

The logo consists of the letters 'EA' in a bold, white, stylized font. The 'E' and 'A' are connected at the top. A small registered trademark symbol (®) is located to the right of the 'A'. The logo is centered within a thin, golden circular border. The background behind the logo is a dark, dotted pattern.

EA[®]



EXCALIBUR ARMY

ARTILLERY SYSTEMS

www.excaliburarmy.cz



**EXCALIBUR
ARMY**

SELF-PROPELLED HOWITZERS



EXCALIBUR ARMY offers a range of self-propelled howitzer class artillery guns with 122, 152 and 155 mm calibre available.

Most of our howitzers are mounted on a wheeled original Tatra chassis and therefore are suitable for high speed travel on road as well a swift deployment in rough terrain.

This increases the safety of the crew that often needs to carry out the given task and leave the firing post as soon as possible to avoid enemy countermeasures.

Our howitzer systems are proved by active duty in a number of defence forces.

SELF-PROPELLED HOWITZERS

DITA
DANA M2
DANA vz. 77

04-09

MULTIPLE LAUNCH ROCKET SYSTEMS

RM-70 VAMPIRE 4D 8X8
RM-70 M1 8X8
BM-21 MT 4X4
BM-21 MU
FIRE CONTROL SYSTEM AND AIMING SYSTEM

10-21

155 mm CALIBER

DITA uses a standard 155 mm caliber ammunition on a gun of 45 caliber, easily available extensive range up to 39 km.

MINIMAL CREW REQUIREMENTS

Thanks to full automation of the system, the vehicle is operated by a crew of only 2 - driver and commander.

CREW COMFORT AND PROTECTION

High performance heating, A/C and NBC filtration system. Cabin protected according to STANAG 4569 Level I.

SMART CONTROLS

Vehicle is equipped with new ergonomically distributed driver's and commander's controls - vehicle controls, C2I systems, FCS, CTIS etc.

DITA

NEW NATO STANDARD 155 MM AUTOMATED SELF PROPELLED HOWITZER

★ **NEW PRODUCT** | **1+1** | **90 KM/H** | **39 KM** | 

The 155 mm DITA self-propelled howitzer is a new modern artillery weapon using a NATO standard 155 mm ammunition. It derives from the original Czechoslovak concept of Tatra truck-mounted howitzers, but it takes the autonomy of operation into a new level - DITA offers an unprecedented rate of fire with only 2 members of the crew. It features a modern fire control system, high speed in taking up and leaving the firing position, great accuracy and excellent hard terrain crossability.

The DITA howitzer is equipped with a powerful Onboard Control System which contains subsystems of diagnostics, navigation, automatic gun aiming, autonomous calculation of shooting elements and ammunition selection subsystem.



AUTOMATIC GUN AIMING

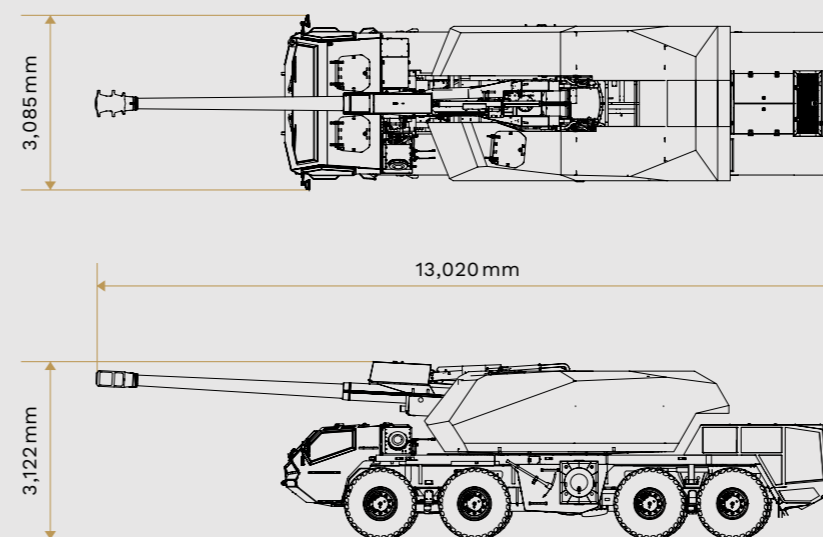
The DITA howitzer is equipped with a special A.S.A.P. system (Automatic Setting of Action Position) and with an ammunition control system which greatly enhance the speed of task execution and overall effectivity of the weapon.

APHU

An auxilliary 24 V hydraulic power unit serves as the main source for weapon systems and turret operation.



Autonomous gun superstructure portable to different types of chassis, e.g. tracked.



PARAMETERS

weight		29t
dimensions	L	13,020 mm
	W	3,085 mm
	H	3,122 mm
engine	type	Tatra T3C-928-90
	output	300 kW
mobility*	top speed - on road	90 km/h
	top speed - off road	25 km/h
	cruising range	600 km
	fording depth (instant)	1.2 m
	gradient	30°
	side slope	15°
	vertical obstacle	0.47 m
	trench crossing	2.0 m

*) Preliminary parameters.

SPECIFIC PARAMETERS

armament	main	155 mm howitzer
	firing range	39,000 m
	elevation	-3° / 70°
	traverse	± 60°
	guidance of weapon	fully automatic / manual (emergency)
	loading	automatic loading
	rate of fire - 1 st minute	6/min.
	rate of fire - sustained	5/min.
	carried ammunition	40
	control of fire	on board control system with ballistic computer

DANA M2

LATEST AND MOST ADVANCED VARIANT OF THE 152 MM DANA VZ. 77 SELF-PROPELLED GUN HOWITZER

BALLISTIC PROTECTION

Cabin according to STANAG 4569 Level I.

ON-BOARD DIAGNOSTIC

Integrated diagnostic system with automatic record of operating units.

CREW COMFORT

High performance heating, A/C and NBC filtration system.

EXTRA POWER

Auxiliary power unit is available, including a hydraulic pump.

★ **NEW PRODUCT** | **1+4** | **90 KM/H** | **25.5 KM** |

The 152 mm DANA vz. 77 self-propelled gun howitzer has gone through a major modernization presenting the most recent **DANA M2** system featuring high speed in taking up and leaving the firing position, greater accuracy and excellent hard terrain crossability.

The DANA M2 howitzer is equipped with a powerful Onboard Control System which contains subsystems of diagnostics, navigation, automatic gun aiming, autonomous calculation of shooting elements and ammunition selection subsystem.

Thanks to the new more resistant cabin and the NBC filtration system the **DANA M2** provides the crew with the highest level of comfort and protection. The newly implemented automatic guiding system allows fast and fully-automatic weapon adjustment into fire position.



PARAMETERS

weight		30.2t
dimensions	L	11,456mm
	W	3,000mm
	H	3,350mm
engine	type	Tatra T3-930-52M, V12
	output	265 kW
mobility	top speed - on road	90 km/h
	top speed - off road	25 km/h
	cruising range	600 km
	fording depth (instant)	1.4 m
	gradient	30°
	side slope	15°
	vertical obstacle	0.6 m
	trench crossing	2.0 m

DANA M2 SYSTEM

SPECIFIC PARAMETERS

armament	main	152.4 mm howitzer
	firing range	20,000 m (25,500 m with DN1CZ ammunition)
	elevation	-4° / 70°
	traverse	±225°
		± 45° a full range elevation
		± 220° with elevation to 10° (except DN1CZ)
	rate of fire – 1 st minute	5/min.
	rate of fire – sustained	4/min.
	carried ammunition	40
	secondary weapon	12.7 mm NSVT anti-aircraft machine gun

CONTROL PANEL



Basic screen



Semi-automatic aiming using arrows



Semi-automatic aiming using dial



Optional ammunition selection subsystem



NEW CONTROLS

Vehicle is equipped with new ergonomically distributed driver's and commander's controls (vehicle controls, C2I systems, FCS, FVS, CTIS etc.).



AUTOMATIC GUN AIMING

DANA M2 howitzer is equipped with a special A.S.A.P. system (Automatic Setting of Action Position) and with an ammunition control system which greatly enhance the speed of task execution and overall effectivity of the weapon.



APHU

Auxiliary 24 V source with a hydraulic pump allows emergency control of gun, battery charging and electrical system powering in case of accidental engine stopping.



IMPROVED UNDERCARRIAGE

Improved engine, new clutch, semi-automatic TATRA NORGRÉN transmission, new steering with servo, diagnostics and other improvements. Activation and retraction of support pads is 65% faster.

SHKH VZ. 77 DANA

THE ORIGINAL DANA SELF-PROPELLED GUN HOWITZER MODEL 77



TATRA CHASSIS

Great negotiation of rough terrain - typical advantage of the unique TATRA concept.

AUTOMATIC RELOADING

Primary reloading system is fully automatic.

GOOD FIREPOWER

Very long range, outstanding accuracy and firing rate. Large number of additional carried ammo.

The 152 mm wheeled self-propelled gun howitzer designated „vz. 77 DANA“ is a wheeled combat vehicle armed with the 152 mm gun.

The howitzer has been designed to provide fire support, neutralize enemy firing positions and destroy enemy positions by indirect fire. It is ranked amongst the most traditional and well-proven artillery systems due to the extensive in-service history and production that commenced in the 1970's.

The number of howitzers produced is around 800 and thanks to the compatibility with its successors it is still in service as one of the leading active and effective battle-proven military system.

The DANA has a crew of five with the driver position on the left side in front crew cab with the commander to his right each are equipped with a single hatch on the roof that opens forward. There is two small windows at the front of the vehicle which can be covered by shutters. The other three members of the crew are located in the turret with the gunner and loader on the left and ammunition handler on the right. There is one single door on each side of the turret. The DANA is fully protected against firing of small arms and shell splinters.



VERSATILE AUTOLOADER

DANA's unique feature is that its autoloader is able to load a shell and a cartridge in any elevation of the barrel.

PARAMETERS

weight		29.3 t
dimensions	L	11,156 mm
	W	3,000 mm
	H	3,500 mm
engine	type	Tatra 3-930.52, V12
	output	265 kW
mobility	top speed - on road	80 km/h
	top speed - off road	25 km/h
	cruising range	600 km
	fording depth (instant)	1.4 m
	gradient	30°
	side slope	15°
	vertical obstacle	0.6 m
trench crossing	1.4 m	

SPECIFIC PARAMETERS

armament	main	152.4 mm howitzer
	firing range	20,000 m (25,500 m with DN1CZ ammunition)
	elevation	-4° / 70°
	traverse	±225°
	rate of fire – 1 st minute	5/min
	rate of fire – sustained	5/min (2/min with manual loading)
	carried ammunition	40-60
	secondary weapon	DShK 1938 12.7 mm Heavy Anti-Aircraft Machine Gun



EXCALIBUR
ARMY

MULTIPLE LAUNCH ROCKET SYSTEMS



EXCALIBUR ARMY produces a range of multiple launch rocket systems. Our MLRS vehicles are built on the unique Tatra chassis which allows them to pass through very difficult terrain with certainty and at surprising speed. The launcher platform is derived from the well-known, proven and widely used RM-70 and BM-21 MLRS systems. To allow fast and accurate firing, our MLRS vehicles are equipped with a new aiming system and optionally with Fire Control System with navigation system and ballistic computer that allows fire elements calculation. According to the calculation aiming system automatically aims and deregulates the launch tubes towards the target.

Apart from the new MLRS production, we also specialize in modernization of existing technology to allow our customers continuous use of their current undercarriage and superstructure platforms.

MULTIPLE LAUNCH ROCKET SYSTEMS

- RM-70 VAMPIRE 4D 8x8
- RM-70 M1 8x8
- BM-21 MT 4x4
- BM-21 MU 6x6
- FIRE CONTROL SYSTEM AND AIMING SYSTEM

12-21



RM-70 VAMPIRE 4D

MULTIPLE LAUNCH ROCKET SYSTEM DELIVERING EXTENSIVE FIREPOWER FAST AND WITH HIGH PRECISION

DIGITAL INTERFACE OF THE ELECTRIC SYSTEM

Digital interface of the main weapon systems enables implementation of the Fire Control System with new aiming system according to calculated shooting elements with the possibility of manual control, voice and data communication with the upper levels of command and the new navigation system.



The RM-70 VAMPIRE 4D is a forty-tube, multi-launch, self-propelled rocket artillery system with a loading device, which is used to provide converging fire support for troops, firing unitary high-explosive fragmentation rocket projectiles (122-JROF-RM 70) at larger area targets.

The RM-70 VAMPIRE 4D is a hugely upgraded variant of the original Czechoslovak RM-70 GRAD MLRS with a loading device.

The rocket launcher can fire both single rounds and volleys from the cab or using a portable device from a nearby trench. The basic type of the fire is indirect fire. If a combat operation requires direct fire with elevation from 0° to 10°, it can only be done within the range determined by elevation and traverse sensors.

The original T-813 chassis was replaced with the new T815-7 chassis with air axle suspension. Two-door variant is also available.

NEW TATRA CHASSIS

Overall design of whole system increased by unique Tatra chassis T815-7 with its high cruising speed and high crosscountry capability, good maneuverability and excellent chassis properties.



NEW CONTROL BOXES

fitted with the latest electronic components



AREA OF EFFECT

single round: 3,000 m²
volley (40 rockets): up to 30,000 m²



PARAMETERS

combat weight		25.7t
dimensions	L	9,550 mm
	W	2,550 mm
	H	2,930 mm
chassis		T 815-7T3RC1 8x8.1
engine	type	Tatra T3C-928.90, V8
	output	300kW
mobility	top speed / off road	85 km/h / 30 km/h
	cruising range	700 km
	fording depth (instant)	1.2 m
	gradient	27°
	side slope	18°
	vertical obstacle	0.6 m
	trench crossing	2.1 m

SPECIFIC PARAMETERS

armament	main	122 mm JROF rockets /40+40/
		max. range 20 381 m (GRAD original at 50°) 40 000 m (G-2000 at 52,9°) - optional

Conversion time is measured in fully automatic mode of aiming supported by Fire Control System and navigation system.

fully combat readiness in combat posit.	< 60s
from combat to travelling position	1,5 min
time of firing a salvo	18 s – 22 s
time of reloading 40 rockets	from 30 up to 36 s
time to prepare 2nd salvo	1,5 - 2,5 min

LOADING UNIT

The unique RM-70 loading unit allows for an unprecedented rate of fire - 80 rockets in 2 minutes.

RM-70 M1

ARMoured CABIN

The cabin is armoured type, low profile, prolonged with two doors. The interior can be heated with the use of independent heating or cooled down by means of the dependent or independent air conditioning system.

NEW TATRA CHASSIS T815-VPR 9M

Overall design of whole system increased by unique Tatra chassis T815-VPR 9M with its high cruising speed and high cross-country capability, good maneuverability and excellent chassis properties.

CREW COMFORT

Easier and safer vehicle handling by the driver, semi-automatic Norgren gear-shifting system and better comfort of the crew when travelling.

UPGRADED VARIANT OF THE RM-70 GRAD MLRS

1+3 | UP TO 40 KM | TATRA |

The RM-70 M1 is a forty-tube, multi-launch, self-propelled rocket artillery system with a loading device, which is used to provide converging fire support for troops, firing unitary high-explosive fragmentation rocket projectiles (122-JROF-RM 70) at larger area targets.

The RM-70 M1 is a hugely upgraded variant of the original Czechoslovak RM-70 GRAD MLRS with a loading device.

The rocket launcher can fire both single rounds and volleys from the cab or using a portable device from a nearby trench. The basic type of the fire is indirect fire. If a combat operation requires direct fire with elevation from 0° to 10°, it can only be done within the range determined by elevation and traverse sensors.

The original T-813 chassis was replaced with the new T815-VPR 9M chassis with air axle suspension.



RM-70 M1 BATTERY

When equipped with the FCS, the vehicle can function alone or traditionally for increased firing volume as a part of a larger battery.

OPTIONAL CABIN VERSIONS



ARMoured CABIN



SOFT CABIN

NEW CONTROL BOXES

fitted with the latest electronic components



AREA OF EFFECT

single round: 3,000 m²
volley (40 rockets): up to 30,000 m²



PARAMETERS

combat weight		25.9t
dimensions	L	9,250 mm
	W	2,590 mm
	H	3,050 mm
chassis		T 815 - VPR9M 29 265 8x8.1R with armoured cab and filtration system
engine	type	Tatra T3-930-50M, V12
	output	264 kW
mobility	top speed - on road	85km/h
	top speed - off road	25km/h
	cruising range	1,000 km
	fording depth	1.2m
	gradient	27°
	side slope	18°
	vertical obstacle	0.5m
	trench crossing	2.0m



RM-70 M1

Soft Cabin version

SPECIFIC PARAMETERS

armament	main	122mm JROF rockets /40+40/ max. range 20.4/40.1km - optional
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NIGHT VISION CAMERA



TATRA T 815 CHASSIS

The TATRA T 815 is a proven and reliable vehicle with good availability of spare parts.

BM-21 MT

4x4 WHEELED MLRS MOUNTED ON TATRA CHASSIS FOR HEAVY TERRAIN DEPLOYMENT

1+2 |
 UP TO 40 KM |
 TATRA |

EQUIPMENT

Dependent heating, ventilation and air conditioning unit (HVAC), optionally - APU, independent heating, AC unit and NBC filtration system.

NEW TATRA CHASSIS

The vehicle chassis is the newest generation of TATRA military vehicles with exceptional terrain handling.

The BM-21 MT is a mobile platform for the 40-round high explosive fragmentation artillery system providing concentrated fire support to the troops over large target areas covering ranges depending on the type of used shell. It is an upgraded variant of the Russian BM-21 Multiple Rocket Launcher.

The rocket launcher can fire both single rounds and volleys from the cab or via remote control device from a nearby trench.

The principal mode of fire is indirect fire, direct fire can be performed only within the range determined by traverse and elevation sensors.

The original URAL chassis was replaced with the T-815-7 chassis with air axle suspension.

NEW CONTROL BOXES

fitted with the latest electronic components



AREA OF EFFECT

single round: 3,000 m²
volley (40 rockets): up to 30,000 m²



PARAMETERS

combat weight		16.3t
dimensions	L	7,370 mm
	W	2,550 mm
	H	2,730 mm
chassis		T815-7T3R21 4x4.1R with low cab
engine	type	Tatra T3C-928.81, V8
	output	270 kW
mobility	top speed - on road	90 km/h
	top speed - off road	30 km/h
	cruising range	1,200 km
	fording depth	1.2 m
	gradient	45°
	side slope	20°
	vertical obstacle	0.6 m
trench crossing	0.9 m	

SPECIFIC PARAMETERS

armament	main	122mm JROF /40 rockets/ max. range 20.4/40.1km - optional
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ZIP 1:1

The logistic kit of spare parts, tools and accessories is intended for superstructure operating, replacing defective parts, for repairing minor faults by the crew and for launcher maintenance.





FULFILLING NATO STANAG REQUIREMENTS

The life cycle of the equipment is at the same level as in the original BM-21. All electronic parts has resistance -20°C to +55°C and humidity 95%.

BM-21 MU

UPGRADED VERSION OF THE URAL CHASSIS MLRS



DIFFERENCES OLD BM-21 AND NEW BM-21 MU

Old system allowed firing only from prepared combat position. Procedure of preparing that position, reaching it, getting into fire direction and leaving combat position was quite time-consuming.

Goal of a new system is fully automatic mode of aiming and firing, which reduce time needed for assuming combat position and increase fire effectivity and accuracy in the target area.

The BM-21 MU is a mobile platform for the 40-round high explosive fragmentation artillery system providing concentrated fire support to the troops over large target areas covering ranges depending on the type of used shell.

It is an upgraded variant of the Russian BM-21 Multiple Rocket Launcher.

The rocket launcher can fire both single rounds and volleys from the cab or via remote control device from a nearby trench.

Modernization preserves tactical and technical features of BM-21 chassis. The principal mode of fire is indirect fire, direct fire can be performed only within the range determined by traverse and elevation sensors.

EASY SERVICE

Secures maintaining of the URAL platform and its logistic system.

COMPLEX LOGISTIC SUPPORT

For our MLRS systems we also offer munition vehicles, battery command vehicles, vehicles for forward observers, battalion command vehicle, fuel trucks, mobile workshops and recovery vehicles.

NEW CONTROL BOXES

fitted with the latest electronic components



AREA OF EFFECT

single round: 3,000 m²
volley (40 rockets): up to 30,000 m²



PARAMETERS

combat weight		13.7t
dimensions	L	7,350mm
	W	2,490mm/2,690mm incl. rear-view mirrors
	H	3,090mm
undercarriage		URAL-375D, 6x6
engine	type	ZIL 375, V8
	output	134.2kW
mobility	top speed - on road	75km/h
	top speed - off road	25km/h
	cruising range	min. 600km
fording depth		1.2m incl. fording wave
gradient		40°
side slope		18°
vertical obstacle		0.5m
trench crossing		0.6m



SPECIFIC PARAMETERS

armament	main	122mm JROF /40 rockets/ max. range 20.4/40.1km - optional
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MULTIPLE LAUNCH ROCKET SYSTEMS FIRE CONTROL SYSTEM AND AIMING SYSTEM FOR ALL EA MLRS

FIRE CONTROL SYSTEM (FCS)

The Fire Control System consists of commander ballistic computer, communication subsystem and navigation system.

We offer two possibilities of the FCS with two different solution of the navigation system:

1. LANSYR-LIR Fire Control System with I-GEO navigation system

- Independent of external surroundings with no interference chances.
- Coordinates are continually recalculated according to the movement of the rocket launcher in terrain.
- Accurate values of the superstructure elevation and direction towards true north.

2. LANSYR-MQR Fire Control System with Q-GEO navigation system

- The dual GPS sensors are linked to the top of the rocket tubes bundle, which secures that the system obtains accurate values of the superstructure direction towards true north.
- Coordinates of the actual position are continually recalculated in the real time.

FCS provides following main features:

- Calculation of shooting elements with automatic correction in the commander's tablet.
- Automatic topographic orientation capability.
- Sending data and commands to other vehicles with RF20 radio in P2P mode.
- Possible operation with or without radio communication.
- Creating geodetic objects: posts, targets, areas on the map.
- Slope calculation in course of vehicle according to the elevation data.
- Automatic command system.
- Firing from prepared or unprepared firing positions with topographic preparation.
- Easy preparation of various number of alternative firing posts.
- Displaying positional information on the digital maps.

MODES OF THE AIMING SYSTEM

1. Fully automatic using a ballistic computer with FCS
2. Semi-automatic using control panel
3. Manual using a joystick and artillery sight RM-70
4. Emergency using a handwheel and artillery sight RM-70

AIMING SYSTEM

- The aiming system allows reliably, quick and accurate aiming into calculated fire direction with all necessary superstructure and chassis subsystems and parts.
- The aiming system is controlled directly through the ballistic computer with automatic deregulation of the aiming or through the control panel and joystick.
- Aiming system consists of new electronic control boxes and panels.
- Non-NATO (360 = 60.00) and NATO (360 = 64.00) aiming circles are available.
- Sensor accuracy is 0.35 mils for elevation and traverse.
- Inclinator tilt angle is $\pm 5^\circ$ with accuracy 0.2°.

COMMANDER WORKPLACE



FCS MAIN COMPONENTS



Commanders ballistic computer



I-GEO navigation system



Q-GEO navigation system



Military radio

AIMING SYSTEM COMPONENTS



Control panel of the aiming



Firing device



Loading unit control panel



Joystick



Portable device

NAVIGATION SYSTEM

We offer two different solution of the navigation system:

I-GEO navigation system based on Inertial Navigation System and GPS.

- Designed for heavy artillery solutions.
- No maintenance.
- Sensors: 3 gyro, 3 accelerometer.
- Bearing and elevation accuracy <2 mils.
- Cold start:
 - 4 min for initial alignment,
 - 10 min for fine alignment.

Q-GEO navigation system based on dual GPS sensors with Q-GEO navigation unit.

- Based on dual GPS sensors with Q-GEO navigation unit.
- Electronic assembly with high accuracy, repeatability, and low power consumption.
- No maintenance.
- Bearing accuracy better than 2 mils.



**PROTECT
YOUR WORLD**

www.excaliburarmy.cz



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