009)	O 2009 L	27
	2S34 Khosta		R 2015 L	30
	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	78
	Barnaul-T	brigade AD subunit; BO quotes a 'missile division' (battalion) commander	O 2021-12 M	84
	BM-21 Grad 122 mm MRL	MRL battalion; 6 launchers per battery, 18 per battalion	D 2016 M	24
	BM-21 Grad 122 mm MRL	BTG, attached BM-21 battery. 1 battery	O 2022-04 M	24
	BMO-T	flamethrower platoon, RKhBZ company. 3 per RKhBZ company flame platoon (ATP); BMP-2-based BMO-1 may be held instead (ATP, RWW)	D 2024 M	11
	BMP-2	motor rifle battalions	O 2023-06 H	12
	Borisoglebsk-2	EW company	D 2024-02 H	60
	Borisoglebsk-2	EW subunit	O 2018 M	60
	BTM-3, MDK-3, PZM-2 and EOY 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	74

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	BTR-80	motor rifle battalions	O 2022-09 H	16
	Eleron-3SV	UAS company, Eleron platoon; platoons attached to battalions or companies	D 2019 M	98
	FPV drones	FPV drone crews	O 2026-03 L	105
	Granat-1 / Granat-4	UAV company, short-range platoon (Granat-4 with Orlan-10)	D 2016 H	98
	Granat-1 / Granat-4	UAV company, mini-platoon (hand-launched Granat-1)	D 2016 M	98
	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	47
	IRM Zhuk	engineer-sapper battalion, separate engineer reconnaissance platoon	R 2017 L	72
	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	35
	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	32
	MT-LB	motor rifle battalions, especially in northern (Arctic) brigades	D 2024 M	14
	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	14
	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	14
	Orlan-10	UAV company, short-range platoon	D 2019 H	99
	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	72
	PRP-4A Argus / PRP-4M Deytery	fire control and artillery reconnaissance battery, artillery spotting platoon	D 2016 M	85
	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	73
	R-142N Deimos-N	brigade staff	D 2020 M	86
	R-330Zh Zhitel		R 2014 L	65
	S-60	ZiL-131 truck with S-60, damaged, Donetsk raion, 31 Jul 2023 (WarSpotting record 18807; brigade listed as ex-DNR). 1 vehicle seen	O 2023-07 L	44
	SNAR-10 / SNAR-10M1 Leopard	fire control and artillery reconnaissance battery, radar platoon	D 2016 M	54
	Sobolyatnik	Brigade reconnaissance (used at the brigade tactical exercise)	O 2019-07 M	55
	Strela-10 and Osa short-range SAM	air defence missile-artillery battalion, missile battery (SA-13). 6 launchers per battery	D 2024 M	45
	T-62	platoon; alternative attribution for the T-62MV obr. 2022 platoon filed under the 5th Tank Brigade	R 2024-02 L	7
	T-80B/BV/BVM, T-80U	tank battalion. 26 T-80BVM in the brigade (2022)	O 2022-03 H	8
	T-80B/BV/BVM, T-80U	38th Bde: 40 (2019); others INA	R 2019 L	8
	T-90	INA; T-90A elements geolocated in Luhansk oblast	O 2014 L	9
	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	79
	Tor	air defence missile battalion, three batteries. 12 launcher vehicles per battalion (4 per battery)	D 2024 M	46
	Tor	air defence missile battalion (Tor-M2DT); brigade link by location and retraining report only	R 2019-11 L	46
	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	25
	Tornado-G	18	O 2012-04 M	25
	Tunguska	air defence missile-artillery battalion, Tunguska battery. 6 launcher vehicles per battery	D 2016 M	46
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	INA; first K-53949 built went to this brigade for trials	R 2021 L	19
	UAZ-469, UAZ-452 and UAZ-39094 utility vehicles	UAZ fighting pickups for desert and steppe	R 2019 L	93
	Verba	MANPADS battery of the air defence missile-artillery battalion. 27 per brigade (doctrinal figure given for Igla, which Verba replaces)	D 2024 M	48
	Verba	air defence subunit; delivered as a full brigade set	O 2017-12 H	48
	Volnoretz, Saniya and Sapfir vehicle anti-drone jammers	tank fitted with Saniya, Pervomaisky area near Donetsk	O 2024-01 L	70
	Zoopark-1 / Zoopark-1M	fire control and artillery reconnaissance battery, radar platoon (with SNAR-10M1)	D 2016 M	55
motor rifle division	2S3 Akatsiya	Kharkiv oblast, captured Sep 2022	O 2022-09 L	27
	2S34 Khosta	1 destroyed near Yasynuvata, Donetsk, 6 Dec 2023	O 2023-12 L	30
	9K111 Fagot / 9K111-1 Konkurs	antitank battalion, ATGM battery. 9 BRDM-2 ATGM vehicles, AT-3 or AT-5 (1991)	D 1991 H	19
	9K114 Shturm-S	anti-tank battalion: several Shturm ATGM batteries	D 2019 M	20
	9K114 Shturm-S	Shturm-S being replaced by more than 18 Khrizantema-S (Jan 2021)	O 2021-01 M	20
	9K79-1 Tochka-U	SSM battalion, firing battery (Soviet structure; moved to army brigades from late 1980s). 2 per firing battery	D 1991 H	35
	Borisoglebsk-2	separate EW battalion	O 2022-01 M	60
	BRM-1K	reconnaissance battalion; two of its three troops operate BRM-1K. 3 per reconnaissance battalion (ARMYREC)	D 2019 M	12
	D-30	artillery regiment, one howitzer battalion in some divisions (Soviet era). 18 per battalion	D 1991 M	34
	Eleron-3SV	UAS company (division asset), Eleron platoon attached to regiments	D 2019 M	98
	Leer-3	separate EW battalion	R 2022-01 M	62
	Orlan-10	UAV company	D 2019 M	99
	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	72
	R-142N Deimos-N	regiment (brigade) to division staffs	D 2020 M	86
	R-149 command and staff vehicles	R-149AKSh-1	O 2022-03 L	83
	T-54 / T-55	one subunit, presumably of the 42nd Guards MRD, near Robotyne with unmodernised T-55s	O 2024-02 L	6
	T-90		R 2020-04 M	9
	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	46
	Tor	air defence missile regiment. one regimental set of Tor-M2 (16 combat vehicles)	O 2017-11 M	46
	Tornado-G	artillery regiment, MRL battalion (replacing Grad battalion)	D 2019 H	25
	Zoopark-1 / Zoopark-1M		D 2024 L	55
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	19
	BM-21 Grad 122 mm MRL	BTG, attached MRL element. 3 in one BTG	O 2022-04 M	24
	BMP-1	reconnaissance company. 3 BMP-1/BMP-2 with 1 BRM-1 (Soviet table)	D 1991 M	11

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	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	82
	BMP-1KSh command and staff vehicle	501st signal company	O 1986 L	82
	BMP-2	reconnaissance company, tracked platoon (Soviet TOE). 3 BMP-1/BMP-2	D 1991 L	12
	BMP-2	air defence battery (Soviet TOE), some regiments. 6 BMP-2, each carrying three SA-16 launchers	D 1991 L	12
	BRM-1K	reconnaissance company. 1 per company (Soviet era, WPEN)	D 1991 L	12
	D-30	howitzer battalion of BTR-equipped regiments (Soviet era). 2-3 batteries of 6	D 1991 M	34
	Granat-1 / Granat-4	Attached Granat or Eleron platoon from the brigade or division UAV company; also battalions, at times companies	D 2019 M	98
	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	85
	PU-12M7	regiment on BTR, Soviet 1980s establishment. 3 PU-12 per regiment	D 1989 L	85
	R-149 command and staff vehicles	R-149MA3	O 2022-09 M	83
	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	47
MVD (police) for event security, incl. 2018 World Cup	Stupor, Garpun-3 and LPD-801 handheld jammer guns	Stupor	R 2018 L	70
Naval Infantry	BTR-MDM Rakushka		D 2024 L	13
	MT-12 Rapira	IISS lists 100mm T-12 (original carriage) in Naval Infantry equipment; count not given	R 2024 M	32
	Tigr and Vodnik armoured cars	branch; no unit named	R 2026 L	18
Naval Infantry (Coastal Troops of the Navy)	2A65 Msta-B	Naval Infantry artillery; brigade not named	R 2024 M	33
Naval Infantry (first two Volnerez sets, trials on boats)	Volnerez, Saniya and Sapfir vehicle anti-drone jammers	2 sets	R 2023 L	70
naval infantry brigade	2B14 Podnos	battalion tactical exercise, Pechenga range, Murmansk Oblast, 2020-04-16; 2B14 named in Commons English caption only	O 2020-04 L	33
	2S1 Gvozdika	brigade artillery	O 2024-04 H	26
	2S23 Nona-SVK	battalion mortar battery	D 2024 H	29
	BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	Vystrel on Naval Infantry equipment list; no unit named	R 2024-12 M	15
	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	16
	MT-LB	IISS estimate 250 MT-LB in Naval Infantry (6 brigades, 1 regiment)	R 2024 M	14
	S-60	Volunteer detachment 'Tigr', one MT-LB with S-60, South Donetsk axis. 1 vehicle seen	O 2023-07 L	44
	T-54 / T-55	30 T-55A across Naval Infantry (IISS estimate); not allocated by brigade	R 2024 M	6
	T-80B/BV/BVM, T-80U	IISS estimate 30 T-80B/BV/BVM in all Naval Infantry (2024)	O 2024-10 H	8
	T-80B/BV/BVM, T-80U		R 2019 L	8
Navy fleet EW units	Svet-KU	EW manoeuvre group, technical control station (Northern Fleet)	O 2025-04 M	67
Northern Fleet EW centre (possible trials)	Tirada-2	Tirada-2S possibly tested there, 2014	R 2014 L	59
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	72
radio-technical battalion	Oborona-14	radar post (RLU) of a radio-technical battalion or centre; Soviet-era ex-service recollection, undated	R 1990 L	52
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	51
Radio-technical troops formation, Western MD	Nebo-U		R 2016-05 L	52
Reconnaissance and special operations units	Tigr and Vodnik armoured cars	force protection for forward air controller detachments, Syria	R 2019 L	18
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	102
reconnaissance battalion	BRDM-2	reconnaissance companies of division or brigade	D 2016 M	15
	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	65
	Tigr and Vodnik armoured cars		D 2016 M	18
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	93
Reconnaissance units of motor rifle and tank brigades and divisions	Torn	reconnaissance subunits of brigades and divisions	R 2018 M	67
research institute	BTR-90 Rostok	38th Research Institute, Kubinka (storage)	R 2023 L	17
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	82
RKhBZ aerosol counteraction units	TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	aerosol counteraction subunits; TDM-2K named	R 2024-04 L	79
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	15
RKhBZ brigade	TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	5 TDA-3 delivered in one batch	R 2017 L	79
	TOS-1A Soltsepek	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	26
	TOS-1A Soltsepek	TOS battalion of 3 companies of 6 launchers (ATP para 5-146). 18 per battalion	D 2024 M	26
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	78
	RKhM CBRN reconnaissance vehicles		R 2025 L	79
RKhBZ troops	RKhM CBRN reconnaissance vehicles	RKhBZ troops; deliveries of RKhM-8 and RKhM-9 planned for 2021	R 2021 M	79
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	79

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
rocket artillery brigade	BM-27 Uragan	rocket launcher battalions. 54 per brigade (3 battalions of 18)	D 1991 M	24
	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	25
	BM-30 Smerch	7 delivered April 2017, 5 more announced	O 2017-04 M	25
	BM-30 Smerch		O 2026-09 M	25
rocket artillery regiment	BM-27 Uragan	three rocket launcher battalions. 54 per regiment (3 battalions of 18)	D 1991 M	24
Rosgvardia unit	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	15
	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	15
	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	16
	Tigr and Vodnik armoured cars	OMON; police SPM-1 and SPM-2 versions	R 2024 M	18
Rubicon detachment	FPV drones	FPV drone operators	O 2025-12 M	105
	Molniya		O 2025-12 M	105
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	92
Russian force in Syria	BTR-80	INA; CNA reports BTR-82s guarding artillery with T-90A (2018)	R 2024 M	16
Russian forces in Syria	2A65 Msta-B	Russian deployment in Syria; unit not named	R 2024 M	33
Russian forces in Ukraine	Stupor, Garpun-3 and LPD-801 handheld jammer guns	Stupor, LPD-801	R 2022-07 L	70
Russian forces in Ukraine (Forbes via RG)	Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	Serp-VS6D and Silok-01 named together	R 2025-04 L	67
Russian Navy	Mohajer-6	Reportedly delivered to the Russian Navy (Guardian via Iran International); operator INA	R 2023-02 L	102
Russian units (anonymous TASS source)	Stupor, Garpun-3 and LPD-801 handheld jammer guns	Garpun-3	R 2022-10 L	70
Satellite tracking stations (NIP), Russian MoD	Tobol	Tobol infrastructure (project 8282) being built at or beside the stations	R 2020 M	60
Second- and third-line units	T-54 / T-55	used as mobile artillery	R 2024 M	6
self-propelled artillery battalion	1B75 Penicillin	battalion fire control network, conceptual ATP fig. 5-3 (1L271)	D 2024 M	53
	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	83
	2S1 Gvozdika	self-propelled howitzer battery (3 per battalion). 6 per battery, 18 per battalion	D 2016 M	26
	2S35 Koalitsiya-SV	self-propelled howitzer battery. 6 per battery, 18 per battalion	D 2016 M	31
self-propelled artillery regiment	PRP-4A Argus / PRP-4M Deytery	battalion fire control platoon, artillery spotter squad	D 2016 L	85
	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	83
	2S35 Koalitsiya-SV	8 2S35 on troop trials	R 2020-05 M	31
	BM-27 Uragan	Uragan rocket artillery battalion. 8 per battalion	R 2017-12 M	24
separate covering brigade	Uragan-1M	rocket artillery battalion (planned replacement for 9K57 Uragan, MoD statement; no holding confirmed)	R 2017-12 L	26
	Borisoglebsk-2		O 2022-03 L	60
signal battalion	BMD-1KSh-A	6 to 8 per independent signal battalion in the 2000 list	R 2000 L	82
Soviet airborne regiments	ZU-23-2	anti-aircraft battery. 6 per regiment	D 1991 M	47
Soviet airborne, air assault and some motor rifle battalions	ZB9 Vasilek	mortar company, second mortar platoon (Afghanistan, 1979-89). 3 per platoon	R 1989 L	33
Soviet Naval Infantry regiments	ZSU-23-4 Shilka	regimental air defence battery. 4 per regiment	D 1991 M	47
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	44
Special Operations Forces detachments (first users)	Lancet	Special Operations Forces detachments (first users)	O 2023-07 L	104
Spetsnaz battalion	FPV drones	FPV drone operators	O 2025-12 L	105
Spetsnaz brigade	Strelets	'Commandos' (TASS reprint); Spetsnaz brigade is an inference	R 2021 L	89
	Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks		O 2018 L	19
Spetsnaz brigades and separate Spetsnaz companies	Gibka-S	first deliveries planned for 2024 (MoD sources)	R 2024-01 L	43
Spetsnaz units	Orlan-10	Leer-3 complex (three Orlan-10 and a command post)	R 2017-12 L	99
Squad to company level	Strelets	Squad to company level; platoon and section leaders wear the full set	D 2024 H	89
Strategic Rocket Forces	Dzyudoist	Strategic Rocket Forces	R 2013 L	61
tank army	Iskander-M	army missile brigade. 1 missile brigade (12 launchers)	O 2021 M	36
	T-80B/BV/BVM, T-80U	INA; 'majority' of the army's tanks were T-80U (2022)	R 2022-03 M	8
tank battalion	BREM and BTS armoured recovery vehicles	armoured tracked recovery vehicles with the battalion on the march; type not named	D 2016 L	77
	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	9
tank brigade	2S19 Msta-S	two howitzer (self-propelled artillery) battalions, three batteries of 6. 18 per battalion, 36 per brigade	D 2016 M	29

UNIT TYPE	EQUIPMENT	HOLDING SUBUNIT AND NUMBER	TAG	PAGE
	2S3 Akatsiya	18 2S3M each (2009)	O 2009 L	27
	BMO-T	flamethrower platoon, RKhBZ company. 3 per RKhBZ company flame platoon (ATP); BMP-2-based BMO-1 may be used instead	D 2024 L	11
	Borisoglebsk-2	EW company	D 2024-02 H	60
	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	47
	PRP-4A Argus / PRP-4M Deytery	fire control and artillery reconnaissance battery, artillery spotting platoon	D 2016 L	85
	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	73
	SNAR-10 / SNAR-10M1 Leopard	fire control and artillery reconnaissance battery, radar platoon	D 2016 M	54
	Strela-10 and Osa short-range SAM	air defence missile-artillery battalion, missile battery (SA-13). 6 launchers per battery	D 2024 L	45
	T-62	platoon	R 2024-02 L	7
	Tor	air defence missile battalion, three batteries. 12 launcher vehicles per battalion (4 per battery)	D 2024 M	46
	Tunguska	anti-aircraft missile-artillery battalion, SA-19 battery; ATP 4-161 gives this battalion to tank brigades, but the battery figure is for brigades generally. 6 per battery (generic brigade figure: RWW 'maneuver brigade', ATP fig. 4-19)	D 2024 L	46
tank division	Zoopark-1 / Zoopark-1M	fire control and artillery reconnaissance battery, radar platoon	D 2016 M	55
	1B75 Penicillin	11271	O 2018-01 M	53
	9K79-1 Tochka-U	SSM battalion, firing battery (Soviet structure; moved to army brigades from late 1980s). 2 per firing battery	D 1991 H	35
	BMPT Terminator	BMPT company (first formed Dec 2021); a further subunit formed 2024. 9 per company	O 2024-12 H	6
	BRM-1K	reconnaissance battalion. 3 per reconnaissance battalion (ARMYREC)	R 2021 L	12
	T-80B/BV/BVM, T-80U	about 200 T-80 in the division (2019, Russian Wikipedia)	O 2022-03 H	8
	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); IIS lists the division with 2 tank regiments	R 2025 L	9
	Tor	air defence missile regiment. one regimental set of Tor-M2 (16 combat vehicles)	O 2017-03 M	46
tank regiment	Tornado-G	artillery regiment, MRL battalion	D 2019 H	25
	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	82
	BMP-2	INA (BMP-2M Berezhok)	O 2023-02 M	12
	BMPT Terminator	separate BMPT company. 9 per company	O 2021-12 M	6
	M-46	M-46 gun crews (regimental artillery)	O 2026-04 L	34
	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	85
	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	47
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	20
Tor-M1 batteries (export composition)	PU-12M7	Tor-M1 battery (9S737M, export composition). 1 per battery of up to 4 Tor-M1 combat vehicles	D 2003 L	85
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	89
training centre	Nebo-U	Nebo-U cab and antenna base shown in photographs, 2011	O 2011 L	52
	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	42
Units in the war zone (Rostec statement)	Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	Groza-04K	R 2024-03 L	67
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	20
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	94
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	94
unmanned systems unit	Forpost	UAV detachment of a naval aviation base. 6 UAV (Kamchatka, 2014)	R 2014-01 M	101
	FPV drones	FPV crews of the unmanned systems troops	R 2026-02 M	105
	Geran-2	strike crews; regiment has one UAV strike battalion. 2 Geran-2 crews per drone regiment	O 2025-05 H	103
	Geran-2	launch teams, combat groups	O 2026-09 M	103
	Geran-2	strike UAV detachment, Aerospace Forces. 5 detachments (2025)	R 2025-03 M	103
	Korsar	platoon in brigade or division UAS company (CNA 2019 conjecture)	R 2019 L	101
	Molniya		R 2026-06 M	105
	Molniya		R 2026-06 L	105
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	60
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	84
volunteer formation	Kurier / Omich-2 / Bogomol-7V ground robotic complexes	NRTK company	O 2026 M	98

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)	25
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	26
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)	25
BM-30 Smerch 9M528 HE-frag unguided extended-range rocket, separable HE-frag warhead	90 km		maximum (claim)	25
2S35 Koalitsiya-SV 2S35 guided or extended-range shell precision-guided or rocket-assisted projectile; munition not named	80 km		maximum (claim)	31
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	25
BM-30 Smerch 9M55F HE-frag unguided, separable HE-frag warhead	70 km	20 km	maximum, minimum	25
BM-30 Smerch Employment range, Smerch unguided rockets, Ukraine 2022, used at or near maximum range	35-70 km		practical	25
Uragan-1M 9M55F HE-frag 300 mm 9M55F HE-frag rocket with trajectory correction	70 km	20 km	maximum, minimum	26
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	24
2S7 Pion / 2S7M Malka HE rocket-assisted RAP projectile, 103 kg	47.5 km		maximum	28
2S35 Koalitsiya-SV 2S35 standard HE-frag standard (unassisted) rounds	40 km		maximum	31
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)	24
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	25
M-46 HE-frag ERFB-BB Chinese-designed extended-range base-bleed round (also North Korean); not a Soviet round	38,000 m		maximum	34
2S7 Pion / 2S7M Malka HE-frag Conventional HE-frag, 110 kg projectile	37.5 km		maximum	28
Tornado-G 9M522 HE-frag 9M522 rocket, separable HE-frag warhead	37.5 km		maximum	25
M-46 HE rocket-assisted rocket-assisted HE-frag (Iranian HE BB per RUWIKI)	37,000 m		claimed	34
2S19 Msta-S rocket-assisted HE rocket-assisted projectile (HERA/RAP), type not named	36 km		range	29
Uragan-1M 9M27F HE-frag 220 mm 9M27F unguided HE-frag rocket	35 km	10 km	maximum effective, minimum effective	26
Uragan-1M 9M27K cluster 220 mm 9M27K rocket, 30 9N210 fragmentation submunitions	35 km		maximum effective	26
BM-27 Uragan 9M27F HE-frag 9M27F HE-frag rocket	35 km	10 km	maximum, minimum	24
BM-27 Uragan 9M27K cluster 9M27K rocket, 30 9N210 HE-frag submunitions	35 km	10 km	maximum, minimum	24
BM-27 Uragan 9M27K2 AT mines 9M27K2 rocket, 24 PTM-1 anti-tank mines	35 km	10 km	maximum, minimum	24
BM-27 Uragan 9M27K3 AP mines 9M27K3 rocket, PFM-1 anti-personnel mines	35 km	10 km	maximum, minimum	24
2A36 Giatsint-B 152 mm towed gun rocket-assisted 3VOF41 active-rocket projectile 3OF30	33.5 km		maximum	32
2S5 Giatsint-S rocket-assisted HE-frag 3OF30 rocket-assisted HE-frag	33 km		maximum	28
2S5 Giatsint-S HE-frag 3OF59 HE-frag 3OF59, improved aerodynamic shape, full charge	30.5 km		maximum	28
2A65 Msta-B OF61 HE-frag base bleed OF61 (3OF61) HE-frag with base-bleed gas generator, round 3VOF91	29 km		maximum (claim)	33
2S19 Msta-S HE-frag base bleed 3OF61 HE-frag base bleed (round 3VOF91)	29 km		maximum	29
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	32
2S5 Giatsint-S HE-frag 3OF29 HE-frag 3OF29, full charge; HE-frag, indirect fire	28.4 km	8,600 m	maximum, minimum	28
M-46 HE-frag OF-33 (full charge 3VOF43) HE-frag 3OF33 or OF-482M, full charge	27,490 m		maximum	34
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)	33
2S19 Msta-S HE-frag 3OF45 (OF-45) HE-frag, full charge	24.7 km		maximum	29
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	31
D-20 HE-frag OF-96 HE-frag OF-96 as WEG names it; WEG does not say rocket-assisted	24.4 km		maximum	34
M-46 guided shell Firm-1 Firm-1 guided shell, 33.4 kg; Russian service status not stated	24,000 m		maximum	34
M-46 HE-frag OF-33 (reduced charge 3VOF44) HE-frag 3OF33, reduced charge	22,500 m		maximum	34
2S1 Gvozdika HE rocket-assisted HE rocket-assisted projectile	21.9 km		maximum	26
D-30 HE-frag rocket-assisted rocket-assisted HE-frag	21.9 km		maximum	34
2S5 Giatsint-S HE-frag 3OF29 reduced charge HE-frag 3OF29 with reduced charge 4Zh48	21.5 km		maximum	28
2S3 Akatsiya HE-frag rocket-assisted 3OF22 rocket-assisted HE-frag	20.5 km		maximum	27

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
BM-21 Grad 122 mm MRL 9M22U HE-frag 9M22U (M-210F) HE-fragmentation rocket	20.4 km	5 km	maximum, minimum	24
Tornado-G 9M22U HE-frag legacy Grad 9M22U HE-frag rocket	20.4 km	5 km	maximum effective, minimum effective	25
2S3 Akatsiya Krasnopol guided 30F39 Krasnopol laser-guided CEP 1 m or less (laser-guided, target designated from Orlan-30 UAV; commentator claim)	20 km		maximum	27
2S5 Giatsint-S Krasnopol guided 30F39 laser-guided HE-frag Krasnopol	20 km		maximum	28
M-46 Practical range, HE-frag targets located by UAV, Dnipropetrovsk area, Apr 2026	about 20 km		practical (claim)	34
2S19 Msta-S guided Krasnopol laser-guided projectile; laser designation by an observer required	20 km		maximum	29
Tornado-G 9M538 HE-frag 9M538 rocket, enhanced monobloc HE-frag warhead	20 km		maximum (claim)	25
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)	25
Tornado-G 9M541 cluster 9M541 rocket, cluster warhead with HEAT-frag submunitions	20 km		maximum	25
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	35
2S4 Tyulpan 308 rocket-assisted cluster mine cluster mine, 14 submunitions	19.3 km	7.1 km	maximum, minimum	27
2S4 Tyulpan Sayda incendiary rocket-assisted mine incendiary (napalm) rocket-assisted mine; incendiary rocket-assisted mine	19 km	0.7 km	maximum, minimum	27
2S4 Tyulpan 3F2 rocket-assisted HE mine 228 kg rocket-assisted HE mine; WEG and GS do not name the round, 3F2 per RUWIKI	18 km	0.8 km	maximum, minimum	27
2S3 Akatsiya HE-frag 30F25 HE-frag	17.4 km		maximum	27
D-20 HE-frag OF-32 HE-frag OF-32 as WEG names it	17.4 km	4.6 km	maximum, minimum	34
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	35
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	35
D-30 HE-frag HE-frag (OF-81 in FAS); HE-frag, indirect fire	15.3 km	1,000 m	maximum, minimum	34
2S1 Gvozdika HE HE-frag (OF-462, 30F56 etc.), full charge	15.2 km	4.2 km	maximum, minimum	26
BM-21 Grad 122 mm MRL 9M28F HE-frag 9M28F HE-fragmentation rocket	15 km	1.5 km	maximum, minimum effective	24
Tornado-G 9M28F HE-frag legacy Grad 9M28F HE-frag rocket	15 km	1.5 km	maximum effective, minimum effective	25
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)	76
2S31 Vena HE-frag 3VOF110 (rifled) rifled HE-frag shell	13 km		maximum	30
2S34 Khosta rocket-assisted 120 mm round Rocket-assisted 120 mm rounds (WSNET)	13 km		maximum	30
BM-27 Uragan 9M51 thermobaric 9M51 thermobaric rocket	13 km	5 km	maximum, minimum	24
2S9 Nona-S HE-frag rocket-assisted shell 30F50 rocket-assisted HE-frag shell 30F50; rocket-assisted HE-frag shell OF-50	12.8 km	1.7 km	maximum, minimum	28
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	35
2S1 Gvozdika Kitolov-2M laser-guided 122 mm shell Kitolov-2M, needs laser designation	12 km		maximum effective (claimed) (claim)	26
2S23 Nona-SVK Kitolov-2 Kitolov-2 laser-guided projectile	12 km	500 m	maximum (claim), minimum	29
2S31 Vena Kitolov-2 guided 3VOF112 Kitolov-2 laser-guided projectile, rifled	12 km		maximum	30
D-30 Kitolov-2M Kitolov-2M laser-guided shell, target laser-designated	12 km		declared maximum effective (claim)	34
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	35
2S40 Floks guided projectile Guided projectile (Kitolov-2M per Defense Express)	10 km		declared (claim)	31
2S4 Tyulpan 53-F-864 HE mine HE mine 130.7 kg, full charge; HE mine, smallest charge	9.65 km	0.8 km	maximum, minimum	27
2S4 Tyulpan Smel'chak-M laser-guided mine laser-guided mine, 134 kg	9.5 km	0.9 km	maximum, minimum	27
2S4 Tyulpan 3F5 Smel'chak laser-guided mine laser-guided mine, 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	27
2S12 Sani 120 mm HE-frag rocket-assisted Frag-HE-RA	9,100 m		maximum	29
2S12 Sani KM-8 Gran 120 mm laser-guided HE-frag bomb with laser designator; Rostec says Sani can use Gran	9 km		maximum	29
2S9 Nona-S Kitolov-2 laser-guided shell laser-guided shell, target lit by laser designator	9 km		maximum	28
2S9 Nona-S HE-frag shell 30F49 rifled HE-frag shell 30F49; HE-frag shell; ACADEM does not name the shell type	8.85 km	1.7 km	maximum, minimum	28
2S40 Floks HE-frag projectile (OFS) HE-frag projectile OFS, 17.3 kg per Defense Express; declared Russian figure	8.5 km		declared (claim)	31
D-30 Practical range, HE-frag two-gun fire mission, Dnipropetrovsk direction, 2025	about 8 km		practical (claim)	34
2S31 Vena mortar bomb (smoothbore HE) smoothbore 120 mm HE bomb	7,200 m		maximum	30
2S23 Nona-SVK mortar bomb OF-843B OF-843B smoothbore mortar bomb	7.15 km	400 m	maximum, minimum	29

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
2S9 Nona-S 120 mm HE mortar bomb smoothbore HE-frag mortar bomb (53-OF-843B)	7.15 km	450 m	maximum, minimum	28
2S12 Sani 120 mm HE-frag standard bomb; RWW, AR18 and TI do not name the munition (WEG15: 7,000 m for 30F843B); Rosoboronexport catalogue figure	7,100 m	480 m	maximum, minimum (claim)	29
2S40 Floks HE mortar bomb (OFM) HE mortar bomb	7 km		declared (claim)	31
RKhM CBRN reconnaissance vehicles Chemical monitoring radius, RKhM-6 around troop positions, chemical situation	up to 6 km		claimed (claim)	79
TOS-1A Sointsepek thermobaric rocket MO.1.01.04M thermobaric rocket, 3.7 m, 217 kg	6,000 m		maximum	26
TOS-1A Sointsepek incendiary rocket MO.1.01.04M.OP incendiary rocket, 3.7 m, 204 kg	6,000 m		maximum effective	26
MT-12 Rapira 9M117 Kastet Gun-launched laser beam-riding missile, 3UBK10 round (RUWIKI) (MT-12K, 9K116)	100–5,000 m		range	32
2S25 Sprut-SD HE-frag 125 mm HE-frag, 1A40M-1 day sight	5 km		maximum aimed	31
2B14 Podnos 82 mm mine mine type not stated by RWW; WSYS: with newer ammunition	4,270 m	87 m	maximum, minimum	33
2B9 Vasilek O-832DU HE-frag 82 mm HE-frag, sea level, standard conditions; 82 mm HE-frag, high-angle fire	4,270 m	800 m	maximum, minimum	33
2S25 Sprut-SD APFSDS 125 mm APFSDS, 1A40M-1 day sight	4 km		maximum aimed	31
Kurier / Omich-2 / Bogomol-7V ground robotic complexes Control range, Kurier Radio control; relay is an aerial repeater	3 km direct; 10 km with air relay		maximum (claim)	98
TOS-1A Sointsepek original short rocket MO.1.01.04 thermobaric rocket, 3.3 m, 173 kg, fired from TOS-1A	2,700 m		maximum	26
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	1,880–2,130 m		maximum, effective	32
TOS-1A Sointsepek minimum range MO.1.01.04M rocket		600 m	minimum	26
2S31 Vena ammunition not stated RUWIKI infobox gives firing range 0.5 to 14 km without naming the round		0.5 km	minimum	30
IRM Zhuk Echo sounder depth range water depth measured by EIR sounder	0.5 to 20 m (EIR echo sounder)		stated range	72
REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles 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		maximum	77
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		maximum	77

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

Ballistic and cruise missiles and one-way attack drones. CEP, where known, is printed under the munition.				
SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
Bastion-P 3M22 Tsirkon open-source figures; Zircon fired from Bastion-M per Ukrainian claims	about 1,000 km		reported	37
Bastion-P Coastline covered against amphibious landings	over 600 km		claimed (claim)	37
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	36
Iskander-M 9M728 (R-500) cruise missile 9M728 cruise missile, Iskander-K	500 km		official maximum (claim)	36
Bal Kh-35U Kh-35U missile (KNIISE director); AIF22 gives 260 km for export Kh-35UE	260 km	7 km	maximum (go) (claim), minimum (claim)	36
Bal Kh-35 Kh-35 missile, sea target	130 km		approximately (RWW); range (KTRV) (claim)	36
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)	37
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)	35
9K79-1 Tochka-U 9M79 9M79 missile, Tochka (Scarab A) CEP 250 m (inertial)	70 km	15 km	maximum (claim), minimum (claim)	35
Bastion-P Cruise altitude, P-800 Oniks			maximum	37

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, T-80BV, T-80U, T-80BVM, T-90, T-90A, T-90M, T-14, BMPT, BMP-1, BMP-2, BMP-3, 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 (28), 2S34 Khosta, 2S25 Sprut-SD, 9K35 Strela-10 (45), SNAR-10 (54), PRP-4M (85), GMZ-3			
ground, ball and API (57-N-323S, 7BZ-3)	effective	1,500 m (disputed)	1,000 to 2,000 m
ground, ball and API (57-N-323S, 7BZ-3)	maximum	4,000 m	3,800 to 4,000 m
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	2,000 m	2,000 to 3,500 m
air, API (B-32), API-T (BZT-44)	effective	1,000 m	
ground, API (B-32)	maximum	7,850 m	2,500 to 7,850 m
Kord 6P49 12.7 mm heavy machine gun, vehicle version of the Kord Carried by, e.g.: T-72B3 (2016 standard), T-90 (late production), T-90M, T-14, 2S35 Koalitsiya-SV (31), MT-LBVMK, GAZ-3937 Vodnik, Tigr, Tigr-M			
ground, personnel, light armour. B-32 API, BZT-44 API-T	effective	2,000 m	
air, B-32 API, BZT-44 API-T	effective	1,000 m (disputed)	1,000 to 1,500 m
ground, B-32 API	maximum	7,850 m	6,000 to 7,850 m
NSVT 12.7 mm heavy machine gun, vehicle version of the NSV Carried by, e.g.: T-72A, T-72B, T-72B3 (early), T-80BV, T-80U, T-90 (early production), T-62M (some), 2S19 Msta-S (29), BREM-1, MT-LBVM			
ground, API (B-32), API-T (BZT-44)	effective	2,000 m	
air, API (B-32), API-T (BZT-44)	effective	1,000 m (disputed)	1,000 to 1,500 m
ground, API (B-32)	maximum	7,850 m	2,000 to 7,850 m
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	2,000 m	
air, API, API-T (B-32, BZT)	effective	1,500 m	1,000 to 1,500 m
ground, 14.5 mm (not specified)	maximum	9,000 m	
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	2,500 m	2,000 to 2,500 m
air, BZT, OFZ	effective	2,500 m	
2A38M 30 mm twin-barrel anti-aircraft automatic cannon Carried by: 2S6M, 2S6M1 Tunguska-M, -M1 (46), Pantsir-S1, Pantsir-SM (96K6) (44)			
air, HE-I, AP-T	effective	4,000 m	2,000 to 4,000 m
ground	maximum	2,000 m	
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, Mi-28N, Mi-28NM, Ka-29, T-15, Kurganets-25, VPK-7829 Bumerang			
light armour, armour-piercing (BT, APDS)	effective	1,500 m	1,500 to 2,000 m
personnel, HE (OFZ, OT)	effective	4,000 m	
air, HE	effective	2,000 m	2,000 to 4,000 m
2A72 30 mm automatic cannon Carried by, e.g.: BMP-3, BMP-3M, 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	1,500 m	1,500 to 2,000 m
personnel, HE	effective	4,000 m	2,000 to 4,000 m
air, HE	effective	4,000 m (disputed)	1,500 to 4,000 m
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	1,200 m	800 to 1,730 m
personnel, ground, Frag-HE VOG-17M	maximum	1,730 m	
personnel, ground, Frag-HE GPD-30 (extended range)	maximum	2,100 m	
AGS-30 30 mm automatic grenade launcher Carried by, e.g.: BMP-2M Berezhok			
personnel, ground, Frag-HE VOG-17M, VOG-30	maximum	1,700 m	
personnel, ground, Frag-HE GPD-30 (extended range)	maximum	2,100 m	2,100 to 2,200 m
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), BRM-3K with AU-220M, 2S38 Derivatsiya-PVO			
ground	effective	3,000 m	
air	effective	7,500 m	6,000 to 7,500 m
ground	maximum	more than 14,000 m	12,000 to 14,500 m
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	1,300 m	500 to 1,300 m
armour, HEAT-FS PG-15V	maximum	1,300 m	
ground, Frag-HE OG-15V	maximum	4,400 m	4,400 to 4,500 m
SPG-9 73 mm recoilless gun Carried by, e.g.: UAZ-469			
armour, HEAT PG-9VS (PG-9V)	effective	1,300 m	800 to 1,300 m
armour, tandem HEAT PG-9VNT	effective	1,000 m	700 to 1,000 m
personnel, ground, Frag-HE OG-9VM1	maximum	4,500 m	
2A70 100 mm rifled gun-launcher Carried by, e.g.: BMP-3, BMP-3M, BMP-3K, BMP-3F, BMD-4M, BMD-4			
ground, HE-Frag 3UOF17 (30F32)	effective	4,000 m	
air, HE-Frag	effective	4,000 m	
ground, HE-Frag 3UOF19 (30F70)	maximum	6,500 m	6,500 to 7,000 m
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			

WEAPON, TARGET AND AMMUNITION	TERM	RANGE	SOURCES
armour. APFSDS (BM-412M, BM-25 type)	effective	2,000-2,500 m	
armour. HEAT (BK-17)	effective	1,000 m	
ground. HE-Frag (OF-32)	effective	2,500-4,000 m	2,500 to 6,000 m
ground. HE-Frag	maximum	15,000 m	14,600 to 16,000 m
MT-12 100 mm smoothbore towed anti-tank gun Carried by, e.g.: MT-LB, Ural-4320, Ural-375D			
armour. APFSDS (BM-412M)	effective	2,500 m	1,880 to 2,500 m
armour. direct fire sight OP4M-40U	sighting	3,000 m	
ground. HE-Frag (OF-15)	maximum	8,200 m	
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	1,800 m	1,800 to 2,100 m
armour. HEAT (3BK4)	effective	1,500 m	1,200 to 1,500 m
ground. HE-Frag (OF-27)	effective	4,000 m	4,000 to 6,000 m
ground. HE-Frag	maximum	9,000 m	
2A45M 125 mm smoothbore towed anti-tank gun with auxiliary power unit Carried by, e.g.: MT-LB			
armour. APFSDS (BM-42M)	effective	3,000 m (disputed)	2,000 to 3,000 m
ground. HE-Frag OF-26	direct fire	5,000 m	
ground. HE-Frag	maximum	12,200 m	12,000 to 12,200 m
2A46M 125 mm smoothbore tank gun and ATGM launcher, autoloader Carried by, e.g.: T-72B, T-72BM, T-90, T-80BV, T-80U, T-80BVM, T-64BV			
armour. APFSDS (3BM42M type)	effective	3,000 m	2,500 to 4,000 m
armour. HEAT (3BK29M, 3BK27 type)	effective	3,000 m	2,000 to 4,000 m
ground. HE-Frag (3OF26)	effective	5,000 m	4,000 to 5,000 m
ground. HE-Frag	maximum	10,000 m	
2A46M-5 125 mm smoothbore tank gun and ATGM launcher, autoloader; improved-accuracy 2A46M Carried by, e.g.: T-72B3, T-72B3M, T-90A, T-90M			
armour. APFSDS (3BM42M type)	effective	3,000-4,000 m	3,000 to 4,000 m
armour. HEAT-MP (3BK29M)	effective	4,000 m	
ground. HE-Frag (3OF26)	effective	5,000 m	
air. HE-shrapnel, time-fuzed (Ainet)	effective	4,000-5,000 m	
ground. HE-Frag	maximum	10,000 m	
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	3,000 m	
armour. APFSDS, HEAT (BK-29M) and guided rounds with 1A40M-1 sight	sighting	4,000 m	
ground. HE-Frag OF-26 (3OF26)	effective	5,000 m	
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	3,500 to 5,000 m
ground. HEAT, HE-Frag	effective	4,700 m	
ground	maximum	12,000 m (disputed)	7,000 to 12,000 m

Other direct-fire figures in the entries

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
T-54 / T-55 100 mm HE Indirect fire with side level and azimuth pointer; round type not named for this figure	14,600 m		maximum	6
2S23 Nona-SVK rocket-assisted 3OF50 3OF50 rocket-assisted HE-frag, indirect fire	12.8 km	1,700 m	maximum, minimum	29
2S23 Nona-SVK HE-frag 3OF49 (rifled) 3OF49 HE-frag, indirect fire	8.85 km		maximum	29
MT-12 Rapira HE-frag HE-frag (RUWIKI rounds 3UOF3, 3UOF12), indirect fire, at maximum elevation of +20 degrees	8,200 m		maximum	32
2S34 Khosta standard 120 mm mortar bomb Standard (non rocket-assisted) 120 mm mortar rounds, indirect fire; RUWIKI and ARSHEET give 0.5 km for all 120 mm types; ARMEDC 500 m for mines, 1.8 km for gun-fired shells	7.2 km	0.5 km	maximum, minimum	30
T-64A/B/BV 125 mm HE-frag OF-26 day; night 800-1,300 m; maximum aimed range 5,000 m	5,000 m		max effective	7
T-80B/BV/BVM, T-80U HE-Frag direct fire, day; RUWIKI's 5,000 m is 'greatest sighting range'	5,000 m		maximum effective	8
BRM-1K 73 mm (munition not stated) ammunition type not stated by WEG	4,500 m		maximum firing range	12
BMD-2 73 mm OG-15V HE-frag BMD-1, HE-fragmentation	4,400 m		maximum	10
2S3 Akatsiya HEAT 53-BP-540 HEAT, direct fire	4 km		maximum	27
BMD-2 30 mm (type not stated) ammunition not stated by WEG	4,000 m		effective, maximum	10
BMD-2 30 mm HE (BMD-2M) high-explosive, BMD-2M fire control	4,000 m		effective (claim)	10
BMD-4M HE-Frag 100 mm, day; ammunition not stated by WEG	4,000 m		maximum effective	11
BMP-2 30 mm HE ground targets, Frag-HE; day (1,300 m night, WEG15)	4,000 m		effective	12
T-54 / T-55 9M117 Bastion Only T-55M/AM/MV with Volna; day; laser beam-riding round fired through the gun	4,000 m		effective	6
T-62 HE-Frag OF-27 HE-Frag, day, direct fire	4,000 m		maximum aimed	7
T-64A/B/BV 9M112 Kobra (AT-8 Songster) gun-launched, radio command guidance; day sight only unless target illuminated	4,000 m		range	7
T-90 HEAT 3BK12M day/night not stated by WEG	4,000 m		effective	9
T-90 HE-Frag 3OF19 day/night not stated by WEG	4,000 m		effective	9

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
T-64A/B/BV 125 mm APFSDS-T BM-42M day; night 800-1,300 m; maximum aimed range 3,000-4,000 m	2,000-3,000 m		max effective	7
T-64A/B/BV 125 mm HEAT-MP BK-29M day; night 800-1,300 m; maximum aimed range 4,000 m	3,000 m		max effective	7
T-80B/BV/BVM, T-80U APFSDS day	2,000-3,000 m		effective	8
T-80B/BV/BVM, T-80U HEAT 3BK31 Start, day	3,000 m		maximum effective	8
T-90 APFSDS 3BM42M day; night	2,000-2,600 m		effective	9
BMP-2 30 mm, air targets helicopters and slow aircraft; ammunition not stated	2,500 m		effective	12
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	2,500 m		claimed (claim)	13
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	2,130 m		direct fire	33
2S1 Gvozdika HEAT HEAT 3BK6, 3BP1, direct fire at armour; day or night not stated	2 km		maximum	26
BMD-2 30 mm AP (BMD-2M) armour-piercing, BMD-2M fire control	2,000 m		effective (claim)	10
BMD-2 9M111 Fagot 9M111-2; 9M111M reaches 2,500 m	2,000 m		maximum	10
BMP-2 30 mm APDS day (1,300 m night)	2,000 m		maximum effective	12
BMR-3M 12.7 mm MG ground targets, 12.7x108 mm	2,000 m		effective	74
2S19 Msta-S secondary MG 12.7x108 mm, ground and air targets	2,000 m ground; 1,500 m air		effective	29
T-62 APFSDS APFSDS, 2 m high target, day; 2,260 m against 3 m high target	1,870 m		effective	7
2A36 Giatsint-B 152 mm towed gun direct fire ammunition and target not stated in source	1,530 m		direct fire	32
BMP-2 30 mm AP-T armour; day (1,300 m night, WEG15)	1,500 m		effective	12
BMR-3M 12.7 mm MG vs air air targets, 12.7x108 mm	1,500 m		effective	74
T-62 HEAT BK-4 HEAT, day	1,500 m		maximum effective	7
BMD-2 73 mm PG-15V HEAT BMD-1, anti-armour	1,300 m		maximum	10
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	1,020-1,150 m		maximum, effective	32
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	1,150 m		effective	35
M-46 APC-T BR-482B direct fire, armour-piercing tracer	1,140 m		direct fire	34
T-54 / T-55 100 mm HE-frag, direct fire Grazing shot at 2 m high target	1,100 m		grazing shot	6
T-54 / T-55 100 mm AP, direct fire Grazing shot (point-blank range) at 2 m high target	1,080 m		grazing shot	6
2S23 Nona-SVK 3BK19 HEAT 3BK19 HEAT, direct fire	1.0 km	40 m	maximum, minimum	29
2S5 Giatsint-S HEAT BP-540 HEAT BP-540, direct fire	1,000 m		direct fire	28
2S9 Nona-S HEAT shell 3BK19 non-rotating HEAT shell, direct fire	1.0 km		maximum	28
BRM-1K HEAT-FS day; firing on the move; night	800-1,000 m		maximum effective	12
BTR-D 7.62 mm API (bow machine gun) Day; 400-500 m on the move	1,000 m		maximum effective	13
D-20 HEAT BP-540 HEAT BP-540, direct fire; day or night not stated	1,000 m		maximum	34
D-30 Direct fire range, HEAT-FS HEAT-FS, direct fire; day or night not stated	1,000 m		maximum	34
T-62 APFSDS (night) night, with IR night vision equipment; WEG does not name the ammunition	800 m		effective	7
2S31 Vena HEAT direct fire HEAT round, direct fire against armoured vehicles	500 m		effective	30
BMO-T RPO-A rocket 93 mm RPO-A thermobaric rocket	400 m		effective	11

Table 3d. Reach of anti-tank weapons

Anti-tank guided missiles.				
SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	TERM	PAGE
Kornet 9M133FM-3 HE day; Kornet-D/D1 launchers; HE blast-frag, also for slow air targets; designation per WPRU, WEG writes 9M133F-3	10,000 m		maximum (claim)	21
Kornet 9M133M-2 tandem HEAT day; Kornet-D/EM launchers	8,000 m	150 m	maximum (claim), minimum	21
Kornet 9M133FM-2 thermobaric day; Kornet-D/EM launchers	8,000 m	150 m	maximum (claim), minimum	21
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	7,800 m		practical (claim)	21
BMP Terminator 9M120-1 / 9M120-1F Ataka-T tandem HEAT (9M120-1) or thermobaric (9M120-1F); laser beam riding	6,000 m		maximum (claim)	6
Khризantema-S 9M123 (laser) tandem HEAT, laser beam-riding (SACLOS)	6,000 m	400 m	maximum (claim), minimum (claim)	20
Khризantema-S 9M123F/9M123F-2 thermobaric	6,000 m		maximum (claim)	20
9K114 Shturm-S 9M120 Ataka tandem HEAT or thermobaric 9M120F, ground target, from 9P149/9P149M	6,000 m	400 m	maximum, minimum	20
BMD-4M 9M117M1 Arkan ATGM laser beam-riding, fired through 100 mm gun; tanks; 3UBK23-3 round	5,500 m	100 m	maximum (claim), minimum	11
BMP-2 9M133 Kornet (BMP-2M) Kornet-LR; day (3,500 m night)	5,500 m		maximum effective	12
Kornet 9M133-1 tandem HEAT day; day or night	5,500 m	100 m	maximum (claim), minimum (claim)	21
Kornet 9M133F-1 thermobaric day	5,500 m		maximum	21
Kornet 9M133 HEAT original 9M133 missile	5,000 m	100 m	maximum, minimum	21
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)	5,000 m	400 m	maximum, minimum	20
2S25 Sprut-SD gun-launched ATGM Laser beam-riding missile fired from the gun; WEG names no missile type	5 km		effective	31
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M 9M119M Invar 9M119M/9M119M1, day, direct optical visibility of target; 3UBK20 round, ground target	5,000 m	100 m	maximum, minimum	20
T-80B/BV/BVM, T-80U 9M119 Refleks ATGM T-80U, T-80BVM; laser beam-riding; ATP: 4,000 m, 5 km against helicopters	4,000-5,000 m		operational	8
T-90 ATGM 9M119M Refleks (AT-11 Sniper-B) day	5,000 m		maximum effective	9
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	4,815 m to 6,830 m		practical	20
BMD-2 9M113 Konkurs SACLOS wire-guided ATGM, BMD-2 and BMD-1P	4,000 m	70 m	maximum, minimum	10
BMP-2 9M113 Konkurs SACLOS, wire-guided ATGM	4,000 m	70 m	maximum, minimum	12
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	70 m	maximum effective, minimum	17
9K111 Fagot / 9K111-1 Konkurs 9M113 Konkurs HEAT, day, optical sight	4,000 m	75 m	maximum, minimum	19
9K111 Fagot / 9K111-1 Konkurs 9M113M Konkurs-M tandem HEAT, day	4,000 m	75 m	maximum (claim), minimum (claim)	19
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M 9M119 Svir 9M119 fired by the 9K120 Svir complex of the T-72B	4,000 m		maximum	20
T-62 9M117 ATGM 9K116-2 Sheksna laser beam-riding missile, T-62M and T-62MV only, day only	4,000 m		effective	7
T-80B/BV/BVM, T-80U 9M112 Kobra ATGM T-80B; radio command guidance; RUWIKI: 4,000 m greatest sighting range for guided round	4,000 m	100 m	effective	8
Kornet 9M133-1 tandem HEAT (night) night, with thermal sight	3,500 m		maximum (claim)	21
BMD-2 9M14 Malyutka MCLOS wire-guided ATGM, BMD-1	3,000 m	500 m	maximum, minimum	10
BMP-1 9M14M Malyutka (AT-3 Sagger) MCLOS wire-guided ATGM, day only; BMP-1; MCLOS wire-guided ATGM; BMP-1	3,000 m	500 m	effective, minimum	11
Khризantema-S 9M123 air target			maximum	20
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M 9M119M Invar night 9M119M, night	2,600 m		maximum	20
9K111 Fagot / 9K111-1 Konkurs 9M111M Faktoriya HEAT, day	2,500 m	75 m	maximum, minimum	19
9K111 Fagot / 9K111-1 Konkurs 9M113 Konkurs, night HEAT, night, 1PN86-1 Mulat or 1PN65 thermal sight	2,500 m		maximum	19
BMP-1 9M111 Fagot (AT-4 Spigot) SACLOS ATGM from roof launcher; BMP-1P	2,000 m		maximum effective	11
BMP-2 9M111 Fagot SACLOS, wire-guided ATGM	2,000 m		maximum effective	12
9K111 Fagot / 9K111-1 Konkurs 9M111 Fagot HEAT, day, optical sight	2,000 m	70 m	maximum, minimum	19
Metis 9M131M tandem HEAT Metis-M1, 9M131M tandem HEAT or 9M131FM thermobaric, day and night	2,000 m	80 m	maximum (claim), minimum (claim)	22
Metis 9M131 tandem HEAT Metis-M, 9M131 tandem HEAT; day, or night with Mulat-115 sight; 9M131F thermobaric also fired	1,500 m	80 m	maximum, minimum	22
Metis 9M115 HEAT Metis, 9M115 single HEAT	1,000 m	40 m	maximum, minimum	22
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M 9M119M CEP 80 % (single round, guidance channel working)				20

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)	41
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)	42
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)	42
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)	41
S-300V4 9M82M aircraft targets; S-300VM	200 km		25 m-30 km	maximum (claim), maximum and minimum (claim)	41
S-300PM / S-300PS 48N6 aerodynamic target; S-300PM/PMU1 (48N6E export)	150 km	3-5 km		maximum (claim), minimum (claim)	41
S-350 Vityaz 9M96D extended-range domestic 9M96D; target type not stated by TWZ	about 121 km (75 miles)			range	42
S-350 Vityaz 9M96E2 aerodynamic target; export missile	120 km	1 km	5 m to 30 km	maximum (claim), minimum (claim)	42
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)	42
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	41
S-300PM / S-300PS 5V55R aerodynamic target; S-300PS/PMU	5-75 km			engagement zone (claim)	41
S-300V4 9M83 aircraft targets; S-300V	75 km	6 km	250 m-25 km	maximum, minimum, maximum and minimum	41
Buk-M1 / Buk-M2 / Buk-M3 9M317M (Buk-M3) air target	2.5-70 km		35 km	maximum effective, maximum	40
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 to 60 km		10 m to 30 km	maximum (claim)	42
S-400 Triumf 48N6 (ballistic targets) ballistic missile targets, 48N6 series	60 km			range	42
Buk-M1 / Buk-M2 / Buk-M3 9M317 (Buk-M2) aircraft; air target	3-50 km		15 m-25 km	engagement zone, intercept altitude	40
Pantsir-S1 Pantsir-SM missile Pantsir-SM with new missile; KBP chief designer, 2016	40 km			claimed (claim)	44
S-300PM / S-300PS 48N6 vs ballistic missile ballistic target; S-300PM/PMU1	40 km			maximum (claim)	41
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)	41
S-350 Vityaz 9M96E aerodynamic target; export missile	40 km	1 km	5 m to 20 km	maximum (claim), minimum (claim)	42
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)	42
Buk-M1 / Buk-M2 / Buk-M3 9M38M1 (Buk-M1) air target	3.25-34 km		30 m-22 km	maximum, intercept altitude	40
Pantsir-S1 Pantsir-S1M missile export Pantsir-S1M; new missile, designation not given by source; High Precision Systems, 2019	30 km			claimed (claim)	44
S-350 Vityaz S-350E system vs ballistic ballistic targets	1.5 to 30 km		2 to 25 km	maximum (claim)	42
S-350 Vityaz 9M96 basic domestic 9M96; target type not stated by TWZ	about 29 km (18 miles)			range	42
S-400 Triumf S-400 (missile not stated) reported engagement altitude band			0.1-27 km	reported	42
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)	40
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	5 m to 15 km	maximum (claim), minimum (claim)	44
Tor 9M338K Tor-M2 domestic, air targets	16 km		10 m to 10 km	maximum (claim)	46
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	45
Tor 9M330/9M331 aircraft and PGM targets, Tor/Tor-M1	12 km	1.5 km	10 m to 6 km	maximum, minimum	46
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 to 12 km		10 m to 10 km	maximum (claim)	46
S-350 Vityaz 9M100 IR-homing short-range missile; fielding unconfirmed	10 km			maximum (claim)	42
Sosna 9M340 Sosna-R air targets, day and night	10 km		5 km	maximum (claim)	45
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	46
Pantsir-S1 TKB-1055 small missile anti-drone round, up to 48 per vehicle in cannon-less versions	7 km			claimed (claim)	44
2S38 Derivatsiya-PVO 57 mm gun Air targets; Air targets moving up to 500 m/s	6 km (200 to 6,000 m)	200 m	4.5 km (0 to 4,500 m)	maximum engagement range (claim), minimum (claim), maximum (claim)	43
Gibka-S 9K338 Igla-S Air targets, head-on and tail-chase	6 km		10 m to 3.5 km	engagement range (claim), engagement altitude (claim)	43

SYSTEM, MUNITION AND CONDITION	RANGE	MINIMUM	ALTITUDE	TERM	PAGE
Gibka-S 9M336 Verba Air targets	6 km		10 m to 4.5 km	engagement range (claim), engagement altitude (claim)	43
Igla / Igla-1 / Igla-S 9M342 (Igla-S) air target; target altitude	6,000 m		10-3,500 m	maximum effective (claim), minimum / maximum (claim)	47
S-60 57 mm anti-aircraft Air target, radar-guided (FAS); RUWIKI gives 6,000 m firing zone	6,000 m		5,000 m	tactical, firing zone height	44
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)	44
Verba 9M336 air targets; maximum target altitude; minimum target altitude	6 km	500 m	10 m	maximum (claim), minimum (claim)	48
Igla / Igla-1 / Igla-S 9M339 (Igla) receding target; engagement zone; target altitude	5,200 m	1,000 m receding, 500 m approaching	10-3,500 m	maximum effective, minimum, minimum / maximum	47
Igla / Igla-1 / Igla-S 9M313 (Igla-1) receding target; target engagement range; target altitude	5,000 m	500 m	100-3,500 m	maximum, minimum, engagement	47
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 to 5 km		25 m to 3.5 km	engagement envelope	45
Pantsir-S1 30 mm 2A38M gun air and ground targets; air targets	4 km	200 m	0 to 3 km	maximum (claim), minimum (claim)	44
Tunguska 30 mm 2A38M guns air target	4 km	200 m	3 km	maximum, minimum	46
2S38 Derivatsiya-PVO 57 mm gun, ground targets Ground targets	3,000 m			engagement range (claim)	43
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	200 m	1,500 m	maximum effective, minimum	47
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		25 to 1,500 m	claimed (claim)	47
ZU-23-2 23 mm AA fire air targets, up to 1,500 m altitude	2,500 m		1,500 m	effective	47
ZSU-23-4 Shilka 23 mm (ground target) ground or surface target, 23x152 mm	2 km			maximum effective	47
ZU-23-2 23 mm ground fire light armoured ground targets	2,000 m			effective	47
S-60 Penetration, UBR-281 APCBC-HE-T Armour-piercing round, one source	96 mm RHA at 1,000 m			stated	44

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
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	66
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)	52
250-300 km	Nebo-U Detection range, hypersonic cruise missile. RCS 0.9 m ² ; 250 km at 10,000 m, 300 km at 20,000-50,000 m	RCS 0.9 m ² , cruise missile, person	detection (claim)	52
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)	54
up to 40 km	R-381T Taran Detection range, R-381T radio emitters. Ground radio emitters; complex of 7 vehicles	vehicle, emitters	up to	65
30 km	SNAR-10 / SNAR-10M1 Leopard Detection range, SNAR-10 radar. moving ships, without MTI	ship	maximum (claim)	54
20 km	1B75 Penicillin Detection range, 1L271. tank-type moving ground target	tank	maximum (claim)	53
>20 km	Sobolyatnik Detection range, 1L277 radar (vehicles). Vehicles; ATP chart	vehicle	stated	55
at least 17 km	Sobolyatnik Detection range, 1L277 radar (tank). Moving tank target; catalogue gives 'not less than'	tank	stated minimum (claim)	55
16 km	SNAR-10 / SNAR-10M1 Leopard Detection range, SNAR-10 radar. moving vehicles, without MTI; 10 km with MTI	vehicle	maximum (claim)	54
15 km	SNAR-10 / SNAR-10M1 Leopard Detection range, SNAR-10M1 radar. moving person; developer figure	person	claimed (claim)	54
12 km	PRP-4A Argus / PRP-4M Deytery Detection range, radar (moving tank-type target). moving tank-type target	tank	up to	85
up to 10,000 m	1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex Detection range, 1V14 optical reconnaissance. day	not stated	maximum	83
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)	85
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)	85
8 km	PRP-4A Argus / PRP-4M Deytery Detection range, optical-electronic (tank-type target, day). tank-type target, daytime	tank	up to	85
7 km	PRP-4A Argus / PRP-4M Deytery Detection range, radar (person). single soldier	person	up to	85
at least 7 km	Sobolyatnik Detection range, 1L277 radar (personnel). Moving person; catalogue 'not less than'	person	stated minimum (claim)	55
4,000 m	2S38 Derivatsiya-PVO Recognition range, optical-electronic sight. Thermal channel, 2.3 x 2.3 m target	not stated	recognition (claim)	43
4,000 m	Kornet Detection range, 1PN79M Metis-2 thermal sight. MBT-type target; recognition 2,500 m; export sight	not stated	detection (claim)	21
over 3,300 m	T-90 Detection range, T-90MS thermal sight. tank target; T-90MS export variant	tank	detection	9
3 km	BTR-80 Detection range, TKN-AI commander's sight (BTR-82A). ground targets, with laser rangefinder	not stated	detection (claim)	16
3 km	PRP-4A Argus / PRP-4M Deytery Detection range, optical-electronic (tank-type target, night). tank-type target, night	tank	up to	85
up to 2,500 m	1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex Detection range, 1V14 optical reconnaissance (night). night	not stated	maximum	83
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)	85
100-1,500 m	BRDM-2 Range, 762 mm ball (PKT). ground target, day; FAS calls 1,500 m maximum aimed range	not stated	effective (with sight adjustments)	15
1.5 km	2S25 Sprut-SD Detection range, TPN-4R night sight. Tank-type target, night	tank	recognition range	31
750 m	1B75 Penicillin Minimum range, 1L271. mortar firing positions; 200 m for moving ground targets	mortar	minimum (claim)	53
Counter-battery				
65 km	Zoopark-1 / Zoopark-1M Detection range, tactical missile, 1L260. Launch positions of Lance / ATACMS type missiles	tactical missile	up to	55
45 km	Zoopark-1 / Zoopark-1M Detection range, rocket artillery, 1L260. MLRS firing position (DOGS, unverified, specifies M270 type)	rocket launcher, artillery	up to	55
40 km	Zoopark-1 / Zoopark-1M Detection range, tactical missile, 1L219M. Tactical missile launch position	tactical missile	detection of launch position	55
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	55
30 km	ARK-1M Rys Detection range, ARK-1M vs battlefield missiles. Missile (WEG)	not stated	unspecified	54
30 km	Zoopark-1 / Zoopark-1M Detection range, rocket artillery, 1L219M. MLRS firing position	rocket launcher, artillery	detection of launch position	55
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	55
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	55
25 km	ARK-1M Rys Detection range, ARK-1M vs MRL rockets. Rocket (WEG); mode not stated	rocket launcher	unspecified	54
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)	53

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
20 km	Zoopark-1 / Zoopark-1M Detection range, mortar, 1L219M. Mortar firing position; calibre not stated	mortar	detection of launch position	55
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)	55
15 km	1B75 Penicillin Detection range, 1L271 (fire adjustment). by shell bursts; by trajectory 5 km	shell bursts	maximum (claim)	53
15 km	Zoopark-1 / Zoopark-1M Detection range, tube artillery, 1L219M. Field artillery firing position	artillery	detection of launch position	55
13 km	ARK-1M Rys Detection range, ARK-1M vs mortars. Mortar (WEG); mode not stated	mortar	unspecified	54
10 km	SNAR-10 / SNAR-10M1 Leopard Detection range, SNAR-10 radar. shell impact (100 mm), without MTI	shell bursts	maximum (claim)	54
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)	54
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	54
5 km	1B75 Penicillin Detection range, 1L271 (mortar positions). mortar firing positions, 81-120 mm	mortar	maximum (claim)	53
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)	58
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)	67
50 km	Bal Detection range, Kh-35U seeker. Kh-35U active/passive radar seeker; target size not stated	not stated	seeker range (claim)	36
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)	68
30 km	Svet-KU Detection range, emitter search. any emitting source, stated as radius by Northern Fleet operator, 2025	emitters	claimed (claim)	67
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)	67
about 10 km	Shipovnik-Aero Detection range, UAV control signals. Detect and identify control signals of enemy UAVs; developer statement	UAV, emitters	radius (claim)	66
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	62
1.5 km	Volnerez, Saniya and Sapfir vehicle anti-drone jammers Detection range, Saniya detector. FPV drone, passive radio detection	UAV	claimed (claim)	70
1,300 m	T-80B/BV/BVM, T-80U Detection range, TPN-3-49 night sight. T-80B; active IR; 850 m passive	not stated	sighting	8
650 m	BMP-2 Detection range, BPK-1-42 sight. night, passive starlight channel; 350 m with IR searchlight	not stated	vision range	12
about 400 m	BMD-2 Detection range, 1PN22M1 night channel. BMD-1 gunner sight, passive image intensifier, night	not stated	vision range	10
400 m	BMP-1 Detection range, 1PN22M1 sight. night, passive image intensifier; 900 m with IR searchlight	not stated	maximum	11
Laser designation				
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)	50
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)	50
200-8000 m	Orlan-10 Laser range, Orlan-30 designator-range-finder. measured distance, 1064 nm laser, export Orlan-30	not stated	range of measured distances (claim)	99
up to 7,000 m	1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex Range, laser target illumination (1V14). for laser-guided (corrected) munitions	not stated	maximum	83
5,300 m	2S12 Sani Range, 120 mm illumination. illumination bomb S-843	not stated	maximum	29
3 km	Granat-1 / Granat-4 Range, laser designation, Granat-4. laser illumination of targets for guided munitions (Krasnopol)	not stated	claimed (claim)	98
1,000 m	2S12 Sani Minimum range, 120 mm illumination. illumination bomb S-843	not stated	minimum	29
250-300 m	BRDM-2 Detection range, TKN-1S night sight. night, with OU-3 infrared illuminator; target not stated	not stated	observation range	15
Air tracking and fire control				
200 km	S-300PM / S-300PS Detection range, 30N6E. target tracking; export 30N6E/E1	not stated	tracking range (claim)	41
120 km	Buk-M1 / Buk-M2 / Buk-M3 Detection range, 9A317 / 9A317M TELAR radar (M2/M3). RCS 1-2 m ² at 3 km altitude and 18-20 km vs same target at 10-15 m (M2); M3: RCS 1-2 m ² , altitude not stated	RCS 1-2 m ²	detection range	40
100 km search; 180 km tracking	Nebo-SVU Upper limit of coverage, altitude. circular scan search / tracking mode	not stated	minimum (claim)	51
80 km	Buk-M1 / Buk-M2 / Buk-M3 Detection range, 9S35 TELAR radar (M1). RCS 2 m ² ; 100 km vs RCS 3 m ²	RCS 2 m ²	detection range	40
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	45
36 km	Pantsir-S1 Detection range, 1RS1 search radar. 2 m ² target; S-band; up to 20 targets tracked	RCS 2 m ²	maximum (claim)	44
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)	45
28 km	Pantsir-S1 Detection range, 1RS2-1 tracking radar. target size not stated; WEG and Armada	not stated	maximum (claim)	44
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)	44
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	45

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
20 km	Tor Detection range, TV sight. target not stated	not stated	maximum	46
15 km	Tor Detection range, tracking radar (Tor/Tor-M1). 60-degree sector; target and variant not stated	not stated	maximum	46
13 km	ZSU-23-4 Shilka Tracking range, RPK-2 (1RL33) radar. air target; may refer to the Sborka command post	aircraft	maximum	47
13 km	Tunguska Detection range, 1RL144M tracking radar. J-band tracker	not stated	maximum	46
Air surveillance				
8000 km	Voronezh-DM Detection altitude, early warning radar. Vertical coverage into near space; target not stated	not stated	claimed (claim)	56
6000 km	Voronezh-DM Detection range, early warning radar. Horizontal range; target type and size not stated by source	not stated	claimed (claim)	56
700 km	Nebo-U Detection range, maximum. maximum range stated for 55Zh6U; target not stated	not stated	maximum (claim)	52
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)	52
600 km	Nebo-M Detection range, Nebo-M. complex; target type, size and altitude not stated	not stated	maximum (claim)	51
600 km	Nebo-M Altitude coverage, Nebo-M. complex, ballistic targets implied; not stated	ballistic missile	maximum (claim)	51
580-600 km	S-400 Triumf Detection range, 91N6E. target RCS >10 m2 (strategic bomber)	RCS 10 m², bomber	detection/ tracking	42
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	RCS 2.5 m², fighter	detection (claim)	52
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)	52
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	RCS 1 m², ballistic missile	claimed (claim)	51
330 km	S-300V4 Detection range, 9S15 Bill Board. target size not stated by WEG	not stated	maximum	41
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)	52
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)	50
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)	52
300 km	S-300PM / S-300PS Detection range, 96L6E. target size not stated; export 96L6E	not stated	max (claim)	41
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)	42
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)	52
270 km	Nebo-SVU Detection range, 1 m2 target at 10 km altitude. RCS 1 m2; export sheet	RCS 1 m²	claimed (claim)	51
260 km	S-300PM / S-300PS Detection range, 64N6E. MiG-21 sized target; export 64N6E	not stated	detection range (claim)	41
250 km	P-18 Terek Detection range, P-18. Target type, size and altitude not stated; unmodernised P-18	not stated	maximum	53
200 km	Nebo-M Detection range, Podlet-K1. main mode, 10-200 km; target size not stated	not stated	maximum (claim)	51
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	53
175 km	S-300V4 Detection range, 9S19 High Screen. ballistic missile search; target size not stated	ballistic missile	maximum	41
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)	52
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	RCS 1-2 m²	detection range	40
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	40
5-150 km	Kasta 35N6 / 39N6 Coverage, range. 51U6 and 39N6E export sheets; 360 deg azimuth	not stated	coverage zone (claim)	51
150 km	S-300V4 Detection range, 9S32 Grill Pan. 2 m2 RCS target, manual mode (140 km automatic)	RCS 2 m²	maximum acquisition	41
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	RCS 1-2 m²	detection range	40
120 km	S-300PM / S-300PS Detection range, 36D6. 1 m2 target at 1,000 m altitude	RCS 1 m²	detection range (claim)	41
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	51
100 km	96L6 all-altitude acquisition radar Maximum target altitude. All-altitude mode, aerodynamic targets	aircraft	maximum (claim)	50
100 km	Nebo-SVU Detection range, 0.1 m2 target. RCS 0.1 m2; altitude not stated	RCS 0.1 m²	claimed (claim)	51
up to 100 km	R-381T Taran Detection range, R-381T aviation radio. Aircraft radio communications	aircraft	up to	65
90 km	S-300PM / S-300PS Detection range, 76N6. 0.02 m2 target at 500 m altitude	RCS 0.02 m²	detection range (claim)	41
75 km	Pantsir-S1 Detection range, Pantsir-SM radar. target size not stated	not stated	claimed (claim)	44
70 km	Buk-M1 / Buk-M2 / Buk-M3 Detection range, 9S36M mast radar (M3). cruise missile flying at 5 m	cruise missile	detection range	40
70 km	Nebo-U Detection range, fighter-type target, 500 m altitude. export 55G6-UE; fighter-type target at 500 m	fighter	detection (claim)	52
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	RCS 1 m², fighter	claimed (claim)	51
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)	RCS 2 m²	detection range	51
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	53

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
55 km	Kasta 35N6 / 39N6 Detection range, 39N6. aircraft at 100 m altitude, antenna raised to 50 m, probability 0.8	aircraft	detection range	51
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	RCS 2 m²	claimed (claim)	51
45 km	Oborona-14 Altitude coverage, low-beam mode. low-beam mode, elevation coverage 12 deg (17 deg high-beam)	not stated	coverage (claim)	52
at least 44 km	Kasta 35N6 / 39N6 Detection range, 35N6. MiG-23-type fighter at 100 m altitude, standard antenna	fighter	not less than	51
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)	51
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)	84
40 km	Gibka-S Detection range, 1L122 Garmon. Air targets up to 10 km altitude and 700 m/s	aircraft	up to (claim)	43
40 km	Verba Detection range, 1L122 Garmon radar. air targets at altitudes up to 10 km	aircraft	maximum (claim)	48
35 km	P-18 Terek Altitude, P-18. Target type not stated; unmodernised P-18	not stated	maximum	53
32 km	Kasta 35N6 / 39N6 Detection range, 51U6 Kasta-2E1. Export sheet; 2 m2 target at 100 m altitude, antenna phase centre 7 m	RCS 2 m²	claimed (claim)	51
32 km	Tor Detection range, surveillance radar (Tor-M2). air targets, size not stated	aircraft	detection (claim)	46
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)	55
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	45
30 km	Volnerez, Saniya and Sapfir vehicle anti-drone jammers Detection range, Sapfir. Drones; Sapfir; source unspecific on size	UAV	claimed (claim)	70
25-27 km	Tor Detection range, surveillance radar (Tor/Tor-M1). aircraft; WEG does not state the variant	aircraft	maximum	46
up to 25 km	RKhM CBRN reconnaissance vehicles Detection range, UAV reconnaissance complex (RKhM-9). Terrain survey distance of the onboard unmanned aerial complex	UAV	claimed (claim)	79
20 km	Bal Detection range, ARGS-35 seeker. Kh-35 active radar seeker, 8-12 GHz; target size not stated	not stated	maximum (claim)	36
20 km	ZSU-23-4 Shilka Detection range, RPK-2 (1RL33) radar. air target; may refer to the Sborka command post	aircraft	maximum	47
20 km	Sobolyatnik Instrumented range. 1L277 radar	not stated	instrumented (claim)	55
18 km	Tunguska Detection range, 1RL144 surveillance radar. E-band; low-flying search mode for targets at about 15 m (JREW02)	not stated	maximum	46
9-15 km	Tor Detection range, surveillance radar (Tor/Tor-M1), UAV. UAVs	UAV	maximum	46
12 km	Tor Detection range, surveillance radar (Tor/Tor-M1), helicopter. helicopters	helicopter	maximum	46
10 km	Barnaul-T Detection altitude, 1L122-1E. export 1L122-1E; 'at least 10 km'	not stated	maximum (claim)	84
10,000 m	BRM-1K Detection range, PSNR-5K (1RL133-1). target type not stated by WEG	not stated	maximum	12
10,000 m	2S38 Derivatsiya-PVO Detection range, optical-electronic sight. Thermal channel, 2.3 x 2.3 m target, 80 % probability	not stated	detection (claim)	43
10,000 m	Khrizantema-S Detection range, MMW radar. millimetre-wave guidance radar	not stated	acquisition	20
10 km	Nebo-M Minimum range, Podlet-K1. air targets, lower limit of stated 10-200 km detection zone	aircraft	minimum (claim)	51
10 km	Nebo-M Altitude coverage, Podlet-K1. maximum detection altitude	not stated	maximum (claim)	51
0.45 to 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	45
7,000 m	BMPT Terminator Detection range, thermal sight. thermal channel	not stated	detection (claim)	6
up to 6 km	Kasta 35N6 / 39N6 Altitude coverage. 51U6 and 39N6E export sheets	not stated	maximum (claim)	51
5,500 m	Khrizantema-S Detection range, EO day sight. day	not stated	acquisition	20
5,000 m	BMPT Terminator Detection range, gunner's sight. optical channel, day	not stated	detection (claim)	6
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)	15
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)	22
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)	84
3,000 m	BRDM-2 Detection range, TPKU-2B commander's sight. day; 5x periscope, target not stated	not stated	observation range	15
about 3 km	RKhM CBRN reconnaissance vehicles Detection range, PKhRDD-2B remote chemical detector (RKhM-6). Remote vapour detection; target and conditions not stated	not stated	claimed	79
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	7
2,600 m	T-80B/BV/BVM, T-80U Detection range, Agava thermal sight. T-80UK, night	not stated	acquisition	8
2.5 km	T-90 Detection range, Agava-2 thermal sight. target identification, night	not stated	identification	9
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)	18
1,750 m	T-80B/BV/BVM, T-80U Detection range, T-80U gunner night sight. night; classification 1,500 m	not stated	detection	8
1,500 m	9K114 Shturm-S Detection range, day sight. day only	not stated	day sight range	20
1.2-1.5 km	T-90 Detection range, Buran-PA night sight. target identification, night	not stated	identification	9

REACH	SYSTEM, DATUM AND CONDITION	TARGET	TERM	PAGE
1 km	Barnaul-T Minimum detection range, 1L122-1E. export 1L122-1E	not stated	minimum (claim)	84
1,000 m	BTR-80 Range, KPVT 14.5 mm, air target. air target; BTR-80 1PZ-2 sight; round not named	aircraft	sight range	16
400 m	T-62 Detection range, commander's night sight. IR night channel with OU-3GK searchlight (specs match TKN-3)	not stated	range	7
about 40 m	MT-LB Detection range, driver's TVN-2 IR periscope. night, with OU-3GK IR searchlight	not stated	approximate	14
Other				
200 km	Mohajer-6 Data link range, line of sight. Ground control station data link, direct line of sight	not stated	claimed (claim)	102
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)	85
50-80 km	BRM-1K Reconnaissance depth, BRM-1KM. Front-line reconnaissance, distance from own troops' positions	not stated	intended (claim)	12
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)	64
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	65
land route 8 to 10 km/h; minefield 5 km/h; 100 m water barrier in 5 min	IRM Zhuk Reconnaissance rate. WEG attributes these to unnamed Russian sources	not stated	typical	72
6,000 m	Khrizantema-S Range, 9M123-2 (radar). tandem HEAT, radar beam-riding	not stated	maximum (claim)	20
1,500 m	BMD-2 Range, 7.62 mm PKT. ball, coaxial	not stated	maximum effective (with sight adjustments)	10
400 m	Khrizantema-S Minimum range, 9M123-2 (radar). tandem HEAT, radar beam-riding	not stated	minimum (claim)	20

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	86
2,000 km	R-166 Artek Communication range, HF, stationary. R-166, at the halt	up to (claim)	86
450 km	R-149 command and staff vehicles Range, HF air–ground Prima, R-149MA1. HF to aircraft	maximum (claim)	83
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	86
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	86
350 km	R-145BM Chayka command and staff vehicle Range, R-130M dipole. HF, halted only, symmetrical dipole	range	82
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)	83
350 km	R-149 command and staff vehicles Range, HF, R-149BMR. HF band 1.5–30 MHz	maximum (claim)	83
350 km	R-166 Artek Communication range, HF, on the move. R-166, moving	up to (claim)	86
300 km	BMD–1KSh-A Range, HF radio R-130. Up to, with 4 m whip antenna; BMD–1KSh	maximum	82
15–300 km	R-149 command and staff vehicles Range, HF R-168–5KV, R-149AKSh-1. 1.5–30 MHz, 2 sets	maximum	83
220–250 km	1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex Radio range, R-111. 1V15 and 1V16, vehicle radio	stated	83
250 km	R-166 Artek Communication range, VHF, stationary. R-166, at the halt	up to (claim)	86
150 km	Merlin-VR Datalink range. Flight distance without loss of link; Russian serviceman's statement	claimed	99
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)	87
130 km	1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex Radio range, R-130MT. 1V15 and 1V16, HF vehicle radio	stated	83
120 km	R-149 command and staff vehicles Range, VHF air–ground Prima, R-149MA1. VHF to aircraft	maximum (claim)	83
100 km	Supercam S350 Range, command and telemetry radio link, radio line of sight to ground control station	maximum (claim)	100
75 km	R-145BM Chayka command and staff vehicle Range, R-130M zenith antenna. HF, halted or moving, symmetrical zenith–radiation antenna	range	82
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	86
70 km	Granat-1 / Granat-4 Data link range, Granat-4. photo, video and thermal data transmitted near real time	claimed (claim)	98
70 km	R-166 Artek Communication range, VHF, on the move. R-166, moving	up to (claim)	86
60 km	R-142N Deimos-N Communication range, R-111 VHF. R-142N, antenna on 11 m mast, at halt	communication range	86
60 km	R-149 command and staff vehicles Range, VHF, R-149BMR. VHF band 30–108 MHz	maximum (claim)	83
25–60 km	R-149 command and staff vehicles Range, VHF R-168–100U–2, R-149AKSh-1. 30–108 MHz, 2 sets	maximum	83
55 km	R-149 command and staff vehicles Range, VHF R-168–100UE–2 on mast, R-149MA1. halted, mast antenna	maximum (claim)	83
up to 55 km	Redut-2US Radio-relay range. radio-relay link at up to 155 Mbit/s	maximum	88
50 km	Lancet Range, IZdeliye 51. control link range, 5 kg warhead; ZALA website figure reported by RT	communication range (claim)	104
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	86
50 km	ZALA 421-16E Control range, video/radio link. 421-16E; average radius of video/radio link	radius of action (claim)	100
at least 40 km	P-240I-4 Pereselenets Communications range. medium and conditions INA	claimed (claim)	86
40 km	1B75 Penicillin Radio range, 1B75. to external subscribers	maximum (claim)	53
up to 40 km	PU-12M7 Data link range, PU-12M7 by radio. radio link to higher and subordinate posts	maximum (claim)	85
40 km	R-142N Deimos-N Communication range, R-123MT VHF. R-142N, antenna on 11 m mast, at halt	communication range	86
25–40 km	R-149 command and staff vehicles Range, VHF R-168–25U–2, R-149MA3. 30–108 MHz, 2 sets	maximum	83
35 km	R-145BM Chayka command and staff vehicle Range, R-111 3.4 m whip. VHF, halted or moving	range	82
up to 30 km	PU-12M7 Data link range, 9S737 to higher post. radio	maximum (claim)	85
up to 30 km	Redut-2US Wireless access range. broadband wireless access at up to 37 Mbit/s	maximum	88
20–25 km	1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex Radio range. 1V13 and 1V14, vehicle radios	stated	83
25 km	R-149 command and staff vehicles Range, VHF R-168–100UE–2, R-149MA1. on the move, vehicle antenna	maximum (claim)	83
20 km	Barnaul-T Data link range, 9S932-1. stationary; 10 km on the move [9S933: 3 km / 1 km]	communication range	84
20 km	R-145BM Chayka command and staff vehicle Range, R-123MT 4 m whip. VHF, halted or moving	range	82
6–20 km	R-149 command and staff vehicles Range, UHF R-168–MRA, R-149MA3. 1.5–1.75 GHz data radio	maximum	83
17 km stationary, 8 km moving	Gibka-S Radio link range, 9S937 to 9A332. Guaranteed range, command vehicle to launcher vehicles	guaranteed (claim)	43

TABLES

REACH	SYSTEM, DATUM AND CONDITION	TERM	PAGE
up to 15 km	PU-12M7 Data link range, PU-12M7 by field cable. field telephone cable	maximum (claim)	85
up to 8 km	Strelets Range, R-853-V2M to aircraft. Target designation data to aircraft, no relay	claimed (claim)	89
6 km	PRP-4A Argus / PRP-4M Deytery Dismounted observation post, distance from vehicle. dismounted observation post	maximum	85
6 km	R-142N Deimos-N Communication range, R-809M2 air band. R-142N, discone on mast, to aircraft	communication range	86
up to 5 km	PU-12M7 Data link range, 9S737 to fire units. radio	maximum (claim)	85
3-5 km	Strelets Range, PDU-4 laser rangefinder. Operating range ('гальность геучмвня'); target type not stated	operating range (claim)	89
about 1.5 km	Strelets Range, squad radio network. Line of sight; each set acts as relay, so reach grows	claimed (claim)	89
up to 30 m	R-416GM Granit-M radio relay station Mast height, raised. Ukrainian border guard description of R-416G-MS	sometimes reaches (claim)	87

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)	59
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)	63
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)	58
up to 250 km	Krasukha-2 / Krasukha-4 Krasukha-2: jamming range, air target: AEW aircraft radar; target altitude not stated	up to	58
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	58
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)	53
50 km or more	R-330M1P Diabazol Jamming range, user equipment installed on aircraft. R-330Zh Zhitel station; airborne equipment	claimed (claim)	64
50 km or more	R-330Zh Zhitel Jamming range, airborne users. User equipment installed on aircraft	claimed minimum (claim)	65
30 x 30 km	R-330M1P Diabazol Jamming range, complex. Area figure for emission-source jamming; target type not stated by source	claimed (claim)	64
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)	68
20–25 km	R-330M1P Diabazol Jamming range, ground cellular and satellite user equipment. R-330Zh Zhitel station; ground-based consumer equipment	claimed (claim)	64
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	68
25 km	R-330Zh Zhitel Jamming range. Ground user equipment (WEG gives no target type; matches manufacturer's ground-user figure)	maximum effective	65
22 km	2S19 Msta-S Range, jammer round. 3RB30 radio jamming projectile; jamming radius 700 m	range (claim)	29
up to 20 km	Palantin Jamming range, UAV control links. air target: UAV radio control links	maximum (claim)	63
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)	62
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)	67
5 km	Volnoretz, Saniya and Sapfir vehicle anti-drone jammers Jamming range, tactical drones (Sapfir). Air target (drones); Sapfir; ground control stations also jammed	maximum (claim)	70
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)	67
3 km	Infaua Jamming range, target not stated. WEG 'Disruption Range'; target and conditions not given	disruption range	68
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)	70
up to 2,000 m	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)	67
1,500 m	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)	70
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)	70
up to 1,000 m	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)	67
1 km	Volnoretz, Saniya and Sapfir vehicle anti-drone jammers Jamming range, FPV drone (Saniya). Air target (FPV drone); Saniya; depends on weather, terrain, drone	claimed (claim)	70
600 m	Volnoretz, Saniya and Sapfir vehicle anti-drone jammers Jamming range, drone control link (Volnoretz). Air target (drone); Volnoretz; Russian claim	claimed (claim)	70

Table 3i. Reach of UAVs

How far from its control point a UAV operates, and at what altitude.			
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	102
1,350 km	Geran-2 Range, Geran-2. 50 kg warhead; leaked Alabuga documents; see mobility data for alternatives	reported (claim)	103
1,350 km	Geran-2 Flight range, Geran-2. standard 50 kg warhead; figure from leaked Alabuga (manufacturer) documents	reported	103
700–1,000 km	Geran-2 Flight range, Geran-1. estimate; DIA estimate 900 km	estimated	103
up to 1,000 km	Geran-2 Flight range, Geran-3. U-series, Telefly J180 turbojet; Ukrainian intelligence	operational	103
650 km	Geran-2 Flight range, Geran-2 with BCh-90. 90 kg warhead, smaller fuel tank; leaked Alabuga documents	reported	103
600 km	Gerbera Flight range. without payload; shorter with warhead; some have a second fuel tank in the nose for extended range	maximum	103
600 km	Merlin-VR Flight range. Kyiv Post, basis and source not given	claimed	99
600 km	Orlan-10 Flight range, Orlan-10 autonomous. pre-programmed flight without radio link	maximum	99
300 km	Orlan-10 Flight range, Orlan-30 autonomous. autonomous mode, export Orlan-30	maximum	99
250 km	Forpost Operating range. directional antenna; 150 km with omnidirectional antenna	range of employment	101
250 km	Orion Radius of action. without relay UAV; Orion-E (WIKIRU); HUR claim (UPDIU)	up to	102
at least 240 km	Supercam S350 Flight range. total flight distance per maker, not radius of action	maximum	100
200 km	Italmas Range, one-way attack. claimed (Rossiya 1 TV; over 200 km); warhead not specified	claimed (claim)	104
200 km	Italmas Flight range. claimed, over 200 km per Rossiya 1 TV; Ukrainian sources call the claim possible propaganda	claimed	104
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	100
150 km	Orlan-10 Flight range, Orlan-10 under radio control. maximum link range with ground antenna, Orlan-10M	maximum	99
120 km	Korsar Flight range, radius from control post. terrain reconnaissance mission	claimed	101
120 km	Leer-3 Practical range, Orlan-10 from control vehicle. radius of UAV employment from the control point	up to (claim)	62
120 km	Orlan-10 Flight range, Orlan-30 under radio control. data-link range, export Orlan-30	maximum	99
100 km	Granat-1 / Granat-4 Range of action, Granat-4. flight range per Kalashnikov	claimed (claim)	98
over 100 km	Orlan-10 Practical range, Leer-3 EW tasks. distance from unit deployment site, Russian MoD statement, after Feb 2022	practical (claim)	99
about 70 km	Lancet Range, 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	practical	104
70 km	Supercam S350 Range, video link. standard video channel to ground control station	maximum (claim)	100
about 70 km	Supercam S350 Practical range, video link. good picture and link, operator's account 2024-08	practical	100
50 km	Eleron-3SV Flight range, autonomous. no link, imagery recorded on board	maximum	98
up to 50 km	Molniya Range, Molniya-2 with warhead. Molniya-2; MoD figure, control link not stated	maximum (claim)	105
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	99
over 40 km	FPV drones Range, Provod fibre-optic. spool length; Ovod centre statement via TASS, Aug 2026	claimed (claim)	105
40 km	Lancet Range, Lancet-3 (Izdeliye 52), flight range with 3 kg warhead	range	104
12 to 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)	102
about 40 km	Molniya Range, Molniya-1 with warhead. Kharkiv regional prosecutor's office; manual FPV control, no GPS	maximum (claim)	105
40 km	Takhion Range, radius of action. Radius of action; kalashnikov.club: within direct radio line of sight	claimed (claim)	100
40 km	Takhion Radius of action. kalashnikov.club: within direct radio line of sight	claimed	100
25 km	Eleron-3SV Control range, real-time link. real-time video over data link	maximum	98
25 km	KUB-BLA Range, KUB HE-frag warhead. radius of action, KUB-E export figure (Kalashnikov via TASS)	radius (claim)	104
20 km	FPV drones Range, KVN fibre-optic. fibre-optic spool; figure 'according to Russian resources', Jan 2025	maximum (claim)	105
15 km	Granat-1 / Granat-4 Range, Granat-1 photo. line of sight, still camera	maximum (claim)	98
7–10 km	FPV drones Range, VT-40. munitions of 1.3–3 kg	claimed (claim)	105
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	105
10 km	Granat-1 / Granat-4 Range, Granat-1 video. line of sight, video camera	claimed (claim)	98
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)	102
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	101
8 km	Forpost Range, KAB-20. released from high altitude; KAB-20L laser or KAB-20S satellite guidance	maximum stand-off	101

REACH	SYSTEM, DATUM AND CONDITION	TERM	PAGE
7,500 m	Orion Ceiling. Orion-E developer figure (WIKIRU); Inokhodets per RT, Russian state media	maximum	102
up to 7 km	Geran-2 Ceiling, Geran-3	maximum	103
6,000 m	Forpost Service ceiling, Forpost-R		101
6000 m	Orlan-10 Ceiling, Orlan-10. above sea level	maximum	99
5,400 m	Mohajer-6 Maximum altitude. 'Open data' figure in Ukrainian press	maximum	102
5100 m	Korsar Ceiling	maximum	101
up to 5,000 m	Leer-3 Altitude, Orlan-10. operating altitude	up to (claim)	62
5 km	Merlin-VR Service ceiling. Claimed; operating altitude 450-2500 m per PLANDIY	maximum	99
150-5,000 m	Supercam S350 Operating altitude		100
60-4,000 m	Geran-2 Flight altitude, Geran-2. Ukrainian General Staff handbook	operating (claim)	103
4,000 m	Granat-1 / Granat-4 Ceiling, Granat-4. above sea level; working band 300-2,000 m	maximum (claim)	98
4,000 m	Takhion Ceiling. Minimum flight height 50 m (WRU)	maximum	100
3,600 m	ZALA 421-16E Altitude, maximum. 421-16E	maximum (claim)	100
3,500 m	Granat-1 / Granat-4 Ceiling, Granat-1. working band 40-1,500 m above ground	maximum (claim)	98
3500 m	Orlan-10 Ceiling, Orlan-30. above sea level, export Orlan-30	maximum	99
1,219 to 3,048 m	Mohajer-6 Release altitude, Qaem-series guided bomb. Release height 4,000 to 10,000 ft, same Iranian statement	claimed (claim)	102
3,000 m	Eleron-3SV Operating altitude, Eleron-3SV. above launch point	maximum (claim)	98
60-3,000 m	Lancet Altitude, flight. Lancet type, Ukrainian General Staff figure		104
100-2,500 m	KUB-BLA Altitude, KUB-10E. flight altitude band; export designation	operating (claim)	104
2200 m	Zastava Ceiling. above sea level	maximum	101
700-2,000 m en route; down to 200 m near target	Geran-2 Flight altitude, Geran-2 observed. Ukrainian General Staff handbook, observed 2022-23; as low as 20 m along rivers and roads	practical (claim)	103
500-1,500 m	ZALA 421-16E Altitude, operating. current Z-16E	operating altitude range (claim)	100
up to 1 km	Gerbera Operating altitude. Espresso report via Kyiv Post, 2025-02	maximum	103
150-1,000 m	KUB-BLA Altitude, KUB HE-frag warhead. flight altitude band, KUB-E export figure (Kalashnikov via TASS)	operating (claim)	104
up to 300-400 m	Molniya Operating altitude. Molniya-2, serviceman in MoD video		105
20-50 m	FPV drones Flight altitude, fibre-optic types. reported by a Ukrainian drone commander	practical	105

Table 3j. 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
up to 100 km	S-400 Triumf Fire unit distance from command post. 98Zh6E fire unit from 55K6E, export composition	maximum (claim)	42
5 to 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	100
15 to 30 km	Borisoglebsk-2 Employment distance from line of contact. Donbas 2014-15, with Leer-3, Zhitel, R-934UM	practical	60
15-30 km	R-330M1P Diabazol Employment distance from line of contact. R-330Zh and R-934UM components, Donbas 2014-15	practical	64
25 km	BM-27 Uragan Distance from front line, observed. one launcher hit by FPV drone, reported c. 2024-07	practical	24
about 15 km from enemy positions	2S4 Tyulpan Employment distance. reported MoD video, Ukraine, Nov 2022	practical (claim)	27
5-10 km behind forward edge	Tor Deployment distance, Tor-M1 in defence. first defensive position; 5-10 km between vehicles	practical	46
1-3 km	Rtut-BM Employment distance from line of contact. Supporting Infauna, Donbas 2014-15	practical	69
1.5 to 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	11
1 km	Uran-6 Remote control distance. by radio from a control panel	claimed maximum (claim)	76
up to 100 m	9K111 Fagot / 9K111-1 Konkurs Remote control distance, Konkurs-M kit. wired remote control of launcher	(claim)	19

Table 3k. 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		
PMP heavy folding pontoon bridge park	227 m	72
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	73
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	
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, 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	
	50 t	
Load class, MTU-72		
Breaching and mine clearing		
BMR-3M	2 tracks x 0.8 m	74
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	75
IMR-2 / IMR-2M / IMR-3M combat engineer vehicle	6 km/h	
Mine plough lane clearing, IMR-2M, AT mines, lane clearing rate (WEG term)		
UR-77 Meteorit	200 to 500 m	75
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	76
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	76
Uran-6	1.6 m	
Clearing width. flail fitted		
Clearing depth. flail fitted	35 cm	
Mine laying		
BMR-3M	KMT-7 (or KMT-8)	74
Mine roller trawl. BMR-3MA: TMT-S		
IRM Zhuk	RShM-2 wide-span detector; ferrous mines to 0.3 m depth in a 3.6 m lane	72
Mine detection. antitank mines with ferromagnetic parts		
ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer	15 km	76
Range, ISDM mine rocket. cassette rocket with AP or AT mines		
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	
TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	10-40 km/h	79
Speed while laying smoke. TDA-2K		
UMZ	11,520 / 720 / 180	77
Mines per load, PFM-1S / POM-2 / PTM-3. basic load by mine type; one source gives 180 to 11,520 range		
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	350 to 450 m3/h	73
Earthwork capacity, filling ditches and craters. ditch digging 200 to 250 m3/h		
BREM and BTS armoured recovery vehicles	3.1 m	77
Dozer blade width, BREM-1		
BTM-3, MDK-3, PZM-2 and EOv earthmoving and trenching machines	up to 1.5 m	74
Trench depth, BTM-3. soils up to category IV, unfrozen		
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	2 t	75
Boom lifting capacity		
Boom reach. IMR-2M	8.4 m	
Dozer capacity. IMR-2 earthmoving	200 to 250 m3/h	76
Uran-6	1.8 m	
Bulldozer blade width		
Transport across water		

SYSTEM, DATUM AND CONDITION	CAPABILITY	PAGE
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	12 t	73
Payload on land, PTS-4		
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	

Table 4. Mobility and time into action

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
1B75 Penicillin	WH-AT	INA	INA	5 min	INA	53
1K148 Yastreb-AV	WH-AT	INA	INA	INA	INA	53
1V12 (1V13, 1V14, 1V15, 1V16) artillery fire control complex	TR-A	14.8 t	Amphibious	INA	INA	83
1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles	WH-AT	10.1 t	10 km/h	10 min	INA	84
2A36 Giatsint-B 152 mm towed gun	TW	9,760 kg	INA	4 min	4 min	32
2A65 Msta-B	TW	7,000 kg	INA	2 to 2.5 min	2 min	33
2B14 Podnos	MP	42 kg	INA	1.3 min	INA	33
2B9 Vasilek	TW	632 kg	INA	1.5 min	1.5 min	33
2S1 Gvozdika	TR-A	15.7 t	amphibious	3 min	INA	26
2S12 Sani	WH-AT	11,020 kg	0.8 m	3 min	3 min	29
2S19 Msta-S	TR	42 t	1.2 m unprepared; 5 m prepared	1.5 min	1.5 min	29
2S23 Nona-SVK	WH-AT-A	14.5 t	10 km/h	1 min	1 min	29
2S25 Sprut-SD	TR-A+AD	18 t	10 km/h	INA	INA	31
2S3 Akatsiya	TR	27.5 t	1 m	0.5 min	INA	27
2S31 Vena	TR	19,500 kg	10 km/h	20 s to first round at unplanned target; 1 min after fire manoeuvre	INA	30
2S34 Khosta	TR-A	16 t	INA	INA	INA	30
2S35 Koalitsiya-SV	TR	48-55 t	2.1 m	1.5 min	under 1 min	31
2S38 Derivatsiya-PVO	TR-A	21.5 t	INA	INA	INA	43
2S4 Tyulpan	TR	27.5 t	1.0 m	25 min	25 min	27
2S40 Floks	WH-AT	20 t	1.75 m	INA	INA	31
2S5 Giatsint-S	TR	28.2 t	1.05 m	less than 2 min	less than 2 min	28
2S7 Pion / 2S7M Malka	TR	46,500 kg	1.2 m	5-6 min	3-5 min	28
2S9 Nona-S	TR-A+AD	8.7 t	9 km/h	5-7 min (2S9, 2S9-1); 0.5-0.9 min (2S9-1M)	INA	28
96L6 all-altitude acquisition radar	WH-AT	INA	1.3 m	5 min	5 min	50
9K111 Fagot / 9K111-1 Konkurs	MP+AD	22.5 kg	10 km/h	25 s or less	INA	19
9K114 Shturm-S	TR-A	12.3 t	4.5 km/h	INA	INA	20
9K120 Svir / 9K119 Refleks / 9K119M Refleks-M	NA	17.2 kg	INA	INA	INA	20
9K79-1 Tochka-U	WH-AT-A	18,145 kg	8 km/h	16 min	1.5 min	35
Aleut and Plastun articulated and light tracked carriers	TR	11 t	INA	INA	INA	10
ARK-1M Rys	TR	15.7 t	6 km/h	5 min	5 min	54
ARS-14, TMS-65 and TZ-74 decontamination vehicles	WH-AT	15,350 kg	1.75 m	6-8 min	10-12 min	78
Bal	WH-AT	INA	1.4 m	10 min	INA	36
Barnaul-T	TR-A	11,000 kg	5 km/h	5 min	7 min	84
Bastion-P	WH-AT	41 t	1.4 m	5 min	INA	37
BAT-2	TR	39.7 t	1.3 m	INA	INA	73
BM-21 Grad 122 mm MRL	WH-AT	13.7 t	1.5 m	3 min	2 min	24
BM-27 Uragan	WH-AT	20 t	1.2 m	3 min	3 min	24
BM-30 Smerch	WH-AT	43.7 t	1.1 m	3 min	3 min	25
BMD-1KSh-A	TR-A	8.7 t	10 km/h	INA	INA	82
BMD-2	TR-A+AD	8,225 kg	10 km/h	INA	INA	10
BMD-4M	TR-A+AD	13.5 t	10 km/h	INA	INA	11
BMO-T	TR	43.9 t	1.2 m	INA	INA	11
BMP-1	TR-A	13,500 kg	7 km/h	INA	INA	11
BMP-1KSh command and staff vehicle	TR	13 t	7 km/h	INA	INA	82
BMP-2	TR-A	14,300 kg	amphibious	INA	INA	12
BMPT Terminator	TR	48 t	1.2 m unprepared; 1.8 m prepared; 5 m with snorkel	INA	INA	6
BMR-3M	TR	48 t	1.2 m unprepared; 5 m prepared	INA	INA	74
Borisoglebsk-2	TR-A	11,000 kg	5 km/h	15 min or less	15 min or less	60
BPM-97, Spartak, Patrul, Sarmat, Akhmat and other light armoured cars	WH-AT	10.5 t	1.75 m	INA	INA	15

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
BRDM-2	WH-AT-A	7.0 t	10 km/h	INA	INA	15
BREM and BTS armoured recovery vehicles	TR	41 t	1.2 m	INA	INA	77
BRM-1K	TR-A	13.3 t	7 km/h	INA	INA	12
BTM-3, MDK-3, PZM-2 and EOY earthmoving and trenching machines	TR	27.7 t	1.5 m	5-7 min	INA	74
BTR-80	WH-AT-A	13,600 kg	9 km/h	INA	INA	16
BTR-90 Rostok	WH-AT	22,000 kg	amphibious, no preparation; 9 km/h afloat	INA	INA	17
BTR-D	TR+AD	8,200 kg	10 km/h	INA	INA	13
BTR-MDM Rakushka	TR-A+AD	13.2 t	10 km/h	INA	INA	13
Buk-M1 / Buk-M2 / Buk-M3	TR	34 t	1 m	5 min	5 min	40
D-20	TW	5.56 t	0.5 m	2.5 min	2.5 min	34
D-30	TW+AD	3,200 kg	0.5 m	1.5 min	3.5 min	34
Dzyudoist	WH-AT	INA	INA	INA	INA	61
Eleron-3SV	AIR-FW	5.3 kg	INA	10 min	INA	98
Forpost	AIR-FW	500 kg	INA	INA	INA	101
FPV drones	AIR-RW	INA	INA	INA	INA	105
Garmon	MP+AD	150 kg	INA	5 min	5 min	50
GAZ-66 and GAZ-3308 Sadko light 4x4 trucks	WH-AT+AD	3,440 kg	1.2 m	INA	INA	92
Geran-2	AIR-FW	200 kg	INA	INA	INA	103
Gerbera	AIR-FW	about 18 kg	INA	INA	INA	103
Gibka-S	WH-AT	7,200 kg	1.2 m	not more than 3 minutes	INA	43
Granat-1 / Granat-4	AIR-FW	30 kg	INA	15 minutes	INA	98
Groza-04K, Silok, Serp, Strizh-3 and Chistyulya portable anti-drone jammers	MP	up to 8 kg	INA	INA	INA	67
Igla / Igla-1 / Igla-S	MP+AD	13.9 kg	INA	13 s	30 s	47
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	75
Infauna	WH-AT-A	13,614 kg	9 km/h	INA	INA	68
IRM Zhuk	TR-A	18,000 kg	10 km/h	3 min	INA	72
ISDM Zemledeliye remote mine-laying system; GMZ-3 tracked minelayer	WH-AT	INA	1.8 m	INA	INA	76
Iskander-M	WH-AT	42.85 t	1.4 m	16 min to first launch from the march; 4 min from highest readiness	INA	36
Italmas	AIR-FW	50 kg	INA	INA	INA	104
KamAZ-4310, -5350 and -6350 Mustang military trucks	WH-AT	9.2 t	1.75 m	INA	INA	93
Kasta 35N6 / 39N6	WH-AT	12,500 kg	1.75 m	20 min	20 min	51
Khrizantema-S	TR-A	18,700 kg	amphibious, 10 km/h	INA	INA	20
Kornet	MP	63.7 kg	INA	under 1 min	INA	21
Korsar	AIR-FW	200 kg	INA	INA	INA	101
Krasukha-2 / Krasukha-4	WH-AT	39,000 kg	1.75 m	less than 20 min	less than 20 min	58
KUB-BLA	AIR-FW	8 kg	INA	20 min	10 min or less	104
Kurier / Omich-2 / Bogomol-7V ground robotic complexes	TR+AD	250 kg	INA	3 to 5 minutes	INA	98
Lancet	AIR-FW	12 kg	INA	under 1 min	INA	104
Leer-2	WH-AT	7,800 kg	1.3 m	INA	INA	61
Leer-3	WH-AT	INA	INA	30 min	INA	62
Lesochek	MP	INA	INA	INA	INA	68
M-46	TW	8.45 t	INA	6 min	7 min	34
MAZ-537, KZKT-7428 and KamAZ-65225 tank transporters and tractor trucks	WH-AT	21.6 t	1.3 m	INA	INA	95
Merlin-VR	AIR-FW	6.5 kg	INA	INA	INA	99
Metis	MP+AD	10.2 kg	INA	15-20 s	15-20 s	22
ML-20, D-1, M-30, BS-3 and D-44 reactivated WWII-era guns	TW	2,450 kg	INA	less than 2 min	INA	35
Mohajer-6	AIR-FW	600 kg	INA	INA	INA	102
Molniya	AIR-FW	10 kg	INA	INA	INA	105
Moskva-1	WH-AT	12,450 kg	1.75 m	45 min	INA	58
MT-12 Rapira	TW	3,100 kg	INA	2 min	INA	32
MT-LB	TR-A	11,900 kg	5-6 km/h	INA	INA	14
Murmansk-BN	WH-AT	up to 35 t	INA	72 h	INA	59

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
Nebo-M	WH-AT	INA	INA	12 m	15 min	51
Nebo-SVU	TW	INA	INA	20 min	20 min	51
Nebo-U	TW	INA	INA	22 h	INA	52
Oborona-14	TW	INA	INA	24 h	INA	52
Orion	AIR-FW	1,000 kg	INA	INA	INA	102
Orlan-10	AIR-FW	18 kg	INA	under 15 min	INA	99
P-18 Terek	WH-AT	INA	INA	45 min	INA	53
P-240I-4 Pereselenets	WH-AT	INA	INA	INA	INA	86
Palantin	WH-AT	INA	INA	about 30 min	INA	63
Pantsir-S1	WH-AT	14.85 t	1.8 m	3 min	INA	44
PMP heavy folding pontoon bridge park	WH-AT	INA	INA	7 m of bridge per minute	a few minutes	72
Pole-21	FX	INA	INA	INA	INA	68
Polyana-D4	WH-AT	13.2 t	1.2 m	35 min	35 min	84
PRP-4A Argus / PRP-4M Deytery	TR-A	13.8 t	7 km/h	2 min	INA	85
PTS-4 tracked amphibious transporter and PMM-2 self-propelled amphibious ferry	TR-A	33.1 t	INA	5 min	INA	73
PU-12M7	WH-AT-A	13.6 t	10 km/h	3 min	INA	85
R-142N Deimos-N	WH-AT	5.97 t	0.8 m	INA	INA	86
R-145BM Chayka command and staff vehicle	WH-AT-A	10.3 t	10 km/h	INA	INA	82
R-149 command and staff vehicles	WH-AT-A	15,000-15,050 kg	10 km/h	10 min on the move / 30 min halted	INA	83
R-161 Poisk HF radio station	WH-AT	10430 kg	INA	1 hour	INA	86
R-166 Artek	WH-AT	14,840 kg	INA	5 min	INA	86
R-330B Mandat-B and R-934BMV	WH-AT	11,000 kg	INA	30 min	INA	63
R-330M1P Diabazol	WH-AT	INA	INA	30 min or less	INA	64
R-330Zh Zhitel	WH-AT	INA	INA	40 min or less	40 min or less	65
R-381T Taran	TR	15,550 kg	INA	10 min	INA	65
R-410-7.5, R-412A/AM and R-417 tropospheric scatter radio stations	WH-AT	INA	INA	INA	INA	87
R-416GM Granit-M radio relay station	WH-AT	INA	INA	INA	INA	87
R-439 Legenda-2	WH-AT	132.5 kg	INA	15 min	INA	87
RB-109A Bylina	WH-AT	INA	INA	INA	INA	66
Redut-2US	WH-AT	INA	INA	INA	INA	88
REM-KL, KT-L, MTP-A2.1 and MTO wheeled recovery and repair vehicles	WH-AT	18.25 t	1.2 m	INA	INA	77
Repellent-1	WH-AT	23,650 kg	1.0 m	15 min	INA	68
RKhM CBRN reconnaissance vehicles	WH-AT-A	13.6 t	9 km/h	INA	INA	79
Rtut-BM	TR	INA	INA	10 min or less	INA	69
S-300PM / S-300PS	WH-AT	INA	INA	5 min	5 min	41
S-300V4	TR	50 t	1.2 m	5 min	5 min	41
S-350 Vityaz	WH-AT	22 t	1.2 m	5 min	5 min	42
S-400 Triumf	WH-AT	INA	INA	5-10 min	INA	42
S-60	TW	4,660 kg	1.5 m	3 to 5 min	6 to 7 min	44
Shipovnik-Aero	WH-AT	INA	INA	20-40 min	INA	66
SNAR-10 / SNAR-10M1 Leopard	TR	12.7 t	INA	5 min	INA	54
Sobolyatnik	MP	36 kg	INA	A few minutes (observed as 5 minutes, Jan 2024)	A few minutes	55
Sosna	TR	INA	INA	INA	INA	45
Strela-10 and Osa short-range SAM	TR	12.1 t	1.2 m	3 to 5 min	3 to 5 min	45
Strelets	MP+AD	2.4 kg	INA	INA	INA	89
Stupor, Garpun-3 and LPD-801 handheld jammer guns	MP	4.1 kg	INA	INA	INA	70
Supercam S350	AIR-FW	15.5 kg	INA	15 min	INA	100
Svet-KU	WH-AT	INA	INA	10 min	INA	67
T-54 / T-55	TR	41,000 kg	1.4 m unprepared; 5.5 m with snorkel	INA	INA	6
T-62	TR	40,000 kg	1.40 m	INA	INA	7
T-64A/B/BV	TR	39.5 t	1.8 m unprepared; 5.0 m with snorkel	INA	INA	7

TABLES

SYSTEM	CODE	WEIGHT	FORDING	INTO ACTION	OUT OF ACTION	PAGE
T-80B/BV/BVM, T-80U	TR	43.7 t	1.8 m unprepared; 5.0 m with snorkel	N/A	INA	8
T-90	TR	46 t	1.2 m	INA	INA	9
Takhion	AIR-FW	25 kg	INA	INA	INA	100
TDA-2K, TDA-3 and TDM-2K smoke generator vehicles	WH-AT	15.75 t	1.75 m	5.5 min	INA	79
Tigr and Vodnik armoured cars	WH-AT	6 t	1.2 m	INA	INA	18
Tirada-2	WH-AT	INA	INA	INA	INA	59
TMM-3 truck-mounted scissors bridge and MTU-72 armoured vehicle-launched bridge	WH-AT	19,500 kg	1.0 m	72 min	8 min	73
Tobol	FX	INA	INA	INA	INA	60
Tor	TR	32 t	1.0 m	less than 3 min	less than 5 min	46
Torn	WH-AT	INA	INA	15 min or less	INA	67
Tornado-G	WH-AT	14 t	1.75 m	2 min	3 min	25
TOS-1A Sointsepek	TR	44.3 t	1.2 m	90 s from halt to fire	INA	26
Tunguska	TR	34 t	1.0 m	not more than 5 min	not more than 5 min	46
Typhoon-K, Typhoon-U, Typhoon-VDV and Linza armoured trucks	WH-AT	13,700 kg	1.5 m	INA	INA	19
UAZ-469, UAZ-452 and UAZ-39094 utility vehicles	WH-AT	1,650 kg	0.5 m	INA	INA	93
UMZ	WH-AT	10,000 kg	1.4 m	INA	INA	77
UR-77 Meteorit	TR-A	15.5 t	5 km/h	INA	30 to 40 min	75
Uragan-1M	WH-AT	40 t	1.4 m	3 min	3 min	26
Ural-6370, -63706 and -532301 trucks (newer Ural family)	WH-AT	33,000 kg	1.8 m	INA	INA	94
Uran-6	TR	6 t	INA	INA	INA	76
Verba	MP	18 kg	INA	12 s or less	INA	48
Volnarez, Saniya and Sapfir vehicle anti-drone jammers	NA	INA	INA	INA	INA	70
Voronezh-DM	FX	INA	INA	INA	INA	56
VTS Ladoga	TR	42 t	1.2 m	INA	INA	83
ZALA 421-16E	AIR-FW	8-10.5 kg	INA	INA	INA	100
Zastava	MP	5.5 kg	INA	20 min	10 min	101
ZIL-131 and KrAZ-255/260 legacy 6x6 trucks	WH-AT	10,425 kg	1.4 m	INA	INA	94
Zoopark-1 / Zoopark-1M	TR	38.1 t	INA	5 min	5 min	55
ZSU-23-4 Shilka	TR	20.5 t	1.0 m	INA	INA	47
ZU-23-2	TW+AD	0.95 t	INA	15-20 min	35-40 min	47

Table 5. Source register

Codes are printed at the foot of each entry. Web sources are coded by publisher and numbered: 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 Military, MISS missliery.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.	
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_14942.pdf	AI12 Что за rossiysskaya sistema REB Tirada-2S otklyuchila Starlink na Ukraine?. Argumenty i Fakty, 2022-10. https://aif.ru/society/army/chto_zh_rossiysskaya_sistema_reb_tirada-2s_otklyuchila_starlink_na_ukraine
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	AI13 Что за роботы-саперы «Уран-6» проводят разминирование на Украине?. Argumenty i Fakty, 2022-05. https://aif.ru/society/army/chto_zh_roboty-sapery-uran-6_provodyat_razminirovanie_na_ukraine
ACADEM Многозвучная «НОНА» [Энциклопедия манков, from Oruzhie no. 7, 1999]. dic.academic.ru, 1999/2010. https://dic.academic.ru/dic.nsf/enc_tech/4376/%D0%9C%D0%BD%D0%BE%D0%B3%D0%BE%D0%B8%D0%BA%D0%BD%D0%BD%D0%BF	AI14 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
ACONF Russian Command Staff Vehicle R-149MA1. armedconflicts.com. https://www.armedconflicts.com/Russian-Command-Staff-Vehicle-R-149MA1-t252192	AI16 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
ACONF145 R-145BM (armedconflicts.com). Armed Conflicts, 2005. https://www.armedconflicts.com/topic/view/28534	AI17 Что за противокорабельные комплексы «Бал» впервые применили на Украине?. Argumenty i Fakty (aif.ru), 2022-04-21. https://aif.ru/politics/russia/chto_zh_protivokorabelnye_kompleksy_bal_vpervye_primenili_na_ukraine
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	AI18 Подарок для десанта. Новая самоходка «Вена» громит танкистскую броню на СВО. Argumenty i Fakty, 2023. https://aif.ru/society/army/podarok_dlya_desanta_novaya_samohodka_vena_gromit_tanokistskuyu_bronyu_na_svo
AEX17 V podrazdelenii REB postupili novyye komplekсы Krasukha-20 i Moskva-1. AEX.RU (relaying Russian MoD), 2017-08-31. https://www.aex.ru/news/2017/08/31/17451/	AINF «Борисоглебск-2»: про ворожий комплекс радиоэлектронной борьбы. ArmyInform (Ukrainian MoD), 2022-04-26. https://armyinform.com.ua/2022/04/26/borysoglebsk-2-pro-vorozhij-kompleks-radioelektronnoy-boroby/
AG1 1B12, Командная машина. Army Guide. https://www.army-guide.com/rus/product/4755.html	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
AG2 2C43 Мальва, Самоходная гаубица. Army Guide. https://www.army-guide.com/rus/product.php?prodID=6099&printmode=1	AINF2 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/
AG3 2S4 Tyulpan (Samokhodnyy minomet). Army Guide. http://www.army-guide.com/rus/product1805.html	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
AG4 BRDM-2 (Reconnaissance Vehicle). army-guide.com. https://www.army-guide.com/eng/product952.html	AINF4 ЗПК C-350 «Витязь»: цо про нього відома. ArmyInform (Ukrainian MoD), 2022-08-17. https://armyinform.com.ua/2022/08/17/zrk-s-350-vytyaz-shho-pro-nogo-vidomo/
AG5 Kapustnik-B, Command vehicle. Army Guide. https://www.army-guide.com/eng/product.php?prodID=2383&printmode=1	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/
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	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/
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	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-artudaru-po-tehnici-ukupantiv-znyshlyl-ekskluzyiv-bojovyj-artkhylniy-vsyudhyd/
AIF Что за новейшую машину разминирования БМР-3М «Вепрь» применили в Мариуполе?. Argumenty i Fakty, 2022-09-07. https://aif.ru/politics/world/chto_zh_noveshuyu_mashinu_razminirovaniya_bmr-3_m_vepr_primenili_v_mariupole	AINF23 Another Russian tracked novelty burned in Zaporizhzhia (Ukr.). ArmyInform (Ukrainian MoD), 2023-11-23. https://armyinform.com.ua/2023/11/23/shhe-odnu-rojsijsku-gusenychnu-novynku-spalyl-na-zaporizhzhii/
AI11 Боевая работа артиллерии ВДВ в зоне СВО. Argumenty i Fakty (MoD video). https://aif.ru/politics/gallery/boevaya_rabota_artillerii_vdv_v_zone_svo	AINF24 Rare Russian Svet-KU complex turned into scrap. ArmyInform (Ukrainian MoD), 2024-06-04. https://armyinform.com.ua/2024/06/04/ridkisyj-kompleks-rosiyan-svyet-ka-peretvorivsya-na-bruh/
AI12 Что за комплекс REB Palantin primenyayut na Ukraine. Argumenty i Fakty. https://aif.ru/society/army/chto_zh_kompleks_reb_palantin_primenyayut_na_ukraine	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-voyniny-vpolyuvaly-rojsijsku-svet-ku-ta-lyshly-ukupantiv-bez-predel-1d1%8d/
AI13 «Смерть на поводке». Жуткое оружие устроило кровавое побоище под Курском. Argumenty i Fakty, 2025. https://aif.ru/politics/russia/smert-na-povodke-zhutkoe-oruzhie-ustrojlo-krovavoe-poboishche-pod-kurskom	AIRBASE Sredstva REB i ITR 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-itr-podrazdelenij-vdv.html
AI14 Что за ружье РЗБ ЛПД-801 применили на Украине. Argumenty i Fakty (from TASS), 2022-07. https://aif.ru/society/army/chto_zh_ruzhe_radioelektronnoy_borby_lpd-801_primenili_na_ukraine	AMAL 26-й полк ПХБ3: участие в спецоперации, структура и вооружение. amalantra.ru, 2025. https://amalantra.ru/26-polk-phbz/
AI15 Что за новье nizkovysotnye RLS Podlet-K1 postupili v VKS RF?. Argumenty i Fakty, 2022-07-06. https://aif.ru/society/army/chto_zh_novyye_nizkovysotnye_rls_podlet-k1_postupili_v_vks_rf	AMAL2 ПТРК «Рефлекс-М» с ракетами «Инвар»: более 30 лет без аналогов. amalantra.ru, 2025. https://amalantra.ru/ptrk-refleks-s-raketami-invar/
AI16 Что за «Аустенко» ведёт контрбатареиную борьбу на Украине?. Argumenty i Fakty, 2022. https://aif.ru/society/army/chto_zh_aistyonok_vedyot_kontrbatareynuyu_borbu_na_ukraine	AMAL3 Новый НРТК «Омич-2» испытывается российским десантом. Amalantra (blog), 2025. https://amalantra.ru/novyy-nrtk-omich-2-ispytyvayetsya-rossijskim-desantom-v-boevykh-usloviyakh/
AI17 Вога — не преграда. Боицы «Центра» отрабатывали наведение понтономной переправы. Аргументы и факты, 2025-02-26. https://aif.ru/politics/russia/voda-ne-pregrada-boycy-centra-otrabatyvali-navedenie-pontonnoy-perepravy	AMAL4 РЗБ «Волнорыз»: характеристики, частоты, установка, применение в СВО. amalantra.ru, 2023-11. https://amalantra.ru/rab-volnoryz/
AI18 Что известно о неpronitsаемом куполе zashchity ot dronov Pole-212. Argumenty i Fakty, 2021-04-17. https://aif.ru/society/army/chto_zh_izvestno_o_nepronitsаемом_kupole_zashchity_ot_dronov_pole_21	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
AI19 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	AMLN 217-й полк ВДВ: участие в СВО, состав, вооружение и боевой путь. amalantra.ru, 2025. https://amalantra.ru/217-polk-vdv/
AI110 В Тверскую область поступили семь новых РСЗО «Смерч». Aif Tver, 2017-04-18. https://tver.aif.ru/society/army/v_tverskuyu_oblast_postupili_seм_novykh_rszo_smerch	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/
AI111 Rabota bespilotnikov Superkam na yuzhnodonetskom napravlenii. Argumenty i Fakty, 2024-01-24. https://aif.ru/politics/gallery/rabota_bespilotnikov_superkam_na_yuzhnodonetskom_napravlenii	ANNA RLS Nebo-M razvernuli pod gorodom Naryan-Mar (citing Izvestia, 17 Nov 2020). ANNA News, 2020-11-17. https://anna-news.info/ris-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-novyy_kompleks_radioelektronnoy_borby_silok_01_stal_trofeem_vsu
	APA1 Almaz-Antey 40R6 / S-400 Triumf Self Propelled Air Defence System / SA-21 (Kopp). Air Power Australia, 2009-05, updated 2012-04. https://www.airsairpower.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. http://www.airsairpower.net/APA-Grumble-Gargyle.html
	APA3 Soviet/Russian Acquisition and GCI Radars (Kopp). Air Power Australia. https://www.airsairpower.net/APA-Acquisition-GCI.html
	APA4 Warsaw Pact / Russian Air Defence Command Posts. Air Power Australia. https://www.airsairpower.net/APA-Rus-ADCP-CP.html
	APA5 Russian EW systems: R-3308/T, R-934B/BM. Air Power Australia, 2014. https://www.airsairpower.net/APA-REB-Systems.html
	APA6 9K35 Strela-10 / SA-13 Gopher. Air Power Australia (C. Kopp), 2012-04. https://www.airsairpower.net/APA-9K35-Strela-10.html
	APA7 Russian / PLA Low Band Surveillance Radar Systems. Air Power Australia. https://www.airsairpower.net/APA-Rus-Low-Band-Radars.html
	APA8 NIIRIT Nebo SVU / RLM-M Nebo M annex (Kopp). Air Power Australia, 2012-10-03. https://www.airsairpower.net/APA-Nebo-M-Annex.html
	APA9 NIIRIT 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. https://www.airsairpower.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). https://www.airsairpower.net/APA-96K6-Pantsir-2K22-Tunguska.html
	APA11 S-300V: 202nd Air Defence Brigade, Naro-Fominsk, APA-PE-2011-0501. Air Power Australia, 2011. https://www.airsairpower.net/APA-202nd-AD-Brigade.html
	APA12 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 2014-01-01). https://www.airsairpower.net/APA-Giant-Gladiator.html
	APA13 NIEMI 9K33 Osa/Romb Self Propelled Air Defence System / SA-8 Gecko, APA-TR-2009-0704. Air Power Australia (Kopp), 2012. https://www.airsairpower.net/APA-9K33-Osa.html
	AR1 2S34 Hosta, 120 mm tracked self-propelled mortar carrier. Army Recognition. 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. 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. https://armyrecognition.com/archives/archives-land-defense/land-defense-2015/russian-central-md-forces-are-being-armed-with-2s12a-sani-modernized-120-mm-mortars
	AR4 Rostec delivers new batch of mobile mortars 2S12A Sani to Russian forces in Ukraine. Army Recognition, 2024-07. 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. 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. 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. 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. 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. 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. 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. 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.
<https://www.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.
<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.
<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.
<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.
<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.
<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.
<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.
<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.
<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.
<https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/the-soviet-era-bat-2-engineering-bulldozer-still-defends-ukraine-s-frontline>

AR22 Russian paratroopers receive refurbished BMD-2 and BTR-RD armored vehicles. Army Recognition, 2023-10.
<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>

AR23 BMD-4M airborne tracked armored infantry fighting vehicle. Army Recognition.
<https://www.armyrecognition.com/military-products/army/infantry-fighting-vehicles/airborne-vehicles/bmd-4m-russia-uk>

AR24 Russian Bakhcha-U combat turret from KBP will increase firepower of IFV (TASS text). Army Recognition / TASS, 2017.
<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>

AR25 Russian army in Siberia received first BMP-2M IFV armed with Berezhok combat module. Army Recognition, 2018.
<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>

AR26 Deployment of new Russian BMR-3MA Vepr armored mine-clearing vehicles in Ukraine. Army Recognition, 2024-04.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2024/deployment-of-new-russian-bmr-3ma-vepr-armored-mine-clearing-vehicles-in-ukraine>

AR27 Borisoglebsk-2 EW system delivered to a Russian military base in Tajikistan. Army Recognition, 2018.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/borisoglebsk-2-ew-system-delivered-to-a-russian-military-base-in-tajikistan>

AR28 Ukrainian army recovers abandoned Russian MTLB-mounted Borisoglebsk-2 jamming system. Army Recognition, 2022-09-16.
<https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-army-recovers-abandoned-russian-mtlb-mounted-borisoglebsk-2-jamming-system>

AR29 R-330ZH Zhitel. Army Recognition, 2025-11-23.
<https://www.armyrecognition.com/military-products/army/electronic-warfare/r-330-zh-jamming-station-russia-uk>

AR30 Russia receives new batch of BREM-1M armored recovery vehicles. Army Recognition, 2023-09.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2023/russia-receives-new-batch-of-brem-1m-armored-recovery-vehicles>

AR31 BRM-1K Model 2021 BRM-1KM reconnaissance tracked armored vehicle. Army Recognition.
<https://www.armyrecognition.com/military-products/army/armored-vehicles/reconnaissance-vehicles/brm-1k-model-2021-brm-1km-reconnaissance-tracked-armored-vehicle-data>

AR32 Russia transfers experimental BTR-90 'Rostok' IFV from museum to Ukraine. Army Recognition, 2023-10-16.
<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>

AR33 Russia Delivers New Batch of BTR-MDM Armored Personnel Carriers. Army Recognition, 2024-10.
<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>

AR34 BTR-82A / BTR-82AM APC. Army Recognition.
<https://www.armyrecognition.com/military-products/army/armoured-personnel-carriers/wheeled-vehicles/btr-82a-russia-uk>

AR35 Ukrainian Forces Destroy Rare Russian EW Vehicle RB-109A Bylina with US-donated HIMARS Rockets. Army Recognition, 2024-01.
<https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/ukrainian-forces-destroy-rare-russian-ew-vehicle-rb-109-a-bylina-with-us-donated-himars-rockets>

AR36 Army-2019: New RKhM-8 wheeled CBRN reconnaissance armored vehicle. Army Recognition, 2019.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/army-2019-new-rkhm-8-wheeled-cbrn-reconnaissance-armored-vehicle>

AR37 D-20 Canon obusier (Description, Identification, Détails à observer). Army Recognition.
<https://armyrecognition.com/military-products/army/artillery-vehicles-and-weapons/towed-howitzer-guns/d-20-howitzer-russia>

AR38 D-30 Canon obusier tracté (Description, Identification, Détails à observer). Army Recognition.
<https://www.armyrecognition.com/military-products/army/artillery-vehicles-and-weapons/towed-howitzer-guns/d-30-howitzer-russia>

AR39 Rostec Pushes to Accelerate Delivery of 2S38. Army Recognition, 2025-01-03.
<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>

AR40 Ukrainian Forces Captures first Latest-Generation Russian Rotor T-16 UAV. Army Recognition, 2023-08.
<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>

AR41 Western Military District of Russian army to receive Granat and Eleron-3 UAVs. Army Recognition (TASS text), 2016.
<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>

AR42 Russia: R-149MA1 command and staff vehicle adopted for service in Southern Military District. Army Recognition (SMD press service), 2018.
<https://www.armyrecognition.com/archives/archives-land-defense/2018/russia-r-149ma1-command-and-staff-vehicle-adopted-for-service-in-southern-military-district>

AR43 Russia intensifies use of armed FPV drones to strike Ukrainian positions. Army Recognition, 2024-03-18.
<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>

AR44 Russian Company Develops AI-Powered Combat Drone Capable of Autonomous Target Engagement. Army Recognition, 2024-04.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2024/russian-company-develops-ai-powered-combat-drone-capable-of-autonomous-target-engagement>

AR45 Russian Gibka-S Air Defense System undergoes evaluation on Ukraine frontline. Army Recognition, 2023-2024.
<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>

AR46 SA-25 Verba 9K333 MANPADS technical data sheet. Army Recognition.
<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>

AR47 Infauna K1Sh1 UNSh-12. Army Recognition.
<https://armyrecognition.com/military-products/army/electronic-warfare/infauna-russia-uk>

AR48 Iskander-K 9K728. Army Recognition.
<https://www.armyrecognition.com/military-products/army/missiles/ballistic-missiles/iskander-k-mobile-short-range-cruise-missile-system-russia-data>

AR49 Russian company AerSCAN unveils Product 54 Italmas long-range loitering munition. Army Recognition, 2023-09.
<https://armyrecognition.com/archives/archives-land-defense/land-defense-2023/russian-company-aerocan-unveils-product-54-italmas-long-range-loitering-munition>

AR50 Russian army widens range of targets for Shтурm-S SPATGM. Army Recognition (TASS copy), 2021-03.
[https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2021/russian-army-widens-range-of-targets-for-shтурм-s-spatgm](https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2021/russian-army-widens-range-of-targets-for-shтурm-s-spatgm)

AR51 New Russian Kornet-D anti-tank armored vehicle set to challenge Ukraine's armored might. Army Recognition, 2023-06.
<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>

AR52 Eleron-3 and upgraded Korsar UAVs for Russian army. Army Recognition, 2018.
<https://armyrecognition.com/news/army-news/2018/eleron-3-and-upgraded-korsar-uavs-for-russian-army>

AR53 1RL257 or Krasukha-4 Jamming Station. Army Recognition, 2026-01-02.
<https://www.armyrecognition.com/military-products/army/electronic-warfare/1rl257-or-krasukha-4-jamming-station>

AR54 Russia confirms deployment in Ukraine of new KUB loitering munition able to reach target at 50 km. Army Recognition, 2024-04.
<https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russia-confirms-deployment-in-ukraine-of-new-kub-loitering-munition-able-to-reach-target-at-50-km>

AR55 Russian army uses a very rare Ladoga autonomous armored vehicle for combat operations in Ukraine. Army Recognition, 2024-03.
<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>

AR56 Ukraine destroys Russian Leer-2 electronic warfare system. Army Recognition, 2023-11.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2023/ukraine-destroy-a-russian-leer-2-electronic-warfare-system>

AR57 Ukrainian Forces Destroy Two Chechen Z-STS Akhmat Armored Vehicles in Kursk region. Army Recognition, 2024-10.
<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>

AR58 Buran 4x4 armored vehicle Russia Russian defense industry MAKs 2017. Army Recognition, 2017-07.
<https://www.armyrecognition.com/focus-analysis-conflicts/army/defence-security/industry-technology/buran-4x4-armored-vehicle-russia-russian-defense-industry-maks-2017-12007172>

AR59 Russian armed forces to receive Kornet-M and 9K115 Metis-M1 anti-tank guided missiles (TASS). Army Recognition, 2016.
<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>

AR60 First armed Iranian-made Mohajer-6 UAV used by Russia crashes near Kursk. Army Recognition, 2024-05.
<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>

AR61 Russia Uses Old MT-12 Rapira 100mm Anti-Tank Gun to Target Camouflaged Ukrainian Positions. Army Recognition, 2024-08.
<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>

AR62 Ukraine Destroys Russian Buk M3 Launcher and Nebo-SVU Radars in Coordinated Strikes. Army Recognition, 2025-10.
<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>

AR63 Russian Central Military District take delivery of new Communications System. Army Recognition (reproducing district press release), 2015.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2015/russian-central-military-district-take-delivery-of-new-communications-system>

AR64 Russian Army deploys first Pantsir SM SV air defense system. Army Recognition, 2025-03.
<https://armyrecognition.com/news/army-news/2025/russian-army-deploys-first-pantsir-sm-sv-air-defense-system-to-improve-coverage-in-off-road-conditions>

AR65 Russia's use of Belarusian-made Pantsir-S1 on MZKT chassis in Ukraine confirmed. Army Recognition, 2026-04.
<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>

AR66 Russian artillery learn to use Aistyonok radar (TASS text). Army Recognition, reprinting TASS, 2017.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2017/russian-artillery-learn-to-use-aistyonok-radar-81708173>

AR67 PRP-4A Argus artillery fire control posts for Russian army. Army Recognition, 2018-06.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/prp-4a-argus-artillery-fire-control-posts-for-russian-army>

AR68 Russian Defense Ministry plans to buy new amphibious tracked armored vehicle PTS-4 in 2014. Army Recognition, 2013-07-24.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2013/russia-24-july-2013-news-uk>

AR69 Russia has deployed PMM-2M amphibious bridging ferry in Syria. Army Recognition, 2017-09.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2017/russia-has-deployed-pmm-2m-amphibious-bridging-ferry-in-syria>

AR70 Russian Central Military District signal units receive advanced hardware. Army Recognition, 2019-12.
<https://armyrecognition.com/news/army-news/army-news-2019/russian-central-military-district-signal-units-receive-advanced-hardware>

AR71 Russian communications units to receive R-149MA1 unified command and staff vehicle. Army Recognition (TASS text), 2017.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2017/russia-communication-units-receive-r-149ma1-vehicle-80806171>

AR72 Russian Army to get new radio stations. Army Recognition (Zvezda weekly text), 2019.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/russian-army-to-get-new-radio-stations>

AR73 6,000 new military communication equipment for Western Military District of Russian army. Army Recognition, 2015.
<https://armyrecognition.com/focus-analysis-conflicts/army/defence-security/industry-technology/6-000-new-military-communication-equipment-for-western-military-district-of-russian-army>

AR74 Russia unveils new UМZ-K multipurpose mine-laying vehicle at Army-2015. Army Recognition, 2015.
<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>

AR75 5P85SE TEL S-300 PMU1. Army Recognition.
<https://armyrecognition.com/military-products/army/air-defense-systems/air-defense-vehicles/5p85se-s-300-pmu1-russia-uk>

AR76 5P85T TEL S-300 PM. Army Recognition.
<https://www.armyrecognition.com/military-products/army/air-defense-systems/air-defense-vehicles/5p85t-s-300-pmu-russia-uk>

AR77 S-300V 9K81 Antey-300 SA-12 Gladiator. Army Recognition.
<https://www.armyrecognition.com/military-products/army/air-defense-systems/air-defense-vehicles/s-300v-russia-uk>

AR78 Russian Southern district to receive S-350 Vityaz air defense system in 2021. Army Recognition (TASS text), 2020.
<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2020/russian-southern-district-to-receive-s-350-vityaz-air-defense-system-in-2021>

AR79 Russian troops use Soviet-era S-60 anti-aircraft gun. Army Recognition, 2023-10.

<https://www.armyrecognition.com/news/army-news/army-news-2023/russian-troops-use-soviet-era-s-60-anti-aircraft-gun-for-rapid-fire-on-ukrainian-targets>

AR80 Russian Southern Military District receives Shturm-S antitank missiles. Army Recognition / TASS, 2019.

<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/russian-southern-military-district-receives-shturm-s-antitank-missiles>

AR81 Russian army CBRN unit receives TDA-3 mobile smokescreen generators (quoting TASS). Army Recognition, 2017.

<https://armyrecognition.com/news/army-news/2017/russian-army-southern-military-district-cbrn-unit-receives-tda-3-mobile-smokescreen-generators-tass-82103173>

AR82 SNAR-10 M1 self-propelled antitank radar enters service in Russian Central Military District. Army Recognition, 2019-01.

<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>

AR83 Russia counters Ukrainian drones with Sobolatytnik reconnaissance systems. Army Recognition, 2024-01-10.

<https://www.armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russian-counters-ukrainian-drones-with-sobolatytnik-reconnaissance-systems>

AR84 Rostec showcases new Sprut-SDM1 light tank with upgraded armor kit at Army-2024. Army Recognition, 2024-08.

<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>

AR85 Russia upgrades Strelets reconnaissance system - Part 1. Army Recognition (from TASS / Nezavisimoye Voennoye Obozreniye), 2021.

<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2021/russia-upgrades-strelets-reconnaissance-system-part-1>

AR86 T-90M Model 2017 Proryv-3 MBT technical data sheet. Army Recognition, 2026-01.

<https://www.armyrecognition.com/military-products/army/main-battle-tanks/main-battle-tanks/t-90m-model-2017-mbt-main-battle-tank-technical-data-sheet>

AR87 Russian army integrates Oran-10 and Takhion UAVs with Msta-B howitzers. Army Recognition (from TASS/Mod), 2021.

<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2021/russian-army-integrates-oran-10-and-takhion-uavs-with-msta-b-howitzers>

AR88 Ukrainian soldiers seize extremely rare Russian GAZ-3937 Vodnik armored vehicle. Army Recognition, 2023-03.

<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>

AR89 Russia up-armored 'Mad Max' Tigr-M SpN spotted in Ukraine. Army Recognition, 2023-10.

<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>

AR90 Analysis: Russian airborne troops armored vehicles used in combat in Ukraine. Army Recognition, 2022.

<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>

AR91 Ukrainian soldiers destroy Russian TOR-M2DT new air defense missile system. Army Recognition, 2023-02.

<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>

AR92 More heavy flamethrower units to appear in Russian armies. Army Recognition (citing Izvestia, 27 Feb 2018), 2018-02-27.

<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/more-heavy-flamethrower-units-to-appear-in-russian-armies>

AR93 Each Russian military district to have TOS-1A flamethrower battalion. Army Recognition (citing Izvestia), 2019-10-22.

<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>

AR94 Russian engineering units receive robotized UMZ-K and UMZ-T minelayers. Army Recognition, 2019.

<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2019/russian-engineering-units-receive-robotized-umz-k-and-umz-t-minelayers>

AR95 Is Russia secretly deploying Uragan-1M bi-caliber MLRS in Ukraine? Army Recognition, 2024-01.

<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>

AR96 Development of Russian Ural Tornado-U truck is at final stage. Army Recognition (TASS text), 2017.

<https://www.armyrecognition.com/focus-analysis-conflicts/army/defence-security-industry-technology/development-of-russian-ural-tornado-u-truck-is-at-final-stage>

AR97 Russian Uran-6 robotic demining UGV undergoing modernization following Ukraine war experience. Army Recognition, 2023-06.

<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2023/russian-uran-6-robotic-demining-ugv-undergoing-modernization-following-ukraine-war-experience>

AR98 Russian World War 2-era D-44 howitzer destroyed by Ukrainian drone. Army Recognition, 2023-09.

<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>

AR99 Ukraine releases video showing first destruction of Russia's high-tech 1K148 Yastreb-AV radar. Army Recognition, 2024-04.

<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>

AR100 Ukrainian sniper downs Russian ZALA 421-16Ev2 surveillance drone. Army Recognition, 2024-03.

<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>

AR101 Zoopark-1M 1L260 artillery counter-battery radar system data. Army Recognition.

<https://www.armyrecognition.com/military-products/army/radars/counter-battery-radars/zoopark-1m-1l260-artillery-counter-battery-radar-system-data>

AR102 Zoopark-1 1L219 counter-battery radar system data. Army Recognition.

<https://www.armyrecognition.com/military-products/army/radars/counter-battery-radars/zoopark-1-1l-219-counter-battery-radar-system-russia-data>

AR103 Russian Central Military District induces Zoopark-1M counterbattery radars. Army Recognition (TASS text), 2018-03-01.

<https://www.armyrecognition.com/archives/archives-land-defense/land-defense-2018/russian-central-military-district-induces-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>

ARINF Ukrainian defenders captured rare command-staff Tigr. Armyinform (Ukrainian MoD), 2022-09-30.

<https://armyinform.com.ua/2022/09/30/ukrayinski-zahysnyky-zahoplyli-ridkisnyj-komandno-shtabnyj-tygr/>

ARMADA1 Russian IADS Redux Part-7: The Effectors (Withington). Armada International, 2023-09-07.

<https://www.armadainternational.com/2023/09/09/russian-air-force-sam-systems/>

ARMADA2 Russia's Rapid UAV Expansion. Armada International, 2019-03.

<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.

<https://www.armadainternational.com/2022/03/ukraine-forces-capture-russian-electronic-warfare-system/>

ARMADA4 Russian Radiation (Withington). Armada International, 2022-01.

<https://www.armadainternational.com/2022/01/ukraine-russia-electronic-warfare/>

ARMADA5 Russian IADS Redux Part-8: Shocking Behaviour (Withington). Armada International, 2023-09.

<https://www.armadainternational.com/2023/09/russian-air-defence-electronic-warfare/>

ARMADA6 Murmurs of Murmansk (Withington). Armada International, 2024-09.

<https://www.armadainternational.com/2024/09/murmansk-electronic-warfare-system-iran/>

ARMADA7 Russian IADS Redux Part 3: Strategic Skywatchers. Armada International, 2023-05.

<https://www.armadainternational.com/2023/05/russian-air-defence-analysis-part-3/>

ARMADA8 To Kill a Pantsir (Withington). Armada International, 2024-07.

<https://www.armadainternational.com/2024/07/to-kill-a-pantsir-electronic-warfare/>

ARMADA9 Exaggerated Russian electronic warfare capabilities. Armada International, 2022-05.

<https://www.armadainternational.com/2022/05/exaggerated-russian-electronic-warfare-capabilities/>

ARMADA10 From Russia with Hertz. Armada International, 2020-05.

<https://www.armadainternational.com/2020/05/from-russia-with-hertz/>

ARMADA11 Torn Asunder (Withington). Armada International, 2022-06-02.

<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.

<https://www.armadainternational.com/2022/12/the-art-of-countering-artillery-fires-in-ukraine/>

ARMEDC 2S34 Khosta (120 mm self-propelled mortar). armedconflicts.com.

<https://www.armedconflicts.com/2S34-Khosta-120-mm-self-propelled-mortar-t-206918>

ARMEDM 100-мм противотанковая пушка Т-12 / MT-12 «Panupa» (2A19, 2A29). 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 1B13; Машина командира батареи 1B14; Машина начальника штаба дивизиона 1B16. armforc.su.

https://armforc.su/rva_1v13.htm; https://armforc.su/rva_1v14.htm; https://armforc.su/rva_1v16.htm

ARMF14 Машина командира батареи 1B14. armforc.su.

https://armforc.su/rva_1v14.htm

ARMF15 Машина командира дивизиона 1B15. armforc.su.

https://armforc.su/rva_1v15.htm

ARMF16 Машина начальника штаба дивизиона 1B16. armforc.su.

https://armforc.su/rva_1v16.htm

ARMFORC Inzhenernaya razvedyvatelnaya mashina IMR Zhuk. armforc.su.

https://armforc.su/siv_irm.htm

ARMINF У Покровську FPV-дрони пробралися у приміщення і знищили артистановку російських десантників. Armyinform (Ukrainian MoD), 2026-02-08.

<https://armyinform.com.ua/2026/02/08/ua-pokrovsku-fpv-drony-probralsya-u-prymishennya-i-znyshchly-artustanovku-rosijskykh-desantnykiv/>

ARMINF2 Сім мільйонів доларів у морі: що вогімо про збумуї російськкй БПЛА «Фортос-Р». Armyinform (Ukrainian MoD news agency), 2024-04-05.

<https://armyinform.com.ua/2024/04/05/sim-milijoniv-dolariv-u-more-shho-vidomo-pro-zhytyj-rosijskij-bpla-forpost-r/>

ARMINF3 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-minnyi-zagorodzhuvach-gmz-3/>

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 вознеметників БМО-Т: що вогімо. Armyinform (Ukrainian MoD), 2022-04-17.

<https://armyinform.com.ua/2022/04/17/bojova-mashyna-vozneMETnykiv-bmo-t-shho-vidomo-pro-ridkisyj-ekzemplar-vazhkoyi-tehniky-agresora/>

ARMYINF Очі ворога: що вогімо про безпілотноку комплексы «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-vrazlyly-z-avto-yake-yiyi-perevozlyo/>

ARMYINF3 Пікітнуї самохїгнуї ПТРК «Хрузантема-С». Armyinform (Ukrainian MoD news agency), 2022-09-04.

<https://armyinform.com.ua/2022/09/04/ridkisyj-samohidnyj-ptrk-hryzantema-s/>

ARMYINF4 Ukrainian soldiers captured the Russian Leseochek. Armyinform (Ukrainian MoD news agency), 2022-09-12.

<https://armyinform.com.ua/2022/09/12/ukrayinski-voiny-zahoplyly-rosijskij-lesochek/>

ARMYINF5 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-ridkisyj-dlya-syl-oborony-ulov-unikalnu-stancziyu-dlya-zaminy-starlink-urazlyly-novitnim-midistrajkom/>

ARMYINF6 Komandno-shtabna mashyna R-149M1 vdrugel . Armyinform (Ukrainian MoD news agency), 2022-09-12.

<https://armyinform.com.ua/2022/09/12/komandno-shtabna-mashyna-r-149m1/>

ARMYINF7 Repellent-1: shcho vidomo pro znyshchennyi rosiyskij kompleks REB. Armyinform (Ukrainian MoD), 2022-06-08.

<https://armyinform.com.ua/2022/06/08/repellent-1-shho-vidomo-pro-znyshchennyi-rosijskij-kompleks-reb/>

ARMYINF8 Українські воїни захопили станцію радіолокаційної розвідки російської армії ЧАП-10M1. Armyinform, 2022-04-05.

<https://armyinform.com.ua/2022/04/05/ukrayinski-voiny-zahoplyly-stancziyu-radio-lokaczijnoyi-rozvidky-rosijskoyi-armiyi-snar-10m1/>

ARMYINF9 Російськкй БПЛА «Тажіон»: що вогімо про чергову згобуч українських воїнів. Armyinform (Ukrainian MoD news agency), 2022-05-03.

<https://armyinform.com.ua/2022/05/03/rosijskij-bpla-tahion-shho-vidomo-pro-chergovu-zdobych-ukrayinskykh-voiniv/>

ARMYINF10 Wanted to build a crossing, but MTU-72 hit earlier (Army Inform). Army Inform (Ukrainian MoD), 2024-10-31.

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>

BCAT1 Exclusive Access to the Russian Forpost Drone Shot Down in Ukraine. Bellingcat, 2015–06–13.

<https://www.bellingcat.com/news/uk-and-europe/2015/06/13/the-russian-forpost-drone-shot-down-in-ukraine>

BCAT2 Новыє російські системи радіоелектронної боротьби на сході України. Bellingcat [Russian edition of DFRLab], 2018–09–10.

<https://ru.bellingcat.com/novosti/russia/2018/09/10/new-russian-ew-donbas/>

BCAT3 Tankspotting: How to Identify the T-72B3. Bellingcat, 2015–05–28 [updated 2017].

<https://www.bellingcat.com/resources/2015/05/28/tankspotting-how-to-identify-the-t-72b3/>

BCAT4 Tankspotting: T-90As in the Donbass. Bellingcat, 2017–04–02.

<https://www.bellingcat.com/news/europe/2017/04/02/tankspotting-t-90as-donbass/>

BCAT5 Russia's Kramatorsk 'Facts' Versus the Evidence. Bellingcat, 2022–04–14.

<https://www.bellingcat.com/news/2022/04/14/russias-kramatorsk-facts-versus-the-evidence/>

BG69 И полярники, и военные, и спецслужбы [ENICS Eleron]. Business Online [business-gazeta.ru], c. 2011.

<https://business-gazeta.ru/article/69375>

BG137 «...И попасть в него очень трудно» [Eleron–3SV downed in Syria]. Business Online [business-gazeta.ru], 2015.

<https://bm.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.

<https://bmpd.livejournal.com/4751381.html>

BMPD2 Вооруженные Силы России получили первые серийные самоходные гаубицы 2С35 «Коалиция-СВ». bmpd [CAST blog], 2024–01–05.

<https://bmpd.livejournal.com/4792565.html>

BMPD3 Самоходное орудие 2С44 «Гуацинг-К». bmpd [CAST blog], 2025–02.

<https://bmpd.livejournal.com/4895454.html>

BMPD4 53-я зенитная ракетная бригада в Курске перевооружается на ЗРК «Бук-М3». bmpd blog [CAST], 2017–12–04.

<https://bmpd.livejournal.com/2985151.html>

BMPD5 61-я зенитная ракетная бригада в Центральном военном округе получает ЗРК «Бук-М3». bmpd blog [CAST], 2019–11–22.

<https://bmpd.livejournal.com/3847762.html>

BMPD6 Самоходный зенитный артиллерийский комплекс по ОКР Деривация-ПВО с боевой машиной 2С38. bmpd [LiveJournal], 2017.

<https://bmpd.livejournal.com/2809618.html>

BMPD7 Боевая машина Гибка-S [KBM press release, Army–2016]. bmpd LiveJournal / KBM, 2016–09–06.

<https://bmpd.livejournal.com/2115282.html>

BMPD8 Комплекс звукометровой разведки 1Б75 «Пенициллин» на форуме «Армия–2021». bmpd [CAST blog], quoting Rossiyskaya Gazeta, 2021–08.

<https://bmpd.livejournal.com/4383315.html>

BMPD9 РЛС «Аистенок» в Донецке. bmpd [CAST blog], 2015–01.

<https://bmpd.livejournal.com/1136931.html>

BMPD10 Zenitnaya raketnaya sistema S–300V4 v Krymu. bmpd [CAST blog], 2016–11.

<https://bmpd.livejournal.com/2296725.html>

BMPD11 Деятельность Концерна ПВО «Алмаз-Антей» в 2013 году: НПО «Стрела». bmpd [CAST blog], 2014.

<https://bmpd.livejournal.com/905167.html>

BMPD12 Учение 21-й отдельной гвардейской тяжелой мотострелковой бригады. bmpd blog [repeats Krasnaya Zvezda], 2019–07.

<https://bmpd.livejournal.com/3718239.html>

BMPD13 Зенитный ракетный комплекс Сосна в серийном исполнении на шасси БМП-3. bmpd [LiveJournal], citing Zvezda TV, 2019–06.

<https://bmpd.livejournal.com/3675175.html>

BMPD14 По данным razvedki SShA, Rossiya ispolzuet kompleksy Tobol [incl. Russian translation of Hendrickx, The Space Review, Nov 2020]. bmpd [LiveJournal], 2023–04–19.

<https://bmpd.livejournal.com/4688329.html>

BMPD15 Зенитный ракетный полк 150-й мотострелковой дивизии вооружен зенитными ракетными системами Тор-M2. bmpd [CAST blog], 2017–11–10.

<https://bmpd.livejournal.com/2946915.html>

BMPD16 Защищенный автомобиль К-53949 «Таифун-К» в бригаде спецназа ЮВО. bmpd [LiveJournal], CAST, 2018.

<https://bmpd.livejournal.com/3207846.html>

BMPD17 Радіолокаційний комплекс «Зоопарк-1М» пог Пальмірої. bmpd blog [CAST], 2016–04–04.

<https://bmpd.livejournal.com/1827333.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-long-range-radioelectronic-warfare-on-kola/158114>

BORG ЗСУ знищили комунікаційний вузол окупантів полковоного рівня (bigeo). Borg Expert [citing InformNapalm].

<https://borgexpert.com/news/zu-znyschlyv-komunikatsijny-vuzol-okupantiv-polkovoho-rivnia-video>

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-bps-377vm1-malogabaritnye-nosimye-i-vozimye-pereatchiki-pomekh-rp-377vm1>

BTVT Боевая машина огнеметчиков-тяжелая [БМО-Т]. btvt.narod.ru.

<http://btvt.narod.ru/4/bmot/bmot.htm>

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/>

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/fincludes/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

CH97 VSU unitochizhili REB Moskva-1 stoimosti 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/>

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/2019/10/10P-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 [DRM-2022-U-034223]. CNA, 2023–03.

<https://www.cna.org/reports/2023/03/Russian-Uncrewed-Systems-Ukraine.pdf>

CNEWS Россия начала использовать в зоне СВО портативный антивирус-БЛА комплекс «Чистюля». CNews, 2024–08–26.

https://www.cnews.ru/news/top/2024-08-26_rossiya_nachala_ispolzovat

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/142>

CSIS1 SS-N-26 Strobile [P-800 Oniks]. CSIS Missile Threat.

<https://missilethreat.csis.org/missile/ss-n-26/>

CSIS2 Shahed-131 and 136. CSIS Missile Defense Project, 2026.

<https://missilethreat.csis.org/missile/shahed-131-and-136/>

CSIS3 Shahed-238. CSIS Missile Defense Project, 2026.

<https://missilethreat.csis.org/missile/shahed-238/>

CSIS4 9K720 Iskander [SS-26]. CSIS Missile Threat, 2024–04–23.

<https://missilethreat.csis.org/missile/ss-26-2/>

CSIS5 9M729 [SSC-8]. CSIS Missile Threat, 2024–04–23.

<https://missilethreat.csis.org/missile/ssc-8-novator-9m729/>

CSIS6 OTR-21 Tochka [SS-21]. CSIS Missile Threat, 2024–04–23.

<https://missilethreat.csis.org/missile/ss-21/>

CSIS7 Pantsir S-1. CSIS Missile Threat, undated [after 2021].

<https://missilethreat.csis.org/defsys/pantsir-s-1/>

CSIS8 S-300 [Missile Defense Project]. CSIS Missile Threat, 2021.

<https://missilethreat.csis.org/defsys/s-300/>

CSIS9 S-400 Triumf. CSIS Missile Threat, undated [c. 2017–2022].

<https://missilethreat.csis.org/defsys/s-400-triumf/>

CSIS10 Tor [SA-15 Gauntlet]. CSIS Missile Defense Project, undated [cites to 2020].

<https://missilethreat.csis.org/defsys/tor/>

CULT Samokhodnyy minomiot 2S4 Tyulpan. ar.culture.ru [Russian Ministry of Culture portal].

<https://ar.culture.ru/ru/subject/samokhodnyy-minomiot-2s4-tyulpan>

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/%D0%90%D0%A0%D0%A1-14%D0%9A%D0%9C>

CYCLO2 BT-40. Cyclopedia [cyclowiki.org], 2026.

<https://cyclowiki.org/wiki/BT-40>

D24 Rosjanie dopanczerzyli dopanczerzony BMP-2. Defence24, 2023–05.

<https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosjanie-dopanczerzyli-dopanczerzony-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 następcy wyrzutni Grad, Uragan i Smiercz. Defence24, 2021–08.

<https://defence24.pl/rosja-rusza-seryjna-produkcja-nastepcy-wyrzutni-grad-uragan-i-smiercz>

D24B Rosjanie wysyłają zmierzniowane BRDM-2 na front. Defence24, 2023 [embeds post of 27 Mar 2023].

<https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosjanie-wysylaja-zmierzniowane-brdm-2-na-front>

D24B2 Rosjanie wysłali na Ukrainie ulepszone artylerie rakietowa. Defence24, 2024.

<https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosjanie-wyslali-na-ukrainie-ulepszona-artylerie-rakietowa>

D242 Rosyjski predator w cieniu Bayraktara. Bezzałogowiec Orion uderza w Ukrainców. Defence24, 2026.

<https://defence24.pl/wojna-na-ukrainie-raport-specjalny-defence24/rosyjski-predator-w-cieniu-bayraktara-bezzałogowiec-orion-uderza-w-ukraincow>

D243 Rosjanie wprowadzają opancerzone Mustangi. Defence24, 2018–03–15.

<https://defence24.pl/sily-zbrojne/rosjanie-wprowadzaja-opancerzone-mustangi>

D244 Electronic Warfare: Russian Response to the NATO's Advantage? [ANALYSIS]. Defence24, 2017–05–05.

<https://defence24.com/electronic-warfare-russian-response-to-the-natos-advantage-analysis>

D245 Wyrzutnie Tornado-G dostarczane rosyjskiej armii. Defence24, 2019.

<https://defence24.pl/przemysl/wyrzutnie-tornado-g-dostarczane-rosyjskiej-armii>

D246 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/>

DEF24 Bóg wojny wagi ciężkiej - 2S7 w działaniach na Ukrainie. Defence24, 2022–03.

<https://defence24.pl/polityka-obronna/bog-wojny-wagi-ciezkiej-2s7-w-dzialaniach-na-ukrainie>

DEF242 Rosyjskie rakietowe niszczyciele czołgów na Ukrainie. Defence24, 2022–08.

DEFPOST3 Russia Uses 60s 'Loaf' Van to Ferry Troops in Ukraine as Losses Mount. The Defense Post, 2024-06-17.
<https://thedefensepost.com/2024/06/17/russia-loaf-van-ukraine/>

DEFUA New russian 2540 Floks Howitzer Just Delivered, Next Day First One Gets Hit. Defense Express, 2023-10.
https://en.defence-ua.com/weapon_and_tech/new_russian_2540_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 Phoenix unit destroys R-330MIP Diabazol EW station. Defense Express, 2025-05.
https://en.defence-ua.com/news/ukrainian_phoenix_unit_destroys_russian_r_330m_1p_diabazol_ew_station_in_targeted_drone_strike_video-14616.html

DEFUA4 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

DEFUA5 1A119 Небо-СВУ: чим особливу, які характеристики та неюліку. Defence Express.
https://defence-ua.com/weapon_and_tech/1A119_nebo_svu_chim_особливу_jaki_harakteristiki_ta_nedoliki_u_tsijelji_ris_scho_znischili_ukrajinski_droni-17748.html

DEFUA6 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

DEFUA7 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

DEFUA8 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

DEFUA9 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

DEFUA10 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

DEFUA11 What we know about captured Russia's Torn-MDM EW system. Defence Express, 2022-06-12.
https://en.defence-ua.com/weapon_and_tech/what_we_know_about_captured_russias_torn_mdm_electronic_warfare_system_and_how_far_it_detects_ukrainian_fighters_mobile_phones_on_the_front_line-3259.html

DEFUA12 Ukrainian landmine finds a rare Russian vehicle (UMZ on BTR-80). Defence Express, 2023.
https://en.defence-ua.com/news/ukrainian_landmine_finds_a_rare_russian_vehicle_that_hindered_counteroffensive_video-7330.html

DEFUA13 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 Погашуваль БПЛА МПД-801. Detector Systems (retailer), 2026.
https://detsys.ru/catalog/zashchita_ot_dronov/podavitel_bpala_ipd_801/

DETSYS2 Система защиты от дронов и БПЛА Стрпук-3. Detector Systems (retailer), 2026.
https://detsys.ru/catalog/zashchita_ot_dronov/sistema_zashchity_ot_dronov_i_bpala_strizh_3/

DEVUA На российские танки начали устанавливать новый РЗБ «Саня». Dev.ua (citing Military, Defence Express), 2024-01.
<https://dev.ua/ru/news/reb-sanya-proti-fpv-1705389593>

DEX Russia retrieves rare Stalin-era M-46 guns - Defense Express. Espresso (citing Defense Express), 2024-01.
<https://global.espresso.tv/russia-ukraine-war-russians-restore-rare-stalin-era-m-46-guns-defense-express>

DEXP 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 РЗБ. dfnc.ru.
https://dfnc.ru/spec_zashita/obzor-sovremennyh-rossijskih-sredstv-reb/

DFNC2 Rossijskie sredstva borby s BPLA: radioelektronnoe podavlenie. Dalnevostochny/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://dfriab.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://dfriab.org/2019/07/17/tirada-2-likely-not-spotted-in-ukraine/>

DFRLAB Having a Bal. Atlantic Council DFRLab, 2016-11-26.
<https://dfriab.org/2016/11/26/having-a-bal/>

DFRLAB2 #MinskMonitor: New Russian Electronic Warfare Systems in Eastern Ukraine. Atlantic Council DFRLab, 2018-08-23.
<https://dfriab.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://dfriab.org/2018/04/27/minskmonitor-new-russian-electronic-warfare-in-horlivka/>

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>

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 «Зушук» ЗУ-23-2 на мотомызе МТ-АБ назвали ключевой при защите от «Бабы-Язы». www1.ru, 2025-01-03.
<https://www1.ru/en/articles/2025/01/03/legendu-pekoty-zusku-zu-23-2-na-motolyge-mt-lb-nazvali-kluczevoi-pri-zashite-ot-baby-iazi-v-liuboe-2.html>

DOGS РПС контрбатареиной борьбы 1A260 «Зоопарк-1М». dogswar.ru, 2022-09-22.
<http://www.dogswar.ru/specsredstva/58-specsredstva/8955-ris-kontrbatareinoi-.html>

DONM «Богомол-7» вышел на учения. Donetsk Media, 2026-10-02.
<https://donetskmedia.com/20261002-bogomol-7-vyshel-na-ucheniya-voennye-otrabatyvajut-dostavku-gruzov-i-jevakuciju.media>

DPOST 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/%20video%20-border-guards-in-kharkiv-region-destroyed-the-latest-russian-electronic-warfare-system>

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 Ustrojstvo 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://libelod.bsuir.by/bitstream/123456789/40729/1/Dudak_2020.pdf

EAN Екатеринбургский авиазавод представил новый ударный БПЛА. EAN (Yekaterinburg), 2025-05-27.
<https://enews.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 UMXE 2026 - Zala unveils new KPU 51E disposable launcher (Novichkov). EDR Magazine, 2026-01-20.
<https://www.edrmagazine.eu/umxe-2026-zala-unveils-new-kpu-51e-disposable-launcher>

EDR3 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>

EDR4 IDEX 2019: Tornado-G MRL system makes international debut. European Defence Review, 2019-02.
<https://www.edrmagazine.eu/idx-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/idx-2019-uralvagonzavod-promotes-rcws-with-57-mm-cannon>

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/idx-2025-kalashnikov-presents-its-latest-attack-uavs>

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 (Sovzevdie group), 2018.
<http://elektrosignal.ru/wp-content/uploads/2018/06/R-149MA1.pdf>

EMP Russia's thermobaric launchers used to just drive up and fire (new TOS-1As). Euromaidan Press, 2026-08-23.
<https://euromaidanpress.com/2026/08/23/new-tos-1as/>

ESD New Russian ISKANDER Missile Brigade. European Security & Defence, 2022-02-08.
<https://euro-sd.com/2022/02/articles/exclusive/25236/iskander-missile/>

ESP What is Podlet radar. Espresso TV, 2024-12.
<https://global.espresso.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?. Espresso Global, 2025-01-02.
<https://global.espresso.tv/military-news-fiber-optic-drones-can-they-change-russian-ukrainian-war>

ESP23 Russia relocates Bal coastal missile systems to Bryansk region. Espresso Global, 2023-06-12.
<https://global.espresso.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?. Espresso Global, 2024-08-05.
<https://global.espresso.tv/military-news-low-accuracy-inevitable-civilian-casualties-what-are-kh-35u-missiles-russia-used-to-strike-kharkiv>

ESPR Russia loses 2 rare electronic warfare systems over several months. Espresso Global, 2023-11.
<https://global.espresso.tv/russia-loses-2-rare-electronic-warfare-systems-over-several-months>

ESPR2 Ukrainian Armed Forces destroy Russian Meteorit demining system in Kharkiv region. Espresso, 2024.
<https://global.espresso.tv/ukrainian-armed-forces-destroy-russian-meteorit-demining-system-in-kharkiv-region-the-10th-since-war-started>

ESPRESO T-62MV with mineplow, drone protection: media show latest version of Russian tank. Espresso Global, citing Forbes and analyst Naalsio26, 2024-02.
<https://global.espresso.tv/russia-ukraine-war-t-62mv-with-mineplow-and-drone-protection-media-show-video-of-latest-version-of-russian-tank>

EXK UMG 30B-3523: мехмические характеристики. exkavator.ru.
https://exkavator.ru/exkapedia/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 Shaded imitations from. Fakty (fakty.com.ua), 2024-11-18.
<https://fakty.com.ua/ru/ukraine/20241118-gerbery-z-fanery-u-gur-ropovily-z-chogo-rosiyani-vygotovlyayut-imitaciyu-shahediv/amp/>

FAS1 MT-LBu (I1V2 series) ACRV M1974 Artillery Command and Reconnaissance Vehicle. Federation of American Scientists, 1999-08-21.
<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.
<https://man.fas.org/dod-101/sys/land/row/2s23.htm>

FAS3 2S5 Giatint-S 152-mm Self-Propelled Gun. Federation of American Scientists, 1999-06-19.
<https://man.fas.org/dod-101/sys/land/row/2s5.htm>

FAS4 2S7 203-mm Self-Propelled Gun. Federation of American Scientists, 1999-10-16.
<https://man.fas.org/dod-101/sys/land/row/2s7.htm>

FAS5 2S9 120-mm SP Howitzer-Mortar. FAS Military Analysis Network, 1999-10-16.
<https://man.fas.org/dod-101/sys/land/row/2s9.htm>

FAS6 BRDM-2 Armored Reconnaissance Vehicle. Federation of American Scientists (Military Analysis Network), c. 1999.
<https://man.fas.org/dod-101/sys/land/row/brdm-2.htm>

FAS7 BTR-D BMD M1979. Federation of American Scientists, 1999-06-19.
<https://man.fas.org/dod-101/sys/land/row/btr-d.htm>

FAS8 D-20 152mm Towed Gun-Howitzer. FAS Military Analysis Network, 1999-06-19.
<https://man.fas.org/dod-101/sys/land/row/d-20.htm>

FAS9 D-30 122-mm Towed Howitzer. Federation of American Scientists (FAS), 1999-06-19.
<https://man.fas.org/dod-101/sys/land/row/d-30.htm>

FAS10 M-46 130-mm Towed Gun (Type 59 130mm Field Gun). Federation of American Scientists, 1999-06.
<https://man.fas.org/dod-101/sys/land/row/m-46.htm>

FAS11 MT-LB (DoD 101 Systems). Federation of American Scientists, about 2000.
<https://man.fas.org/dod-101/sys/land/row/mt-lb.htm>

FAS12 SA-10 GRUMBLE (S-300PMU). Federation of American Scientists, 2000-06.
<https://nuke.fas.org/guide/russia/airdef/s-300pmu.htm>

FAS13 S-60 / Type 59 57mm Anti-Aircraft Artillery. Federation of American Scientists, 1999-06.
<https://man.fas.org/dod-101/sys/land/row/s-60.htm>

FAS14 9P149 (DoD 101, ROW land/row/9p149.htm). Federation of American Scientists, 1999-06-19.
<https://man.fas.org/dod-101/sys/land/row/9p149.htm>

FAS15 T-62 Main Battle Tank. Federation of American Scientists (FAS) Military Analysis Network, c. 2000.
<https://man.fas.org/dod-101/sys/land/row/t62tank.htm>

FAS16 AT-12 SWINGER (DoD 101 Systems). Federation of American Scientists, 1999-06-19.
<https://man.fas.org/dod-101/sys/land/row/at-12.htm>

FAS17 T-64 Tank. Federation of American Scientists (FAS) Military Analysis Network, c. 2000.
<https://man.fas.org/dod-101/sys/land/row/t64tank.htm>

FAS18 T-72 Tank Characteristics. Federation of American Scientists (FAS) Military Analysis Network, 2000-01-16.
<https://man.fas.org/dod-101/sys/land/row/t72tank.htm>

FAS19 T-80 Tank. Federation of American Scientists (FAS) Military Analysis Network, c. 2000.
<https://man.fas.org/dod-101/sys/land/row/t80tank.htm>

FAS20 220-mm Multiple Rocket Launcher (9P140). Federation of American Scientists, 1999-06-19.
<https://man.fas.org/dod-101/sys/land/row/9p140.htm>

FAS21 ZU-23 23MM Antiaircraft Gun. Federation of American Scientists, 2000-04-27.
<https://man.fas.org/dod-101/sys/land/row/zu-23.htm>

FERG Russian base in Tajikistan to be fitted with Pole-21 electronic countermeasures system. Fergana News, 2019-11-26.
<https://en.fergana.ency/news/12784/>

FERG2 Russian Electronic Warfare System Is Capable Of Neutralizing GPS, Galileo and BeiDou Systems (Sputnik, rntfnd.org, reposted), Resilient Navigation and Timing Foundation (rntfnd.org), 2021-02-01.

<https://rntfnd.org/?p=35483>

FISH 1A260 3oonapк-1M. fishki.net (repost of militaryrussia.ru material).

<https://fishki.net/anti/2340561-1260-zoopark-1m.html>

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_F_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](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_F_1991/FM%20100-2-3%20The%20Soviet%20Army-Troops%2C%20Organization%20and%20Equipment%20%281991%29_djvu.txt

FN Molniya: The wooden FPV drone that's made in Russia and copied in Ukraine. Forces News (BFSB), 2024-10-29.

<https://www.forcesnews.com/ukraine/molniya-wooden-fpv-drone-thats-made-russia-and-copied-ukraine>

FOC2 Vdale polivuvannia: SSO vystezhyly pid Bakhmutom rosijsku Triadu. Focus.ua, 2023-07.

<https://focus.ua/uk/amp/voennyye-novosti/581006-udachnaya-ohota-ssv-vysledili-pod-bahmutom-rossiyskuyu-triadu-i-eshe-8-celey-video>

FOCUS Upor na mobilnost: voyska RF poluchat 2S40 Floks. Focus.ua, 2023-10-05.

<https://focus.ua/voennyye-novosti/597382-upor-na-mobilnost-voyska-rf-poluchat-noveyshuyu-120-mm-samohodku-2s40-floks-video>

FOCUS2 У РФ на 30% скоротились запасы САУ «Нона-С» на складах – OSINT-аналіз. Focus.ua, с. 2023-10.

<https://focus.ua/uk/voennyye-novosti/600523-u-rf-na-30-skorotilis-zapasi-sau-nona-s-na-skladah-osint-analiz-foto>

FOCUS3 ВС РФ перебрали советские гаубицы А-20 в Крым: Атеш рассказал подробности. Focus.ua, 2023-10-06.

<https://focus.ua/voennyye-novosti/597489-vs-rf-perebrasyvayut-sovetskie-gaubicy-d-20-v-krym-atesh-rasskazal-podrobnosti-foto-video>

FOCUS4 Силы обороны уничтожили станцию РЗБ 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: 6 ВСУ заметили пегкую инженерный БТМ-3. Focus.ua (relaying Forbes), 2023-08.

<https://focus.ua/voennyye-novosti/585223-10-mashin-na-vsu-ukrainu-v-vsu-zametili-redkiy-inzhenernyy-btm-3-chto-izvestno>

FOCUS6 БЛА уничтожили российскую антиморозовую пушку ЛПА-801. Focus.ua (Ukrainian press), 2023-02-27.

<https://focus.ua/digital/552019-bpla-unichtozhili-rossiyskuyu-antidronovuyu-pushku-lpd-801-okkupanty-ostalis-bezshchitnymi>

FOCUS7 Zashchita ot yadernogo dozhdy NATO: VСУ podorvali eshechne odnu mashinu RF (Forbes). Focus.ua, 2024-07-01.

<https://focus.ua/voennyye-novosti/655273-zashchita-ot-yadernogo-dozhdy-nato-vsu-podorvali-eshechne-odnu-mashinu-rf-dlya-yadernoy-voyny-forbes>

FOCUS8 VS RF ustanavliwayut moduli REB Pole-21 na domakh i vyshkakh svyazi. Focus.ua, 2023-03-28.

<https://focus.ua/digital/557429-vs-rf-ustanavliwayut-moduli-reb-pole-21-na-domakh-i-vyshkah-svyazi-zachem-eto-im-nuzhno>

FOCUS9 Продаётся на AliExpress: штурмовики ВС РФ получили комплексы РЗБ «Чистюля». Focus.ua, 2024-08.

<https://focus.ua/digital/665035-prodaetsya-na-alieexpress-shturnoviki-vs-rf-poluchili-kompleksy-reb-chistyulya-foto>

FOCUS10 Forbes via Focus: Ukraine destroyed R-416GM. Focus.ua (citing Forbes), 2024-06.

<https://focus.ua/voennyye-novosti/652373-u-rf-ogranichen-dostup-k-sputnikam-vsu-unichtozhili-r-416gm-otslyavshuyu-signal-y-v-troposferu-forbes>

FOCUS11 VS RF primenyayut v boyakh dymovye mashiny TDM-2K. Focus.ua, 2024-05.

<https://focus.ua/voennyye-novosti/644074-vs-rf-primenyayut-v-boyah-dymovye-mashiny-tdm-2k-kak-s-nimi-borotsya-analiz-ekspertov>

FOCUS12 ВСУ уничтожили станцию разведки ЧАП-10 "Леопард", которая различает человека за 15 км. Focus.ua, 2023-08.

<https://focus.ua/voennyye-novosti/583806-vs-unichtozhili-stanciyu-razvedki-snar-10-leopard-kotoraya-razlichayet-cheloveka-za-15-km-foto-video>

FOCUS13 Впервые на фронте: украинские военные уничтожили российский ЗРК Sosna-R. Focus.ua, 2023.

<https://focus.ua/voennyye-novosti/585650-vperve-na-fronte-ukrainskie-voennyye-unichtozhili-rossiyskiy-zrk-sosna-r-analitiki-video>

FOCUS14 В Украине затопили российскую коммекс Стрелец. Focus.ua, 2024 (undated on page).

<https://focus.ua/digital/674075-v-ukraine-zatofili-rossiyskiy-kompleks-strelec-zachem-on-nuzhen-razvedchikam-vs-rf-foto>

FOCUS15 Very rare beast: AFU drone disabled Russian Svet-KU EW station. Focus.ua, 2023-08-28.

<https://focus.ua/uk/digital/538680-duzhe-ridkisnij-zvir-dron-zsu-viviv-z-ladu-rosijsku-stanciyu-reb-svet-ku-video>

FOCUS16 ЗСУ захопили пікісний російський грон «Тяхіон» піг Харковом. Focus.ua, 2022.

<https://focus.ua/uk/digital/532547-vsu-zahvatili-redkiy-rossiyskiy-dron-tahion-pod-harkovom-chem-on-opasen-foto>

FOCUS17 V seti povayilis kadry pervogo porazheniya rosiiskoi RLS Yastreb-AV. Focus.ua, 2024-04.

<https://focus.ua/voennyye-novosti/640343-v-seti-povayilis-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>

FUTZ Ukraine zerstört erstmals Russlands modernste Funkstation. futurezone.at, 2024-06.

<https://futurezone.at/amp/digital-life/ukraine-zerstoert-russlands-modernste-funkstation-drohen-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/>

GICHD Explosive Ordnance Guide for Ukraine, 2022 (v18), entries OTR-21 9K79/9M79 Tochka and 9N24. GICHD, 2022.

https://www.gichd.org/fileadmin/uploads/gichd/Publications/GICHD_Explosive_Ordnance_Guide_for_Ukraine_2022_v18.pdf

GRROBO1 Грарам-1 (Robotrends catalogue). Robotrends.
<https://robotrends.ru/roboedia/granat-1>

GS1 2A36 Giatshint-B (M1976) 152-mm Towed Gun. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/2a36-specs.htm>

GS2 2A65 (M1987) 152-mm Towed Gun-Howitzer. GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/2a65-specs.htm>

GS3 2S4 M-1975 240-mm Tulpan self-propelled mortar. GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/2s4.htm>

GS4 2S5 Giatshint-S 152-mm Self-Propelled Gun. GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/2s5.htm>

GS5 96L6 / 96L6E - CHEESE BOARD Radar. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/96l6.htm>

GS6 11122 Garmon / Harmonium. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/garmon.htm>

GS7 Airborne Assault Troops [VDV] - Organization. GlobalSecurity.org, undated (Soviet-era text, later additions).
<https://www.globalsecurity.org/military/world/russia/vdv-org.htm>

GS8 Russian Defense Ministry to receive 250 BMD-4M, Rakushka vehicles (TASS, reproduced by GlobalSecurity). TASS, 2015-05-13.

<https://www.globalsecurity.org/wmd/library/news/russia/2015/russia-150513-tass-04.htm>

GS9 Modernized BMD-4M (Boyevaya Mashina Desanta). GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/bmd-4m.htm>

GS10 BMO-T (Object 564) Firebug. GlobalSecurity.org, undated (c. 2012).

<https://www.globalsecurity.org/military/world/russia/bmo-t.htm>

GS11 BMP-1 Fighting Vehicle - Variants. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/bmp-1-var.htm>

GS12 Airborne Assault Troops [VDV] - Order of Battle. GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/vdv-orbat.htm>

GS13 BTR-MD Rakushka (Ob'yekt 955). GlobalSecurity, 2015.

<https://www.globalsecurity.org/military/world/russia/btr-md.htm>

GS14 BTR-82 specs. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/btr-82-specs.htm>

GS15 BTR-82A 8x8 infantry fighting vehicle - Program. GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/btr-82-program.htm>

GS16 BTR-70 Armored Personnel Carrier. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/btr-70.htm>

GS17 Orlan-10. GlobalSecurity.org, undated, after 2023-08.

<https://www.globalsecurity.org/military/world/russia/orlan-10.htm>

GS18 Russian Airborne Gets New ECM System (RIA Novosti, 6 Jul 2012). GlobalSecurity.org, 2012-07-06.

<https://www.globalsecurity.org/wmd/library/news/russia/2012/russia-120706-rianovosti01.htm>

GS19 Lancet specs. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/lancet-specs.htm>

GS20 Lancet. GlobalSecurity.org, undated (quotes TASS of 2023-09-22).

<https://www.globalsecurity.org/military/world/russia/lancet.htm>

GS21 2S19 MSTA-S 152-mm Self-Propelled Howitzer. GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/2s19.htm>

GS22 55ZH6M Nebo-M TALL RACK Mobile multi-band radar complex. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/nebo-m.htm>

GS23 Orion UAV / Inkhodets [Pacer]. GlobalSecurity.

<https://www.globalsecurity.org/military/world/russia/orion.htm>

GS24 1B75 Penicillin Automated Sound-Thermal Artillery Reconnaissance Complex. GlobalSecurity.

<https://www.globalsecurity.org/military/world/russia/penicillin.htm>

GS25 Engineers - River Crossings. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/engineer-river.htm>

GS26 S-350E Vityaz / SA-28 - Specifications. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/s-350-specs.htm>

GS27 S-350 Vityaz (Knight / Hero) (S0R6) / SA-28. GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/s-350.htm>

GS28 S-350E Vityaz / SA-28 - Design. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/s-350-design.htm>

GS29 Ten T-80 Tanks Deployed to Russian Pacific Fleet to Bolster Marines (Sputnik, reposted by GlobalSecurity). Sputnik / GlobalSecurity.org, 2019-09-10.

<https://www.globalsecurity.org/wmd/library/news/russia/2019/russia-190910-sputnik01.htm>

GS30 Contract on Delivering T-80BMV Tanks to Russian Army Fulfilled - Rostec (Sputnik, reposted by GlobalSecurity). Sputnik / GlobalSecurity.org, 2019-12-12.

<https://www.globalsecurity.org/wmd/library/news/russia/2019/russia-191212-sputnik04.htm>

GS31 T-90 specifications. GlobalSecurity.org.
<https://www.globalsecurity.org/military/world/russia/t-90-specs.htm>

GS32 Tachyon, GlobalSecurity. GlobalSecurity, 2022.
<https://www.globalsecurity.org/military/world/russia/tachyon.htm>

GS33 Russia's Western Military District gets newest Tornado-G multiple rocket launchers. TASS (reproduced by GlobalSecurity.org), 2015-07-22.

<https://www.globalsecurity.org/wmd/library/news/russia/2015/russia-150722-tass-02.htm>

GS34 TOS-1A Solntsepek (Sun) 220mm Multiple Rocket Launcher. GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/tos-1a.htm>

GS35 UR-77 Meteorit. GlobalSecurity.
<https://www.globalsecurity.org/military/world/russia/ur-77.htm>

GS36 9P140 Uragan (Hurricane) 220-mm Multiple Rocket Launcher. GlobalSecurity.org.

<https://www.globalsecurity.org/military/world/russia/9p140.htm>

GS37 ZALA421-16E5. GlobalSecurity.org.
<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>

HOTNEWS FOTO Ruși au aruncat în luptă o dronă extrem de rară. HotNews.ro, 2022-11.

<https://hotnews.ro/?p=98013>

HSCHL Russia's heavy equipment transporters (Henry Schlottman, Substack). Substack (personal blog), 202

ISW2 Russian Offensive Campaign Assessment, January 13, 2026. Institute for the Study of War, 2026-01-13. <https://understandingwar.org/research/russia-ukraine/russian-offensive-campaign-assessment-january-13-2026/>

IUS Drone War Accelerates Over Ukraine [summarising RUS], Watling and Reynolds, Ukraine at War, 2022). Inside Unmanned Systems, 2022. <https://insideunmannedsystems.com/drone-war-accelerates-over-ukraine/>

IZ Расчеты ГРВ-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-gaubitsy-bogdana-b-i-d-30-vsu-v-zone-svo>

I22 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-iz>

I23 Рукьё ЛПД-801 Первые использовали против дронов ВСУ. Izvestia [from TASS], 2022-07-09. <https://iz.ru/1362168/2022-07-09/ruzhie-lpd-801-vpervye-ispolzovali-protiv-dronov-vsu>

I24 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>

I25 Glushitelnii uspek: kompleks REB nakroet Evropu iz-pod Kaliningrada. Izvestia, 2019-04-26. <https://iz.ru/871450/aleksei-ramm-aleksei-kozachenko-bogdan-stepovoi/glushitelnii-uspek-kompleks-reb-nakroet-evropu-iz-pod-kaliningrada>

I26 Minobrony ispytaet kompleks REB Shipovnik-AERO [Izvestia]. Izvestia, 2016-09. <https://iz.ru/export/google/amp/188092>

I27 Удар РСЗО «Смерч» уничтожил артрасчет ВСУ на границе с Белородской областью. Izvestia, 2024-03-21. <https://iz.ru/1668950/2024-03-21/vs-rf-s-pomoshchiu-rszo-smersch-razgromili-artrasahet-vsu-na-granitse-belgorodskoi-oblasti>

I28 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-upravleniya-bpla-vsu-v-khersonskoi-oblasti>

I29 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>

I217 Artilleriya narashchivaet moshch. Izvestia, 2017-12-14. <https://iz.ru/675176/evgenii-andreev-bogdan-stepovoi-aleksei-ramm/artilleriya-narashchivaet-moshch>

I220 В Назорном Карабахе появились российские комплексы «Леер-3». Izvestia, 2021-11-25. <https://iz.ru/1092202/2020-11-25/v-nagornom-karabakhe-poiavilis-rossiiskie-kompleksy-leer-3>

I221 Командующий армией ЮО сообщил о скором поступлении С-350 «Витязь». Izvestia, 2021-08-12. <https://iz.ru/1206053/2021-08-12/komanduiushchii-armiei-yuo-soobshchil-o-skorom-postuplenii-s-350-vitiaz>

I222 В Западном округе создадут батальоны радиоэлектронной борьбы. Izvestia, 2022-02-02. <https://iz.ru/1285489/2022-02-02/v-zapadnom-okrugu-sozdaiut-batalony-radioelektromnoi-borby>

I223 Правящая «Коалиция»: в зоне спецоперации появилась самая дальнбойная САУ Izvestia, 2023-12. <https://iz.ru/1624356/roman-kretcul-iuliia-leonova-bogdan-stepovoi/praviashchaa-koalitsiia-v-zone-spetcoperatcii-poiavilas-samaia-dalnoboiiaia-sau>

I223B Dali nam samye krutye pushki iz tkht, chto est v mire. Izvestia, 2023-02. <https://iz.ru/1618422/dmitrii-astakhan/dali-nam-samye-krutye-pushki-iz-tkht-cto-est-v-mire>

I224 Поражительные средства: как усилит 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>

I224B Расчет ПТРК «Корнет» уничтожил вышку с аппаратурой ВСУ в Запорожской области. Izvestia, 2024-10-02. <https://iz.ru/1768176/2024-10-02/raschet-ptrk-kornet-unichtozhil-vyshku-s-apparaturoi-vsu-v-zaporozhskoi-oblasti>

I226 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-upravleniya-vrazheskikh-bespiplotnikov>

I2262 Минобороны РФ назвало дислокацию первой ЗРС С-350 «Витязь». Izvestia, 2020-01-14. <https://iz.ru/1964166/2020-01-14/minobrony-rf-nazvalo-diskolatsiiu-pervoi-zrs-s-350-vitiaz>

I2212 «Вербное» оснащение: стрелков-зенитчиков защитят новые броневики. Izvestia, 2021. <https://iz.ru/1179657/anton-lavrov-anna-cherepanova/verbnoe-osnashchenie-strelkov-zenitchikov-zashchitiat-novye-broneviki>

I2222 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-svazi-v-zone-svo>

I2232 Brigady podryad: VS RF usiliat artilleriyskie soedineniya bolshoy moshchnosti. Izvestia, 2023. <https://iz.ru/1612479/aleksei-ramm-bogdan-stepovoi/brigady-podriad-vs-rf-usiliat-artilleriiskie-soedineniya-bolshoi-moshchnosti>

I2233 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/gaubitsy-msta-s-i-pushki-giatcint-s-porazili-zhivuiu-silu-i-tehniku-vsu>

I2234 MO pokazalo boevuiu rabotu spetsialistov REB ZVO na kupianskom napravlenii SVO. Izvestia, 2023-12-17. <https://iz.ru/1621743/2023-12-17/mo-pokazalo-boevuiu-rabotu-spetcialistov-reb-zvo-na-kupianskom-napravlenii-svo>

I2242 Расчет ПЗРК «Верб» уничтожил беспилотник ВСУ на артемовском направлении. Izvestia, 2024-01-16. <https://iz.ru/1634850/2024-01-16/raschet-pzrk-verba-unichtozhil-bespiplotnik-vsu-na-artemovskom-napravlenii>

I2K Противовоздушная обстановка: какие ПЗРК защищают войска РФ на переговоях. Izvestia [with D. Kornev, Military Russia], 2023. <https://iz.ru/1567285/dmitrii-kornev/protivovozdushnaia-obstanovka-kakie-pzrk-za-shchishchait-voiska-rf-na-peredovoi>

I2MAL Новейшая гаубица «Мальва» выдержала попадание из HIMARS в зоне СВО. Izvestia, 2024-07-16. <https://iz.ru/1728408/2024-07-16/noveishaia-gaubitsa-malva-vyderzhala-popadanie-iz-himars-v-zone-svo>

I2OM Пилотный проект: на что способен робокмплекс «Омич». Izvestia, 2025. <https://iz.ru/2073682/dmitrii-astakhan/pilotnyi-proekt-na-cto-sposoben-robokompleks-omich>

I2ZRU Minobrony zaglushit GPS s vyshek sotovoi svyazi. Izvestiya, 2016-05-25. <https://iz.ru/news/628766>

I2ZRU2 В эпицентре «Торнадо»: новые бронегрузовики поступают на Северный Кавказ. Izvestia, 2020-06-17. <https://iz.ru/1024825/aleksei-ramm-bogdan-stepovoi/v-epitcentre-tornado-novye-bronegruzoviki-postupiat-na-severnyi-kavkaz>

I2V 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>

I2V1 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>

I2V2 Уралвагонзавод переименовал БМПТ «Терминатор» в «Спиритон». Izvestia, 2026-06-02. <https://iz.ru/2107613/na-uralvagonzavode-bmpt-terminator-pereimenovali-v-spiridon-i-zi>

I2V3 Расчеты гаубиц Д-20 уничтожили живую силу ВСУ в районе Часова Яра. Izvestia, citing Russian MoD, 2025-09-23. <https://iz.ru/1959666/2025-09-23/raschety-gaubic-d-20-unichtozili-zivuu-silu-vsu-v-raione-casova-ara>

I2V4 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>

I2V5 «Форпост» принял: ВМФ начал осваивать дроны дальнего радиуса действия. Izvestia, 2025-06-05. <https://iz.ru/export/google/amp/1898170>

I2V6 Sostroyt Lantseta: kakie novshestva primenyayutsya v kontrbatreynoy borbe. Izvestia, 2024-12 [inferred from a 2024-12-06 derivative]. <https://iz.ru/1802349/bogdan-stepovoi-vladimir-matveev/s-ostrotol-lanceta-kakie-novshestva-primenautsa-v-kontrbatareinoi-borbe>

I2V7 Контроль за воздушным пространством в Запорожье усилили радарми 1А119 «Небо-СВУ». Izvestia, 2021-04-15. <https://iz.ru/1152170/2021-04-15/kontrol-za-vozdushnym-prostranstvom-v-zapoliare-usili-gradami-1119-nebo-svu>

I2V8 Russia Integrates Military Capabilities into Civil Communications Infrastructure [OE Watch, quoting Izvestiya 25 Aug 2016]. US Army FMSO / OE Watch, 2016-10. <https://rntfnd.info/wp-content/uploads/Cell-Tower-Jammers-Russia.pdf>

I2V9 Vrazheskie bespiplotniki ubyt 'Repellentom'. Izvestia, 2016-12-29. <https://iz.ru/news/653954>

I2V10 Kozachenko A., Ramm A., 'Severnoe vliyanie: v Arktike razvernut sverkhdalnoboiye S-300V4'. Izvestia, 2019-08-19. <https://iz.ru/904692/aleksei-kozachenko-aleksei-ramm/severnoe-vlianie-v-arktike-razvernut-sverkhdalnoboiye-s-300v4>

I2V11 Танковый «Прорыв»: войска в Центральной России уккомплектыют Т-90М. Izvestia, 2020-03. <https://iz.ru/export/google/amp/989082>

I2V12 Зенитчики рассказали об особенностях работы ЗРК Top-M2 в зоне СВО. Izvestia, 2024-05-02. <https://iz.ru/1690614/2024-05-02/zenitchiki-rasskazali-ob-osobennostiakh-raboty-zrk-top-m2-v-zone-svo>

I2V13 Колесить по тылам: армейский спецназ получит новый броневедомоиль. Izvestia, 2021. <https://iz.ru/1164819/roman-kretcul-anna-cherepanova/kolesit-po-tylam-armeiskii-spetcnaz-poluchit-novyi-broneavtomobil>

I2V14 Войска ВДВ на учениях «Центр-2026» впервые десантировали НРПК из самолета. Izvestia, 2026-10-02. <https://iz.ru/2177678/voiska-vdv-na-ucheniakh-tcentr-2026-vpervye-desantirovali-nrtk-iz-samoletov-iz>

I2V15 В общевоисковых армиях создадут мобильные группы по борьбе с дронами. Izvestia, 2024-03-29. <https://iz.ru/1767367/2024-03-29/v-obshchevoikovykh-armiiah-sozdadut-mobilnye-gruppy-po-borbe-s-dronami>

I2V17 Танки поведут на «Веоуснегах» [Izvestia, Ramm and Litovkin, 21 Jun 2017]. Izvestia, 2017-06-21. <https://iz.ru/608113/aleksei-ramm-dmitrii-litovkin/tankisty-peresiadut-na-tiazhelye-velosipedy>

I2V19 На пляж с «Хризантемами»: береговые бригады усиливают артистематами. Izvestia, 2019-01-15. <https://iz.ru/832205/aleksei-ramm-aleksandr-kruglov/na-plazh-s-khrizantemami-beregovye-brigady-usilivaiut-artisistemami>

I2V20 «Пенициллин» углем в разбегу. Izvestia, 2020-04. <https://iz.ru/1007743/bogdan-stepovoi-anton-lavrov/penicillin-idet-v-razvedku-artilleriiu-navedut-na-tsel-elektronnye-kompleksy>

I2V21 Оснащение Сибирь: 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-ozruzhia>

I2V22 «Хризантемы» в цетве: юз страны прикроют высокоточные ракетные комплексы. Izvestia, 2023-10-06. <https://iz.ru/1584777/aleksei-ramm-bogdan-stepovoi/oglushitelnyi-effekt-kogda-voiska-poluchat-sistemy-reb-bylyna>

I2V24 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>

I2V222 ВС РФ получили комплексы разведки «Пенициллин» для применения в зоне СВО. Izvestia, 2023-12-17. <https://iz.ru/1442261/2022-12-17/vs-rf-poluchili-kompleksy-razvedki-penicillindlia-primeneniia-v-zone-svo>

I2V223 Сибирь защитят модернизированные комплексы «Фаворит». Izvestia, 2022-07-20. <https://iz.ru/1367354/2022-07-20/sibir-zashchitiat-modernizirovannye-kompleksy-favorit>

I2V224 Kurs «Zemledeliya»: yug Rossii usilyat «reaktivnymi» minnymi polyami. Izvestia, 2022-02-16. <https://iz.ru/1291330/roman-kretcul-bogdan-stepovoi/kurs-zemledeliia-iug-rossii-usiliat-reaktivnymi-minnymi-poliami>

I2V232 Российские военные сбили украинский Му-8 из «Иглы» в районе Лозово. Izvestia, citing RIA Novosti, 2023-05-24. <https://iz.ru/15175708/2023-05-24/rossiiskie-voennye-sbili-ukrainskii-mi-8-iz-igly-v-ralone-lozovo>

I2V233 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-minobrony-rf-rasskazali-o-boevoi-rabote-ptrk-shturn-s-v-zone-svo>

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/>

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 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>

JANES3 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>

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. ISBN 0-00-472452-6

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed. [Foss]: 122mm self-propelled gun M1974 (2S1). HarperCollins / Jane's, 2000. ISBN 0-00-472452-6 [printed book; no public URL]

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed. [Foss], 2S1 entry, variants, p. 412-413. HarperCollins / Jane's, 2000. ISBN 0-00-472452-6 [printed book]

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed. [Foss], 2S1 entry, variants, p. 412-413. HarperCollins / Jane's, 2000. ISBN 0-00-472452-6 [printed book]

JANESRG Jane's Tanks and Combat Vehicles Recognition Guide, 2nd ed., T-72 key recognition features. HarperCollins / Jane's, 2000. ISBN 0-00-472452-6 [printed book; local text sources_cache/janes_foss.txt]

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>

JFRC Russian Northern Fleet Temporary River Bridging Exercise. Joint Forces News (Northern Fleet press 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>

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. Not public

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.

books/jrew_2002_ru/jrew2002_ru.md

JREW02 Jane's Radar and EW Systems, entry JREW-p1882 55G6-UE Nebo-U, PDF pp. 1882–1883; also 11L3–3 (JREW-p1956). Jane's Information Group, 2001–07.

Not public (local: books/jrew_2002_ru/jrew2002_ru.md)

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.

Not public; (JREW02, JREW-p1795, PDF pp. 1795–1796 [also JREW-p1992 Romb])

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](https://kalashnikov.club/bpla-takhion-kruglosutochnyy-razvedchik), 2022–12.

<https://kalashnikov.club/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_vooruzheniya_Kniga_1.pdf

K11 Ukraine claims strike on Onyx and Zircon missile launcher in occupied Crimea. Kyiv Independent, 2026–08–16.

<https://kyivindependent.com/ukraine-strikes-onyx-and-zircon-launcher-in-occupied-crimea-military-says/>

K12 Opinion: A look at the drone arsenal Russia uses against Ukraine (Kharuk). Kyiv Independent, 2024–04–16.

<https://kyivindependent.com/opinion-a-look-at-the-drone-arsenal-russia-uses-against-ukraine/>

K13 As Russia's fiber optic drones flood the battlefield, Ukraine is racing to catch up (F. Farrell). The Kyiv Independent, 2025–05–20. <https://kyivindependent.com/as-russias-fiber-optic-drones-flood-the-battlefield-ukraine-is-racing-to-catch-up/>

K14 Ukraine's intelligence reveals Russian brigades responsible for Sumy attack. Kyiv Independent, 2025–04–13.

<https://kyivindependent.com/ukraines-intelligence-reveals-russian-brigades-responsible-for-sumy-attack/>

K15 Exclusive: Majority of companies involved in Russian Molniya drone production unsanctioned. Kyiv Independent, 2026–09–25. <https://kyivindependent.com/exclusive-majority-of-companies-involved-in-russian-molniya-drone-production-unsanctioned-research-shows/>

K16 Ukraine struck \$100 million Russian Nebo-U radar system in occupied Crimea, General Staff claims. Kyiv Independent, 2026–02–13.

<https://kyivindependent.com/ukraine-says-it-struck-100-million-russian-nebo-u-radar-system-in-occupied-crimea/>

K17 Hundreds of Russian vehicles, weapon systems seized during Kharkiv counterattack. Kyiv Independent, 2022–09.

<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, свезабиwатель 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 КАЗ-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>

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 Ukraine Strikes Russian Fuel Trains, Destroys Rare 'Inokhodets' Drones in Crimea. Kyiv Post, 2026–04–04.

<https://www.kyivpost.com/amp/post/73228>

KP4 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 North Korean Ammo Keeps 70-Year-Old Russian Guns Firing. Kyiv Post, 2024–06–30.

<https://www.kyivpost.com/post/35075>

KP22 Russian Defense Ministry Showcases 1950s Howitzers in Kursk to Boost Recruitment. Kyiv Post, 2024–08.

<https://kyivpost.com/post/38045>

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/amp/post/46692>

KP26 Russia Repurposes Gerbera Drone as FPV Carrier for First Time. Kyiv Post, 2026–02.

<https://www.kyivpost.com/post/69364>

KP262 Operator Orlan-30 ... porazhayut tseli vysokotochnymi snaryadami. Komsomolskaya Pravda, 2026–07–09.

<https://www.kp.ru/daily/27796/5274528/>

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 Prykordonyky pokazaly, yak znyshchyly novitnii rosiiskyyi kompleks REB R-340RP Pole-21. Kyiv Post (Ukrainian edition), 2024–04.

<https://www.kyivpost.com/uk/amp/post/30942>

KUBNEWS Разведчику получили напругу ПАС Соболятник у станції разБегука Фара. Kubanskie Novosti (quotes Southern MD press service, TASS), 2021–03–05.

<https://kubnews.ru/obshchestvo/2021/03/05/razvedchiki-poluchili-partiyu-ris-sobolyatik-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 \$600K in 30 Minutes: Ukraine Downs Two of Russia's Most Expensive Recon Drones. Kyiv Post, 2025.

<https://www.kyivpost.com/post/51783>

KYIVP2 Ukrainian Special-Ops Pick Off Russia's Cutting-Edge Radio Relay Station. Kyiv Post, 2024–06–13.

<https://www.kyivpost.com/amp/post/34226>

KYIVP3 Ukraine Uses Hummers as Improvised Remote Anti-Tank Mine Layers. Kyiv Post, c. 2024 (undated page).

<https://www.kyivpost.com/post/43317>

KYIVPOST Ukraine Blows Up One S-400 Division, Two S-300s in Crimea. Kyiv Post, 2024–06–10.

<https://www.kyivpost.com/amp/post/34045>

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 fokus, reprinting Krasnaya Zvezda (MoD newspaper), 2026–06–05.

<https://vfokuse.mail.ru/news/69624868-voyuyschie-na-sau-malva-bojtsy-nazyivayut-ee-snaiperskoj-vintovkoj/>

KZ2 Самоходки «Мальва» ведут непрерывную огневую работу по позициям ВСУ. Mail.ru V fokus, reprinting Krasnaya Zvezda (MoD newspaper), 2026–08–14.

<https://vfokuse.mail.ru/news/69636296-samohodki-malva-vedut-nepreprvnyuyu-ognevuyu-rabotu-po-pozitsiyam-vsui/>

KZ3 Na Kamchatke uspešno 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-nadozhno-prikrity-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-nadozhno-zashishhenoi/>

LB Russia demothballs rare 130mm M-46. LB.ua (citing Defense Express), 2024–01–28.

https://en.lb.ua/news/2024/01/28/26722_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 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 Rossiyskim desantnikam pomogut Dzyudoisty. Lenta.ru, 2012–07–06.

<https://lenta.ru/news/2012/07/06/judoka/>

LENTA2 «Князь Вандаг» разбил колонну ВСУ под Курском. Lenta.ru, 2024–10–30.

<https://lenta.ru/news/2024/10/30/knyaz-vandal-razbil-kolonnu-vsui-pod-kurskom-chto-iz-sebya-predstavlyayet-revolutsionnoe-oruzhie-rossii/>

LENTA3 Комплексы Гарпун-3 применили против дронов. Lenta.ru (from TASS), 2022–10–17.

<https://lenta.ru/news/2022/10/17/harpoon/>

LENTA4 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/>

LENTA5 KRET handed MoD ten 1L262E Rtut-BM complexes (Lenta.ru news). Lenta.ru, 2013–11–25.

<https://lenta.ru/news/2013/11/25/mercury/>

LENTA6 Vostochnyy voyennyy krug poluchil polkovoy kompleks S-400. Lenta.ru (citing RIA Novosti and MoD press service), 2012–06–09.

<https://lenta.ru/news/2012/06/09/s400>

LENTA7 V SShA obespekoliis rossiyskimi unichtozhitelyami Starlink. Lenta.ru, 2025–04–03.

<https://lenta.ru/news/2025/04/03/v-ssha-obespekoliis-rossiyskimi-unichtozhitelya-mi-starlink/>

LENTA8 Российская армия перевооружилась на «Искандеры». Lenta.ru, citing Russian MoD, 2019–11–22.

<https://lenta.ru/news/2019/11/22/iskander/>

LENTA9 Российский «Омич» разогнался го 60 километров в час. Lenta.ru, 2026–07–21.

<https://lenta.ru/news/2026/07/21/rossiyskiy-omich-razognalsya-do-60-kilometrov-v-chas/>

LENTA10 В России рассказали о применении незаметных для украинских войск беспилотников. Lenta.ru, 2022–04–27.

<https://lenta.ru/news/2022/04/27/bespilotniki/>

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/>

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, patrol-7020, sarmat, z-sts-akhmat, gusar, buran-asv, toros. Project lexicon (pilot/lexicon/lexicon_final.json), 2026–09–30.

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 Контрразведчики СБУ уничтожили с дрона российскую систему борьбы с дронами. Liga.net, 2022–10.

MDB Iskander the Great (Barabanov), Moscow Defense Brief 4/2008. CAST, 2008.
https://www.files.ethz.ch/isn/94687/2008_4.pdf

MEDUZA 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-besplotnikov-kotorye-rossiyskaya-armiya-ispolzuet-v-ukraine-fotografi>

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-2/

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.
https://www.militaryfactory.com/armour/detail.php?armor_id=704

MF2 Kalashnikov Takhion (Tachyon) Mini-UAV. Military Factory, 2022-04.
https://www.militaryfactory.com/aircraft/detail.php?aircraft_id=2466

MFRAБ About the company. GK Besplotnye sistemy, undated, read 2026-10.
<https://supercam.aero/about>

MIL Ukrainian Forces Score a Victory with Destruction of Russian Dzdudoist EW System. Militarynyi (mil.in.ua), 2023-04-25.
<https://mil.in.ua/en/news/ukrainian-forces-score-a-victory-with-destruction-of-russian-dzdudoist-ew-system/>

MIL1 82-мм автоматичний міномет 2Б9 «Васильок». Militarynyi. MilitaryFactory.com/uk/articles/82-mm-avtomatichnyi-mi-nomet-2b9-vasylok/

MIL2 Росіяни заявляють про збільшення випуску снарядів «Куполов». Militarynyi, 2025.
<https://militarynyi.com/uk/news/rosiyan-yavlyayut-pro-zbilshennya-vypusku-snyariyad-kytlov-yakyh-navit-ne-bachyli-na-fronti/>

MIL3 Russians use extremely rare 2S31 Vena ACS. Militarynyi, 2023-09.
<https://militarynyi.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. Militarynyi, 2024-07.
<https://militarynyi.com/en/news/the-destruction-of-a-rare-2s34-hosta-spg-in-the-donetsk-region-was-captured-on-video/>

MIL5 Під Бахмутом знищили гві «Нони» окупантів. Militarynyi, 2023-04.
<https://militarynyi.com/uk/news/pid-bahmutom-znyshhyly-dvi-nony-okupantiv/>

MIL6 Defence Intelligence of Ukraine Strikes S-400 Launcher and Radar in Crimea. Militarynyi, 2026-07-27.
<https://militarynyi.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. Militarynyi.
<https://militarynyi.com/en/news/russian-ark-1-rys-radar-neutralized-in-the-kherson-region/>

MIL8 Counter-battery radars of Russia under Ukrainian fire (Ukrainian text). Militarynyi, 2025.
<https://militarynyi.com/uk/articles/kontrbatarejni-radari-rosiyi-pid-vognem-zsu-sho-znysheno-i-chomu-tse-vazhlyvo/>

MIL9 Ukrainian Drones Hit Module of Russia's Rare Barnaul-T System. Militarynyi, 2025-08 (inferred from image path).
<https://militarynyi.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. Militarynyi, 2022.
<https://militarynyi.com/en/news/the-trophy-of-the-armed-forces-of-ukraine-became-the-bat-2-cev-of-the-russian-invaders/>

MIL11 БМА-2 (reference article). Militarynyi.
<https://militarynyi.com/uk/articles/bmd-2/>

MIL12 Russian Army receives new BMP-3 and BMD-4M. Militarynyi, 2024.
<https://militarynyi.com/en/news/russian-army-receives-new-bmp-3-and-bmd-4m/>

MIL13 Modernized Russian BMP-1AM Falls into Hands of Ukrainian 58th Brigade. Militarynyi, 2023-11.
<https://militarynyi.com/en/news/modernized-russian-bmp-1am-falls-into-hands-of-ukrainian-58th-brigade/>

MIL14 Армія Росії отримала нові БМПТ «Терминатор». Militarynyi, 2025-10.
<https://militarynyi.com/uk/news/armiya-rosiyi-otrymala-novi-bmpt-terminator/>

MIL15 У Росії офіційно перейменували БМПТ «Терминатор» на «Спиридон». Militarynyi, 2026-06.
<https://militarynyi.com/uk/news/perejmenuvali-bmpt-terminator-na-spyrydon/>

MIL16 Ukrainian Forces Destroy Third Borisoglebsk-2 Electronic Warfare System in a Week. Militarynyi, April, year not shown on fetched text.
<https://militarynyi.com/en/news/ukrainian-forces-destroy-third-borisoglebsk-2-electronic-warfare-system-in-a-week/>

MIL17 Ukrainian military destroy the Russian R-934BMV Borisoglebsk-2 EW system. Militarynyi, 2023-10-16.
<https://militarynyi.com/en/news/ukrainian-military-destroy-the-russian-r-934bm-borisoglebsk-2-ew-system/>

MIL18 414th Strike Drone Regiment destroyed a Russian R-934BMV electronic warfare station of the Borisoglebsk-2 system. Militarynyi, 2024-11.
<https://militarynyi.com/en/news/414th-strike-drone-regiment-destroyed-a-russian-r-934bm-electronic-warfare-station-of-the-borisoglebsk-2-system/>

MIL19 Russian BREM-1 destroyed in the Zaporizhzhia region. Militarynyi, 2023.
<https://militarynyi.com/en/news/russian-brem-1-destroyed-in-the-zaporizhzhia-region/>

MIL20 Ukrainian Air Assault Forces demonstrated an unknown modernized version of BRM-1K. Militarynyi.
<https://militarynyi.com/en/news/ukrainian-air-assault-forces-demonstrated-an-unknown-modernized-version-of-brm-1k/>

MIL21 A rare BTR-90 was spotted among the defeated column of Russians near Adivivka. Militarynyi, 2023-12.
<https://militarynyi.com/en/news/a-rare-btr-90-was-spotted-among-the-defeated-column-of-russians-near-advivka/>

MIL22 Volunteers restored the captured BTR-MD Rakushka for Ukrainian paratroopers. Militarynyi, 2023-06.
<https://militarynyi.com/en/news/volunteers-restored-the-captured-btr-md-rakushka-for-ukrainian-paratroopers/>

MIL23 Ukrainian Forces Destroy Russian Buk-M2 Air Defense Systems. Militarynyi, 2025-04-21.
<https://militarynyi.com/en/news/ukrainian-forces-destroy-russian-buk-m2-air-defense-systems/>

MIL24 Unmanned Systems Forces Shoot Down Russian Forpost-R Drone Over Kursk Region at 4.3 km Altitude. Militarynyi, 2026-07-27.
<https://militarynyi.com/en/news/unmanned-systems-forces-shoot-down-russian-forpost-r-drone-over-kursk-region-at-4-3-km-altitude/>

MIL25 Range of 50-65 km: Russians Modernized Fiber Optic FPV Drone Prince Vandal. Militarynyi, 2025-12-27.
<https://militarynyi.com/en/news/range-of-50-65-km-russians-modernized-fiber-optic-fpv-drone-prince-vandal/>

MIL26 Russians complete formation of first UAV regiment, present it at May 9 parade. Militarynyi, 2025-05.
<https://militarynyi.com/en/news/russians-completes-formation-of-first-uav-regiment-presents-it-at-may-9-parade/>

MIL27 Ukraine's Unmanned Systems Forces destroy training base of Russian GROM Kaskad drone brigade. Militarynyi, 2026-09.
<https://militarynyi.com/en/news/ukraine-s-unmanned-systems-forces-destroy-training-base-of-russian-grom-kaskad-drone-brigade/>

MIL28 Ukrainian intelligence releases detailed analysis of Russian Geran-3 jet-powered UAV (series UJ). Militarynyi, 2025-09.
<https://militarynyi.com/en/news/ukrainian-intelligence-releases-detailed-analysis-of-russian-geran-3-jet-powered-uav-series-u/>

MIL29 Caught on the Ground: NEMESIS Unmanned Systems Brigade Strikes Russian Gerbera UAV on Launch Vehicle. Militarynyi, 2025-12.
<https://militarynyi.com/en/news/caught-on-the-ground-nemesis-unmanned-systems-brigade-strikes-russian-gerbera-uav-on-launch-vehicle/>

MIL30 Drones and Artillery Strike Russian Navodchik-2 UAV. Militarynyi.
<https://militarynyi.com/en/news/drones-and-artillery-strike-russian-navodchik-2-uav/>

MIL31 Ukrainian military destroys Russian R-934B Sinitsa electronic warfare station. Militarynyi, 2024-10 (inferred from image upload path; no date in text).
<https://militarynyi.com/en/news/ukrainian-military-destroys-russian-r-934b-sinitsa-electronic-warfare-station/>

MIL32 Ukrainian bomber drones destroy two stations of Borisoglebsk-2 EW system. Militarynyi, 2025-04 (inferred from image upload path; no date in text).
<https://militarynyi.com/en/news/ukrainian-bomber-drones-destroy-two-stations-of-borisoglebsk-2-ew-system/>

MIL33 Russian 9K333 Verba MANPADS mounted on Shahed drone shot down by Darknode Battalion soldiers. Militarynyi, 2026-01.
<https://militarynyi.com/en/news/russian-9k333-verba-manpads-mounted-on-shahed-drone-shot-down-by-darknode-battalion-soldiers/>

MIL34 Sumy Missile Attack Traced to Russia's 112th and 448th Brigades. Militarynyi, 2025-04-13.
<https://militarynyi.com/en/news/sumy-missile-attack-traced-to-russia-s-112th-and-448th-brigades/>

MIL35 Artillery hits elements of Russian 35N6 Kasta radar. Militarynyi, 2025.
<https://militarynyi.com/en/news/artillery-hits-elements-of-russian-35n6-kasta-radar/>

MIL36 Russia monitors the sky of Kharkiv region with the Kasta-2E2 radar station. Militarynyi.
<https://militarynyi.com/en/news/russia-monitors-the-sky-of-kharkiv-region-with-the-kasta-2e2-radar-station/>

MIL37 In the Kyiv region, Russian servicemen has lost part of the Krasukha-4 EW system. Militarynyi, 2022-03-23.
<https://militarynyi.com/en/news/in-the-kyiv-region-russian-servicemen-has-lost-part-of-the-krasukha-4-ew-system/>

MIL38 Ukrainian Forces eliminate Russian Krasukha-4 EW System in Zaporizhzhia region. Militarynyi, 2023-11-01.
<https://militarynyi.com/en/news/ukrainian-forces-eliminate-russian-krasukha-4-ew-system-in-zaporizhzhia-region/>

MIL39 Hackers Leak Detailed Photos of Russian EW System 1RL257 Krasukha-4. Militarynyi, 2025-10-09.
<https://militarynyi.com/en/news/hackers-leak-detailed-photos-of-russian-ew-system-1rl257-krasukha-4/>

MIL40 ZALA Lancet: engagement and countereffort (Yan). Militarynyi, 2023-07-18.
<https://militarynyi.com/en/articles/zala-lancet-engagement-and-countereffort/>

MIL41 Ukrainian Defence Forces destroyed the Russian Leer-2 EW system. Militarynyi, 2023-11.
<https://militarynyi.com/en/news/ukrainian-defence-forces-destroyed-the-russian-leer-2-ew-system/>

MIL42 Mykolaiv paratroopers shot down enemy drone capable of jamming GSM connection. Militarynyi.
<https://militarynyi.com/en/news/mykolaiv-paratroopers-shot-down-enemy-drone-capable-of-jamming-gsm-connection/>

MIL43 Armed Forces destroyed APC with an RP-377 EW system, Kherson left bank. Militarynyi, 2024.
<https://militarynyi.com/en/news/the-armed-forces-destroyed-the-apc-with-an-rp-377-ew-system-on-the-left-bank-of-the-kherson-region/>

MIL44 Armed Forces of Ukraine seize new Russian Buran armored vehicle in Kursk oblast. Militarynyi, 2024.
<https://militarynyi.com/en/news/armed-forces-of-ukraine-seize-new-russian-buran-armored-vehicle-in-kursk-oblast/>

MIL72 T-54 and T-55: What are those tanks, and how Russia uses them against Ukraine. Militarynyi, 2023-07.
<https://militarynyi.com/en/articles/t-54-and-t-55-what-are-those-tanks-and-how-russia-uses-them-against-ukraine/>

MIL46 Russia's own Mohajer-6 drone spotted crashed in Kursk region. Militarynyi, 2024-05.
<https://militarynyi.com/en/news/russia-s-own-mohajer-6-drone-spotted-crashed-in-kursk-region/>

MIL47 In Crimea, SSU struck Iranian Mohajer-6 drone and Pantsir-S2 systems. Militarynyi, 2026-03-06.
<https://militarynyi.com/en/news/in-crimea-ssu-struck-mohajer-6-pantsir-s2/>

MIL48 Ukrainian Forces Shoot Down AI-Equipped Molniya UAV for the First Time. Militarynyi, 2026-06.
<https://militarynyi.com/en/news/ukraine-shoot-down-ai-molniya-uav-first/>

MIL49 General Cherry AIR Drones Downed Over 1000 Russian Molniya UAVs in December. Militarynyi, 2026-01.
<https://militarynyi.com/en/news/general-cherry-air-drones-downed-over-1000-russian-molniya-uavs-in-december/>

MIL50 Lightning 13: РФ розробила нову версію ударного БпЛА «Молния». Militarynyi (Ukrainian edition), 2026-06.
<https://militarynyi.com/uk/news/lightning-13-versiyu-udarnogo-bpla-molnnya/>

MIL51 HIMARS destroyed a battery of Russian Msta-S. Militarynyi, 2023-06-14.
<https://militarynyi.com/en/news/himars-destroyed-a-battalion-of-russian-msta-s/>

MIL52 MT-LB: combat chariot of the Russo-Ukrainian war. Militarynyi, 2023.
<https://militarynyi.com/en/articles/mt-lb-combat-chariot-of-the-russo-ukrainian-war>

MIL53 Russian invaders lost a rare MT-LB 6MB. Militarynyi, undated (2022-2023).
<https://militarynyi.com/en/news/russian-invaders-lost-a-rare-mt-lb-6mb/>

MIL54 РФ відправляє в Україну 80-му арктичну бригаду з фінського корону. Militarynyi, 2022.
<https://militarynyi.com/uk/news/rf-vidpravlyaye-v-ukrayinu-80-tu-arktychnu-brygadu-z-finskogo-kordonu-popyr-vstup-krayiny-v-nato/>

MIL55 Defense Intelligence of Ukraine Struck Russian Murmansk-BN Electronic Warfare station in Crimea. Militarynyi, 2026-07.
<https://militarynyi.com/en/news/diu-struck-murmansk-bn-ew-station-in-crimea/>

MIL56 Ukrainian Armed Forces Destroy Russian 1L119 Nebo-SVU Radar in Kherson Region. Militarynyi, 2024-01.
<https://militarynyi.com/en/news/ukrainian-armed-forces-destroy-russian-1l119-nebo-svu-radar-in-kherson-region/>

MIL57 The commander of the 3rd Signals Intelligence Regiment was eliminated in Crimea. Militarynyi, 2024-01.
<https://militarynyi.com/en/news/the-commander-of-the-3rd-signals-intelligence-regiment-was-eliminated-in-crimea/>

MIL58 Ukrainian Armed Force destroy the Russian Palantin-K EW system for the first time. Militarynyi, 2023-02.
<https://militarynyi.com/en/news/ukrainian-armed-force-destroy-the-russian-palantin-k-ew-system-for-the-first-time/>

MIL59 Ukrainian Special Forces Eliminate Russian Palantin EW System. Militarynyi, 2024-03-11.
<https://militarynyi.com/en/news/ukrainian-special-forces-eliminate-russian-palantin-ew-system/>

MIL60 Belarus Supplying Russia With MZKT Armored Chassis for New Pantsir Version Since 2024. Militarynyi, 2025-11.
<https://militarynyi.com/en/news/belarus-supplying-russia-with-mzkt-armored-chassis-for-new-pantsir-version-since-2024/>

MIL61 Ukrainian Special Operation Forces destroyed a pontoon unit in the Kursk region. Militarynyi, 2024-08.
<https://militarynyi.com/en/news/ukrainian-special-operation-forces-destroyed-a-pontoon-unit-in-the-kursk-region/>

MIL62 Russian military use Strizh-3 EW systems against Ukrainian drones. Militarynyi, 2024.
<https://militarynyi.com/en/news/russian-military-use-strizh-3-ew-systems-against-ukrainian-drones/>

MIL63 Transcarpathian brigade captured the Silok-01 EW system. Militarynyi, 2022.
<https://militarynyi.com/en/news/transcarpathian-brigade-captured-the-silok-01-ew-system/>

MIL64 Russians Lost Rare PRP-4 Vehicles in Combat. Militarynyi, 2025-11-07.
<https://militarynyi.com/en/news/russians-lost-rare-prp-4-vehicles-in-combat/>

MIL65 The Ukrainian military seized a Russian R-149MA1 command post carrier. Militarynyi, 2022.
<https://militarynyi.com/en/news/the-ukrainian-military-seized-a-russian-r-149ma1-command-post-carrier/>

MIL66 The Armed Forces had seized the russian R-166-0.5 radio station in the Sumy region. Militarynyi, 2022.
<https://militarynyi.com/en/news/the-armed-forces-had-seized-the-russian-r-166-0-5-radio-station-in-the-sumy-region/>

MIL67 Ukrainian Drones Strike Tor, Redut-2US, and Kaira Operator Post. Militarynyi, 2026-05-14.
<https://militarynyi.com/en/news/ukraine-drones-strike-tor-redut-2us-kaira/>

MIL68 Strike on Novorossiysk: Sheshkharis oil terminal and air-defense base hit. Militarynyi, 2025-11-14.
<https://militarynyi.com/en/news/strike-on-novorossiysk-sheshkharis-oil-terminal-and-air-defense-base-hit/>

MIL69 Satellite images confirm destruction of S-400 launchers and radars in Novorossiysk. Militarynyi, 2025-11.
<https://militarynyi.com/en/news/satellite-images-confirm-destruction-of-s-400-launchers-and-radars-in-novorossiysk/>

MIL70 23 мм зенітна самохідна установка 3CY-23-4 «Шулка» 2A6. Militarynyi.
<https://militarynyi.com/uk/articles/23-mm-zenitna-samohidna-ustanovka-shylka-2a6/>

MIL71 Росіяни залучили 3CY-23-4 «Шулка» го штурму позицій українських десантників. Militarynyi, 2024-11 (inferred from image upload path).
<https://militarynyi.com/uk/news/rosiyan-zaluchly-zsu-23-4-shylka-do-shturnu-pozitsij-ukrayinskykh-desantnykiv/>

MIL72 T-54 and T-55: What are those tanks, and how Russia uses them against Ukraine. Militarynyi, 2023-07.
<https://militarynyi.com/en/articles/t-54-and-t-55-what-are-those-tanks-and-how-russia-uses-them-against-ukraine/>

MIL73 Russians Show T-62M and T-62MV Tanks Upgrades: Self-Entrenching Blades, Tank Sweeps and EW. Militaryrny.

<https://militaryrny.com/en/news/russians-show-t-62m-and-t-62mv-tanks-upgrades-self-entrenching-blades-tank-sweeps-and-ew/>

MIL74 Details of the elimination of the first T-90M Proryv in the Kharkiv region have appeared. Militaryrny, 2022-05.

<https://militaryrny.com/en/news/details-of-the-elimination-of-the-first-t-90m-proryv-in-the-kharkiv-region-have-appeared/>

MIL75 Drones of National Guard disrupted MTU-72 bridge layer in Donetsk (Militaryrny). Militaryrny, 2025-12-03.

<https://militaryrny.com/uk/news/drony-natsgardiyi-zirvaly-robotu-mostoukladachamtu-72-na-donechchyni/>

MIL76 Ukrainian army captured Russian Torn-MDM SIGINT system. Militaryrny, 2022-03.

<https://militaryrny.com/en/news/ukrainian-army-captured-russian-torn-mdm-sigint-system/>

MIL77 Soltsepyok, Buratino, and Tosochka: The Threat of Russian Thermobaric Flamethrowers in Ukraine (Kozatskyi). Militaryrny, 2024-10-14.

<https://militaryrny.com/en/articles/soltsepyok-buratino-and-tosochka-the-threat-of-russian-thermobaric-flamethrowers-in-ukraine/>

MIL78 Russians lost the state-of-the-art TOS-2 Tosochka flamethrower system. Militaryrny, 2025-02-16.

<https://militaryrny.com/en/news/russians-lost-the-state-of-the-art-tos-2-tosochka-flamethrower-system/>

MIL79 Russia presents Drakon TOS-3 MRL for the first time. Militaryrny, 2024-06-04.

<https://militaryrny.com/en/news/russia-presents-drakon-tos-3-mrl-for-the-first-time/>

MIL80 In Russia, the development of Pantsir-SM-SV air defense system has been advanced. Militaryrny, 2024-01-06.

<https://militaryrny.com/en/news/russia-the-development-of-pantsir-sm-sv-air-defense-system-has-been-advanced/>

MIL81 Russia modernizes BM-27 Uragan rocket launchers with BAZ-69092 chassis upgrade. Militaryrny, 2023-12-20.

<https://militaryrny.com/en/news/russia-modernizes-bm-27-uragan-rocket-launchers-with-baz-69092-chassis-upgrade/>

MIL82 Силы обороны зрущили пікікнучу РСЗВ «Ураган» на шасі вантажівки «БАЗ». Militaryrny, 2024-08-25.

<https://militaryrny.com/uk/news/sily-oborony-zruchili-pikiknuchu-rszzv-uragan-na-shasi-vantazhivky-baz/>

MIL83 Tornado-U trophy armored vehicle restored for Kraken Regiment. Militaryrny, 2023-09.

<https://militaryrny.com/en/news/tornado-u-trophy-armored-vehicle-restored-for-kraken-regiment/>

MIL84 Ukrainian forces target Russian counter-battery radars: what was hit and why it matters. Militaryrny, 2025.

<https://militaryrny.com/en/articles/ukrainian-forces-target-russian-counter-battery-radars-what-was-hit-and-why-it-matters/>

MIL85 Russia deploys the newest Yastreb-AV system to war against Ukraine. Militaryrny, 2024-01.

<https://militaryrny.com/en/news/russia-deploys-the-newest-yastreb-av-system-to-war-against-ukraine/>

MIL86 HIMARS hits a rare Russian Yastreb-AV radar in the Donetsk region. Militaryrny, 2024.

<https://militaryrny.com/en/news/himars-hits-a-rare-russian-yastreb-av-radar-in-the-donetsk-region/>

MIL87 Ukrainian Defense Destroys New Russian Yastreb-AV Radar in Donetsk Region. Militaryrny, 2024.

<https://militaryrny.com/en/news/ukrainian-defense-destroys-new-russian-yastreb-av-radar-in-donetsk-region/>

MIL88 The Ukrainian servicemen shot down an enemy ZALA 421-16E2 drone. Militaryrny, 2022-05 (approx.).

<https://militaryrny.com/en/news/the-ukrainian-servicemen-shot-down-an-enemy-zala-421-16e2-drone/>

MIL89 Modern Russian ZALA 421-16E2 UAV neutralized near Izium. Militaryrny, 2022-07 (approx.).

<https://militaryrny.com/en/news/modern-russian-zala-421-16e2-uav-neutralized-near-izium/>

MIL90 Ukrainian Bukovel-AD EW system landed Russian ZALA 421-16E2 UAV. Militaryrny, 2023-03 (approx.).

<https://militaryrny.com/en/news/ukrainian-bukovel-ad-ew-system-landed-russian-zala-421-16e2-uav/>

MIL91 The Russians lost two Zala UAVs that were adjusting strikes in Ukraine. Militaryrny, 2024-07 (approx.).

<https://militaryrny.com/en/news/the-russians-lost-two-zala-uavs-that-were-adjusting-strikes-in-ukraine/>

MIL92 Russian R-330Zh Zhitel EW system destroyed in the Kharkiv Region. Militaryrny, 2022-09.

<https://militaryrny.com/en/news/russian-r-330zh-zhitel-ew-system-destroyed-in-the-kharkiv-region/>

MIL93 Ukrainian military hit 4 Zoopark-1 radar stations. Militaryrny, 2023-11-04.

<https://militaryrny.com/en/news/ukrainian-military-hit-4-zoopark-1-radar-stations/>

MIL94 Destroyed Zoopark-1M radar found in Kherson region. Militaryrny, 2023-02.

<https://militaryrny.com/en/news/destroyed-zoopark-1m-radar-found-in-kherson-region/>

MIL95 Ukrainian paratroopers down Russian Orion UAV over Kursk oblast. Militaryrny, 2024-10.

<https://mil.in.ua/en/news/ukrainian-paratroopers-down-russian-orion-uav-over-kursk-oblast>

MIL110 Ukrainian troops destroyed Russian Uragan MLRS in the Kharkiv sector. Militaryrny, 2024-07.

<https://mil.in.ua/en/news/ukrainian-troops-destroyed-russian-uragan-mlrs-in-the-kharkiv-sector>

MIL922 The 92nd Mechanized Brigade destroyed the Russian Orlan-10 UAV mobile control post. Militaryrny, 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/>

MILIN Sturm-SM ATGM-vehicle passed state tests. Militaryrny, 2024-01.

<https://mil.in.ua/en/news/sturm-sm-atgm-vehicle-passed-state-tests/>

MILIN2 The Russian army received a batch of modernized T-80BVM tanks. Militaryrny (mil.in.ua), undated, c. 2024.

<https://mil.in.ua/en/news/the-russian-army-received-a-batch-of-modernized-t-80-bvm-tanks>

MILINF Военный Осведомитель, Telegram post 70948. Voenny Osvedomitel (Telegram channel), 2021-09-04.

<https://t.me/s/milinfoive/70948>

MILM30 Russians start using a World War II-era M-30 howitzers. Militaryrny (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. Militaryrny, 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. Militaryrny, 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/>

MILRU 96A6-1 / 96A6E Всевысотный обнаружатель. MilitaryRussia.ru (DIMMI), 2014-05-07.

<https://web.archive.org/web/2026/http://militaryrussia.ru/blog/topic-805.html>

MILUA Ukrainian defenders destroy Russian Aleut swamp buggy. Militaryrny, 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. Militaryrny (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 Ukrainian troops seize Russian satellite communications station in Kursk Oblast. Militaryrny (mil.in.ua), 2024.

<https://mil.in.ua/en/news/ukrainian-troops-seize-russian-satellite-communications-station-in-kursk-oblast>

MILUA5 SNAR-10M1 radar reconnaissance station seized in Ukraine. Militaryrny, 2022-04.

<https://mil.in.ua/en/news/the-snar-10m1-radar-reconnaissance-station-of-the-russian-army-was-seized-in-ukraine/>

MILUA6 Ukrainian FPV-drones hit Russian minelayers. Militaryrny (mil.in.ua), 2023.

<https://mil.in.ua/en/news/ukrainian-fpv-drones-hit-russian-minelayers/>

MILUA7 Luhansk region: Ukrainian troops used UR-77 Meteorit mine clearing vehicle. Militaryrny, 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. Militaryrny (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. Militaryrny (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. Militaryrny (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>

MISS1 Anti-aircraft missile system 9K37 Buk-M1 [EN and RU pages]. Missilery.info.

<https://en.missilery.info/missile/bukm1>

MISS2 Зенитный ракетный комплекс средней дальности 9K317 «Бук-М2». Missilery.info.

<https://missilery.info/missile/buk-2m>

MISS3 Зенитный ракетный комплекс средней дальности 9K317M «Бук-М3». Missilery.info.

<https://missilery.info/missile/bukm3>

MISS4 Зенитный ракетный комплекс 2K12 «Куб». Missilery.info.

<https://missilery.info/missile/kub>

MISS5 Зенитный ракетный комплекс «Тор-М23». Missilery.info.

<https://missilery.info/missile/tor-m2>

MISS6 Игла-C. missilery.info.

<https://missilery.info/missile/igla-c>

MISS7 PC30 9K51 «Граг». missilery.info.

<https://missilery.info/missile/grad>

MISS8 Переносной зенитный ракетный комплекс 9K38 «Игла». missilery.info (Паketная техника).

<https://missilery.info/missile/igla>

MISS9 Переносной зенитный ракетный комплекс 9K310 «Игла-1». missilery.info (Паketная техника).

<https://missilery.info/missile/igla1>

MISS10 9K720 Iskander operational-tactical missile system. missilery.info.

<https://en.missilery.info/missile/iscander>

MISS11 Kornet anti-tank missile system. missilery.info.

<https://en.missilery.info/missile/comet>

MISS12 Противотанковый ракетный комплекс 9П149 Штурм-С. missilery.info (Паketная техника).

<https://missilery.info/missile/shturms>

MISS13 9K113 Konkurs antitank missile system. missilery.info.

<https://en.missilery.info/missile/conkurs>

MISS14 Contest-M [Konkurs-M] anti-tank missile system. missilery.info.

<https://en.missilery.info/missile/conkursm>

MISS15 Portable anti-tank complex 9K111 Fagot. missilery.info.

<https://en.missilery.info/missile/fagot>

MISS16 Universal anti-aircraft missile and gun system Pantsir-S1. missilery.info (Raketnaya tekhnika).

<https://en.missilery.info/missile/panz>

MISS17 Anti-aircraft missile system S-300V / S-300VM Antey-2500. missilery.info.

<https://en.missilery.info/missile/c300v>

MISS18 Комплекс Амака-В. missilery.info.

<https://missilery.info/missile/ataka>

MISS19 Multiple launch rocket system 9K58 Smerch. missilery.info (S. V. Gurov).

<https://en.missilery.info/missile/smerch>

MISS20 Реактивная система залпового огня 9K515 «Торнадо-С». missilery.info (S. V. Gurov), 2023.

<https://missilery.info/missile/tornado-s>

MISS21 Anti-aircraft missile system 9K33 Wasp. missilery.info.

<https://en.missilery.info/missile/osa>

MISS22 Тактический ракетный комплекс 9K79-1 Точка-У. missilery.info (Паketная техника).

<https://missilery.info/missile/tochka>

MISS23 Anti-aircraft missile system Tor-M2E. missilery.info.

<https://en.missilery.info/missile/tor-m2>

MISS24 Heavy flamethrower system TOS-1A. missilery.info.

<https://en.missilery.info/missile/tos-1a>

MISS25 Переносной зенитный ракетный комплекс 9K333 «Вербка». missilery.info.

<https://missilery.info/missile/verba>

МК Беспилотники «Форпост» поставлены на Тихоокеанский флот. Moskovskiy Komsomolets, 2014-01-16.

<https://www.mk.ru/politics/army/news/2014/01/16/971083-bespilotniki-quotforpos-tquot-postavleniy-na-tihookeanskiy-flot.html>

МК2 «Длиная рука» артиллерии: расчет «Торнадо-С» уничтожил скопление ВСУ. Moskovskiy Komsomolets, 2025-04-09.

<https://www.mk.ru/politics/2025/04/09/dlinnaya-ruka-artillerii-raschet-tornados-unichtozhil-skopleniye-vsu.html>

МК3 V Rossii poayavilsya kompleks, sposobnyy podavlyat rabotu sputnikov svyazi. Moskovskiy Komsomolets, 2018-10-28.

<https://www.mk.ru/politics/2018/10/28/v-rossii-poayavilsya-kompleks-sposobnyy-podavlyat-rabotu-sputnikov-svyazi.html>

МК26 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-ff-razbili-p](https://www.mk.ru/politics/2026/02/09/tyulpany-vs-ff-razbili-podzemnye-komandnye-punkty-vsu-pod-kupyanskom.html)

NEWSRU2 Терминатор выпустил 400 снарядов по ВСУ. News.ru, 2023-07-11.
<https://news.ru/world/terminator-vypustil-400-snyadov-po-vsu-novosti-svo-na-utru-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://novyagazeta.eu/articles/2025/09/25/strashnoe-oruzhie-na-tonkoi-leske>

NI The Russian Army Just Received Its First New T-90M Proryv Tanks (Suci, The National Interest). Warrior Maven / The National Interest, 2020-04.
<https://warriormaven.com/and/the-russian-army-just-received-its-first-new-t-90-m-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-udarem-po-pozitsijam-gruppirovki-vojsk-vostok/>

NIKIT БТР-МДМ: гесантпруемая Пакушка. nikitinski LiveJournal (repost), 2014.
<https://nikitinski.livejournal.com/240438.html>

NOVG Дыгуяву шхит Россii. Novaya Gazeta Europe, 2025-06-26.
<https://novyagazeta.eu/articles/2025/06/26/dyriyavi-shchit-rossii>

ODETIE Комплекс управления вооружения 9К119 «Рефлекс». Огнемые 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.
<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].
<https://www.oryxspioenkop.com/2023/03/counting-down-list-of-russian-army.html>

ORYX3 Destination Disaster: Russia's Failure At Hostomel Airport. Oryx, 2022-04.
<https://www.oryxspioenkop.com/2022/04/destination-disaster-russias-failure-at-hostomel.html>

ORYX4 Hit or miss: Russian loitering munition strikes (Kub and Lancet-3(M)). Oryx, 2023-03.
<https://www.oryxspioenkop.com/2023/11/hit-or-miss-russian-loitering-munition.html>

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 минометов 2Б9 «Василёк» нанесли удар по позициям ВС Украины. Obshchestvennaya sluzhba novosti (OSN), 2023-04-01.
<https://www.osnmedia.ru/politika/raschety-minomotov-2b9-vasilyok-nanesli-udar-po-pozitsiyam-vs-ukrainy/amp/>

OSN2 «Ростех»: Минобороны РФ получило партию модернизированных минометных комплексов «Саня». Obshchestvennaya sluzhba novosti [citing Rostec], 2023-07-11.
<https://www.osnmedia.ru/obshchestvo/rosten-minoborony-rf-poluchilo-partiyu-modernizirovannyh-minometnyh-kompleksov-sani/amp/>

OSN3 Минобороны показало кадры боевого дежурства ЗРС «Фаворит». Obshchestvennaya Sluzhba Novosti, 2022-06-02.
<https://www.osnmedia.ru/politika/minoborony-pokazalo-kadry-boevogo-dezhurstva-zrs-favorit/amp/>

OSN4 VS RF v zone SVO primenyayut sovremennye komplekсы artzavedki 'Yastreб-AV'. Obshchestvennaya sluzhba novosti, 2024-01-02.
<https://www.osnmedia.ru/politika/vs-rf-v-zone-svo-primenyayut-sovremennye-komplekсы-artzavedki-yastreb-av/amp/>

OSN22 Минобороны показало работу противотанковых подразделений на Украине. OSN [Obshchestvennaya sluzhba novosti], 2022-04-14.
<https://www.osnmedia.ru/obshchestvo/minoborony-pokazalo-rabotu-protivotankovyh-podrazdelenij-na-ukraine/amp/>

OSONE Многоножка из Муассы (Урал-532301). os1.ru, about 2003.
<http://www.os1.ru/article/7612-mnogonozhka-iz-miassa-ural-532301>

OVC Preimushchestva sistemy minirovaniya «Zemledeliye» i ispolzovanie eyo na SVO. Overclockers.ru (user blog).
<https://overclockers.ru/blog/Blog9JACka/show/101493/Preimushchestva-sistemy-minirovaniya-Zemledeliye-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>

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 podviznykh sredstv TO i remonta). ozlib.com.
https://ozlib.com/993120/sotsium/mashina_tekhnicheskoy_pomoshchi

PARK Автоматизированная станция помех P-934УМ. Park Patriot.
<https://parkpatriot.ru/o-parke/tekhnika-parka/r-934um/>

PARMKT KT-L – legkie koleyniy evakuatsionnyy 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 Arkhangel'skoi oblasti Patriot (regional patriotic centre), c.2020.
<https://patriotcentr29.ru/vooruzhennyye-sily/332-radiotekhnicheskii-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>

PLANDIY Merlin-UV UAV: experimental Russian scout (plandiy.com.ua). plandiy.com.ua, 2026.
http://www.pmulcahy.com/artillery_support_vehicles/russian_asv.htm

PMUL Russian artillery support vehicles (PRP-3 section). pmulcahy.com (hobby site).
http://www.pmulcahy.com/artillery_support_vehicles/russian_asv.htm

PPTO Obshchie svedeniya o RLS 35N6 (lecture slides, Siberian Federal University military training department). ppt-online.org, undated [after 2015].
<https://ppt-online.org/4405887>

PRIME Новый ударный грон "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 VSV 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-sapernyy-batalyon-brigady-novogo-oblika/>

PRO Автоматизированная станция помех P-330Ж. QAO 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 Уралвагонзавод отправил в войска партию 6МПТ. Profile.ru, 2025-10.
<https://profile.ru/news/military/uralvagonzavod-otpravil-v-vojska-partiyu-bmpt-ranshe-in-nazyvali-terminatorami-1762052/amp/>

PROF2 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/>

PROF3 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/>

PROFILE В трёх регионах России начались масштабные учения БАР. Profile.ru [citing RIA Novosti and MoD], 2021-02.
<https://profile.ru/news/protection/army/v-trekh-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/rossia_vtracaje_vzlyazok_prikordonniki_znishhil_ridkisu_cil_za_600_tisac_dolariv

PVO Радиолокационная станция 96А6Е. pvo.guns.ru (Nevsky Bastion material), 2008-11-30.
<https://pvo.guns.ru/rv/96ib.htm>

RADTUT 1L271 (Radartutorial, saved mirror). Radartutorial.eu via l.xif.fr mirror.
<https://l.xif.fr/files/elec/radar/radartutorial-eu.save/19.karte/04.battle/karte036.en.html>

RAKUL Станция спутниковой связи Р-439-КУЛ. RusArmy.com, 2004-2010.
<http://www.rusarmy.com/svyaz/sputnik/r-439-ku.html>

RAMB Как командир артиллерии победил в критической ситуации с помощью "Вбодзку". Rambler News [military press feature], 2025.
<https://news.rambler.ru/army/54697946-kak-komandir-artdivizion-a-pobedil-v-kriticheskoy-situatsii-s-pomoschyu-gvozdi/>

RAMB2 Российский ОПК создал мобильную пусковую установку по Циркон. Rambler [relaying TASS], 2022.
<https://news.rambler.ru/army/49635134-rossiyskiy-opk-sozdal-mobilnyu-puskovuyu-ustanovku-pod-tsirkon/amp/>

RAMB3 Minoborony RF soobshchilo ob uspešnom primeneni dronov Laniset. Rambler News [quoting Russian MoD and RT], 2026-06-10.
<https://news.rambler.ru/army/56580923-minoborony-rf-soobshchilo-ob-uspešnom-primenenii-dronov-laniset/>

RAMBLER 2C34 «Хоста» – российская самоходная артиллерийская установка. Rambler News.
<https://news.rambler.ru/army/54054783-2s34-hosta-rossiyskaya-samohodnaya-artilleriyskaya-ustanovka/>

RAMBLER2 Boepripyas KUB dosrochno postavili na SVO. Rambler [relaying TASS], c. 2025, undated page.
<https://finance.rambler.ru/business/5553441-boepripyas-kub-dosrochno-postavili-na-svo/>

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

RBASE Носимый противотанковый комплекс 9К115 «Мемус». 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 «Мемус-М». Ракетная техника [rbase.new-factoria.ru].
http://rbase.new-factoria.ru/missile/wobb/metis_m/metis_m.shtml

RBC Украинские СММ сообщили об участии псковского десанта в боях за Луганск. RBC, 2014-08.
<https://www.rbc.ru/rbcfreenews/5afa2e6c9a7947e14ee5ecc5>

RBC2 НРПК «Курьер»: российский наземный боевой робот. RBC, 2025-11-28.
<https://www.rbc.ru/base/28/11/2025/692868a9a7947e26dd0442e>

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

RDPI Upgunning Artillery. Russian Defense Policy (blog), 2018-04-29.
<https://russiandefpolicy.com/2018/04/29/upgunning-artillery/>

RDPI2 New airborne armor deliveries. Russian Defense Policy (blog), 2020-06-25.
<https://russiandefpolicy.com/2020/06/25/new-airborne-armor-deliveries/>

RDPI3 Russian Defense Policy, 26 July 2021 post. Russian Defense Policy (blog), 2021-07-26.
<https://russiandefpolicy.com/2021/07/26/>

RDPI4 Electronic warfare: myths and truth (translation of Aleksey Ramm, VPK, Oct 2015). russiandefpolicy.com, 2015.
<https://russiandefpolicy.com/tag/r-330zh/>

RDPI5 Iskander-M (tag archive). Russian Defense Policy blog, 2014 to 2017 posts.
<https://russiandefpolicy.com/tag/iskander-m/>

RDPI6 Polyana-D4M1 (tag page; Ground Troops procurement 2011). Russian Defense Policy blog, 2011.
<https://russiandefpolicy.com/tag/polyana-d4m1/>

RDPI7 Tag archive: Tornado-G (Motovilikh 2019 GOZ report). Russian Defense Policy blog, 2019-12.
<https://russiandefpolicy.com/tag/tornado-g/>

REACH Красуха-2 (1A269). reachaim, LiveJournal, 2014-03-17.
<https://reachaim.livejournal.com/5097.html>

REDSTAR «Гуацсинт-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>

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>

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

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

RFPOТ Voronezh-DM's potential. Russian strategic nuclear forces (P. Podvig), 2006-02.
https://russianforces.org/blog/2006/02/voronezhdm_potential.shtml

RFSPRN Early warning (radar table, 2026). Russian strategic nuclear forces (P. Podvig), 2026.
<https://russianforces.org/sprn/>

RG Как самоходки «Юна-С» применяются при уничтожении противника на Артемовском направлении. Rossiyskaya Gazeta, 2022-12-01.
<https://rg.ru/2022/12/01/orudie-trajnoogo-udara.html>

RG1 Garpun-3 article (amp). Rossiyskaya Gazeta, 2022-10-17.
<https://rg.ru/amp/2022/10/17/reg-pfo/armia-rf-primeniat-noveishie-ruchnye-komplekсы-garpun-3-v-specoperacii.html>

RG2 Гаубица Д-30 остается наиболее эффективным оружием 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 производствo FPV-дронoв «Обог». Rossiyskaya Gazeta, 2025-04-01.
<https://rg.ru/2025/04/01/reg-cfo/tulskij-granik-kak-indikator-togo-chto-dron-ne-ustarel.html>

RG4 Ogennyy shchit: effektivnuu rabotu kompleksa 'Infauna' sniali na video. Rossiyskaya Gazeta, 2019-04-08.
<https://rg.ru/2019/04/08/ogennyy-shchit-effektivnuu-rabotu-kompleksa-infauna-sniali-na-video.html>

RG5 Противотанковый комплекс «Конкурс-М» получат дистанционное управление. Rossiyskaya Gazeta, 2024-12-23. <https://rg.ru/2024/12/23/protivotankovyy-kompleks-konkurs-m-poluchit-distantsionnoe-upravlenie.html>

RG6 Chto nuzhno znat o boepripasakh Lantset. Rossiyskaya Gazeta, 2023-04-06. <https://rg.ru/2023/04/06/ot-lanceta- gaubica- ne- priachetsia.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/rossiiskuiu-bronetehniku-osnashchaiut-malogabaritnoj-sistemoj-reb-lesochek.html>

RG8 Forbes: Россия применяет новые системы РЗБ для борьбы с дронами ВСУ. Rossiyskaya Gazeta, 2025-04-11. <https://rg.ru/2025/04/11/forbes-rossia-primeniaet-novye-sistemy-reb-dlia-borby-s-dronami-vsu.html>

RG9 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>

RG10 РСЗО «Торнадо-С» уничтожила заглубленный командный пункт ВСЮ под Добропольем. Rossiyskaya Gazeta, 2026-08-05. <https://rg.ru/2026/08/05/reg-dnr/rso-tornado-s-unichtozhila-zaglublennyy-komandnyj-punkt-vsu-pod-dobropolem.html>

RG11 Комплекс Стрелец-М помогает ВКС РФ поражать сложные цели ВСЮ. 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 раскрыты на «Армии-2020». Rossiyskaya Gazeta, 2020-08-23. <https://rg.ru/2020/08/23/narakteristiki-letaiushchego-tank-a-t-80bvm-rassekretili-na-armii-2020.html>

RG13 Ubiytys sputnikovoy svyazi: chto izvestno o kompleksakh Tírada i Rudolíf. Rossiyskaya Gazeta, 2022-10-15. <https://rg.ru/2022/10/15/ubiycy-sputnikovoy-svazi-chto-izvestno-o-kompleksah-tirada-i-rudolf.html>

RG14 Efrnaia voina radiochastot. Rossiyskaya Gazeta, 2024-04-24. <https://rg.ru/2024/04/24/efrnaia-voina-radiochastot.html>

RG15 Подразделения РЗБ на Дальнем Востоке получают 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-radioelektronoj-borby-murmansk-bn-obedinili-v-edinuiu-sistemu.html>

RG17 Novyy divizion na tyazhelykh minometakh poayavitsya 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-bespiplotniki.html>

RG19 Применение комплекса "Палантин-К" впервые показали на бугею. 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-lam-basurmanin.html>

RG21 В 2021 году военные получат новые машины химвразвёжки 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 minometry Tyulpan уничtozhayut ukraïnцю VSU. Rossiyskaya Gazeta, 2022-11-18. <https://rg.ru/2022/11/18/razrushitel-bunkerov-kak-samohodnye-minometry-tiulpan-unichtozhaiut-ukrepaïnyu-vsu.html>

RG22B Разработанный для десанта "Корнет-Д1" прохогит стрельбовые испытания. Rossiyskaya Gazeta (state), citing TASS/ Rostec, 2022-02-21. <https://rg.ru/2022/02/21/razrabotannyj-dlia-desanta-kornet-d1-prohodit-strelbovyie-ispytaniia.html>

RG22B2 На учениях в ЗВО применили комплекс РЗБ "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/koalicia-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-bespiplotniki-ohotitsia-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.ria.ru/2015/03/11/taistenok.html>

RG162 В приамуре разведчиков научат пользоваться радарами Собольятник. 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>

RG172 К 2020 году ВДВ получат более трехсот новых бронемашин. Rossiyskaya Gazeta, 2017-04-28. <https://rg.ru/2017/04/28/reg-pfok-2020-godu-udv-poluchat-bolee-trehst- 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 В Крыму военные развнули sverkhmshoshchnyy kompleks REB Murmansk. Rossiyskaya Gazeta, 2017-03-10. <https://rg.ru/2017/03/10/reg-ufo/v-krymu-voennye-razvernuli-sverhmshoshchnyy-kompleks-reb-murmansk.html>

RG175 Первый полк Тор-М2 пришел в войска. Rossiyskaya Gazeta, 2017-03-25. <https://rg.ru/2017/03/25/pervyy-polk-tor-m2-prishel-v-vojska.html>

RG176 Мотострелков ЦВО вооружили новейшими ПЗРК «Верб»**.** Rossiyskaya Gazeta, 2017-12-18. <https://rg.ru/2017/12/18/reg-urfo/motostrelkov-cvo-vooruzhili-novejshimi-przk-verba.html>

RG192 Арктический комплекс Тор-М2ДТ заступил на боевое дежурство. Rossiyskaya Gazeta, 2019-11-30. <https://rg.ru/2019/11/30/reg-szfo/artkicheskiy-kompleks-tor.html>

RG202 Новейший комплекс РЗБ «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>

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 Броневомобиль «Тайфун-ВДВ» приняли на снабжение ВДВ. Rossiyskaya Gazeta, 2021-08-04. <https://rg.ru/2021/08/04/broneavtomobil-tajfun-udv-priniali-na-snabzhenie-udv.html>

RG214 Новейшие «Торнадо-У» приняли участие в параде на аэбазае Хмеймим. Rossiyskaya Gazeta, 2021-05-12. <https://rg.ru/2021/05/12/novejshie-tornado-u-priniali-uchastie-v-parade-na-aviabaze-hmejmim.html>

RG222 ВВО получат 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-ukrainoi-razvernut-novyy-batalon-radioelektronoj-borby.html>

RG224 «Игла» поразит низколетающие воздушные цели. Rossiyskaya Gazeta, 2022-04-28. <https://rg.ru/2022/04/28/igla-porazit-nizkoletaiushchie-vozdushnye-celi.html>

RG225 Миноборонны 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 развёртыванию в зоне СВО. Rossiyskaya Gazeta, 2023-10-30. <https://rg.ru/2023/10/30/sistemy-rb-109a-bylina-gotovitsia-k-razvertvaniyu-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 РЗБ «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 На SVO применили новейшую versiyu drona-kamikadze KUB. Rossiyskaya Gazeta, 2024-02-27. <https://rg.ru/2024/12/27/novyy-udarnyy-dron-primenen-na-fronte.html>

RG243 Как комплекс артрэзвёжки «Пенициллин» вскрывает позиции артиллерии ВСЮ. Rossiyskaya Gazeta, 2024-02-01. <https://rg.ru/2024/02/01/otvetnyj-udar-po-zvuku-vystrela.html>

RG244 Как разведчики применяют беспилотники и РАС Собольятник в зоне СВО. Rossiyskaya Gazeta (MoD material), 2024-01-15. <https://rg.ru/2024/01/15/mini-radar-vadit-vse.html>

RG245 Бойцы расчёта 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 «Верб» 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-sbivaut-vrazheskie-drony.html>

RG252 ЗРК Тор-М2 получил дополнительную броню и сребства РЗБ. Rossiyskaya Gazeta, 2025-08-13. <https://rg.ru/2025/08/13/zrk-tor-m2-poluchil-dopolnitelnuu-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-pozivnym-iskra-rasskazal-o-nelegkoj-rabote-zenitchikov.html>

RG2018 'Leer-2' prikrýl tanki T-72B3 i bronetransportery BTR-82A. Rossiyskaya Gazeta, 2018-03-26. <https://rg.ru/2018/03/26/leer-2-prikrýl-tanki-t-72b3-i-bronetransportery-btr-82a.html>

RG2108 Специальный колесный развёчик РХМ-9 можно уредить на Армии-2021. Rossiyskaya Gazeta, 2021-08-24. <https://rg.ru/2021/08/24/specialnyj-kolesnyj-razvedchik-rhm-9-mozhno-uidet-na-armii-2021.html>

RGAZ В зоне SVO nachali primenyat ZRK Gibka-S na baze Tígra-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>

RGGB В 2022 году в войска начнут поставлять комплексы ПВО «Губка-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-podviznaia.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 РЗБ "Палантин" подавляет средства связи штабов ВСЮ. Rossiyskaya Gazeta, 2022-07-27. <https://rg.ru/2022/07/27/kompleks-reb-palantin-podavliat-sredstva-svazi-shtabov-vsu.html>

RGPAR Новейшие российские САУ «Мальва» и «Гуацинт-К» впервые приняли участие в параде. Rossiyskaya Gazeta, 2025-05-09. <https://rg.ru/2025/05/09/novejshie-rossiiskie-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 Ибановская дивизия ВДВ получила боевые машины БМД-4М и БТР-МДМ «Пакушка». Rossiyskaya Gazeta (state), 2021-07-26. <https://rg.ru/2021/07/26/reg-cfo/ivanovskaia-diviziia-udv-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/novaja-rossiiskaja-avtomatizirovannaa-samohodka-2s31-vena-zamechena-v-zone-svo.html>

RGRU3 Mozhnet 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 Развёдка 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-poliavili-novye-boevye-mashiny-brm-1k.html>

RGRU5 Ростех старается ускорить первые поставки Деривации-ПВО на переговоры. Rossiyskaya Gazeta, 2024-04-08. <https://rg.ru/2024/04/08/rostehtaraetsia-uskorit-pervye-postavki-derivacii-pvo-na-peredovuiu.html>

RGRU6 V Sirii vpervye zamechena novieishaya rossiiskaya RLS Garmon. Rossiiskaya Gazeta, 2018-03-06. <https://rg.ru/2018/03/06/v-sirii-vpervye-zamechena-novejshaia-rossiiskaja-rls-garmon.html>

RGRU7 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 «Пакушка» вооружили скорострельными «рогатками». Rossiyskaya Gazeta (state), 2021-09-28. <https://rg.ru/2021/09/28/desantnye-btr-mdm-rakushka-vooruzhili-skorostrelnymi-roгатkami.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/>

RIA Расчет БПЛА уничтожил технику ВСЮ почти на три миллиона долларов. RIA Novosti, 2026-03-04. <https://ria.ru/20260304/spetsoperatsiya-2078346762.html>

RIA2 Новейшие радиостанции Р-166 впервые задействуют на учениях в ЦВО. RIA Novosti, 2012-09-18. <https://ria.ru/20120918/753121813.html>

RIA3 Источник рассказал, как танковые ракеты проходят бронетехнику ВСЮ. RIA Novosti, 2024-03-27. <https://ria.ru/20240327/rakety-193608479.html>

RIA4 Palantin and Tirada-2 to enter service with Central Military District in 2019. RIA Novosti, 2018-12-17. <https://ria.ru/20181217/1548106399.html>

RIA5 VS RF primenyaiut v zone SVO novieishie komplekсы artrozvedki "Yastreб-AV". RIA Novosti (Russian state news agency), 2024-01-02. <https://ria.ru/20240102/spetsoperatsiya-1919420169.html>

RIA15 KRET v 2015 godu peredl Vooruzhenным 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 «Вербя». RIA Novosti, 2017-07-27. <https://ria.ru/20170727/1499245207.html>

RIA17B Наследница «Изы»: почему российскую «Вербу» считают лучшим ПЗРК в мире. RIA Novosti, 2017-12-25. <https://ria.ru/20171225/1511551922.html>

RIA22 Самоходные орудия "Гуаццим-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 ВВВ в феврале. RIA Novosti, 2022-02-02. <https://ria.ru/20220202/vooruzheniya-1770605498.html>

RIASV Беспилотник «Тахион» — что это? Инфографика. RIA SV, 2022-11-08. <https://riassv.ru/obshchestvo/2022/11/08/bespiotnik-tahion-cto-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-radioelektronnnoy-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-boysla/>

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). Rosobornexport. <https://web.archive.org/web/20251028012324/https://roe.ru/en/production/protivov-ozdushnaya-oborona/zenitye-raketnye-kompleksy-i-ustanovki/zenitye-raketnye-kompleksy-sistemy-sredney-dalnosti/buk-m2e/>

ROE2 Air Defence Systems Export Catalogue, Pelena-1 Ground-Based AWACS-Type Radar Jammer, p. 76. Rosobornexport (copy on ebin.pub), 2003. <https://ebin.pub/air-defence-systems-export-catalogue.html>

ROSTEC23 Ростех поставил вооруженным силам новую партию БМП-2М «Бережок». Ouzhie Rossii (www1.ru), Rostec / High-Precision Systems release, 2023-09-06. <https://www1.ru/news/2023/09/06/rostec-postavil-vooruzennym-silam-novuiu-partiiu-bmp-2m-berezok-usovershenstvovannye-boevye-masiny.html>

ROSTEC25 In demand in the Middle East: Rostec assessed the prospects of the Berezhoz module with Kornet missiles. Ouzhie Rossii (www1.ru), Rostec statement, 2025-02-13. <https://www1.ru/en/news/2025/02/13/vostrebovan-na-bliznem-vostoke-rostec-ocenil-perspektivy-modulia-berezok-s-raketami-kornet.html>

RS 96L6 всевысотный радиолокатор целеуказания. Russkaya Sila (русская-сила.рф). <https://xn----7sb5sbah4aladq2m.xn--p1ai/guide/army/r/96l6.shtml>

RS19 Первый в Российской армии комплекс РЗБ «Палантин» дебютировал на учении под Воронежем. Krasnaya Zvezda, 2019-09. <http://redstar.ru/pervyy-v-rossijskoi-armii-kompleks-reb-palantin-debyutiroval-na-ucheni-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-pantsirei/>

RSUPPLY Russia transports tanks of the 1960s to the Ukrainian front. Railway Supply, citing CFTS, 2022-06-01. <https://www.railwaysupply.eu/russia-transports-tanks-of-the-1960s-to-the-ukrainian-front/>

RT 96L6E Cheese Board. radartutorial.eu (Wolff), mirror copy, 2015. <https://lxif.fr/files/elec/radar/radartutorial-eu.save/19.kartei/02.surve/karte044.en.html>

RT2 Новые возможности: какими будут российские ударные и разведывательные БЛА «Альтиус» и «Форпост». RT (Russian state media), 2020. <https://russian.rt.com/russia/article/715411-rossiya-bespiotniki-altius-forpost>

RT3 Sistemnaya modernizatsiya: kak sovershenstvuetysya semeystvo barrazhiruyushchikh boepripasov Lanset. RT (Russian state media), 2024 (after Army-2024, Aug 2024; exact date not on page). <https://russian.rt.com/russia/article/1354523-lancet-modernizatsiya-zala-svo>

RT4 Radioelectronic Lesoschek: how EW complexes protect Russian troops from drones. RT Russian Media, 2024-01. <https://russian.rt.com/russia/article/1254121-reb-lesoschek-minoborony>

RT5 Inokhodets: combat capabilities of the Russian UAV. RT (Russian state media), 2022-03. <https://russian.rt.com/russia/article/976629-inohodec-orion-ukraina-spekoperatsiya/amp>

RT6 Чем уникален новый авиадесантируемый броневедомитель «Таифун-ВДВ». RT (Russian state media), 2020. <https://news.rambler.ru/army/8587725-taifun-vdv-mashina-pushka-bronya>

RT7 «Всеракурсная защита»: какие новые комплексы борьбы с ФПВ-грозимами. RT (Russian state media), 2023. <https://russian.rt.com/russia/article/1220024-fpv-dron-reb-saniya-3mx>

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-bespiotniki-bespiotniki-podrazdeleniya-sozdanielotniki>

RT21 Готовы к самым разным вызовам: новейшие машины РХБЗ. RT (Russian), 2021. <https://russian.rt.com/russia/article/844614-rhbz-mashina-rhm-tigr-taifun>

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/1268126-ptrk-kornet-minoborony>

RTGIB «В единой системе управления»: какие преимущества получит армия РФ с появлением комплекса ПВО «Губка-С». RT, 2019-12-27. <https://russian.rt.com/russia/article/702175-gbika-s-tigr-m-pzrk-minoborony>

RTRU Vsepodobnost i bolshaya dalnost: dostoinstva malogabaritnykh radiolokatorov. RT (Russian), 2020-07-25. <https://russian.rt.com/russia/article/767395-garmon-malogabaritnye-ris-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-minnykh-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/ru-brytianskiy-rozviditsi-povidomyly-pro-pereklyannaya-rosiyey-pid-syevyerodonetsk-svoeyi-yedynoyi-grupy-z-terminatoramy>

RUBR2 Russian forces bring decommissioned Soviet howitzers from Crimea to frontline - ATESH partisan movement. Rubryka, 2023-10-06. <https://russian.rt.com/en/7p=584054>

RUELEC ПАС в Армавире заступила на боевое дежурство. Время электроники (quotes RIA Novosti), 2009-02. <https://rusiaelectronics.ru/rfs-v-armavire-zastupila-na-boevoe-dezhurstvo/>

RUMOD Модернизированный разведывательный комплекс «Зоопарк-1М» (MoD news item). Russian Ministry of Defence (mil.ru). <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 9C52M1 «Поляна-Д4М1». RusArmy.com, 2004-2010. https://rusarmy.com/pvo/pvo_vsk/su_polyana-d4m1.html

RUSARM Модернизированная радиолокационная станция П-18 (вариант ННИИПТ). RusArmy.com, 2010. https://rusarmy.com/pvo/pvo_vsk/rfs_p-18.html

RUSARMM Комплекс 9C52M «Поляна-Д4М». RusArmy.com, 2004-2010. https://rusarmy.com/pvo/pvo_vsk/su_polyana-d4m.html

RUSARMY 152-мм пушка 2А36 Гуаццим-Б. RusArmy.com, 2004-2010. https://rusarmy.com/brone/bau_2a36_giatsint-b.htm

RUSARMY2 Inzhenerno-razvedyvatelnaya mashina IRM Zhuk. RusArmy.com, 2010. https://www.rusarmy.com/brone/rzm_irm_zhuk.htm

RUSARMY3 Radiolokatsionnaya stantsiya Kasta-2E1. RusArmy.com, 2010. https://rusarmy.com/pvo/pvo_vsk/rfs_kasta-2e1.html

RUSARMY4 Командно штабная машина Р-1456М «Чайка». RusArmy.com, 2004-2010. https://www.rusarmy.com/svyaz/kshm/kshm_r-1456m.html

RUSARMY5 Komandno-shtabnaya mashina R-149BMR. RusArmy.com, 2010. https://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>

RUS11 Defending Mother Russia's Skies (Withington). RUSI Commentary, 2022-07-13. <https://www.rusi.org/explore-our-research/publications/commentary/defending-mother-russias-skies>

RUS12 Tactical Developments During the Third Year of the Russo-Ukrainian War (Watling, Reynolds). RUSI, 2025-02. <https://static.rusi.org/tactical-developments-third-year-russo-ukrainian-war-february-2025.pdf>

RUS13 Russia's Iranian-Made UAVs: A Technical Profile (Uzi Rubin). RUSI, 2023-01-13. <https://www.rusi.org/explore-our-research/publications/commentary/russias-iranian-made-uavs-technical-profile>

RUS14 The Iskander-M and Iskander-K: A Technical Profile (Cranny-Evans, Kaushal). RUSI, 2022-08-08. <https://www.rusi.org/explore-our-research/publications/commentary/iskander-m-and-iskander-k-technical-profile>

RUS15 Mass Precision Strike: Designing UAV Complexes for Land Forces (Bronk, Watling). RUSI, 2024-04-11. <https://static.rusi.org/mass-precision-strike-final.pdf>

RUS16 Meatgrinder: Russian Tactics in the Second Year of its Invasion of Ukraine (Watling, Reynolds). RUSI, 2023-05-19. <https://static.rusi.org/403-SR-Russian-Tactics-web-final.pdf>

RUS17 Ukraine at War: Paving the Road from Survival to Victory (Watling, Reynolds). RUSI, 2022-07-04. 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 Борусозлебск-2. rus.team, n.d. (latest event 2019-01-10). <https://rus.team/articles/kompleks-radioelektronnnoy-borby-borisoglebsk-2>

RUWK152 1V152 (Russian Wikipedia mirror, dic.academic.ru). Wikipedia mirror, 2010. <https://dic.academic.ru/dic.nsf/rwwiki/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://jurniki.ua/contents/suchasni-zrazki-ozbroiennya-ta-viyskovoi-tehniki-imovirnogo-protivnika-dovidnik.pdf>

RVDYKU 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». safanuk.livejournal.com. <https://safanuk.livejournal.com/28392.html>

SAIDPVO ПАС «Зоопарк-1М» в Алабуно. saidpvo.livejournal blog, reposting a militaryrussia.ru table, 2015. <https://saidpvo.livejournal.com/418815.html>

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>

SBX Russia is trying to cut off Ukraine's access to Starlink (T. Spirlit, Business Insider). Sandbox 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 Bespiotnye sistemy (Unmanned Systems Group), undated, read 2026-10. <https://supercam.aero/catalog/supercam-s350>

SDELANO Всеобщее око на Кубань. Сделано у нас (reprint of Krasnaya Zvezda-type article), 2014-09. <https://sdelanounas.ru/blogs/5313/>

SDN В полк РХБЗ ВВВ поступили APC-14КМ. Сделано у нас (blog), undated, about 2020. <https://sdelanounas.ru/blogs/86040/>

SDN2 Pyat RLS Garmon 11L22 postupil v TsVO. Sdelano u nas (repost of Central MD press service), 2018-08-15. <https://sdelanounas.ru/blogs/110803/>

SDU Комплект срегсбм 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 serиюnoe 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 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/>

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 remonto-ne-evakuatsionnoe podrazdelenie VVO poluchilo REM-KL. Silovoi blok (citing Russian MoD), 2019-07-26. <https://www.sila-rf.ru/2019/07/26/novoe-remonto-ne-evakuatsionnoe-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.slovodio.ua/2026/03/26/novyna/bezpeka/unikalna-czil-prykordonnky-obrazly-zvyazok-okupantam-luhanshyni>

SNOB Kalashnikov predstavil samovzryvayushchiysya bespiotnik. Snob (quoting Rostec), 2019-02. <https://snob.ru/news/172572/>

SPAGE Air Defense: The Old Gun Is The New Gun. StrategyPage, 2020–07–10.

<https://www.strategypage.com/htmwt/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. spotechnika.ru [surplus equipment dealer].

<https://spotechnika.ru/vonnaya-tehnika/pontonno-mostovoy-park-pmp/>

SPUT СВО: артиллеристы из Приморья “звоздят” позиции ВСУ, обрушивая до 100 снарядов в 8 секунд. Sputnik Kazakhstan, quoting Russian MoD, 2024–04–12.

<https://ru.sputnik.kz/20240412/svo-artilleryist-iz-primorya-gvozdyat-pozitsii-vsu-obrushivaya-do-100-snyadov-v-8-sutki-43621094.html>

STARCOM РАС П–14 “Оборона” – лучшая РАС времен СССР. starcom68.livejournal.com.

<https://starcom68.livejournal.com/3150409.html>

STC15 Primenenie BLA semestva Orlan dlya aeryosyemochnykh robot (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/%C2%ABtornado-u-%C2%B8-novyi-voennyi-%C2%ABural%C2%B8>

STOL Пакетная дуэль «Торнадо-С» и HIMARS (79th Gds Rocket Artillery Brigade). StolicaMedia, 2026–09–17.

<https://stolica.media.ru/news/2624426/>

STRASAM S–400 Triumph Air Defence System (Part 1). STRASAM, 2026–04.

<https://strasam.org/en/defense/aerospace-industry/s-400-triumf-air-defence-system-part-1-4079>

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 APC–14, устройство и работа станци. studfile.net (training manual).

<https://studfile.net/preview/553066/page/2/>

STUD2A Авторазличная станция APC–14. Техническое описание (Кутин, ПХТУ, 1999), page 1. studfile.net (training manual), 1999.

<https://studfile.net/preview/553066/>

SVOB Быстрая, но неточная: что известно о российских ракетах Циркон. Radio Svoboda / Крым.Realii, 2026–01.

<https://www.svoboda.org/a/bystraya-no-netochnaya-chto-izvestno-o-rossijskih-rocketah-tsirkon/3366005.html>

SVOB2 ВСУ бомбит Воронеж. Угары по российским РАС. Ругу Свобода, 2024.

<https://www.svoboda.org/a/vsu-bombayt-voronezh-udary-po-rossijskim-ris/32967418.html>

SVRHZB Авторазличная станция APC–14KM. Колоз ветеранов РКБ3 (veterans association site).

<https://soyuz-veteranov-rhbz.ru/tehnika/avtorazlichnaya-stanciya-ars-14km>

TAD Zala E–серия ББС. TAdviser, 2022.

https://www.tadviser.ru/index.php/%D0%9F%D1%80%D0%BE%D0%B4%D1%83%D0%BA%D1%82Zala_E_%D1%81%D0%B5%D1%80%D0%B8%D1%8F_%D0%91%D0%82%D0%A1_%D0%91%D0%B5%D1%81%D0%B8%D0%B8%D0%BE%D1%82%D0%BD%D0%BE%D0%B5_%D0%B2%D0%BE%D0%B7%D0%B4%D1%83%D1%88%D0%BD%D0%BE%D0%B5_%D1%81%D1%83%D0%B4%D0%BD%D0%BE%

TADV 2C38 Деривация–ПВО. TAdviser, 2024–08.

https://www.tadviser.ru/index.php/Прогукм:2C38_Деривация-ПВО

TADV2 Гранат–4 [TAdviser]. TAdviser, 2024–07.

<https://www.tadviser.ru/index.php/Прогукм:Гранат-4>

TADV3 Сапфир (комплекс радиоэлектронной борьбы). TAdviser, 2023.

https://www.tadviser.ru/index.php/%D0%9F%D1%80%D0%BE%D0%B4%D1%83%D0%BA%D1%82%D0%A1%D0%80%D0%BF%D1%84%D0%B8%D1%80_%D0%8A%D0%8E%D0%8C%D0%8F%D0%B8%D0%B5%D0%8A%D1%81_%D1%80%D0%BD%D0%B4%D0%B8%D0%BE%D1%8D%D0%B8%D0%B5%D0%BA%D1%82%D1%80%D0%BE%D0%BD%D0%BE%D0%B9_%D0%81%D0%BE%D1%80%D1%8C%D0%81%D1%88%

TAKT Rosselektronika presented a modernised Lesochek EW complex. Takticheskyy.ru, 2024–12–19.

<https://takticheskyy.ru/2024/12/19/roseelektronika-predstavila-modernizirovannyj-kompleks-reb-lesochek/>

TANKAFV MT–Lbu (1974). tank-afv.com.

<https://tank-afv.com/coldwar/ussr/MT-Lbu.php>

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.

<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.

<https://tass.com/defense/1354193>

TASS3 Russian military gets first batch of cutting-edge electronic warfare operation systems. TASS, 2017–09–26.

<https://tass.com/defense/967557/amp>

TASS4 Provod fiber-optic FPV drones deployed at ranges over 40 km. TASS, 2026–08–19.

<https://tass.com/defense/2175003>

TASS5 Rostec delivers IMR–3 obstacle-clearing vehicles to Defense Ministry. TASS, 2026–01–21.

<https://tass.com/defense/2074497>

TASS6 Foreign military attaches, media get a look at 9M729 for Iskander–M. TASS, 2019–01–23.

<https://tass.com/defense/1041360>

TASS7 KUB munitions integrated into Russian military armament system. TASS, 2026–01–19.

<https://tass.com/defense/2073179>

TASS8 Single Russian Lancet drone crew destroys 20 pieces of Ukrainian equipment in DPR. TASS, 2026–07–09.

<https://tass.com/politics/2158107>

TASS9 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.

<https://tass.com/defense/1322243>

TASS10 Latest Msta–S artillery systems arrive for troops in Russia's south. TASS, 2020–03–16.

<https://tass.com/defense/1130667>

TASS11 Defense firm delivers latest Msta–S self-propelled howitzers to Russian troops. TASS, 10 November, year not shown on fetched page.

<https://tass.com/defense/1359801>

TASS12 Military peacekeepers suppress enemy communications in Volga area drills. TASS, 2020–06–18.

<https://tass.com/defense/1169139/amp>

TASS13 Russia's Western Military District gets first radio-electronic warfare system Palantin. TASS, 2019–04–10.

<https://tass.com/defense/1053089>

TASS14 New targeting system to double range of Russia's Pantsir air defense system. TASS, 2016–10–06.

<https://tass.com/defense/904503>

TASS15 New Pantsir–SIM upgraded after Syria to be able to hit any drones. TASS, 2019–05.

<https://tass.com/defense/1058576>

TASS16 Russian units uncover Ukrainian artillery positions with Penicillin. TASS, 2023–04–15.

<https://tass.com/defense/1604741>

TASS17 Range of Russian S–300V4 system with new missile reaches 400 km. TASS, 2016–05–19.

<https://tass.com/defense/676665>

TASS18 Advanced long-range missile for S–400 system accepted for service in Russia. TASS, 2018–10–18.

<https://tass.com/defense/1026630>

TASS19 Russian hi-tech firm showcases latest Sosna short-range air defense missile system. TASS (quotes Rostec), 2018–08–22.

<https://tass.com/defense/1018157>

TASS20 Russia to display Supercam S350 drone at ADEX show. TASS, 2024–09–23.

<https://tass.com/defense/1846567/amp>

TASS21 Supercam S350 UAV helps Russian troops destroy array of Western-made armament. TASS, 2025–05–21.

<https://tass.com/defense/1961491/amp>

TASS22 Supercam S350 reconnaissance and strike drone to be presented at World Defense Show. TASS, 2026–02–06.

<https://tass.com/defense/2082793/amp>

TASS23 Russia's latest recon drones successfully employed in Ukraine operation – source. TASS, 2022–12–05.

<https://tass.com/politics/1545685>

TASS24 Latest Torнадо–G multiple rocket launchers arrive for troops in Russia's south. TASS, 2021–04–06.

<https://tass.com/defense/1274683>

TASS25 Heavy flamethrowers unit assumes combat duty in northwest Russia. TASS, 2018–11–13.

<https://tass.com/defense/1030669>

TASS26 Russia's cutting-edge TOS–2 flamethrower boasts high export potential. TASS, 2021–11–19.

<https://tass.com/defense/1163645>

TASS27 Russia engages TOS–2 flamethrowers in Ukraine. TASS, 2024–05–03.

<https://tass.com/defense/1783193>

TASS28 Moscow Military District to receive TOS–1A, TOS–2 heavy flamethrower systems. TASS, 2026–03–31.

<https://tass.com/defense/2109769>

TASS29 Russian engineering troops receive over 20 robotic vehicles. TASS (quoting Krasnaya Zvezda interview), 2023–01–20.

<https://tass.com/defense/1564823/amp>

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>

TECHIN Ladoga: how the Soviet tank-limousine was built. Technical Insider.

<https://www.techinsider.ru/weapon/498622-sovetskiy-tank-limuzin-stal-muzejnym-ekspонатom/>

TECHINS Боевые машины разминирования: эзда напролом. Populyarnaya Mekhanika (techinsider.ru).

<https://www.techinsider.ru/weapon/10637-k-protivniku-naprolom-boevye-mashiny-razminirovaniya/>

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/>

TEXTY Як влаштовані російські FPV-дрони: боєць ЗСУ гослігув трофейний зразок. Texty.org.ua, 2023–09–28.

<https://texty.org.ua/fragments/110753/yak-vlasthovani-rosijski-fpv-drony-boyec-doslidyv-trofejny-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/>

ТІ Южные Войска получили модернизированные «Сани». TechInsider (citing RIA Novosti and Southern MD press service), 2018.

<https://www.techinsider.ru/weapon/news-415572-rossijskie-voyska-poluchili-mode-rnizirovannye-sani/>

ТІ2 Мост наБстмечу вразу: понтонно–мостовой парк (Veremeev). TechInsider (Popular Mechanics Russia), 2020–06–17.

<https://www.techinsider.ru/weapon/10160-most-navstremchu-vrazgu-pontonno-mostovoy-park/>

ТІ3 Nemirnoye «Zemledeliye»: kak rabotayet rossiyskaya sistema zalpovogo minirovaniya. Techinsider.

<https://www.techinsider.ru/weapon/1540730-nemirnoye-zemledeliye-kak-rabotaet-rossijskaya-sistema-zalpovogo-minirovaniya/>

TOPWAR1 From Rys to Yastreb: Russian counter-battery radars. Top War [en.topwar.ru], 2021–02–17.

<https://en.topwar.ru/180040-ot-rysi-k-jastrebu-otechestvennyie-ris-kontrbatarejnoi-j-borby.html>

TOPWAR2 От «Рыси» к «Ястребу». Отечественные РАС контрбатареиной борьбы (Russian original of TOPWAR). Военное обозрение (topwar.ru), 2021–02–17.

<https://topwar.ru/180040-ot-rysi-k-jastrebu-otechestvennyie-ris-kontrbatarejnoi-borby.html>

TOPWAR3 Радиолокационная станция 1Л122 «Гармония».

Topwar.ru, c. 2015.

<https://topwar.ru/amp/68472-radiolokatsionnaya-stanciya-1l122-garmon.html>

TOPWAR4 The new RCB reconnaissance complex on KamAZ–63969 Typhoon was adopted. Topwar.ru (English), 2021.

<https://en.topwar.ru/200880-novyy-kompleks-rhb-razvedki-na-baze-broneavtomobi-ija-kamaz-63969-tajfun-prijat-na-vooruzhenie-rossijskoj-armii.html>

TOPWAR5 Smoke machine TDA–3. topwar.ru (English edition), 2021.

<https://en.topwar.ru/207753-dymovaja-mashina-tda-3.html>

TOPWAR6 Станция РЗБ Р–9347 «Синица» (Topwar). Topwar.ru (Voennoye Obozreniye), 2017–11–03.

[https://topwar.ru/128807-stanciya-reb-r-934u-sinica-kogda-sinica-v-pole-zhuravlyam-v-nebe-ty](https://topwar.ru/128807-stanciya-reb-r-934u-sinica-kogda-sinica-v-pole-zhuravlyam-v-nebe-tyazhko.html)

TSR Russia's space-related electronic warfare projects (B. Hendrickx). The Space Review, 2020-10-26. <https://thespacereview.com/article/4056/>

TV24 Orlan-10: kharakteristiki drona, tsena, dalnost. 24 Kanal (24tv.ua), 2026. https://24tv.ua/military/ru/orlan-10-kharakteristiki-drona-cena-dalnost-skorost-i-jeffektivnost_n3044152

TZ42 SSO znyshchyly kompleks orbitalnoho podavlennia suputnykiv Tirada-2. 24 Kanal, 2024-01-08. https://24tv.ua/tirada-2-rosiiji-ssu-znyshhili-potuzhnyi-kompleks-reb-voroga-donechchini_n2468162/amp

TWZ1 One Of Russia's Newest Air Defense Systems Has Been Captured By Ukraine. The War Zone (Trevithick), 2022-03. <https://www.twz.com/44981/ukraine-captured-one-of-russias-newest-air-defense-systems>

TWZ2 Roundup of Russia's arsenal of artillery. The War Zone, 2022-02. <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. <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. <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. <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. <https://www.twz.com/44866/russias-new-buk-m3-air-defense-missile-system-now-appears-to-be-in-ukraine>

TWZ7 New Russian Long-Range Drone Appears In Ukraine (Newdick). The War Zone, 2024-07-29. <https://www.twz.com/news-features/new-russian-long-range-drone-appears-in-ukraine>

TWZ8 Ukraine Just Captured Part Of One Of Russia's Most Capable Electronic Warfare Systems. The War Zone (Joseph Trevithick), 2022-03-22. <https://www.twz.com/44879/ukraine-just-captured-part-of-one-of-russias-most-capable-electronic-warfare-systems>

TWZ9 Ultra-Rare Russian Armored VIP Escape Vehicle Spotted In Ukraine. The War Zone, 2024-03. <https://www.twz.com/news-features/ultra-rare-russian-armored-vip-escape-vehicle-spotted-in-ukraine>

TWZ10 Prized Russian Long Range Radar System Attacked In Eastern Ukraine. The War Zone, 2024-05-28. <https://www.twz.com/news-features/prized-russian-long-range-radar-system-attacked-in-eastern-ukraine>

TWZ11 Russia's Predator-Style Drone With Big Export Potential Has Launched Its First Missiles. The War Zone, 2020-12-28. <https://twz.com/38446/russias-predator-style-drone-with-big-export-potential-has-launched-its-first-missiles>

TWZ12 Russia's Predator-Like Drone Is Now Shooting Down Other Drones. The War Zone, 2021-12. <https://www.twz.com/43585/russias-predator-like-drone-is-now-shooting-down-other-drones>

TWZ13 Ukraine Appears To Have Destroyed Its First Russian S-350 Air Defense System. The War Zone, undated (reports the Feb 2024 loss as earlier). <https://www.twz.com/land/ukraine-appears-to-have-destroyed-its-first-russian-s-350-air-defense-system>

TWZ14 Russian Troops Deploy Huge Smokescreen To Hide From Marauding Drones. The War Zone, 2024. <https://www.twz.com/news-features/russian-troops-deploy-huge-smokescreen-to-hide-from-marauding-drones>

TWZ15 Ukraine Just Captured Another Rare Russian Electronic Warfare Vehicle. The War Zone, 2022. <https://www.twz.com/ukraine-just-captured-another-rare-russian-electronic-warfare-vehicle>

TWZ16 Russian mine clearing vehicle detonates in massive fireball from drone bomblet. The War Zone, 2023. <https://www.twz.com/russian-mine-clearing-vehicle-detonates-in-massive-fireball-from-drone-bomblet>

TWZ17 Mine-clearing system seen being used as devastating urban artillery in Ukraine. The War Zone, 2023. <https://www.twz.com/mine-clearing-system-seen-being-used-as-devastating-urban-artillery-in-ukraine>

TWZ18 Ukraine Situation Report: Russian Anti-Drone Electronic Warfare Tank Captured. The War Zone, 2024. <https://www.twz.com/news-features/ukraine-situation-report-russian-anti-drone-electronic-warfare-tank-captured>

U241 Ukraine blinds Russia's S-400 in Crimea, then sets its launcher ablaze. United24 Media, 2026-07-27. <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. <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). <https://united24media.com/latest-news/ukrainian-drone-strike-destroys-rare-rkhm-4-chemical-recon-vehicle-video-7239>

U244 Ukraine Hits Kasta and P-18 Radars Alongside Russian Attack Drone Facility. UNITED24 Media (relaying Ukrainian General Staff), 2026-09-24. <https://united24media.com/war-in-ukraine/ukraine-hits-kasta-and-p-18-radars-alongside-russian-attack-drone-facility-22836>

U245 Russia Tests Molniya Strike Drones as Flying Couriers. UNITED24 Media, 2026-09-24. <https://united24media.com/war-in-ukraine/russia-tests-molniya-strike-drones-as-flying-couriers-for-carrying-weapons-and-food-to-frontline-22837>

U246 Ukraine Blinds Russian Air Defense in Crimea, Destroying Four Rare Radar Systems. United24 Media, 2026-03-09. <https://united24media.com/latest-news/ukraine-blinds-russian-air-defense-in-crimea-destroying-four-rare-radar-systems-16643>

U247 Ukraine Blinds Russia's Air Defenses in Crimea: Podlet and Nebo-M Radars Destroyed. United24 Media, 2025-09-09. <https://united24media.com/latest-news/ukraine-blinds-russias-air-defenses-in-crimea-podlet-and-nebo-m-radars-destroyed-11491>

U248 Russia Brought Back a Giant 1950s Radar. Ukraine Hit It Days Later. UNITED24 Media (citing Defense Express), 2026-07. <https://united24media.com/war-in-ukraine/russia-brought-back-a-giant-1950s-radar-ukraine-hit-it-days-later-20650>

U249 Ukraine Hits Russian P-18 Terek Early-Warning Radar Watching Skies for 250 Km. UNITED24 Media, 2026-09-26. <https://united24media.com/war-in-ukraine/ukraine-hits-russian-p-18-terek-early-warning-radar-watching-skies-for-250-km-22886>

U2410 Ukraine Destroys \$20M Russian "Palantin" EW System, Opening Skies for Drone Operations. United24 Media, 2026-04. <https://united24media.com/latest-news/ukraine-destroys-20m-russian-palantin-ew-system-opening-skies-for-drone-operations-17562>

U2411 Partisans blow up Russian military communications station in Rostov (Spanish edition). United24 Media, 2025 (year not shown on page). <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>

U2412 Fuerzas especiales ucranianas destruyen un sistema Buk-M3 y un raro MLRS Uragan. United24 Media, 2025-05. <https://united24media.com/es/latest-news/fuerzas-especiales-ucranianas-destruyen-un-sistema-ruso-de-defensa-antiaerea-buk-m3-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

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/rubic-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/rubic-ato/3678721-russia-replenishing-armored-vehicle-losses-with-old-t62-tanks-uk-intel.html>

UKRIN Border guards destroy 22 Russian vehicles, EW control center. Ukrinform, 2025-05. <https://www.ukrinform.net/rubic-ato/3996456-border-guards-destroy-22-russian-vehicles-ew-control-center-and-fuel-depot-in-kharkiv-region.html>

UKRIN2 Defense Forces strike Russian ammunition depot and Terek radar station. Ukrinform (relays Ukrainian General Staff), 2026-09-26. <https://www.ukrinform.net/rubic-ato/4168275-defense-forces-strike-russian-ammunition-depot-and-terek-radar-station.html>

UKRIN3 Ukrainian forces destroy Russia's Leopard radar on left bank of Dniro River. Ukrinform, 2024-01-17. <https://ukrinform.net/rubic-ato/3814762-ukrainian-forces-destroy-russias-leopard-radar-on-left-bank-of-dniro-river.html>

UKRIN4 InformNapalm: Drone downed in Donbas in service with twelve Russian army units. Ukrinform, 2020. <https://www.ukrinform.net/rubic-defense/3000100-informnapalm-drone-downed-in-donbas-in-service-with-twelve-russian-army-units.html>

UKRINF Ukraine's special forces destroy two Russian EW systems near Avdiivka. Ukrinform, 2023-11-11. <https://ukrinform.net/rubic-ato/3785708-ukraines-special-forces-destroy-two-russian-ew-systems-near-avdiivka.html>

UKRINF1 Ukrainian defenders destroy Russia's Pole-21 EW system. Ukrinform, 2023-11. <https://www.ukrinform.net/rubic-ato/3782899-ukrainian-defenders-destroy-russias-pole21-ew-system.html>

UKRINF2 National Guard destroys Russian anti-tank system 'Chrysanthemum'. Ukrinform (Ukrainian state news agency), 2024-03. <https://www.ukrinform.net/rubic-ato/3843171-national-guard-destroys-russian-antitank-system-chrysanthemum.html>

UKRINF3 Ukrainian drones strike Russian Mursmansk-BN EW system in Crimea. Ukrinform, 2026-07-31. <https://www.ukrinform.net/rubic-ato/4149676-ukrainian-drones-strike-russian-mursmansk-ew-system-in-crimea.html>

UKRINF4 Ukraine forces destroy Russia's Palantin e-warfare system. Ukrinform, 2023-02. <https://www.ukrinform.net/rubic-ato/3670026-ukraine-forces-destroy-russias-palantin-ewarfare-system.html>

UKRINF5 Ukrainian USFs hit Russia's air defense system, communications complex, drone command post. Ukrinform, 2026-05-14. <https://ukrinform.net/rubic-ato/4123339-ukrainian-usfs-hit-russias-air-defense-system-communications-complex-drone-command-post.html>

UKRINF6 Army destroys Russian EW system, two drones, over 40 invaders in southern Ukraine. Ukrinform, 2022-05-01. <https://www.ukrinform.net/rubic-ato/3471882-army-destroys-russian-ew-system-two-drones-over-40-invaders-in-southern-ukraine.html>

UKRINF7 Drone operators destroy rare Russian anti-aircraft gun. Ukrinform, 2025-06-29. <https://www.ukrinform.net/rubic-ato/4009447-drone-operators-destroy-rare-russian-antiaircraft-gun.html>

UKRINF8 OSCE again spots Russian TORN electronic warfare system in Donbas. Ukrinform, 2019-06. <https://ukrinform.net/rubic-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/rubic-ato/3532722-ukrainian-forces-destroy-enemy-electronic-warfare-system-near-kakhovka-hpp.html>

UNIAN В Україні моли 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 Аер-3 – ЗСУ затрофеїли пігікний російськїи комплекс РЕБ. UNIAN, 2023-02-04. <https://www.unian.ua/war/rb-341v-layer-3-zsu-zatrofeili-ridiskinyi-rosiyskiy-kompleks-reb-foto-1232975.html>

UNIAN4 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>

UNIAN5 Ukrainian troops captured R-149AKSh-1 command and staff vehicle. UNIAN, 2022-09-09. <https://www.unian.net/war/ukrainskie-voennye-zahvatili-cennyi-trofej-komandno-shtabnuyu-mashinu-r-149aksh-1-okupantov-11972223.html>

UNIAN6 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 Рывин рассказал подробности об исследовании российского противокорабельного комплекса «Бал». UNN, 2023-06-15. <https://unn.ua/ru/amp/oleksandr-ruvin-rozpoziv-podrobiitsi-pro-doslidzhennya-rosiyskogo-protikorablebnogo-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>

USERBOCT Editor's inspection of photographs, 8 Oct 2026. Editor (editor observation), 2026-10-08.

UTIN Радиостанции полёвых узлов связи (UTIN, Makaterchik, Maseichik), учебно-методическое пособие. BSUIR Military Faculty, Minsk, 2018. https://libeloidc.bsuir.by/bitstream/123456789/33800/1/Utin_radio.pdf

UZST Технічне характеристіку автомобілей КамАЗ 5350. UZST (KamAZ dealer, operator-manual data). <https://uzst.ru/poleznaya-informaciya/rukovodstvo-po-ekspluatacii-avtomobilej-kamaz/ekspluatatsionnye-parametry/tehnichekije-harakteristiki-avtomobilej-kamaz-5350>

VALKA Barnaul-T (RUS) automated air defence command system. valka.cz / armedconflicts.com. <https://www.armedconflicts.com/Barnaul-T-1217337>

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>

VESTNIK Разведчики ВАР получат специальные радары 1A277 Соболятник. Vestnik Mordovii (repeats MoD release), 2020-06-21. <https://vestnik-rm.ru/articles/blog-tanikovoda-1945-stranicy-voennoj-istorii/razvedchiki-vdv-poluchat-specialnye-radary-11277-sobolyatnik>

VIKNA БПЛА Форпост стоимостью \$7 млн: характеристіку. Vikna, 2024-04. <https://vikna.tv.ru/dlia-tele/bpla-forpost-za-7-mln-unichtozhen-vsu-chto-izvestno-o-tth/>

VIKNA2 БПЛА Молния: что известно о новой российской разработке. Vikna (STB), 2025-05. <https://vikna.tv.ru/dlia-tele/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. *Vechnynaya Moskva* [quoting Russian MoD information department], 2018-11-28. https://vm.ru/news/561956.html

VM2 Артиллеристы боюют характером. *Vechnynaya Moskva* (vm.ru), 2025. https://vm.ru/society/1335467-artilleristy-voyuyut-harakterom

VM3 Lantset primeril telnashku. *Vechnynaya Moskva*, 2025-06. https://vm.ru/opinion/1241338-lancet-primeril-telnashku

VM4 Видео тренировки расчетов систем ПВО на полигоне Ашулук появились в Сети. *Vechnynaya Moskva*, 2019. https://vm.ru/news/663849.html

VMUS 152-мм пушка «Гуацмин-Б» 2A36. СССР. Victory Museum (Moscow). https://victorymuseum.ru/encyclopedia/technic/artilleriya/152-mm-pushka-giatsint-b-2a36-sssr/

VNTU Osoblyvosti vykorystannya radioreleynoho ta troposfernoho zv'yazku 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. https://vpk.name/library/fi/2c31-vena.html

VPK2 2S34 Khosta Russian self-propelled artillery system. vpk.name [English]. https://vpk.name/en/964800_2s34-khosta-russian-self-propelled-artillery-system.html

VPK3 Self-propelled launcher 9P78-1. vpk.name. https://vpk.name/library/fisp-9p78-1.html

VPK4 БМП-1АМ «Басурманин». Как легендарной советской «копейке» подарили вторую жизнь (TASS, reposted by VPK.name). TASS, 2022-02. https://vpk.name/news/581211_bmp-1am_basurmanin_kak_legendarnoi_sovetskoi_kopeike_podarili_vtoruyu_zhizn.html

VPK5 БТР-МДМ Pakyuuka-M. vpk.name library. https://vpk.name/library/fi/btr-mdm.html

VPK6 Партия разведывательных химических машин РХМ-6 поступила в подразделение РХБ защиты ВВО. vpk.name / CAMTO, 2015-11-17. https://vpk.name/news/144363_partiya_razvedyvatelnyh_himicheskikh_mashin_rhm-6_postupila_v_podrazdeleniya_rhb_zashity_vvo.html

VPK7 Zenitnyy raketnyy kompleks Gibka-S (vpk.name), from KBM material. vpk.name. https://vpk.name/library/fi/gobka-s.html

VPK8 Mobilnaya RLS 39N6 Kasta-2. vpk.name. https://vpk.name/library/fi/kasta-2.html

VPK9 Mobilnyi avtomatizirovannyi kompleks REB 'Leer-2' (copy of arms-expo.ru catalogue). vpk.name, 2021. https://vpk.name/library/fi/leer-2.html

VPK10 Moskva-1 (library entry). VPK.name. https://vpk.name/library/fi/moscow-1.html

VPK11 Novaya RLS Nebo-M postupila na voорuzhenie voisk v Povolzhe (TASS via VPK.name). TASS, 2018-04-25. https://vpk.name/news/213609_novaya_radiolokatsionnaya_stanciya_nebo-m_postupila_na_voорuzhenie_voisk_v_povolzhe.html

VPK12 Понтонный парк ПП-91 (ПП-2005). ВПК.name. https://vpk.name/library/fi/pp-91.html

VPK13 Поляна-Д4. VPK.name library. https://vpk.name/library/fi/polyana-d.html

VPK14 Battery command post 9S482M7 PU-12M7. VPK.name. https://vpk.name/library/fi/pu-12m7.html

VPK15 Автомобильная КВ/УКВ радиостанция Р-166 «Артек». VPK.name, undated [archived 2019]. https://vpk.name/library/fi/r-166.html

VPK16 V Priamure v obedinenie VVO postupili REM-KL (RIA Novosti). VPK.name / RIA Novosti, 2019-10-17. https://vpk.name/news/165963_v_priamure_v_obedinenie_vvo_postupili_noveishie_mashiny_rem-kl.html

VPK17 НПО «Стрела» показало машину радиолокационной разведки СНАР-10М1. VPK.name (Torwar lineage), 2014-08. https://vpk.name/news/116377_npo_strela_pokazalo_mashinu_radiolokatsionnoi_razvedki_snar-10m1.html

VPK18 В войска ЗВО в ближайшее время поступят станции наземной артиллерийской разведки «Пантера». VPK.name relaying TsAMTO, 2016-03-11. https://vpk.name/news/151126_v_oiiska_zvo_v_blizhaishee_vremya_postupyat_stancii_nazemnoi_artilleriiskoi_razvedki_pantera.html

VPK19 Боевая машина огневой поддержки 2С25 Спрут-СД. vpk.name. https://vpk.name/library/fi/2c25.html

VPK20 Комплекс разведки, управления и связи Стрелец и Стрелец-М для Ратник. vpk.name (Novosti VPK), undated, c2016-2018. https://vpk.name/library/fi/strelec.html

VPK21 Invar-M tank rocket on its own. vpk.name, 2024. https://vpk.name/en/958603_invar-m-tank-rocket-on-its-own.html

VPK22 Новый переносной зенитный ракетный комплекс «Вербя» начал поступать на вооружение российской армии (APMC-TACC). VPK.name / ARMS-TASS, 2014-08-22. https://vpk.name/news/116170_noviy_perenosnoi_zenitnyy_raketnyy_kompleks_verba_nachal_postupat_na_voорuzhenie_rossiiskoi_armii.html

VPK23 Беспилотный летательный аппарат ZALA 421-16(E). VPK.name. https://vpk.name/library/fi/421-16.html

VRF1 Комплекс управления огнем артиллерии 1Б12М. вооружение.рф. https://xn--b1agac3aeas4a.xn--p1ai/armament/1v12m-mashina/

VRF2 Комплекс радиоэлектронной борьбы РБ-301Б Борисoglebsk-2. вооружение.рф. https://xn--b1agac3aeas4a.xn--p1ai/armament/rb-301b-borisoglebsk-2/

VRF3 Станция постановки помех Р-9345МВ. вооружение.пф. https://xn--b1agac3aeas4a.xn--p1ai/armament/r-9345mv/

VRF4 РХМ-4 (Army Guide). army-guide.com Russian mirror. https://xn--b1agac3aeas4a.xn--p1ai/armament/rhm-4/

VRF5 РХМ-6 (Army Guide). army-guide.com Russian mirror. https://xn--b1agac3aeas4a.xn--p1ai/armament/rhm-6/

VRF6 РХМ-8 (Army Guide). army-guide.com Russian mirror. https://xn--b1agac3aeas4a.xn--p1ai/armament/rhm-8/

VRF7 МКТК-1А Дзюгоуст (Weapons of Russia reference page). Weapons of Russia (reference site). https://xn--b1agac3aeas4a.xn--p1ai/armament/mktk-1a-dzyudoist/

VRF8 РБ-531Б «Инфауна». voоружenie.rf. https://xn--b1agac3aeas4a.xn--p1ai/armament/rb-531b-infauna/

VRF9 РБ-341Б «Леер-3» (catalogue entry). вооружение.пф. https://xn--b1agac3aeas4a.xn--p1ai/armament/rb-341v-leer-3/

VRF10 Радиолокационная станция «Небо-СВ» 1Л119. Обзор вооружения и военной техники [xn--b1agac3aeas4a.xn--p1ai]. https://xn--b1agac3aeas4a.xn--p1ai/armament/nebo-sv/

VRF11 Понтонно-мостовой парк ПМТ: обзор. Вооружение.пф. https://xn--b1agac3aeas4a.xn--p1ai/armament/pmp/

VRF12 Автоматизированная система управления Поляна-Д4. вооружение.рф. https://xn--b1agac3aeas4a.xn--p1ai/armament/polyana-d4/

VRF13 1Л262Е Rtut-BM (SPR-2M), equipment page with characteristics table. вооружение.рф. https://xn--b1agac3aeas4a.xn--p1ai/armament/1l262e-rtut-bm-spr-2m/

VRF14 Дымовая машина ТДА-2К: обзор характеристик. armyguide (xn--b1agac3aeas4a.xn--p1ai). https://xn--b1agac3aeas4a.xn--p1ai/armament/tda-2k/

VRF15 1Л277 Sobolyatnik catalogue page. Reference site (copies manufacturer sheet). https://xn--b1agac3aeas4a.xn--p1ai/armament/1l277-sobolyatnik/

VRF16 РБ-636 Svet-KU (military equipment catalogue). voоружenie.rf, 2023. https://xn--b1agac3aeas4a.xn--p1ai/armament/rb-636-svet-ku/

VRF17 Электронический беспилотный летательный аппарат Тахион. xn--b1agac3aeas4a.xn--p1ai (armament catalogue). https://xn--b1agac3aeas4a.xn--p1ai/armament/tahion/

VRF18 Р-330Ж «Жулея». voоружenie.rf (вооружение.пф), Russian reference site. https://xn--b1agac3aeas4a.xn--p1ai/armament/r-330zh-zhite/

VS По крутым траекториям. Vokrug Sveta. https://www.vokrugsveta.ru/vs/pp-krutym-traektoriyam-id585154/

VZ Десантники впервые сбросили роботом 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

W1A Раскрыты характеристики новейшего ударного БПЛА «Молия-2». www1.ru, quoting Russian MoD, 2024-12-05. https://www1.ru/news/2024/12/05/raskrytye-harakteristiki-noveishego-udarnogo-bpla-molnia-2-okazalsia-proshhe-lanceta.html

W1A2 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-voennykh-v-minoborony-rf-nazvali-preimushchestva-dronov-razvedikov-supercam-s350.html

W1A3 Ustroit kontrbatareinyu vzbuchku: chem khorosha perspektivnaya RSZO Uragan-1M. www1.ru, 2024-10-08. https://www1.ru/news/2024/10/08/ustroit-kontrbatareinyu-vzbuchku-chem-xorosa-perspektivnaia-rszo-uragan-1m.html

W1B Крылатая смерть: раскрыта дальность полёта дрона-камикадзе «Молия-2». www1.ru, quoting Russian MoD press service, 2025-01-28. https://www1.ru/news/2025/01/28/krylataia-smert-raskryta-summassedaia-dalnost-poleta-noveishego-drona-kamikadze-molnia-2.html

W1B2 Новое поколение воздушной разведки: 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-otslezhivanii-manevrov-protivnika-amp.html

W1C Военные показали работу дрона-камикадзе «Молия-2». www1.ru, quoting Russian MoD, 2025-02-03. https://www1.ru/news/2025/02/03/voennye-pokazali-rabotu-preodelevaiushhego-pomei-sredstv-reb-drona-kamikadze-molnia-2.html

W1C2 Sovsem strakh poteriali: armiya Rossii svela poteri dronov Supercam pocht k nulyu. www1.ru, 2024-10-25. https://www1.ru/news/2024/10/25/sovssem-strax-poteriali-armiya-rossii-svela-poteri-dronov-razvedikov-supercam-pochi-k-nulyu-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-noveishaia-rszo-uragan-1m-ustroit-kontrbatareinyu-vzbuchku.html

W1D Раскрыты официальные характеристики дрона «Молия-2». www1.ru, quoting Russian MoD, 2025-05-02. https://www1.ru/news/2025/05/02/raskrytye-ofitsialnye-harakteristiki-drona-molnia-2-sostoit-iz-aliuminiyevy-trub-i-plastika.html

W1D2 Ustoichiv k REB, rabotaet kruglye sutki: chto mozhet novyi bespilotnik Supercam. www1.ru, 2024-01-27. https://www1.ru/news/2024/01/27/ustoichiv-k-reb-rabotaet-kruglye-sutki-cto-mozet-novyi-rossiiskii-bespilotnik-supercam-amp.html

W1E Gaubitsy 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-akacia-nacali-ispolzovat-v-svlyazke-s-razvedronom-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-primeneniya-noveishei-rszo-uragan-1m.amp.html

W1F Supercam S350 corrected the destruction of a drone control point. www1.ru, 2026-03-18. https://www1.ru/news/2026/03/18/bespilotnik-supercam-s350-skorrektiroval-unictozenie-punkta-upravleniya-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-poluchat-prodvinutuiu-versiyu-bespilotnika-razvedchika-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-celeina-peredovoi-operator-nazval-kameru-odnoi-iz-lucsih-sredi-analogov.html

W1I Nazvana glavnaya modifikatsiya drona Supercam S350. www1.ru, 2025-01-20. https://www1.ru/news/2025/01/20/nazvana-glavnaia-modifikatsiya-drona-supercam-s350-novoe-pokolenie-vozdusnoi-razvedki.html

W1ITAL Redkii dron Italmas zasvetilsya na foto, sposoben proleat 200 km. www1.ru, 2025-01-21. https://www1.ru/news/2025/01/21/redkii-dron-italmas-zasvetilsia-na-foto-sposoben-proleat-200-km.html

W1J Protivniku ne ostavlyаем shansov: rossiiskie voennye ispolzuyut bespilotniki Supercam. www1.ru, 2024-04-29. https://www1.ru/news/2024/04/29/protivniku-ne-ostavlyаем-sansov-rossiiskie-voennye-ispolzuiut-bespilotniki-supercam-dlia-tocnoi-r-amp.html

W1KYN Переговоры дроны «Князь Вандал Новгородский» с тепловодзором 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 Orkana navodit artilleriyu i vysokotochnye snaryady. www1.ru, 2024-11-20. https://www1.ru/news/2024/11/20/lazernia-ukazka-orkana-navodit-artilleriyu-i-vysokotochnye-snaryady-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-optovokonnnyi-dron-kamikadze-provod-dalnosti-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-rossiiskuui-armiiu.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 БТ-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 Дешеве и серпигто: появилось первое фото ЗСУ-23-4 «Шулка» 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-zashitой.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-artilleriyu-raskrytye-harakteristiki-noveishego-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/glisit-oxotnikov-i-letit-150-km-bez-poteri-svlyazi-nazvany-polnye-harakteristiki-drona-merlin-vr.html

W171 Tseleukazanie za minuty: Oran-10 zakryl petlyu mezhdu obnaruzheniem tseli i artilleriyskim udarom. www1.ru, 2026-04-04. https://www1.ru/news/2026/04/04/celeukazanie-za-minuty-oran-10-zakryl-petlyu-mezdu-obnaruzheniem-celli-i-artilleriiskim-udarom.html

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. 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. 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. 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). https://odin.tradoc.army.mil/WEG/Asset/2S35_Koalitsiya-SV_Russian_152mm_Self-Propelled_Howitzr_[SPH]

WEG5 2S4 Tyulpan (M-1975) Russian 240mm Self-Propelled Heavy Mortar (local extract). US Army TRADOC, ODIN WEG, 2025-05-06. 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.
[https://odin.tradoc.army.mil/WEG/Asset/2S7_Pion_\[M1975\]_Russian_203mm_Self-Propelled_Gun_\[SPG\]](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.
https://odin.tradoc.army.mil/WEG/Asset/2S40_Floks_Russian_6x6_120mm_Self-Propelled_Mortar_System_

WEG8 2S5 Giatshint-S Russian 152mm Self-Propelled Gun (SPG), WEG extract. US Army TRADOC, 2025-03-11.
[https://odin.tradoc.army.mil/WEG/Asset/2S5_Giatshint-S_Russian_152mm_Self-Propelled_Gun_\[SPG\]](https://odin.tradoc.army.mil/WEG/Asset/2S5_Giatshint-S_Russian_152mm_Self-Propelled_Gun_[SPG])

WEG9 WEG: 2S9 Anona (S0-120) Russian 120mm Amphibious Self-Propelled Mortar. US Army TRADOC (ODIN WEG), local extract pilot/weg_extract/2s9.json, 2024-10-08.
[https://odin.tradoc.army.mil/WEG/Asset/2S9_Anona_\[S0-120\]_Russian_120mm_Amphibious_Self-Propelled_Mortar](https://odin.tradoc.army.mil/WEG/Asset/2S9_Anona_[S0-120]_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.
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.
[https://odin.tradoc.army.mil/WEG/Asset/2S9-1M_\(Nona-S\)_Russian_120mm_Self-Propelled_Mortar](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.
[https://odin.tradoc.army.mil/WEG/Asset/96L6E_\[Cheese_Board\]_Russian_Early-Warning_and_Acquisition_Radar](https://odin.tradoc.army.mil/WEG/Asset/96L6E_[Cheese_Board]_Russian_Early-Warning_and_Acquisition_Radar)

WEG13 WEG: ARK-1M RVS Russian Artillery Locating Radar [local extract, last modified 2024-10-22]. US Army TRADOC, 2024-10-22.
https://odin.tradoc.army.mil/WEG/Asset/ARK-1M_RVS_Russian_Artillery_Locating_Radar

WEG14 ODIN WEG: 3K60 Bal [SSC-6 Sennight] Russian Coastal Defense System [local extract]. US Army TRADOC, 2024-06-03.
[https://odin.tradoc.army.mil/WEG/Asset/3K60_Bal_\[SSC-6_Sennight\]_Russian_Coastal_Defense_System_](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.
https://odin.tradoc.army.mil/WEG/Asset/Barnaul-T_Russian_Air_Defense_Command_and_Control_System

WEG16 K-300P Bastion-P [SS-C-5 Stoooge] Russian Coastal Defense Missile System [local extract pilot/weg_extract/bastion.json]. US Army TRADOC, ODIN WEG, 2025-06-10.
[https://odin.tradoc.army.mil/WEG/Asset/K-300P_Bastion-P_\[SS-C-5_Stoooge\]_Russian_Coastal_Defense_Missile_System_](https://odin.tradoc.army.mil/WEG/Asset/K-300P_Bastion-P_[SS-C-5_Stoooge]_Russian_Coastal_Defense_Missile_System_)

WEG17 WEG online, BAT-2 Russian Combat Engineer Vehicle (local extract). TRADOC, 2024-10-21.
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].
[https://odin.tradoc.army.mil/WEG/Asset/BMD-2_Russian_Airborne_Amphibious_Infantry_Fighting_Vehicle_\[IFV\]](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.
[https://odin.tradoc.army.mil/WEG/Asset/BMD-4_Russian_Airborne_Amphibious_Infantry_Fighting_Vehicle_\[IFV\]](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.
[https://odin.tradoc.army.mil/WEG/Asset/BMP-1_Russian_Amphibious_Infantry_Fighting_Vehicle_\[IFV\]](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.
[https://odin.tradoc.army.mil/WEG/Asset/BMP-1KSh_\(BMP_M1978\)_Russian_Amphibious_Command_Post_and_Staff_Infantry_Fighting_Vehicle_\[IFV\]](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.
[https://odin.tradoc.army.mil/WEG/Asset/PRP-4A_\[Argus\]_Russian_Amphibious_Artillery_Reconnaissance_Vehicle](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.
[https://odin.tradoc.army.mil/WEG/Asset/BMP-2_Russian_Amphibious_Infantry_Fighting_Vehicle_\[IFV\]](https://odin.tradoc.army.mil/WEG/Asset/BMP-2_Russian_Amphibious_Infantry_Fighting_Vehicle_[IFV])

WEG24 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.
https://odin.tradoc.army.mil/WEG/Asset/BMPT_Terminator_Russian_Heavy_Fire_Support_Combat_Vehicle

WEG25 Worldwide Equipment Guide: BMR-3M Russian Mine Clearing Vehicle [local extract]. US Army TRADOC, 2024-10-16.
https://odin.tradoc.army.mil/WEG/Asset/BMR-3M_Russian_Mine_Clearing_Vehicle

WEG26 Borisoglebsk-2 [RB-301B] Russian Amphibious Multipurpose Jamming Complex. US Army TRADOC, ODIN WEG, 2025-06-05.
[https://odin.tradoc.army.mil/WEG/Asset/Borisoglebsk-2_\[RB-301B\]_Russian_Amphibious_Multipurpose_Jamming_Complex](https://odin.tradoc.army.mil/WEG/Asset/Borisoglebsk-2_[RB-301B]_Russian_Amphibious_Multipurpose_Jamming_Complex)

WEG27 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.
https://odin.tradoc.army.mil/WEG/Asset/BRDM-2_Russian_4x4_Amphibious_Armored_Scout_Car

WEG28 Worldwide Equipment Guide: BREM-1, BREM-2, BREM-D, RM-G [local extract]. US Army TRADOC, 2024-10-15.
https://odin.tradoc.army.mil/WEG/Asset/BREM-1_Russian_Armored_Recovery_Vehicle

WEG29 Worldwide Equipment Guide: IMR-2 Russian Combat Engineering Vehicle (local extract). US Army TRADOC, 2024-10-16.
https://odin.tradoc.army.mil/WEG/Asset/IMR-2_Russian_Combat_Engineering_Vehicle

WEG30 WEG extract: BRM-1K Russian Amphibious Combat Reconnaissance Vehicle (CRV). TRADOC Worldwide Equipment Guide (ODIN), 2025-03-03.
[https://odin.tradoc.army.mil/WEG/Asset/BRM-1K_Russian_Amphibious_Combat_Reconnaissance_Vehicle_\[CRV\]](https://odin.tradoc.army.mil/WEG/Asset/BRM-1K_Russian_Amphibious_Combat_Reconnaissance_Vehicle_[CRV])

WEG31 WEG online: BTR-90 (GAZ-5923) Russian 8x8 Amphibious APC (local extract pilot/weg_extract/btr-90.json). US Army TRADOC, 2025-12-10.
[https://odin.tradoc.army.mil/WEG/Asset/BTR-90_\[GAZ-5923\]_Russian_8x8_Amphibious_Armored_Personnel_Carrier_\[APC\]](https://odin.tradoc.army.mil/WEG/Asset/BTR-90_[GAZ-5923]_Russian_8x8_Amphibious_Armored_Personnel_Carrier_[APC])

WEG32 Worldwide Equipment Guide: BTR-70 (BTR M1978) and BTR-80 Russian 8x8 Amphibious APC [local extract]. US Army TRADOC (ODIN), 2025-03-05.
[https://odin.tradoc.army.mil/WEG/Asset/BTR-80_Russian_8x8_Amphibious_Armored_Personnel_Carrier_\[APC\]](https://odin.tradoc.army.mil/WEG/Asset/BTR-80_Russian_8x8_Amphibious_Armored_Personnel_Carrier_[APC])

WEG33 WEG: BTR-D (BMD M1979) Airborne APC (local extract pilot/weg_extract/btr-d.json). US Army TRADOC, 2025-03-05.
[https://odin.tradoc.army.mil/WEG/Asset/BTR-D_\[BMD_M1979\]_Russian_Amphibious_Airborne_Armored_Personnel_Carrier_\[APC\]](https://odin.tradoc.army.mil/WEG/Asset/BTR-D_[BMD_M1979]_Russian_Amphibious_Airborne_Armored_Personnel_Carrier_[APC])

WEG34 WEG extract: BTR-MD Rakushka [Russian Amphibious Airborne APC]. TRADOC WEG, 2024-08-07.
[https://odin.tradoc.army.mil/WEG/Asset/BTR-MD_Rakushka_Russian_Amphibious_Airborne_Armored_Personnel_Carrier_\[APC\]](https://odin.tradoc.army.mil/WEG/Asset/BTR-MD_Rakushka_Russian_Amphibious_Airborne_Armored_Personnel_Carrier_[APC])

WEG35 9K37 Buk-M1 [SA-11 Gaffly] Russian Medium-Range Surface-to-Air Missile System. US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-06-10.
[https://odin.tradoc.army.mil/WEG/Asset/9K37_Buk-M1_\[SA-11_Gaffly\]_Russian_Medium-Range_Surface-to-Air_Missile_System](https://odin.tradoc.army.mil/WEG/Asset/9K37_Buk-M1_[SA-11_Gaffly]_Russian_Medium-Range_Surface-to-Air_Missile_System)

WEG36 Buk-M2 [SA-17 Grizzly] Russian Medium-Range Air Defense Missile System. US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-06-10.
[https://odin.tradoc.army.mil/WEG/Asset/Buk-M2_\[SA-17_Grizzly\]_Russian_Medium-Range_Air_Defense_Missile_System](https://odin.tradoc.army.mil/WEG/Asset/Buk-M2_[SA-17_Grizzly]_Russian_Medium-Range_Air_Defense_Missile_System)

WEG37 9K317M Buk-M3 [SA-27] Russian Medium-Range Air Defense Missile System. US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-06-10.
[https://odin.tradoc.army.mil/WEG/Asset/9K317M_Buk-M3_\[SA-27\]_Russian_Medium-Range_Air_Defense_Missile_System](https://odin.tradoc.army.mil/WEG/Asset/9K317M_Buk-M3_[SA-27]_Russian_Medium-Range_Air_Defense_Missile_System)

WEG38 9K330 Tor [SA-15 Gauntlet] Russian Short-Range Surface-to-Air Missile System. US Army TRADOC, Worldwide Equipment Guide (ODIN), 2025-06-10.
[https://odin.tradoc.army.mil/WEG/Asset/9K330_Tor_\[SA-15_Gauntlet\]_Russian_Short-Range_Surface-to-Air_Missile_System](https://odin.tradoc.army.mil/WEG/Asset/9K330_Tor_[SA-15_Gauntlet]_Russian_Short-Range_Surface-to-Air_Missile_System)

WEG39 WEG entry RKhM-6 and RKhM-8 [local extract]. US Army TRADOC, 2024-10-09.
https://odin.tradoc.army.mil/WEG/Asset/RKhM-6_Russian_8x8_Amphibious_CBRN_Reconnaissance_Vehicle

WEG40 D-20 (M1955) Russian 152mm Towed Gun-Howitzer, Worldwide Equipment Guide [local extract]. US Army TRADOC, 2025-04-10.
[https://odin.tradoc.army.mil/WEG/Asset/D-20_\[M1955\]_Russian_152mm_Towed_Gun-Howitzer](https://odin.tradoc.army.mil/WEG/Asset/D-20_[M1955]_Russian_152mm_Towed_Gun-Howitzer)

WEG41 D-30 (M1963) Russian 122mm Towed Howitzer, Worldwide Equipment Guide [local extract]. US Army TRADOC, 2025-03-06.
[https://odin.tradoc.army.mil/WEG/Asset/D-30_\[M1963\]_Russian_122mm_Towed_Howitzer](https://odin.tradoc.army.mil/WEG/Asset/D-30_[M1963]_Russian_122mm_Towed_Howitzer)

WEG42 WEG extract decon.json (ARS-14KM, TMS-65 pages). TRADOC, odin.tradoc.army.mil/WEG, 2024-10-15 and 2025-03-06.
https://odin.tradoc.army.mil/WEG/Asset/ARS-14KM_Russian_6x6_Decontamination_Truck

WEG43 Worldwide Equipment Guide: BTM-3, MDK-3, PZM-2 [local extract]. TRADOC, 2025-03-20.
https://odin.tradoc.army.mil/WEG/Asset/BTM-3_Russian_Trenching_Machine

WEG44 WEG online extract: GAZ-66 and GAZ-3308 Sadko [pilot/weg_extract/gaz-trucks.json]. TRADOC, 2024-12-10.
https://odin.tradoc.army.mil/WEG/Asset/GAZ-3308_Sadko_Russian_4x4_Light_Utility_Truck

WEG45 WEG: Gibka-S Russian Self-Propelled VSHORAD System (local extract pilot/weg_extract/gibka.json). US Army TRADOC, WEG, 2025-06-10.
[https://odin.tradoc.army.mil/WEG/Asset/Gibka-S_Russian_Self-Propelled_Very_Short-Range_Air_Defense_\[VSHORAD\]_System](https://odin.tradoc.army.mil/WEG/Asset/Gibka-S_Russian_Self-Propelled_Very_Short-Range_Air_Defense_[VSHORAD]_System)

WEG46 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.
[https://odin.tradoc.army.mil/WEG/Asset/9K35_Strela-10_\[SA-13_Gopher\]_Russian_Short-Range_Surface-to-Air_Missile_System](https://odin.tradoc.army.mil/WEG/Asset/9K35_Strela-10_[SA-13_Gopher]_Russian_Short-Range_Surface-to-Air_Missile_System)

WEG47 WEG extract: BM-21 Grad Russian 122mm MRL (last modified 2024-12-19). US Army TRADOC, 2024-12.
[https://odin.tradoc.army.mil/WEG/Asset/BM-21_Grad_Russian_122mm_Multiple_Rocket_Launcher_\[MRL\]](https://odin.tradoc.army.mil/WEG/Asset/BM-21_Grad_Russian_122mm_Multiple_Rocket_Launcher_[MRL])

WEG48 WEG extract groza.json: R-934UM2, R-330B, R-934B pages. US Army TRADOC, 2025-06-05.
https://odin.tradoc.army.mil/WEG/Asset/R-934B_Russian_VHF_Air_Communication_Automated_Jamming_Station

WEG49 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.
[https://odin.tradoc.army.mil/WEG/Asset/9K38_Igla_\[SA-18_Grouse\]_Russian_Man-Portable_Air_Defense_Missile](https://odin.tradoc.army.mil/WEG/Asset/9K38_Igla_[SA-18_Grouse]_Russian_Man-Portable_Air_Defense_Missile)

WEG50 Worldwide Equipment Guide online: MTU-72 AVLB and TMM-3 mobile bridging system [local extract trmm.json]. TRADOC, 2024-10 to 2025-04.
https://odin.tradoc.army.mil/WEG/Asset/TMM-3_Russian_6x6_Mobile_Bridging_System

WEG51 Infaua (RB-531B) Russian 8x8 Amphibious Electronic Warfare System. TRADOC WEG, 2025-06-05.
[https://odin.tradoc.army.mil/WEG/Asset/Infaua_\[RB-531B\]_Russian_8x8_Amphibious_Electronic_Warfare_System](https://odin.tradoc.army.mil/WEG/Asset/Infaua_[RB-531B]_Russian_8x8_Amphibious_Electronic_Warfare_System)

WEG52 WEG: IRM Zhuk Russian Amphibious Engineer Reconnaissance Vehicle [local extract pilot/weg_extract/irm.json]. TRADOC, 2024-10-30.
https://odin.tradoc.army.mil/WEG/Asset/IRM_Zhuk_Russian_Amphibious_Engineer_Reconnaissance_Vehicle

WEG53 WEG extract, LPD-801 Russian UAV Jammer. US Army TRADOC WEG [local extract], 2025-06-05.
[https://odin.tradoc.army.mil/WEG/Asset/LPD-801_Russian_Unmanned_Aerial_Vehicle_\[UAV\]_Jammer](https://odin.tradoc.army.mil/WEG/Asset/LPD-801_Russian_Unmanned_Aerial_Vehicle_[UAV]_Jammer)

WEG54 Worldwide Equipment Guide, KamAZ-4310, 5350, 6350 pages. TRADOC, 2024-10.
https://odin.tradoc.army.mil/WEG/Asset/KamAZ-4310_Russian_6x6_General_Utility_Vehicle

WEG55 Kasta 2E1 Russian 6x6 Low-Altitude All-Around 3-D Surveillance Radar System (WEG extract). US Army TRADOC, WEG online, 2024-08-07.
https://odin.tradoc.army.mil/WEG/Asset/Kasta_2E1_Russian_6x6_Low-Altitude_All-Around_3-D_Surveillance_Radar_System

WEG56 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.
https://odin.tradoc.army.mil/WEG/Asset/9P157_Khrizantema-S_Russian_Anti-Tank_Guided_Missile_System

WEG57 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.
[https://odin.tradoc.army.mil/WEG/Asset/9M113_Konkurs_\[AT-5_Spandrel\]_Russian_Anti-Tank_Guided_Missile_\[ATGM\]](https://odin.tradoc.army.mil/WEG/Asset/9M113_Konkurs_[AT-5_Spandrel]_Russian_Anti-Tank_Guided_Missile_[ATGM])

WEG58 WEG: 9M133 Kornet [AT-14 Spriggan] ATGM; 9M133 Kornet-EM 4x4 ATGM Vehicle [local extract pilot/weg_extract/kornet.json]. US Army TRADOC (ODIN), 2024-08-07 / 2024-08-29.
[https://odin.tradoc.army.mil/WEG/Asset/9M133_Kornet_\[AT-14_Spriggan\]_Russian_Anti-Tank_Guided_Missile_\[ATGM\]](https://odin.tradoc.army.mil/WEG/Asset/9M133_Kornet_[AT-14_Spriggan]_Russian_Anti-Tank_Guided_Missile_[ATGM])

WEG59 Krasuha Russian Mobile Electronic Warfare Jamming System [WEG extract]. US Army TRADOC, ODIN, 2025-06-05.
https://odin.tradoc.army.mil/WEG/Asset/Krasuha_Russian_Mobile_Electronic_Warfare_Jamming_System

WEG60 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.
[https://odin.tradoc.army.mil/WEG/Asset/T-80B_Russian_Main_Battle_Tank_\[MBT\]](https://odin.tradoc.army.mil/WEG/Asset/T-80B_Russian_Main_Battle_Tank_[MBT])

WEG61 WEG: Leer-2 Russian 4x4 Mobile EW Vehicle [local extract]. US Army TRADOC, 2025-06-05.
[https://odin.tradoc.army.mil/WEG/Asset/Leer-2_Russian_4x4_Mobile_Electronic_Warfare_\[EW\]_Vehicle](https://odin.tradoc.army.mil/WEG/Asset/Leer-2_Russian_4x4_Mobile_Electronic_Warfare_[EW]_Vehicle)

WEG62 WEG extract: KrAZ-255B, KrAZ-260, ZIL-131. TRADOC WEG, 2024-03.
https://odin.tradoc.army.mil/WEG/Asset/KrAZ-255B_Russian_6x6_Cargo_Truck

WEG63 WEG extract: AMN-590951 [Spartak] and Z-ST5 Akhmat. TRADOC WEG, 2024-08/2024-09.
[https://odin.tradoc.army.mil/WEG/Asset/AMN-590951_\[Spartak\]_Russian_4x4_Mine_Resistant_Ambush_Protected_\[MRAP\]](https://odin.tradoc.army.mil/WEG/Asset/AMN-590951_[Spartak]_Russian_4x4_Mine_Resistant_Ambush_Protected_[MRAP])

WEG64 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.
[https://odin.tradoc.army.mil/WEG/Asset/9K115_Metis_\[AT-7_Saxhorn\]_Russian_Anti-Tank_Guided_Missile_\[ATGM\]](https://odin.tradoc.army.mil/WEG/Asset/9K115_Metis_[AT-7_Saxhorn]_Russian_Anti-Tank_Guided_Missile_[ATGM])

WEG65 Moskva-1 [1L265] Russian Electronic Warfare Vehicle. US Army TRADOC ODIN WEG, 2025-06-06.
[https://odin.tradoc.army.mil/WEG/Asset/Moskva-1_\[1L265\]_Russian_Electronic_Warfare_Vehicle](https://odin.tradoc.army.mil/WEG/Asset/Moskva-1_[1L265]_Russian_Electronic_Warfare_Vehicle)

WEG66 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).
[https://odin.tradoc.army.mil/WEG/Asset/2S19_Msta-S_Russian_152mm_Self-Propelled_Howitzer_\[SPH\]](https://odin.tradoc.army.mil/WEG/Asset/2S19_Msta-S_Russian_152mm_Self-Propelled_Howitzer_[SPH])

WEG67 Worldwide Equipment Guide: MT-LB Russian Amphibious Armored Personnel Carrier [local extract pilot/weg_extract/mtlb.json]. US Army TRADOC, 2025-03-05.
[https://odin.tradoc.army.mil/WEG/Asset/MT-LB_Russian_Amphibious_Armored_Personnel_Carrier_\[APC\]](https://odin.tradoc.army.mil/WEG/Asset/MT-LB_Russian_Amphibious_Armored_Personnel_Carrier_[APC])

WEG68 Murmansk-BN Russian Long-Range Communications Jamming System. US Army TRADOC, ODIN WEG, 2025-06-05.
https://odin.tradoc.army.mil/WEG/Asset/Murmansk-BN_Russian_Long-Range_Communications_Jamming_System

WEG69 48Ya6-K1 Podlet K1 Russian Mobile Long-Range High-Altitude Surveillance Radar [local extract]. US Army TRADOC, ODIN WEG, 2025-04-08.
https://odin.tradoc.army.mil/WEG/Asset/48Ya6-K1_Podlet_K1_Russian_Mobile_Long-Range_High-Altitude_Surveillance_Radar

WEG70 WEG: P-18 [Spoon Rest D] Russian Mobile 2D VHF Radar. US Army TRADOC, 2025-11-07.
[https://odin.tradoc.army.mil/WEG/Asset/P-18_\[Spoon_Rest_D\]_Russian_Mobile_2D_VHF_Radar](https://odin.tradoc.army.mil/WEG/Asset/P-18_[Spoon_Rest_D]_Russian_Mobile_2D_VHF_Radar)

WEG71 Pantsir-S1 [SA-22 Greyhound] Russian Short-Range Air Defense Gun/Missile System. US Army TRADOC ODIN WEG, 2025-06-10.
[https://odin.tradoc.army.mil/WEG/Asset/Pantsir-S1_\[SA-22_Greyhound\]_Russian_Short-Range_Air_Defense_Gun_Missile_System](https://odin.tradoc.army.mil/WEG/Asset/Pantsir-S1_[SA-22_Greyhound]_Russian_Short-Range_Air_Defense_Gun_Missile_System)

WEG72 PMP Russian Heavy Folding Pontoon Bridge [WEG online]. US Army TRADOC G-2, 2024-10-16.
https://odin.tradoc.army.mil/WEG/Asset/PMP_Russian_Heavy_Folding_Pontoon_Bridge

WEG73 Pole-21E Russian RF Jammer. US Army TRADOC WEG, 2025-06-05.
https://odin.tradoc.army.mil/WEG/Asset/Pole-21E_Russian_RF_Jammer

WEG74 95S2 Polyana-D4 ASU Russian 6x6 Air Defense Command and Control Vehicle [local extract]. US Army TRADOC, ODIN WEG, 2025-06-10.
https://odin.tradoc.army.mil/WEG/Asset/95S2_Polyana-D4_ASU_Russian_6x6_Air_Defense_Command_and_Control_Vehicle

WEG75 WEG extract: PTS-4 and PMM-2 pages. US Army TRADOC, WEG (local extract), 2024.

https://odin.tradoc.army.mil/WEG/Asset/PTS-4_Russian_Amphibious_Cargo_Vehicle

WEG76 PU-12M7 Russian 8x8 Mobile Command and Control Vehicle; 9S737 Ranzhir Russian 6x6 Mobile Command Center. US Army TRADOC, ODIN WEG, 2024-08-26.

https://odin.tradoc.army.mil/WEG/Asset/PU-12M7_Russian_8x8_Mobile_Command_and_Control_Vehicle

WEG77 WEG BTR-60-R-145BM Command Post and Communication Center Vehicle. US Army TRADOC, 2024-08-07.

https://odin.tradoc.army.mil/WEG/Asset/BTR-60-R-145BM_Russian_8x8_Command_Post_and_Communication_Center_Vehicle

WEG78 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.

https://odin.tradoc.army.mil/WEG/Asset/R-149AKSh-1_Russian_6x6_Command_and_Signal_Vehicle

WEG79 WEG: REM-KL Russian 8x8 Recovery Vehicle. US Army TRADOC, 2024-10-22.

https://odin.tradoc.army.mil/WEG/Asset/REM-KL_Russian_8x8_Recovery_Vehicle

WEG80 Repellent Russian 8x8 Anti-Drone Warfare Complex. TRADOC WEG (local extract), 2025-06-05.

https://odin.tradoc.army.mil/WEG/Asset/Repellent_Russian_8x8_Anti-Drone_Warfare_Complex

WEG81 50R6 Vityaz (S-350E) Russian Medium-Range Air Defense Missile System (local extract). US Army TRADOC ODIN WEG, 2025-06-10.

[https://odin.tradoc.army.mil/WEG/Asset/50R6_Vityaz_\(S-350E\)_Russian_Medium-Range_Air_Defense_Missile_System](https://odin.tradoc.army.mil/WEG/Asset/50R6_Vityaz_(S-350E)_Russian_Medium-Range_Air_Defense_Missile_System)

WEG82 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.

[https://odin.tradoc.army.mil/WEG/Asset/S-300V_\(SA-12a_Gladiator\)_Russian_Long-Range_Air_Defense_Missile_System](https://odin.tradoc.army.mil/WEG/Asset/S-300V_(SA-12a_Gladiator)_Russian_Long-Range_Air_Defense_Missile_System)

WEG83 Worldwide Equipment Guide: S-400 Triumph (SA-21 Growler) (local extract pilot/weg_extract/s400.json). US Army TRADOC, 2025-11-17.

[https://odin.tradoc.army.mil/WEG/Asset/S-400_Triumph_\(SA-21_Growler\)_Russian_Long-Range_Surface-to-Air_Missile_\(SAM\)_System](https://odin.tradoc.army.mil/WEG/Asset/S-400_Triumph_(SA-21_Growler)_Russian_Long-Range_Surface-to-Air_Missile_(SAM)_System)

WEG84 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.

https://odin.tradoc.army.mil/WEG/Asset/ZSU-23-4_Shilka_Russian_23mm_Self-Propelled_Anti-Aircraft_Weapon_System

WEG85 9K114 Shturm (AT-6 Spiral) Russian Anti-Tank Missile Carrier. US Army TRADOC, ODIN WEG, 2025-04-24.

[https://odin.tradoc.army.mil/WEG/Asset/9K114_Shturm_\(AT-6_Spiral\)_Russian_Anti-Tank_Missile_Carrier](https://odin.tradoc.army.mil/WEG/Asset/9K114_Shturm_(AT-6_Spiral)_Russian_Anti-Tank_Missile_Carrier)

WEG86 Worldwide Equipment Guide: 9A52-2 (BM-30 Smersch-M); 9A52-4 Tornado; 9A53-S Tornado-S (local extract). US Army TRADOC, 2024-10 to 2026-02.

[https://odin.tradoc.army.mil/WEG/Asset/9A52-2_\(BM-30_Smerch-M\)_Russian_300mm_Multiple_Launch_Rocket_System](https://odin.tradoc.army.mil/WEG/Asset/9A52-2_(BM-30_Smerch-M)_Russian_300mm_Multiple_Launch_Rocket_System)

WEG87 WEG: TDA-3 Russian 6x6 Mobile Smokescreen Generator. US Army TRADOC, 2024-08-29.

https://odin.tradoc.army.mil/WEG/Asset/TDA-3_Russian_6x6_Mobile_Smokescreen_Generator

WEG88 WEG: SNAR-10 and SNAR-10M1 (Big Fred) entries, last modified 2024-10-22. TRADOC, 2024-10.

[https://odin.tradoc.army.mil/WEG/Asset/SNAR-10M1_\(Big_Fred\)_Russian_Battlefield_Surveillance_Radar](https://odin.tradoc.army.mil/WEG/Asset/SNAR-10M1_(Big_Fred)_Russian_Battlefield_Surveillance_Radar)

WEG89 WEG: 2S25 Sprut-SD Russian Light Amphibious Tank (local extract). TRADOC WEG, 2024-11-12.

https://odin.tradoc.army.mil/WEG/Asset/2S25_Sprut-SD_Russian_Light_Amphibious_Tank

WEG90 9M119 Svir / 9M119M Refleks (AT-11 Sniper) WEG page, extract. TRADOC WEG, 2024-08-07.

[https://odin.tradoc.army.mil/WEG/Asset/9M119_Svir_-_9M119M_Refleks_\(AT-11_Sniper\)_Russian_Anti-Tank_Guided_Missile_\(ATGM\)](https://odin.tradoc.army.mil/WEG/Asset/9M119_Svir_-_9M119M_Refleks_(AT-11_Sniper)_Russian_Anti-Tank_Guided_Missile_(ATGM))

WEG91 WEG extract t55: T-55 Russian Main Battle Tank (MBT), page last modified 2025-04-16. TRADOC WEG, 2025-04.

[https://odin.tradoc.army.mil/WEG/Asset/T-55_Russian_Main_Battle_Tank_\(MBT\)](https://odin.tradoc.army.mil/WEG/Asset/T-55_Russian_Main_Battle_Tank_(MBT))

WEG92 T-62 Russian Medium Tank, Worldwide Equipment Guide (local extract pilot/weg_extract/t62.json). US Army TRADOC, 2025-02-27.

https://odin.tradoc.army.mil/WEG/Asset/T-62_Russian_Medium_Tank

WEG93 T-90 Russian Main Battle Tank (MBT). US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-02-27.

[https://odin.tradoc.army.mil/WEG/Asset/T-90_Russian_Main_Battle_Tank_\(MBT\)](https://odin.tradoc.army.mil/WEG/Asset/T-90_Russian_Main_Battle_Tank_(MBT))

WEG94 GAZ-2975 Tigr and GAZ-3937 Vodnik (WEG extract, two records). US Army TRADOC, ODIN WEG, 2025-02-11.

https://odin.tradoc.army.mil/WEG/Asset/GAZ-2975_Tigr_Russian_4x4_Combat_Support_Vehicle_-_Light_UTILITY_Vehicle

WEG95 9A53-G Tornado Russian 122mm Multiple Rocket Launcher (local extract). US Army TRADOC, ODIN WEG, 2024-08-21.

https://odin.tradoc.army.mil/WEG/Asset/9A53-G_Tornado_Russian_122mm_Multiple_Rocket_Launcher

WEG96 Worldwide Equipment Guide: TOS-1A Soltsepek, 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).

https://odin.tradoc.army.mil/WEG/Asset/TOS-1A_Soltsepek_Russian_220mm_Heavy_Flamethrower_System

WEG97 WEG online record MAZ-537 Russian 8x8 Special Wheeled Chassis (extract). TRADOC Worldwide Equipment Guide, 2024-10-15.

https://odin.tradoc.army.mil/WEG/Asset/MAZ-537_Russian_8x8_Special_Wheeled_Chassis

WEG98 WEG extracts: 2S6M1 Tunguska-M1 and 2S6M Tunguska-M (SA-19 Grison). US Army TRADOC, 2025-06-10.

https://odin.tradoc.army.mil/WEG/Asset/2S6M1_Tunguska-M1_Russian_30mm_Self-Propelled_Anti-Aircraft_System

WEG99 Worldwide Equipment Guide extract: KamAZ-53949 Typhoon-K and Linza. US Army TRADOC, 2024-10.

[https://odin.tradoc.army.mil/WEG/Asset/KamAZ-53949_Typhoon-K_Russian_4x4_Armored_Mine-Resistant_Ambush_Protected_\(MRAP\)](https://odin.tradoc.army.mil/WEG/Asset/KamAZ-53949_Typhoon-K_Russian_4x4_Armored_Mine-Resistant_Ambush_Protected_(MRAP))

WEG100 WEG extract, UAZ-469 Russian 4x4 Light Utility Vehicle (odin.tradoc.army.mil, last modified 2024-09-03). US Army TRADOC, 2024-09-03.

https://odin.tradoc.army.mil/WEG/Asset/UAZ-469_Russian_4x4_Light_UTILITY_Vehicle

WEG101 WEG online: UMZ Russian 6x6 Scatterable Minelaying System (local extract). TRADOC, 2024-10-16.

https://odin.tradoc.army.mil/WEG/Asset/UMZ_Russian_6x6_Scatterable_Minelaying_System

WEG102 WEG entry: UR-77 Meteorit Russian Mine Clearing Vehicle (local extract ur77.json). US Army TRADOC, 2024-10-24.

https://odin.tradoc.army.mil/WEG/Asset/UR-77_Meteorit_Russian_Mine_Clearing_Vehicle

WEG103 9K512 (Uragan-1M) Russian 220mm/300mm Multiple Launch Rocket System (MRL), Worldwide Equipment Guide (local extract). US Army TRADOC G-2, 2025-03-27.

[https://odin.tradoc.army.mil/WEG/Asset/9K512_\(Uragan-1M\)_Russian_220mm:300mm_Multiple_Launch_Rocket_System_\(MRL\)](https://odin.tradoc.army.mil/WEG/Asset/9K512_(Uragan-1M)_Russian_220mm:300mm_Multiple_Launch_Rocket_System_(MRL))

WEG104 9P140 (BM-27 Uragan) Russian 220mm Multiple Rocket Launch (MRL). US Army TRADOC, Worldwide Equipment Guide (ODIN), local extract, 2024-10-28.

[https://odin.tradoc.army.mil/WEG/Asset/9P140_\(BM-27_Uragan\)_Russian_220mm_Multiple_Rocket_Launch_\(MRL\)](https://odin.tradoc.army.mil/WEG/Asset/9P140_(BM-27_Uragan)_Russian_220mm_Multiple_Rocket_Launch_(MRL))

WEG105 Worldwide Equipment Guide: Ural-4320 record (variants: Ural-4320-70 Ural Next). US Army TRADOC (ODIN), 2024-03-04 / 2025-01-29.

https://odin.tradoc.army.mil/WEG/Asset/Ural-4320_Russian_6x6_General_UTILITY_Truck

WEG106 WEG entry: Uran-6 Russian Demining UGV (local extract pilot/weg_extract/uran6.json). US Army TRADOC, 2024-10-16.

[https://odin.tradoc.army.mil/WEG/Asset/Uran-6_Russian_Demining_Unmanned_Ground_Vehicle_\(UGV\)](https://odin.tradoc.army.mil/WEG/Asset/Uran-6_Russian_Demining_Unmanned_Ground_Vehicle_(UGV))

WEG107 9K333 Verba (SA-29) Russian MANPADS, WEG asset page (local extract). US Army TRADOC, 2025-06-10.

[https://odin.tradoc.army.mil/WEG/Asset/9K333_Verba_\(SA-29\)_Russian_Man-Portable_Infrared_Homing_Surface-to-Air_Missile_\(MANPAD\)](https://odin.tradoc.army.mil/WEG/Asset/9K333_Verba_(SA-29)_Russian_Man-Portable_Infrared_Homing_Surface-to-Air_Missile_(MANPAD))

WEG108 WEG extract for ML-20, M-30, BS-3, D-44 (D-1 not present). TRADOC WEG (local extract), 2025.

<https://odin.tradoc.army.mil/WEG>

WEG109 ODIN WEG: GMZ-3 Russian Tracked Minelaying Vehicle; ISDM Zemledeliye Russian 8x8 Mine-Laying System (local extract). US Army TRADOC, 2024-10-16.

https://odin.tradoc.army.mil/WEG/Asset/ISDM_Zemledeliye_Russian_8x8_Mine-Laying_System

WEG110 R-330Zh Zhitel Russian Cellular Jamming and Direction Finding System. US Army TRADOC, ODIN Worldwide Equipment Guide, 2025-09-03.

https://odin.tradoc.army.mil/WEG/Asset/R-330Zh_Zhitel_Russian_Cellular_Jamming_and_Direction_Finding_System

WEG111 ZU-23-2 Russian 23mm Towed Anti-Aircraft Gun (WEG extract). US Army TRADOC, 2025-06-10.

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>

WIKRD18 Mashina komandira batarei 1V18 Klen-1 (handbook text on tech.wikireading.ru). Wikireading (reprint of Russian armour handbook).

<https://tech.wikireading.ru/7372>

WMC1 File:61st Naval Infantry Brigade's exercise in Murmansk Oblast (16-04-2020).webm. Wikimedia Commons (video by Russian MoD), 2020-04-16.

[https://commons.wikimedia.org/wiki/File:61st_Naval_Infantry_Brigade's_exercise_in_Murmansk_Oblast_\(16-04-2020\).webm](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.

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.

<https://commons.wikimedia.org/wiki/Category:96L6E>

WMC4 MasteringTheArmament2018-13.jpg (Russian MoD photo, caption). Russian MoD via Wikimedia Commons, 2018.

<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.

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.

<https://commons.wikimedia.org/wiki/File:ElectronicWarfareExercise2018-01.jpg>

WMC7 File:GAZ-66 truck of Russian Army.JPG. Wikimedia Commons.

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.

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.

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.

[https://commons.wikimedia.org/wiki/File:2014.05.14_kamaz-4310\(1\).JPG](https://commons.wikimedia.org/wiki/File:2014.05.14_kamaz-4310(1).JPG)

WMC11 File:Krasukha-2 (Kpacuxa-2) Unloaded.jpg. Wikimedia Commons (Vitaly V. Kuzmin), 2014-12-11.

[https://commons.wikimedia.org/wiki/File:Krasukha-2_\(Kpacuxa-2\)_Unloaded.jpg](https://commons.wikimedia.org/wiki/File:Krasukha-2_(Kpacuxa-2)_Unloaded.jpg)

WMC12 File:1L269E Krasukha-2 Army-2018.jpg. Wikimedia Commons (Boevaya mashina), 2018-08-22.

https://commons.wikimedia.org/wiki/File:1L269E_Krasukha-2_Army-2018.jpg

WMC13 File:1RL257E Krasukha-4 Army-2018.jpg. Wikimedia Commons (Boevaya mashina), 2018-08-22.

https://commons.wikimedia.org/wiki/File:1RL257E_Krasukha-4_Army-2018.jpg

WMC14 File:1RL257E Krasukha-4 Army-2022 2022-08-20 2459.jpg. Wikimedia Commons (Mike1979 Russia), 2022-08-20.

https://commons.wikimedia.org/wiki/File:1RL257E_Krasukha-4_Army-2022_2022-08-20_2459.jpg

WMC15 File:TB2015ExhibitionP2-47.jpg (RB-34IV Leer-3 ECM system with UAV). Wikimedia Commons, 2015.

<https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-47.jpg>

WMC16 File:TB2015ExhibitionP2-48.jpg (RB-34IV Leer-3 ECM system with UAV). Wikimedia Commons, 2015.

<https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-48.jpg>

WMC17 File:Ural-4320 - TankBiathlon14part1-51.jpg (Vitaly V. Kuzmin). Wikimedia Commons, 2014-06-28.

https://commons.wikimedia.org/wiki/File:Ural-4320_-_TankBiathlon14part1-51.jpg

WMC18 File:Пазвертьвание Р36 Палантин на учениях.jpg. Wikimedia Commons (Ministry of Defence of Russia), 2019-03.

https://commons.wikimedia.org/wiki/File:Пазвертьвание_Р36_Палантин_на_учениях.jpg

WMC19 Open Water 2017 qualifying photographs (OpenWater2017qualifying-01 to -13). Vitaly V. Kuzmin via Wikimedia Commons, 2017.

https://commons.wikimedia.org/wiki/Category:PMP_pontoon_bridge_in_Russian_service

WMC20 File:MAKS-2009-225.jpg (PU-12M7 on K1Sh1, roof sensor). Wikimedia Commons (Vitaly V. Kuzmin), 2009-08-20.

<https://commons.wikimedia.org/wiki/File:MAKS-2009-225.jpg>

WMC21 File:Punkt ipravleniya PU-12M7.jpg (PU-12M7 at MAKS 2007). Wikimedia Commons (Vitaly V. Kuzmin), 2007-08-23.

https://commons.wikimedia.org/wiki/File:Punkt_ipravleniya_PU-12M7.jpg

WMC22 File:R-149MA1 - Engineering technologies 2012 (1).jpg (R-149MA1, rear three-quarter). Wikimedia Commons (Vitaly V. Kuzmin), 2012-06-27.

https://commons.wikimedia.org/wiki/File:R-149MA1_-_Engineering_technologies_2012_%2B1%29.jpg

WMC23 File:R-149BMR - ETIF-2010 (1).jpg (R-149BMR, side view, mast raised). Wikimedia Commons (Vitaly V. Kuzmin), 2010-06-30.

https://commons.wikimedia.org/wiki/File:R-149BMR_-_ETIF-2010_%2B1%29.jpg

WMC24 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.

[https://commons.wikimedia.org/wiki/File:R-166-0.5_radiostation_-_27th_Independent_Sevastopol_Guards_Motor_Rifle_Brigade_\(4\).jpg](https://commons.wikimedia.org/wiki/File:R-166-0.5_radiostation_-_27th_Independent_Sevastopol_Guards_Motor_Rifle_Brigade_(4).jpg)

WMC25 File:R-142N command vehicle.jpg. Wikimedia Commons (photo by Vitaly V. Kuzmin), 2011.

https://commons.wikimedia.org/wiki/File:R-142N_command_vehicle.jpg

WMC26 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.

WMC39 R-330Zh Zhitel ECM station (ParkPatriot2015part9-58 and -60). Vitaly V. Kuzmin, Wikimedia Commons, 2016-02-07. https://commons.wikimedia.org/wiki/File:ParkPatriot2015part9-58.jpg

WMC40 Станция помех Р-330Ж Жумель (TB2015ExhibitionP2-51 and -52). Vitaly V. Kuzmin, Wikimedia Commons, 2015-08-15. https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP2-52.jpg

WMC41 R-330Zh Zhitel jammer. Russian MoD (Denis Abramov), via Wikimedia Commons, 2018-07-19. https://commons.wikimedia.org/wiki/File:R-330Zh_Zhitel_jammer.jpg

WMC42 File:1L219M MAKS2005.jpg. Wikimedia Commons, 2005-07-20. https://commons.wikimedia.org/wiki/File:1L219M_MAKS2005.jpg

WMC43 File:1L260-E Army-2018.jpg. Wikimedia Commons, 2018-08-22. https://commons.wikimedia.org/wiki/File:1L260-E_Army-2018.jpg

WP-EN1 2A36 Giatint-B. English Wikipedia, 2026. https://en.wikipedia.org/wiki/2A36_Giatint-B

WP-EN2 152 mm howitzer 2A65 Msta-B. English Wikipedia, 2026. https://en.wikipedia.org/wiki/152_mm_howitzer_2A65_Msta-B

WP-EN3 244th Artillery Brigade (Russia). English Wikipedia, 2026. https://en.wikipedia.org/wiki/244th_Artillery_Brigade_(Russia)

WP-EN4 2S5 Giatint-S. English Wikipedia, 2026. https://en.wikipedia.org/wiki/2S5_Giatint-S

WP-EN5 288th Guards Artillery Brigade (Russia). Wikipedia, 2024. https://en.wikipedia.org/wiki/288th_Guards_Artillery_Brigade_(Russia)

WP-EN6 227th Artillery Brigade (Russia). Wikipedia, 2026. https://en.wikipedia.org/wiki/227th_Artillery_Brigade_(Russia)

WP-EN7 2B14 Podnos (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/2B14_Podnos

WP-EN8 2B9 Vasilek (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/2B9_Vasilek

WP-EN9 2S1 Gvozdika. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/2S1_Gvozdika

WP-EN10 2S12 Sani. Wikipedia (en), 2026. https://en.wikipedia.org/wiki/2S12_Sani

WP-EN11 2S9 Nona (page the 2S23 title redirects to). English Wikipedia, 2026. https://en.wikipedia.org/wiki/2S23_Nona-SVK

WP-EN12 2S3 Akatsiya. English Wikipedia, 2026. https://en.wikipedia.org/wiki/2S3_Akatsiya

WP-EN13 2S31 Vena. Wikipedia (en), 2026. https://en.wikipedia.org/wiki/2S31_Vena

WP-EN14 2S35 Koalitsiya-SV. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/2S35_Koalitsiya-SV

WP-EN15 2S43 Malva. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/2S43_Malva

WP-EN16 2S4 Tyulpan (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/2S4_Tyulpan

WP-EN17 2S40 Floks (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/2S40_Floks

WP-EN18 2S7 Pion. Wikipedia, 2026. https://en.wikipedia.org/wiki/2S7_Pion

WP-EN19 MT-LBu (variants list). Wikipedia, 2026. https://en.wikipedia.org/wiki/MT-LBu

WP-EN20 BTR-60 (English Wikipedia), variants list. Wikipedia, retrieved 2026-10-04. https://en.wikipedia.org/wiki/BTR-60

WP-EN21 BTR-80 (English Wikipedia), variants list. Wikipedia, retrieved 2026-10-04. https://en.wikipedia.org/wiki/BTR-80

WP-EN22 BTR-D (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/BTR-D

WP-EN23 Kh-35. English Wikipedia, retrieved 2026-10-06. https://en.wikipedia.org/wiki/Kh-35

WP-EN24 K-300P Bastion-P. English Wikipedia, 2026. https://en.wikipedia.org/wiki/K-300P_Bastion-P

WP-EN25 MZKT-7930. English Wikipedia, 2026. https://en.wikipedia.org/wiki/MZKT-7930

WP-EN26 IMR-2. Wikipedia, 2026. https://en.wikipedia.org/wiki/IMR-2

WP-EN27 BMD-2. Wikipedia (en), retrieved 2026-10-03. https://en.wikipedia.org/wiki/BMD-2

WP-EN28 BMD-4 (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/BMD-4

WP-EN29 BMP-1. English Wikipedia, 2026. https://en.wikipedia.org/wiki/BMP-1

WP-EN30 List of BMP-1 variants. Wikipedia, 2026. https://en.wikipedia.org/wiki/List_of_BMP-1_variants

WP-EN31 BMP-2 (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/BMP-2

WP-EN32 BMPT Terminator. English Wikipedia, 2026. https://en.wikipedia.org/wiki/BMPT_Terminator

WP-EN33 BRDM-2. English Wikipedia, retrieved 2026-10-03. https://en.wikipedia.org/wiki/BRDM-2

WP-EN34 T-62. Wikipedia (en), retrieved 2026-10-01. https://en.wikipedia.org/wiki/T-62

WP-EN35 List of BMP-1 variants (BRM-1K section). Wikipedia, retrieved 2026-10-03. https://en.wikipedia.org/wiki/BRM-1K

WP-EN36 BTR-90. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/BTR-90

WP-EN37 247th Guards Air Assault Regiment, composition. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/247th_Guards_Air_Assault_Regiment

WP-EN38 Russian Airborne Forces, Ukraine section. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/Russian_Airborne_Forces

WP-EN39 BTR-70 (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/BTR-70

WP-EN40 S-300V. Wikipedia (English), retrieved 2026-09-29. https://en.wikipedia.org/wiki/S-300V

WP-EN41 Buk missile system. Wikipedia (English), retrieved 2026-09-30. https://en.wikipedia.org/wiki/9K37_Buk

WP-EN42 152 mm gun-howitzer D-20. Wikipedia (en), 2026. https://en.wikipedia.org/wiki/152_mm_towed_gun-howitzer_M1955_(D-20)

WP-EN43 152 mm howitzer-gun M1937 (ML-20). Wikipedia, 2026. https://en.wikipedia.org/wiki/152_mm_howitzer-gun_M1937_(ML-20)

WP-EN44 122 mm howitzer 2A18 (D-30). Wikipedia (English), 2026. https://en.wikipedia.org/wiki/122_mm_howitzer_2A18_(D-30)

WP-EN45 152 mm howitzer M1943 (D-1). Wikipedia, 2026. https://en.wikipedia.org/wiki/152_mm_howitzer_M1943_(D-1)

WP-EN46 R-330Zh Zhitel [Wikipedia, en]. Wikipedia, 2026. https://en.wikipedia.org/wiki/R-330Zh_Zhitel

WP-EN47 ENICS Eleron-3. Wikipedia (en), retrieved 2026-09-30. https://en.wikipedia.org/wiki/Eleron-3

WP-EN48 IAI Searcher. Wikipedia (en), retrieved 2026-10-02. https://en.wikipedia.org/wiki/IAI_Searcher

WP-EN49 Mohajer-6. Wikipedia, 2026-10-02. https://en.wikipedia.org/wiki/Mohajer-6

WP-EN50 Baykar Bayraktar TB2. Wikipedia, 2026-10-03. https://en.wikipedia.org/wiki/Baykar_Bayraktar_TB2

WP-EN51 Luch Korsar. English Wikipedia, 2026. https://en.wikipedia.org/wiki/Luch_Korsar

WP-EN52 Unmanned Systems Forces of Russia. Wikipedia, 2026-09. https://en.wikipedia.org/wiki/Unmanned_Systems_Forces_of_Russia

WP-EN53 GAZ-66. Wikipedia (English), 2026-10. https://en.wikipedia.org/wiki/GAZ-66

WP-EN54 GAZ-3308 Sadko. Wikipedia (English), 2026-10. https://en.wikipedia.org/wiki/GAZ-3308

WP-EN55 HESA Shahed 136. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/HESA_Shahed_136

WP-EN56 Gerbera (drone). Wikipedia (English), 2026. https://en.wikipedia.org/wiki/Gerbera_(drone)

WP-EN57 BM-21 Grad. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/BM-21_Grad

WP-EN58 9K38 Igla. Wikipedia (en), 2026. https://en.wikipedia.org/wiki/9K38_Igla

WP-EN59 1st Guards Engineer Brigade. Wikipedia, 2026. https://en.wikipedia.org/wiki/1st_Guards_Engineer_Brigade

WP-EN60 9K720 Iskander. Wikipedia, retrieved 2026-09-29. https://en.wikipedia.org/wiki/9K720_Iskander

WP-EN61 Italmas. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/Italmas

WP-EN62 KamAZ-5350 (English Wikipedia). Wikipedia, 2024. https://en.wikipedia.org/wiki/KamAZ-5350

WP-EN63 KamAZ-4310 (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/KamAZ-4310

WP-EN64 Kasta 2E (English Wikipedia). Wikipedia, 2025. https://en.wikipedia.org/wiki/Kasta_2E

WP-EN65 P-19 radar (English Wikipedia). Wikipedia, 2025. https://en.wikipedia.org/wiki/P-19_radar

WP-EN66 Krasukha. Wikipedia (English), retrieved 2026-09-29. https://en.wikipedia.org/wiki/Krasukha

WP-EN67 ZALA Kub-BLA. Wikipedia (English), retrieved 2026-10-03. https://en.wikipedia.org/wiki/ZALA_KYB-UAV

WP-EN68 ZALA Lancet. Wikipedia (English), retrieved 2026-10-02. https://en.wikipedia.org/wiki/ZALA_Lancet

WP-EN69 KrAZ-255. Wikipedia (en), 2026. https://en.wikipedia.org/wiki/KrAZ-255

WP-EN70 KrAZ-260. Wikipedia (en), 2026. https://en.wikipedia.org/wiki/KrAZ-260

WP-EN71 ZIL-131. Wikipedia (en), 2026. https://en.wikipedia.org/wiki/ZIL-131

WP-EN72 Ural-4320. English Wikipedia. https://en.wikipedia.org/wiki/Ural-4320

WP-EN73 BPM-97. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/BPM-97

WP-EN74 List of equipment of the Russian Ground Forces. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/List_of_equipment_of_the_Russian_Ground_Forces

WP-EN75 130 mm towed field gun M1954 (M-46). Wikipedia, 2026. https://en.wikipedia.org/wiki/130_mm_towed_field_gun_M1954_(M-46)

WP-EN76 9K115 Metis. English Wikipedia, 2026. https://en.wikipedia.org/wiki/9K115_Metis

WP-EN77 9K115-2 Metis-M. English Wikipedia, 2026. https://en.wikipedia.org/wiki/9K115-2_Metis-M

WP-EN78 Molniya (drone). Wikipedia, 2026-09-30. https://en.wikipedia.org/wiki/Molniya_(drone)

WP-EN79 2S19 Msta-S (English Wikipedia). Wikipedia, retrieved 2026-09-29. https://en.wikipedia.org/wiki/2S19_Msta-S

WP-EN80 MT-12. English Wikipedia, 2026. https://en.wikipedia.org/wiki/MT-12

WP-EN81 100 mm anti-tank gun T-12. English Wikipedia, 2026. https://en.wikipedia.org/wiki/100_mm_anti-tank_gun_T-12

WP-EN82 MT-LB (English Wikipedia). Wikipedia, retrieved 2026-10-03. https://en.wikipedia.org/wiki/MT-LB

WP-EN83 Nebo-SVU. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/Nebo-SVU

WP-EN84 Nebo-M. English Wikipedia, 2026. https://en.wikipedia.org/wiki/Nebo-M

WP-EN85 Russian air surveillance radars. English Wikipedia, 2026. https://en.wikipedia.org/wiki/Russian_air_surveillance_radars

WP-EN86 P-14 radar. Wikipedia, 2026. https://en.wikipedia.org/wiki/P-14_radar

WP-EN87 Kronstadt Orion. Wikipedia (en), 2026. https://en.wikipedia.org/wiki/Kronstadt_Orion

WP-EN88 Orlan-10. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/Orlan-10

WP-EN89 P-18 radar. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/P-18_radar

WP-EN90 Pantsir missile system. English Wikipedia, retrieved 2026-09-29. https://en.wikipedia.org/wiki/Pantsir_missile_system

WP-EN91 Penicillin (counter-artillery system). Wikipedia, 2026. https://en.wikipedia.org/wiki/Penicillin_(counter-artillery_system)

WP-EN92 Aistyonok. Wikipedia, 2026. https://en.wikipedia.org/wiki/Aistyonok

WP-EN93 PMP Floating Bridge. English Wikipedia, retrieved 2026-09-29. https://en.wikipedia.org/wiki/PMP_Floating_Bridge

WP-EN94 Polyana-D4. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/Polyana-D4

WP-EN95 Ural-375D. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/Ural-375D

WP-EN96 PTS (vehicle) (en.wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/PTS_(vehicle)

WP-EN97 288th Guards Artillery Brigade (en.wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/288th_Guards_Artillery_Brigade

WP-EN98 4th Guards Tank Division. English Wikipedia, 2026. https://en.wikipedia.org/wiki/4th_Guards_Tank_Division

WP-EN99 REM-KL. Wikipedia, 2024. https://en.wikipedia.org/wiki/REM-KL

WP-EN100 Repellent-1. Wikipedia, 2026. https://en.wikipedia.org/wiki/Repellent-1

WP-EN101 S-300VM missile system (English Wikipedia). Wikipedia, retrieved 2026-09-29. https://en.wikipedia.org/wiki/S-300VM_missile_system

WP-EN102 S-350 missile system. Wikipedia, 2026. https://en.wikipedia.org/wiki/S-350_missile_system

WP-EN103 List of NATO reporting names for surface-to-air missiles. Wikipedia, retrieved 2026-09-29. https://en.wikipedia.org/wiki/List_of_NATO_reporting_names_for_surface-to-air_missiles

WP-EN104 S-400 missile system. Wikipedia (en), retrieved 2026-09-29. https://en.wikipedia.org/wiki/S-400_missile_system

WP-EN105 AZP S-60. Wikipedia, 2026. https://en.wikipedia.org/wiki/AZP_S-60

WP-EN106 ZSU-23-4 Shilka. Wikipedia (en), 2026. https://en.wikipedia.org/wiki/ZSU-23-4_Shilka

WP-EN107 BM-30 Smerch. English Wikipedia, 2026. https://en.wikipedia.org/wiki/BM-30_Smerch

WP-EN108 79th Guards Rocket Artillery Brigade. English Wikipedia, 2026. https://en.wikipedia.org/wiki/79th_Guards_Rocket_Artillery_Brigade

WP-EN109 2S25 Sprut-SD (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/2S25_Sprut-SD

WP-EN110 9K35 Strela-10. Wikipedia, 2026. https://en.wikipedia.org/wiki/9K35_Strela-10

WP-EN111 9K33 Osa. Wikipedia, 2026. https://en.wikipedia.org/wiki/9K33_Osa

WP-EN112 9M119 Svir/Refleks. Wikipedia, 2025. https://en.wikipedia.org/wiki/9M119_Svir/Refleks

WP-EN113 T-54/T-55 (English Wikipedia). Wikipedia, retrieved 2026-10-02. https://en.wikipedia.org/wiki/T-54/T-55

WP-EN114 T-64 (Wikipedia). Wikipedia, retrieved 2026-10-03. https://en.wikipedia.org/wiki/T-64

WP-EN115 T-90. English Wikipedia, 2026. https://en.wikipedia.org/wiki/T-90

WP-EN116 Tigr (military vehicle). Wikipedia, 2026. https://en.wikipedia.org/wiki/GAZ_Tigr

WP-EN117 Vodnik (Russian military vehicle). Wikipedia, 2026. https://en.wikipedia.org/wiki/Vodnik_(Russian_military_vehicle)

WP-EN118 English Wikipedia: T-72 operators and variants (MTU-72 entry). Wikipedia, retrieved 2026-09-29. https://en.wikipedia.org/wiki/T-72

WP-EN119 English Wikipedia: TMM-6. Wikipedia, retrieved 2026-09-29. https://en.wikipedia.org/wiki/TMM-6

WP-EN120 OTR-21 Tochka. Wikipedia (English), 2026. https://en.wikipedia.org/wiki/OTR-21_Tochka

WP-EN121 TOS-1. Wikipedia. https://en.wikipedia.org/wiki/TOS-1

WP-EN122 TOS-2. Wikipedia. https://en.wikipedia.org/wiki/TOS-2

WP-EN123 MAZ-537 (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/MAZ-537

WP-EN124 KZKT-7428 (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/KZKT-7428

WP-EN125 2K22 Tunguska. Wikipedia, 2026. https://en.wikipedia.org/wiki/2K22_Tunguska

WP-EN126 KamAZ-63968 (Kamaz Typhoon), English Wikipedia. Wikipedia, 2026. https://en.wikipedia.org/wiki/KamAZ-63968

WP-EN127 UAZ-452 (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/UAZ-452

WP-EN128 UAZ-469 (English Wikipedia). Wikipedia, 2026. https://en.wikipedia.org/wiki/UAZ-469

WP-EN129 UR-77 Meteorit. Wikipedia, 2026. https://en.wikipedia.org/wiki/UR-77_Meteorit

WP-EN130 9K512 Uragan-1M [English Wikipedia]. Wikipedia, 2026.
https://en.wikipedia.org/wiki/9K512_Uragan-1M

WP-EN131 BM-27 Uragan. English Wikipedia, 2026.
https://en.wikipedia.org/wiki/BM-27_Uragan

WP-EN132 338th Guards Rocket Artillery Brigade. English Wikipedia, 2026.
https://en.wikipedia.org/wiki/338th_Guards_Rocket_Artillery_Brigade

WP-EN133 9K333 Verba. Wikipedia [en], retrieved 2026-10-07.
https://en.wikipedia.org/wiki/9K333_Verba

WP-EN134 Voronezh radar. Wikipedia, 2026.
https://en.wikipedia.org/wiki/Voronezh_radar

WP-EN135 Armavir Radar Station. Wikipedia, 2026.
https://en.wikipedia.org/wiki/Armavir_Radar_Station

WP-EN136 122 mm howitzer M1938 (M-30). Wikipedia, 2026.
https://ru.wikipedia.org/wiki/122_mm_howitzer_M1938_(M-30)

WP-EN137 100 mm field gun M1944 (BS-3). Wikipedia, 2026.
https://en.wikipedia.org/wiki/100_mm_field_gun_M1944_(BS-3)

WP-EN138 85 mm divisional gun D-44. Wikipedia, 2026.
https://en.wikipedia.org/wiki/85_mm_divisional_gun_D-44

WP-EN139 Zemledeliye (minelaying system). Wikipedia.
https://en.wikipedia.org/wiki/Zemledeliye_(minelaying_system)

WP-EN140 GMZ-3. Wikipedia.
https://en.wikipedia.org/wiki/GMZ-3

WP-EN141 ZU-23-2. Wikipedia [English], 2026.
https://en.wikipedia.org/wiki/ZU-23-2

WP-RU1 1B13; 1B14; MT-Абы [Russian Wikipedia articles]. Wikipedia, retrieved 2026-09-29.
https://ru.wikipedia.org/wiki/1%D0%9213; https://ru.wikipedia.org/wiki/1%D0%9214; https://ru.wikipedia.org/wiki/%D0%9C%D0%A2-%D0%98%D0%91%D1%83

WP-RU2 152-мм пушка 2А36. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2А36

WP-RU3 152-мм гаубица 2А65. Russian Wikipedia, 2024.
https://ru.wikipedia.org/wiki/2А65

WP-RU4 2Б14 «Погнос» [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2Б14_«Погнос»

WP-RU5 2Б69 «Васулёк» [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2Б69_«Васулёк»

WP-RU6 2С1 «Гвоздика». Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/2С1_«Гвоздика»

WP-RU7 2С12 «Сани». Wikipedia [ru], 2026.
https://ru.wikipedia.org/wiki/2С12_«Сани»

WP-RU8 2С23 «Нона-СБК». Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2С23_«Нона-СБК»

WP-RU9 2С40. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2С40

WP-RU10 2С17. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2С17

WP-RU11 2С31 «Вена». Russian Wikipedia, retrieved 2026-09-30.
https://ru.wikipedia.org/wiki/2С31_«Вена»

WP-RU12 2С3 «Акация». Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2С3_«Акация»

WP-RU13 2С34 [Russian Wikipedia]. Wikipedia, retrieved 2026-10-06.
https://ru.wikipedia.org/wiki/2С34

WP-RU14 2С35. Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/2С35

WP-RU15 2С43. Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/2С43

WP-RU16 2С19 «Мсма-С». Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/2С19

WP-RU17 2С4 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2С4

WP-RU18 2С5 [Russian Wikipedia]. Wikipedia.
https://ru.wikipedia.org/wiki/2С5

WP-RU19 2С7 «Пунон». Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2С7_«Пунон»

WP-RU20 2С9 «Нона-С». Russian Wikipedia, retrieved 2026-10-06.
https://ru.wikipedia.org/wiki/2С9_«Нона-С»

WP-RU21 120-мм орудье 2Б16. Russian Wikipedia, retrieved 2026-10-06.
https://ru.wikipedia.org/wiki/2Б16

WP-RU22 C-400 [article, raw wikitext]. Wikipedia [Russian], retrieved 2026-09-29.
https://ru.wikipedia.org/wiki/C-400

WP-RU23 ГАЗ-3344. Wikipedia [Russian], retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/ГАЗ-3344

WP-RU24 1V119 [Russian Wikipedia]. Wikipedia, retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/1%D0%92119

WP-RU25 1V18 [Russian Wikipedia]. Wikipedia, retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/1В18

WP-RU26 БМД-1КШ [Russian Wikipedia]. Wikipedia, 2025.
https://ru.wikipedia.org/wiki/БМД-1КШ

WP-RU27 БМД-1 [Russian Wikipedia]. Wikipedia, 2025.
https://ru.wikipedia.org/wiki/БМД-1

WP-RU28 Бал (береговой ракетный комплекс). Russian Wikipedia, retrieved 2026-10-06.
https://ru.wikipedia.org/wiki/Бал_(береговой_ракетный_комплекс)

WP-RU29 Барнаул-Т. Russian Wikipedia, retrieved 2026-09-29.
https://ru.wikipedia.org/wiki/Барнаул-Т

WP-RU30 9С737 «Ранжур». Russian Wikipedia, retrieved 2026-09-29.
https://ru.wikipedia.org/wiki/9С737_«Ранжур»

WP-RU31 Бастуон (береговой ракетный комплекс). Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/Бастуон_(береговой_ракетный_комплекс)

WP-RU32 БАТ-2. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БАТ-2

WP-RU33 МАК-3. Wikipedia [ru], retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/МАК-3

WP-RU34 БТР-Д [Russian Wikipedia]. Wikipedia, 2025.
https://ru.wikipedia.org/wiki/БТР-Д

WP-RU35 БМД-2. Wikipedia [ru], retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БМД-2

WP-RU36 БМД-4 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БМД-4

WP-RU37 2А70 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2А70

WP-RU38 БМД-3 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БМД-3

WP-RU39 БМО-Т. Russian Wikipedia, retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БМО-Т

WP-RU40 БМП-1. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БМП-1

WP-RU41 2А28. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2А28

WP-RU42 БМП-1КШ. Wikipedia [ru], retrieved 2026-10-01.
https://ru.wikipedia.org/wiki/БМП-1КШ

WP-RU43 БМП-2 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БМП-2

WP-RU44 БМПТ «Терминатор». Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БМПТ_«Терминатор»

WP-RU45 БМПТ-72. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БМПТ-72

WP-RU46 БМП-3М. Russian Wikipedia, retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/БМП-3М

WP-RU47 БМП-3. Russian Wikipedia, retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/БМП-3

WP-RU48 Wikipedia [ru]: БРЭМ-1. Wikipedia, retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-1

WP-RU49 P-330. Wikipedia [Russian].
https://ru.wikipedia.org/wiki/P-330

WP-RU50 БРЭМ-2. Russian Wikipedia, retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-2

WP-RU51 Wikipedia [ru]: БРЭМ-2. Wikipedia, retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-2

WP-RU52 Wikipedia [ru]: БРЭМ-А. Wikipedia, retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-А

WP-RU53 Wikipedia [ru]: БРЭМ-Д. Wikipedia, retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-Д

WP-RU54 Wikipedia [ru]: БРЭМ-К. Wikipedia, retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БРЭМ-К

WP-RU55 Wikipedia [ru]: БТС-4. Wikipedia, retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БТС-4

WP-RU56 Wikipedia [ru]: МТ-АБ. Wikipedia, retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/МТ-АБ

WP-RU57 БРМ-1К. Wikipedia [ru], retrieved 2026-10-03.
https://ru.wikipedia.org/wiki/БРМ-1К

WP-RU58 БТР-90. Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/БТР-90

WP-RU59 БТР-МДМ. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БТР-МДМ

WP-RU60 БТР-80 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БТР-80

WP-RU61 БТР-82 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БТР-82

WP-RU62 БТР-70 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/БТР-70

WP-RU63 2А72 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2А72

WP-RU64 Бук-М2. Wikipedia [Russian], retrieved 2026-09-29.
https://ru.wikipedia.org/wiki/Бук-М2

WP-RU65 РХМ-4. Russian Wikipedia, retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/РХМ-4

WP-RU66 РХМ-6. Russian Wikipedia, retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/РХМ-6

WP-RU67 152-мм пушка-гаубица Д-20. Wikipedia [ru], 2026.
https://ru.wikipedia.org/wiki/152-мм_пушка-гаубица_Д-20

WP-RU68 Д-30 [гаубица]. Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/Д-30_(гаубица)

WP-RU69 М-30 [гаубица]. Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/М-30_(гаубица)

WP-RU70 ТМС-65. Russian Wikipedia, retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/ТМС-65

WP-RU71 2С38. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/2С38

WP-RU72 АУ-220М. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/АУ-220М

WP-RU73 БТМ-3. Wikipedia [ru], retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/БТМ-3

WP-RU74 ПЗМ-2. Wikipedia [ru], retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/ПЗМ-2

WP-RU75 Элерон-3. Wikipedia [ru], retrieved 2026-09-30.
https://ru.wikipedia.org/wiki/Элерон-3

WP-RU76 Элерон-10. Wikipedia [ru], retrieved 2026-09-30.
https://ru.wikipedia.org/wiki/Элерон-10

WP-RU77 Тахуон (БПЛА), Russian Wikipedia. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/Тахуон_(БПЛА)

WP-RU78 IAI Searcher (Фортност [БПЛА]). Wikipedia [ru], retrieved 2026-10-02.
https://ru.wikipedia.org/wiki/Фортност_(БПЛА)

WP-RU79 Mohajer-6. Wikipedia [ru], 2026-10-03.
https://ru.wikipedia.org/wiki/Mohajer-6

WP-RU80 Соболятник. Wikipedia [Russian], retrieved 2026-10-06.
https://ru.wikipedia.org/wiki/Соболятник

WP-RU81 ГАЗ-3308. Wikipedia [Russian], 2026-10.
https://ru.wikipedia.org/wiki/ГАЗ-3308

WP-RU82 ГАЗ-66. Wikipedia [Russian], 2026-10.
https://ru.wikipedia.org/wiki/ГАЗ-66

WP-RU83 Герань-2. Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/Герань-2

WP-RU84 Гербера [БПЛА]. Russian Wikipedia, retrieved 2026-10-02.
https://ru.wikipedia.org/wiki/Гербера_(БПЛА)

WP-RU85 Gіbka (3M-47) and Tigr (armoured car), Russian Wikipedia. Wikipedia, retrieved 2026-10-07.
https://ru.wikipedia.org/wiki/%D0%A2%D0%B8%D0%83%D1%80_(%D0%B1%D1%80%D0%BE%D0%BD%D0%B5%D0%B0%D0%82%D1%82%D0%BE%D0%BC%D0%BE%D0%B1%D0%B8%D0%BB%D1%8C)

WP-RU86 Смерка-10. Wikipedia [ru], 2026.
https://ru.wikipedia.org/wiki/Смерка-10

WP-RU87 БМ-21 «Пуг». Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/БМ-21_«Пуг»

WP-RU88 Гранат-4. Russian Wikipedia, 2026-10.
https://ru.wikipedia.org/wiki/Гранат-4

WP-RU89 Гранат-1. Russian Wikipedia, 2026-10.
https://ru.wikipedia.org/wiki/Гранат-1

WP-RU90 Игла (переносной зенитный ракетный комплекс). Wikipedia [ru], 2026.
https://ru.wikipedia.org/wiki/Игла_(ПЗРК)

WP-RU91 ИМП-2. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/ИМП-2

WP-RU92 ИМП-3М. Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/ИМП-3

WP-RU93 РБ-531Б «Игла». Wikipedia [ru].
https://ru.wikipedia.org/wiki/РБ-531Б_«Игла»

WP-RU94 Zhuk [IRM]. Russian Wikipedia, retrieved 2026-10-04.
https://ru.wikipedia.org/wiki/%D0%96%D1%83%D0%8A_(%D0%98%D0%A0%D0%9C)

WP-RU95 Смынон (пукёб). Russian Wikipedia, 2022.
https://ru.wikipedia.org/wiki/Смынон_(пукёб)

WP-RU96 КамаЗ-5350 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/КамаЗ-5350

WP-RU97 КамаЗ-6350 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/КамаЗ-6350

WP-RU98 КамаЗ-4310 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/КамаЗ-4310

WP-RU99 35N6 [Russian Wikipedia]. Wikipedia, 2025.
https://ru.wikipedia.org/wiki/35N6

WP-RU100 39N6 Kasta-2-2 [Russian Wikipedia]. Wikipedia, 2026.
https://ru.wikipedia.org/wiki/39%D0%9D6

WP-RU101 Хрузантема (противотанковый ракетный комплекс). Russian Wikipedia, retrieved 2026-09-30.
https://ru.wikipedia.org/wiki/Хрузантема_(ПТРК)

WP-RU102 Конкурс (противотанковый ракетный комплекс). Wikipedia [ru], retrieved 2026-10-07.
https://ru.wikipedia.org/wiki/Конкурс_(ПТРК)

WP-RU103 9П148. Wikipedia [ru], retrieved 2026-10-07.
https://ru.wikipedia.org/wiki/9П148

WP-RU104 9К135 «Корнет». Russian Wikipedia, retrieved 2026-10-07.
https://ru.wikipedia.org/wiki/9К135_«Корнет»

WP-RU105 7-я зваргейская десантно-штурмовая дивизия. Russian Wikipedia, retrieved 2026-10-07.
https://ru.wikipedia.org/wiki/7-я_зваргейская_десантно-штурмовая_дивизия

WP-RU106 Корсар (БПЛА). Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/Корсар_(БПЛА)

WP-RU107 Красуха (комплекс РЗБ). Wikipedia [Russian], retrieved 2026-09-29.
https://ru.wikipedia.org/wiki/Красуха_(комплекс_РЗБ)

WP-RU108 Kub-BLA. Wikipedia [Russian], retrieved 2026-10-02.
https://ru.wikipedia.org/wiki/Ky6-BLA

WP-RU109 Алеп-2. Russian Wikipedia, 2026-09-29.
https://ru.wikipedia.org/wiki/Алеп-2

WP-RU110 РБ-341В. Russian Wikipedia, retrieved 2026-09-29.
https://ru.wikipedia.org/wiki/РБ-341В

WP-RU111 КрАЗ-255. Wikipedia [ru], 2026.
https://ru.wikipedia.org/wiki/КрАЗ-255

WP-RU112 КрАЗ-260. Wikipedia [ru], 2026.
https://ru.wikipedia.org/wiki/КрАЗ-260

WP-RU113 ЗИЛ-131. Wikipedia [ru], 2026.
https://ru.wikipedia.org/wiki/ЗИЛ-131

WP-RU114 АМН-590951 (БПК-Урал). Wikipedia [Russian], 2025.
https://ru.wikipedia.org/wiki/БПК-Урал

WP-RU115 Пампуль (броневомобиль). Wikipedia [Russian], 2024.
https://ru.wikipedia.org/wiki/Пампуль_(броневомобиль)

WP-RU116 130-мм пушка М-46. Wikipedia [Russian], 2026.
https://ru.wikipedia.org/wiki/130-мм_пушка_М-46

WP-RU117 Мемус (противотанковый ракетный комплекс). Russian Wikipedia, 2026.
https://ru.wikipedia.org/wiki/Мемус_(ПТРК)

WP-RU118 Оруон [БПЛА]. Wikipedia [ru], 2026.
https://ru.wikipedia.org/wiki/Оруон_(БПЛА)

WP-RU119 Moskva-1 (REB). Russian Wikipedia, retrieved 2026-09-29.
https://ru.wikipedia.org/wiki/Москва-1_(РЗБ)

WP-RU120 16-ia otdelnaja brigada radioelektronnoi borby. Russian Wikipedia, retrieved 2026-09-29.
https://ru.wikipedia.org/wiki/16-я_отдельная_бригада_радиоэлектронной_борьбы

WP-RU121 100-мм противотанковая пушка МТ-12. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/MT-12

WP-RU122 МТ-Абу (Russian Wikipedia). Wikipedia, retrieved 2026-10-03.

https://ru.wikipedia.org/wiki/MT-Абу

WP-RU123 9П149. Russian Wikipedia.

https://ru.wikipedia.org/wiki/9П149

WP-RU124 Небо (радиолокационная станция). Wikipedia (Russian), 2026.

https://ru.wikipedia.org/wiki/Небо_(радиолокационная_станция)

WP-RU125 Nebo (radiolokatsionnaya stantsiya). Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Небо_(радиолокационная_станция)

WP-RU126 Radiotekhnicheskie voyska Rossiyskoy Federatsii. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Радиотехнические_во́йска_Росси́йской_Федерации

WP-RU127 Nebo-M. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Небо-M

WP-RU128 48Ya6-K1 Podlyot. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/48Я6-К1_«Подъем»

WP-RU129 П-14 (Russian Wikipedia article reached via 5H84A). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/5H84A

WP-RU130 Orlan-30. Wikipedia (Russian), 2026.

https://ru.wikipedia.org/wiki/Орлан-30

WP-RU131 П-18. Wikipedia (Russian), 2026.

https://ru.wikipedia.org/wiki/П-18

WP-RU132 Список Вооружения у военной техники Сухопутных Вои́ск Росси́йской Феде́рации (Russian Wikipedia). Wikipedia, 2026-09-26.

https://ru.wikipedia.org/wiki/Список_вооружения_у_военной_техники_Сухопутных_вои́ск_Росси́йской_Федерации

WP-RU133 Палантин (комплекс РЗБ). Russian Wikipedia, 2024.

https://ru.wikipedia.org/wiki/Палантин_(комплекс_РЗБ)

WP-RU134 Pantsir-S1. Russian Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/Панцирь-С1

WP-RU135 Пенциллин (комплекс армразвегку). Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Пенциллин_(комплекс_армразвегку)

WP-RU136 Аустёнок (радиолокационный комплекс). Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Аустёнок_(радиолокационный_комплекс)

WP-RU137 ПМП-М. Russian Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/ПМП-М

WP-RU138 ПП-91 (понтонный парк). Russian Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/ПП-91_(понтонный_парк)

WP-RU139 Поляна-Д4. Wikipedia (Russian), 2026.

https://ru.wikipedia.org/wiki/Поляна-Д4

WP-RU140 ПРП-4. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/ПРП-4

WP-RU141 ПТС-4 (ru.wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/ПТС-4

WP-RU142 ПММ-2М (ru.wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/ПММ-2М

WP-RU143 ПММ-2 (ru.wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/ПММ-2

WP-RU144 ПУ-12М6. Russian Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/ПУ-12М6

WP-RU145 Панжур-М. Russian Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/Панжур-М

WP-RU146 Мотострелковый полк СССР. Russian Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/Мотострелковый_полк_СССР

WP-RU147 P-142. Russian Wikipedia, retrieved 2026-10-04.

https://ru.wikipedia.org/wiki/P-142

WP-RU148 P-161 (Russian Wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/P-161

WP-RU149 P-145BM (ru.wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/P-145BM

WP-RU150 БТР-60 (ru.wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/БТР-60

WP-RU151 R-149MA1 (Russian Wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/P-149MA1

WP-RU152 R-149BMR (Russian Wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/P-149BMR

WP-RU153 P-166. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/P-166

WP-RU154 P-439 [article]. Russian Wikipedia, 2021 (refs retrieved 2021-05-12).

https://ru.wikipedia.org/wiki/P-439

WP-RU155 C-300П (Russian Wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/C-300П

WP-RU156 S-300V (Russian Wikipedia). Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/C-300B

WP-RU157 9A83 (Russian Wikipedia). Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/9A83

WP-RU158 C-350. Wikipedia (Russian), 2026.

https://ru.wikipedia.org/wiki/C-350

WP-RU159 C-400. Wikipedia (ru), retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/%D0%A1-400

WP-RU160 4-я эвгардейская армия ВВС и ПВО. Wikipedia (ru), retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/4-«D1%8F_%D0%B3%D0%B2%D0%B0%D1%80%D0%B4%D0%B5%D0%B8%D1%81%D0%B4%D0%B0%D1%8F_%D0%B0%D1%80%D0%B0%D0%B8%D1%8F_%D0%B2%D0%BE%D0%B5%D0%B0%D0%B0%D0%BE_%D0%B2%D0%BE%D0%B7%D0%B4%D1%83%D1%88%D0%B0%D1%89%D1%85_%D1%81%D0%B8%D0%B8_%D0%B8_%D0%BF%D1%80%D0%BE%D1%82%D0%B8%D0%B2%D0%BE%D0%B2%D0%BE%D0%BF%D0%B4%D1%83%D1%88%D0%B0%D0%BE%D0%B9_%D0%BE%D0%B1%D0%BE%D1%80%D0%BE%D0%B0%D1%88

WP-RU161 C-60. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/C-60

WP-RU162 ЗСУ-23-4 «Шука». Wikipedia (ru), 2026.

https://ru.wikipedia.org/wiki/ЗСУ-23-4_«Шука»

WP-RU163 Shipovnik-AERO (Russian Wikipedia). Wikipedia, 2026.

WP-RU164 Штурм (противотанковый ракетный комплекс). Russian Wikipedia.

https://ru.wikipedia.org/wiki/Штурм_(ПТРК)

WP-RU165 Смерч (РСЗО). Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/9K58

WP-RU166 МА3-543. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/МА3-543

WP-RU167 Леопард (радиолокационная станция). Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/ШНАР-10

WP-RU168 Сосна (зенитный ракетный комплекс). Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Сосна_(зенитный_ракетный_комплекс)

WP-RU169 2С25 (Russian Wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/2%D0%A125

WP-RU170 Стрелец (КРКУС-ВР). Wikipedia (ru), retrieved 2026-10-04.

https://ru.wikipedia.org/wiki/Стрелец_(КРКУС-ВР)

WP-RU171 Supercam S350. Russian Wikipedia, read 2026-10.

https://ru.wikipedia.org/wiki/Supercam_S350

WP-RU172 Рефлекс (противотанковый ракетный комплекс). Russian Wikipedia, 2025.

https://ru.wikipedia.org/wiki/Рефлекс_(ПТРК)

WP-RU173 Словесные названия российского оружия/С. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Словесные_названия_российского_оружия/С

WP-RU174 Т-72b. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/T-72b

WP-RU175 Т-55 (Russian Wikipedia). Wikipedia, retrieved 2026-10-02.

https://ru.wikipedia.org/wiki/T-55

WP-RU176 Т-62. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/T-62

WP-RU177 Т-80 (Russian Wikipedia article, comparison table, modifications, service lists). Wikipedia, retrieved 2026-10-02.

https://ru.wikipedia.org/wiki/T-80

WP-RU178 Т-90. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/T-90

WP-RU179 Т-90М. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/T-90М

WP-RU180 Словесные названия российского оружия/Т. Wikipedia (Russian), 2026.

https://ru.wikipedia.org/wiki/Словесные_названия_российского_оружия/Т

WP-RU181 Тузр (броневтомобиль). Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Тузр_(броневтомобиль)

WP-RU182 Russian Wikipedia: ТММ-3. Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/ТММ-3

WP-RU183 Russian Wikipedia: МТУ-72. Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/МТУ-72

WP-RU184 Точка (мактуический ракетный комплекс). Wikipedia (Russian), 2026.

https://ru.wikipedia.org/wiki/Точка-У

WP-RU185 Тор (зенитный ракетный комплекс). Russian Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/Тор_(зенитный_ракетный_комплекс)

WP-RU186 Торнадо-Г. Russian Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/%D0%A2%D0%BE%D1%80%D0%B0%D0%B0%D0%B4%D0%BE_%D0%93

WP-RU187 МА3-537 (Russian Wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/МА3-537

WP-RU188 КАМА3-65225 (Russian Wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/КАМА3-65225

WP-RU189 Slovesnye nazvaniya rossiyskogo oruzhiya/R. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Словесные_названия_российского_оружия/Р

WP-RU190 Slovesnye nazvaniya rossiyskogo oruzhiya/B. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Словесные_названия_российского_оружия/Б

WP-RU191 Тунзуска (зенитный ракетно-пушечный комплекс). Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/2K22_«Тунзуска»

WP-RU192 КамА3-63968 «Таифун-К», Russian Wikipedia.

Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Таифун-К

WP-RU193 КамА3-53949 «Аунза», Russian Wikipedia. Wikipedia, 2026.

https://ru.wikipedia.org/wiki/КамА3-53949

WP-RU194 Таифун (семейство броневтомобилей), Russian Wikipedia. Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Таифун_(семейство_броневтомобилей)

WP-RU195 Уран-63095, Russian Wikipedia. Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Уран-63095

WP-RU196 2С41 «Дрок», Russian Wikipedia. Wikipedia, 2026.

https://ru.wikipedia.org/wiki/2С41

WP-RU197 UAZ-469 (Russian Wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/УАЗ-469

WP-RU198 УП-77. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/УП-77

WP-RU199 Ураган-1М (Russian Wikipedia). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Ураган-1М

WP-RU200 Ураган (РСЗО). Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Ураган_(РСЗО)

WP-RU201 Уран-6370 [Уран-63704 redirects here]. Russian Wikipedia, retrieved 2026-10.

https://ru.wikipedia.org/wiki/Уран-63704

WP-RU202 Уран-6. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Уран-6

WP-RU203 Вербя (переносной зенитный ракетный комплекс). Wikipedia (ru), retrieved 2026-10-07.

https://ru.wikipedia.org/wiki/Вербя_(ПЗРК)

WP-RU204 Воронек (радиолокационная станция). Wikipedia (ru), 2026.

https://ru.wikipedia.org/wiki/Воронек_(радиолокационная_станция)

WP-RU205 БС-3. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/БС-3

WP-RU206 152-мм заубица образца 1943 года [А-1]. Russian Wikipedia, 2026.

https://ru.wikipedia.org/wiki/152-мм_заубица_образца_1943_года_(А-1)

WP-RU207 Bird-Eye 400 (Russian Wikipedia, redirect from Застава [БПЛА]). Wikipedia, 2026.

https://ru.wikipedia.org/wiki/Застава_(БПЛА)

WP-RU208 Зоопарк (радиолокационный комплекс). Russian Wikipedia, retrieved 2026-09-29.

https://ru.wikipedia.org/wiki/Зоопарк_(радиолокационный_комплекс)

WP-RU209 ЗУ-23-2. Wikipedia (Russian), 2026.

https://ru.wikipedia.org/wiki/ЗУ-23-2

WP-UK1 Р5-301Б «Борисоглебск-2». Wikipedia (Ukrainian), retrieved 2026-09-29.

https://uk.wikipedia.org/wiki/Р5-301Б_«Борисоглебск-2»

WP-UK2 R-340RP Pole-21. Ukrainian Wikipedia, 2026-09-30.

https://uk.wikipedia.org/wiki/%D0%AD-340%D0%AD%D0%9F_%C2%AB%D0%9F%D0%BE%D0%BB%D0%B5-21%C2%8B

WP-UK3 Torn (EW complex), Ukrainian Wikipedia. Wikipedia, 2026.

https://uk.wikipedia.org/wiki/%D0%A2%D0%BE%D1%80%D0%BD_(%D0%BA%D0%BE%D0%BC%D0%BF%D0%BB%D0%B5%D0%BA%D1%81_%D0%AD%D0%95%D0%91)

WPBTR60 BTR-60. Wikipedia, 2026.

https://www.wikipedia.org/wiki/BTR-60

WSN1 152mm 2A36 Giatint-B. WeaponSystems.net.

https://weaponsystems.net/system/340-152mm+2A36+Giatint-B

WSN2 82mm 2B14 Podnos. weaponsystems.net.

https://weaponsystems.net/system/1135-82mm+2B14+Podnos

WSN3 2S34 Hosta. weaponsystems.net.

https://weaponsystems.net/system/1400-2S34%20Hosta

WSN4 2S31 Vena. weaponsystems.net, 2026.

https://weaponsystems.net/system/135-2S31+Vena

WSN5 2S35 Koalitsiya-SV. weaponsystems.net.

https://weaponsystems.net/system/836-2S35+Koalitsiya-SV

WSN6 BAT-2. WeaponSystems.net, 2026.

https://weaponsystems.net/system/306-BAT-2

WSN7 BRM-1K Korshun. weaponsystems.net.

https://weaponsystems.net/system/346-BRM-1K%20Korshun

WSN8 TMM [weaponsystems.net]. WeaponSystems.net.

https://weaponsystems.net/system/1276-TMM

WSN9 9K79 Tochka. weaponsystems.net.

https://weaponsystems.net/system/907-9K79+Tochka

WSPOT1 WarSpotting loss record 3619: 2F510A transport vehicle (for 2S12 'Sani' mortar). WarSpotting, 2022-02-26.

https://ukr.warspotting.net/api/losses/russia/3619

WSPOT2 WarSpotting loss record 8233: 2F510A transport vehicle (for 2S12 'Sani' mortar). WarSpotting, 2022-09-10.

https://ukr.warspotting.net/api/losses/russia/8233

WSPOT3 WarSpotting loss record 8689: 2F510A transport vehicle (for 2S12 'Sani' mortar). WarSpotting, 2022-09-13.

https://ukr.warspotting.net/api/losses/russia/8689

WSPOT4 WarSpotting API, Russian losses 2022-09-10 (records 8171, 8864). WarSpotting, 2022-09-10.

https://ukr.warspotting.net/api/losses/russia/2022-09-10

WSPOT5 WarSpotting API, Russian losses 2022-09-

WSPOT13 WarSpotting #3046, R-330BMV jamming station [for RB-3018 Borisoglebsk-2]. WarSpotting, 2022-03-12.
<https://ukr.warspotting.net/view/3046/39064/>

WSPOT14 WarSpotting #8541, R-330BMV Borisoglebsk-2B. WarSpotting, 2022-09-13.
<https://ukr.warspotting.net/view/8541/20284/>

WSPOT15 WarSpotting losses, Russia, 2 March 2022 [records 2078, 2151, 2152]. WarSpotting, 2022-03-02.
<https://ukr.warspotting.net/api/losses/russia/2022-03-02>

WSPOT16 WarSpotting losses, Russia, API page from id 8997 [records 9025, 9141]. WarSpotting, 2022.
<https://ukr.warspotting.net/api/losses/russia/8997>

WSPOT17 WarSpotting losses, Russia, API page from id 8565 [records 8632, 8633, 8638, 8640]. WarSpotting, 2022.
<https://ukr.warspotting.net/api/losses/russia/8565>

WSPOT18 WarSpotting losses, Russia, 15 October 2024 [record 30831]. WarSpotting, 2024-10-15.
<https://ukr.warspotting.net/api/losses/russia/2024-10-15>

WSPOT19 WarSpotting loss record #2439: R-149AKSh(-1), 2nd Guards Motor Rifle Division, 2022-03-08. WarSpotting, 2022-03-08.
<https://ukr.warspotting.net/api/losses/russia/2439>

WSPOT20 WarSpotting loss record #2440: R-149AKSh(-1), 60th Control Brigade, 2022-03-27. WarSpotting, 2022-03-27.
<https://ukr.warspotting.net/api/losses/russia/2440>

WSPOT21 WarSpotting loss record #13822: R-149MA3, 1st Guards Motor Rifle Regiment, 2022-03-01. WarSpotting, 2022-03-01.
<https://ukr.warspotting.net/api/losses/russia/13822>

WSPOT22 WarSpotting loss record #9001: R-149MA3 [tagged Turretless], 1st Guards Motor Rifle Regiment, 2022-09-11. WarSpotting, 2022-09-11.
<https://ukr.warspotting.net/api/losses/russia/9001>

WSPOT23 WarSpotting loss record #23939: R-149MA3, 1st Tank Regiment, 2022-09-29. WarSpotting, 2022-09-29.
<https://ukr.warspotting.net/api/losses/russia/23939>

WSPOT24 WarSpotting loss record #8999: R-149MA1, 27th Separate Guards Motor Rifle Brigade, 2022-09-12. WarSpotting, 2022-09-12.
<https://ukr.warspotting.net/api/losses/russia/8999>

WSPOT25 WarSpotting loss record #2442: R-166-0.5 'Artek' radio station based on BTR-80. WarSpotting, 2022-03-20.
<https://ukr.warspotting.net/api/losses/russia/2442>

WSPOT26 WarSpotting loss record #2448: R-166-0.5 'Artek' radio station based on BTR-80. WarSpotting, 2022-03-01.
<https://ukr.warspotting.net/api/losses/russia/2448>

WSPOT27 WarSpotting loss record #2453: R-166-0.5 'Artek' radio station based on BTR-80. WarSpotting, 2022-02-26.
<https://ukr.warspotting.net/api/losses/russia/2453>

WSPOT28 WarSpotting loss record #36863: 9A83M2 TELAR (for 9K81M2 S-300V4), Oleksiivka, Polohy raion, 2025-08-20. WarSpotting, 2025-08-20.
<https://ukr.warspotting.net/api/losses/russia/36863>

WSPOT29 WarSpotting loss record #7009: 9A83M2 TELAR (for 9K81M2 S-300V4), Volnukhyne, Luhansk raion, 2026-08-14. WarSpotting, 2026-08-14.
<https://ukr.warspotting.net/api/losses/russia/7009>

WSPOT30 WarSpotting, Russian losses of 2023-07-31 [record 18807, Zil-131 with S-60 AA gun]. WarSpotting, 2023-07-31.
<https://ukr.warspotting.net/api/losses/russia/2023-07-31>

WSPOT31 WarSpotting losses, Russia, 2022-11-09 [record 11376]. WarSpotting, 2022-11-09.
<https://ukr.warspotting.net/api/losses/russia/2022-11-09>

WSPOT32 WarSpotting loss records, Russia, 2022-03-04 [records 574, 575]. WarSpotting, 2022-03-04.
<https://ukr.warspotting.net/api/losses/russia/2022-03-04>

WWW1 Bezbashennyye samokhodki 2S7M Malka nachali ispolzovat po novomu. www1.ru, 2025-04-24.
<https://www1.ru/news/2025/04/24/bezbashennyye-samokhodki-2s7m-malka-nacali-ispolzovat-po-novomu-biut-na-dalnosti-50-km.html>

WWW1A Разносят танки, артиллерию и укрепляющие врага: на что способна российская САУ 2С3М «Акация». www1.ru, 2024-06-19.
<https://www1.ru/news/2024/06/19/raznosit-tanki-artilleriyu-i-ukreplayonny-vraga-na-cto-sposobna-rossiiskaya-sau-2s3m-akaciya.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-chem-xoros-rossiiskii-bmpt-terminator-na-peredovoi.html>

WWW1A3 Деривация-ПВО засветилась в Нижнем Новгороде. www1.ru, 2025-05-16.
<https://www1.ru/news/2025/05/16/noveisiaa-zenitnaia-derivaciya-pvo-zasvetilas-v-niznem-novgorode.html>

WWW1A4 «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.html>

WWW1A5 Kalashnikov vypolnil goskazak po postavke barazhiruyushchego boeprigasa KUB. Ouzhie Rossii (www1.ru), Kalashnikov press service, 2023-12-19.
<https://www1.ru/news/2023/12/19/kalashnikov-vypolnil-goskazak-po-postavke-barra-ziruiushchego-boeprigasa-kub-minoborony-rf.html>

WWW1A6 «Мемис» с «Фэготом» 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.html>

WWW1B Гаубицы «Акация» адаптировали к новейшим высокоточным снарядам «Краснопол». www1.ru, 2025-09-03.
<https://www1.ru/news/2025/09/03/gaubicy-akaciya-adaptirovali-k-noveisim-vysokotocnym-snariadam-krasnopola.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-diviziuyu-cvo-v-2024-godu.html>

WWW1B3 Разработчики комплекса «Форпост» создали новую версию БПЛА с радиолокатором целеуказания. www1.ru, 2025-02-20.
<https://www1.ru/news/2025/02/20/razrabotchiki-kompleksa-forpost-sozdali-novuiu-versiyu-bpla-s-radiolokatorom-celeukazaniya.html>

WWW1B4 Kalashnikov otravil v voyska pervuyu v 2025 godu partiuyu UB KUB. Ouzhie Rossii (www1.ru), Kalashnikov press service, 2025-03-17.
<https://www1.ru/news/2025/03/17/kalashnikov-otpravil-v-voiska-pervuyu-v-2025-godu-partiuyu-upravliyaemyx-boeprigasov-kub.html>

WWW1B5 Компактность и мощь: российский ПТРК «Мемис» останобит бронетехнику противника. www1.ru, 2024-07-15.
<https://www1.ru/news/2024/07/15/kompaktnost-i-moshh-rossiiskii-ptrk-metis-ostanovit-bronetekniku-protivnika.html>

WWW1C Smertonosnaya ptitsa vzmyla v nebo: Kalashnikov nazval glavnye plyusy KUB. Ouzhie Rossii (www1.ru), Kalashnikov press service, 2025-03-26.
<https://www1.ru/news/2025/03/26/smertonosnaya-ptitsa-vzmyla-v-nebo-kalashnikov-nazval-glavnye-plyusy-kub.html>

WWW1D Postavki Kalashnikovym KUBa-2. Ouzhie Rossii (www1.ru), Kalashnikov press service, 2025-12-29.
<https://www1.ru/news/2025/12/29/postavki-kalashnikovym-kuba-2.html>

WWW1I Kontsern Kalashnikov postavil voennym partiuyu KUBov povyshennogo mogushchestva. Ouzhie Rossii (www1.ru), Kalashnikov press service, 2025-05-01.
<https://www1.ru/news/2025/05/01/kontsern-kalashnikov-postavil-voennym-partiuyu-kubov-povyshennogo-mogushchestva.html>

WWW2 Poyavilis pervye kadry redkogo drona-kamikadze Italmas pored boevym zapuskom. www1.ru, 2025-02-09.
<https://www1.ru/news/2025/02/09/poyavilis-pervye-kadry-redkogo-drona-kamikadze-italmas-pored-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-moshhnosti-krylatoi-rakety-nacali-zapuskat-s-pikapov-unikalnoe-video.html>

WWW12 Vezdekhd-razvedchik ili ogneyaaya platforma: Plastun-SN. www1.ru, 2023-10-30.
<https://www1.ru/news/2023/10/30/vezdexod-razvedchik-ili-ogneyaaya-platforma-cto-mozet-armeiskii-plastun-sn.html>

WWW13 Новейшую машину разминирования BMP-3М «Вепрь» на базе Т-90А применили на фронте. www1.ru, 2024-09-24.
<https://www1.ru/news/2024/09/24/noveisuiu-masinu-razminirovaniya-bmr-3m-vepr-na-baze-t-90a-primenili-na-fronte.html>

WWW14 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.html>

WWW15 Bronemashina Sudnogo dnya: vysokozashchishchennuyu Ladogu na shassi T-80 zametili u rossiysskikh voennosluzhashchikh. www1.ru, 2024-03-27.
<https://www1.ru/news/2024/03/27/bronemashina-sudnogo-dnia-vyskokozashchishhen-nuiu-ladogu-na-sassi-letaishushhego-tanki-t-80-zametili-u-ross.html>

WWW16 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>

WWW17 Omsktransmash presents floating transporter PTS-4 (Spanish edition). www1.ru, 2024-06-06.
<https://www1.ru/es/news/2024/06/06/proizvoditel-tos-la-solncepek-predstavil-plavalushii-transporter-pts-4-dlia-perevozki-kamaz.html>

WWW18 Российские радисты задействовали подвижные радиостанции Р-166-05 и Р-149AKШ в Таджикистане. www1.ru, 2025-08-07.
<https://www1.ru/news/2025/08/07/rossiiskie-radisty-zadeystvovali-podviznyie-radiostancii-r-166-05-i-r-149aks-v-tadzhikistane.html>

WWW19 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/noveisuiu-radiostancii-strategicheskogo-upravleniya-r-416gm-postupili-na-vooruzhenie-cvo.html>

WWW22 Плавающий транспортер ПТС-2 впервые попал на фото: получил мангал и комплекс РЗБ. www1.ru, 2025-10-09.
<https://www1.ru/news/2025/10/09/plavalushii-transporter-pts-2-vpervye-popal-na-foto-poluch-mangal-i-kompleks-reb.html>

WWW110 Оружие с опытом: В Войска отправили минометы «Погнос», 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.html>

WWW111 How the Russian smoke machine TDM-2K works. www1.ru, 2024-04-19.
<https://www1.ru/en/news/2024/04/19/prikriout-ot-vraga-na-kilometry-kak-rabotaet-rossiiskaa-dym-masina-dm-2k.html>

WWW112 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-zashchit-aerodromy-ot-dronov-kamikadze.html>

WWW113 Многоослойная броня и защита «Реликт»: 23 танка Т-90М «Прорыв» отправили мотострелкам ЦВО. www1.ru, 2024-05-17.
<https://www1.ru/news/2024/05/17/mnogosloinaya-bronia-i-zashchita-reликт-23-tanki-t-90m-proryv-otpravili-motostrelkam-cvo.html>

WWW114 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-sv-zapad-2025.html>

WWW115 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-unictozh-protivnika-daze-ne-vyozhda-iz-tzhl.html>

WWW116 Подгрываем 100-метровый шнур: «Змей Горыныч» помог российским саперам проглотать 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-shnur-zmei-gorynyc-pomog-rossiiskim-saperam-prodelat-proxody-v-minnyx-polia.html>

WWW117 Umnye polya «Zemledeliya»: rossiysskim voyskam peredan novyeshiy kompleks. www1.ru, 2023-10-13.
<https://www1.ru/news/2023/10/13/umnye-polia-zemledeliya-rossiiskim-voiskam-pereadan-noveisii-kompleks-distancionnogo-minirovaniya.html>

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-%c2%abvaryag%c2%bb-kontroliruet-udary-po-tylovoj-infrastrukture-vsui>

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-kontrolom-zala-z-16-centra-%c2%abrubikon%c2%bb/>

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-vsui>

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-vsui>

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-razvedyvatel'nogo-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-podrazdeleniya-bpla/>

ZALAAIF Что из себя представляет разведывательный БЛА ZALA 421-16E? Argumenty i Fakty [aif.ru].
https://aif.ru/society/army/chto_iz_sebya_predstavlyayet_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-tehnologii-cheskaya-novinka-rossiiskoj-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 Засмава [Robopedia]. robotrends.ru, 2015.
<https://robotrends.ru/robopedia/zastava>

ZAXID На Донбасі вперше зафіксували новітній російський комплекс «Навобаск-2». zaxid.net, 2020-11.
https://zaxid.net/n1a_donbasi_vpershe_zafiksuvaii_novitnii_rossiyskii_kompleks_navobask_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>

ZONWAR Миномет 2Б14-1 Погнос. 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 боюют в зоне СВО. Za Rulem [zr.ru], undated, c. 2024.
<https://www.zr.ru/content/articles/940956-chem-vooruzheny-desantniki-v-zon/>

ZR3 Новые особые vezdekhdyy Plastun-SN. Za Rulem, 2023.
<https://www.zr.ru/content/news/948692-voennoe-osobyie-vezdekhdyy-plastul/>

ZR4 СВШный аперейд: как БМД-2 получила защиту от дронов и современный модуль Берег. За рулем, 2026.
<https://www.zr.ru/content/articles/982867-svshnuiy-aperjaid-kak-bmd-2-pol/>

ZR5 Avtomobili v rogonakh (За рулем). За рулем [zr.ru].
<https://www.zr.ru/content/articles/966328-voennyye-gruzoviki/>

ZR6 Машина с револьвером — чем уникальна российская Хрузантема. Za Rulem, undated [after 2022].
<https://www.zr.ru/content/articles/971047-ptrk-hrizantema/>

ZR7 Компановка — старая, машина — новая: современные версии «мотолыжи». Za Rulem.
<https://www.zr.ru/content/articles/963485-mt-lb-motolyga/>

ZR8 Катюши нового поколения: Ураган и Торнадо работают в зоне СВО. За рулем, undated, after 2022.
<https://www.zr.ru/content/articles/942236-katysui-novogo-pokoleniya-uraga>

ZR9 В зоне СВО появились бронеавтомобили нового поколения. Za Rulem, 2024.
<https://www.zr.ru/content/articles/941588-tajfun-vdv-broneavtomobil-no/>

ZR16 Gerol inzhenernykh voysk. Za Rulem.
<https://www.zr.ru/content/articles/616786-zashchitniki-oteshchiva/>

ZR24 «Zemledeliye»: kak miniruyut polya po tu storonu linii fronta. Za Rulem, 2024 or later [undated page].
<https://www.zr.ru/content/articles/962576-isdni-zemledeliie/>

ZRRU БТР-МДМ Пакуйка: без башни. За рулем [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 pribivayut dazhe trekhmetrovyye betonnyie steny. TV Zvezda, 2022-12-19.
<https://tvzvezda.ru/news/20221219528-saWQSh.html>

ZVEZ Расчет ПТРК «Фагот» уничтожил наблюдательный пункт националистов в зоне СВО. TV Zvezda (Russian MoD), 2023-05-25.

<https://tvzvezda.ru/news/2023525052-13ttr.html>

ZVEZ2 Bezoblastnoe Nebo-M v Krymu (Sokirko). TV Zvezda (Russian MoD media), 2017-04-24.

<https://tvzvezda.ru/news/201704240824-gp30.htm>

ZVEZDA Gibka-S: gibkoe reagirovanie na ugrozy s vozdukhа. Zvezda weekly (Russian MoD media), 2020-11.

<https://zvezdawebkly.ru/news/20201151549-mnQDj.html>

ZVEZDA2 Морпехи-тихоокеанцы приварили к МТ-ЛБ 57-мм пушку. TV Zvezda (Russian MoD channel), 2023-07-20.

<https://tvzvezda.ru/news/20237201259-Ao8gt.html>

ZVEZDA3 Комплексы ПВО уничтожили основные силы группы беспилотников «противника». Zvezda TV (Russian MoD), 2019-04-08.

<https://tvzvezda.ru/news/201904080434-q4zr.htm>

ZVEZDA4 Использование БПЛА «Тахион» позволит повысить боевые возможности разведывательного подразделения ЦВО. TV Zvezda (MoD channel), 2020-12-28.

<https://tvzvezda.ru/news/202012281555-vnVpf.html>

ZVEZDA19 Снайперы ЗВО получили первые комплексы КРУС «Стрелец-М». TV Zvezda (Russian MoD broadcaster), 2019-12-25.

<https://tvzvezda.ru/news/20191225165-hFTU3.html>

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1V12 [1V13, 1V14, 1V15, 1V16] artillery fire control complex p. 83
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[https://commons.wikimedia.org/wiki/File:ACRV_M_1974\[2\]_1V15_\(7528060300\).jpg](https://commons.wikimedia.org/wiki/File:ACRV_M_1974[2]_1V15_(7528060300).jpg)

2A36 Giatsint-B 152 mm towed gun p. 32
Ministry of Defence of Ukraine. CC BY-SA 2.0 (<https://creativecommons.org/licenses/by-sa/2.0>).
https://commons.wikimedia.org/wiki/File:Apmuuepucm_BMC_Буконубалу_практичні_стрілєби_з_гармат_«Гіацинт-Б»_11.jpg

2A65 Msta-B p. 33
One half 3544. Public domain (https://commons.wikimedia.org/wiki/File:2A65_Msta-B.JPG).
https://commons.wikimedia.org/wiki/File:2A65_Msta-B.JPG

2B14 Podnos p. 33
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>

2B9 Vasilek p. 33
Vitaly V. Kuzmin. CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>).
https://commons.wikimedia.org/wiki/File:82mm_automatic_mortar_2B9_Vasilek_-_Oboronexpo2014part3-26.jpg

2S1 Gvozhdika p. 26
Srdan Popović. CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>).
https://commons.wikimedia.org/wiki/File:2S1_VS2.jpg

2S12 Sani p. 29
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https://commons.wikimedia.org/wiki/File:2S12_DSC_0194-4.jpg

2S23 Nona-SVK p. 29
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

2S3 Akatsiya p. 27
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

2S31 Vena p. 30
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. 30
Vitaly V. Kuzmin. CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>).
https://commons.wikimedia.org/wiki/File:2S34_Khosta_sideview.jpg

2S35 Koalitsiya-SV p. 31
Kirill Borisenko. CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>).
[https://commons.wikimedia.org/wiki/File:Koalitsiya-SV_during_the_"Armia_2020"_exhibition_\(bright\).jpg](https://commons.wikimedia.org/wiki/File:Koalitsiya-SV_during_the_"Armia_2020"_exhibition_(bright).jpg)

2S4 Tyulpan p. 27
Vitaly V. Kuzmin. CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>).
<https://commons.wikimedia.org/wiki/File:ParkPatriot2015part5-53.jpg>

2S40 Floks p. 31
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_Floxx.jpg

2S5 Giatsint-S p. 28
One half 3544. Public domain (<https://commons.wikimedia.org/wiki/File:Template:PD-self>).
https://commons.wikimedia.org/wiki/File:2S5_Giatsint-S.jpg

2S7 Pion / 2S7M Malka p. 28
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. 28
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>

96L6 all-altitude acquisition radar p. 50
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

Aleut and Plastun articulated and light tracked carriers p. 10
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. 54
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

1V18/1V19, 1V119, 1V152 and 1V1003 artillery command vehicles,
1V119 Reostat p. 84
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. 84
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_напке_Ленинского_комсомола_06.JPG

Bal p. 36
Vitaly V. Kuzmin. CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>).
<https://commons.wikimedia.org/wiki/File:MAKS2015part6-28.jpg>

Barnaul-T p. 84
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https://commons.wikimedia.org/wiki/File:9S932-1_at_the_MAKS-2011_011.jpg

Bastion-P p. 37
Сергей Шмугм СПб. CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>).
https://commons.wikimedia.org/wiki/File:Санкт-Петербург_«Алень_БМОД_РД_«Абортубар_пошаго_«Бейма8ка_опыкур_2707.2019.jpg

BAT-2 p. 73
ArmyInform. CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0>).
https://commons.wikimedia.org/wiki/File:UA_BAT-2_01.jpg

BMD-1KSh-A p. 82
Alf van Beem. Public domain (<https://creativecommons.org/publicdomain/mark/1.0/>).
https://commons.wikimedia.org/wiki/File:BMD-1KSh_БМА-1KW_Saint-Petersburg_pic1.JPG

BMD-2 p. 10
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](https://commons.wikimedia.org/wiki/File:106th_Guards_Airborne_Division_(394-1).jpg)

BMD-4M p. 11
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. 11
Vitaly V. Kuzmin. CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>).
<https://commons.wikimedia.org/wiki/File:БМО-T.jpg>

BMP-1 p. 11
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https://commons.wikimedia.org/wiki/File:BMP-1_JFV_in_Russian_service.jpg

BMP-1KSh command and staff vehicle p. 82
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. 12
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https://commons.wikimedia.org/wiki/File:BMP-2_01.jpg

BMPT Terminator p. 6
Nickel nitride. CCO (<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

BMR-3M p. 74
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_1531-10.jpg

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<https://commons.wikimedia.org/wiki/File:Borisoglebsk-2.png>

BRDM-2 p. 15
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https://commons.wikimedia.org/wiki/File:BRDM-2_-_ETIF-2010_13.jpg

BREM and BTS armoured recovery vehicles, BREM-L p. 77
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https://commons.wikimedia.org/wiki/File:BREM-L_-_TankBiathlon14part2-09.jpg

BRM-1K p. 12
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<https://commons.wikimedia.org/wiki/File:TB2015ExhibitionP22-33.jpg>

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https://commons.wikimedia.org/wiki/File:BTR-90_Kubinka_tank_museum.jpg

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https://commons.wikimedia.org/wiki/File:Patriot_Park_in_Kubinka_2015-06-19_42.JPG

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<https://commons.wikimedia.org/wiki/File:BTR-ZD.jpg>

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<https://commons.wikimedia.org/wiki/File:БТР-МДМ.jpg>

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https://commons.wikimedia.org/wiki/File:BTR70_004.jpg

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https://commons.wikimedia.org/wiki/File:Buk_TELAR_Moscow_2015.jpg

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https://commons.wikimedia.org/wiki/File:Расчеты_ЗРК_«Бук-М3»_отразили_удар_усовного_противника_по_пункту_базирования_кораблей_Каспийской_флотилии_в_Д_

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https://commons.wikimedia.org/wiki/File:SA-16_and_SA-18_missiles_and_launchers.jpg
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https://commons.wikimedia.org/wiki/File:Fm100-2-3_-_The_Soviet_Army_Troops_Organization_and_Equipment.pdf
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