



# SKIF

MAN PORTABLE ANTITANK  
MISSILE SYSTEM





**“Skif” man portable antitank missile system** is designed to destroy manpower and stationary and mobile modern armored targets with combined, carried or monolithic armor including ERA (explosive reactive armor) and also pinpoint targets like weapon emplacements, lightly armored objects and hovered helicopters at any time of day or night.

The system’s feature lies in its possibility to aim the missiles at a target from closed emplacements and shelters that reduces the risk of the gunner destruction by reply fire attack of the enemy as well as target tracking in automatic mode, which provides automatic control of the missile flight in the laser beam without participation of the gunner.

The system is completed with **130 mm** and **152 mm** caliber missiles in transport and launching containers with tandem hollow-charge (RK-2S, RK-2M-K) and high-explosive fragmentation (RK-2OF, RK-2M-OF) warheads.



# SPECIFICATIONS

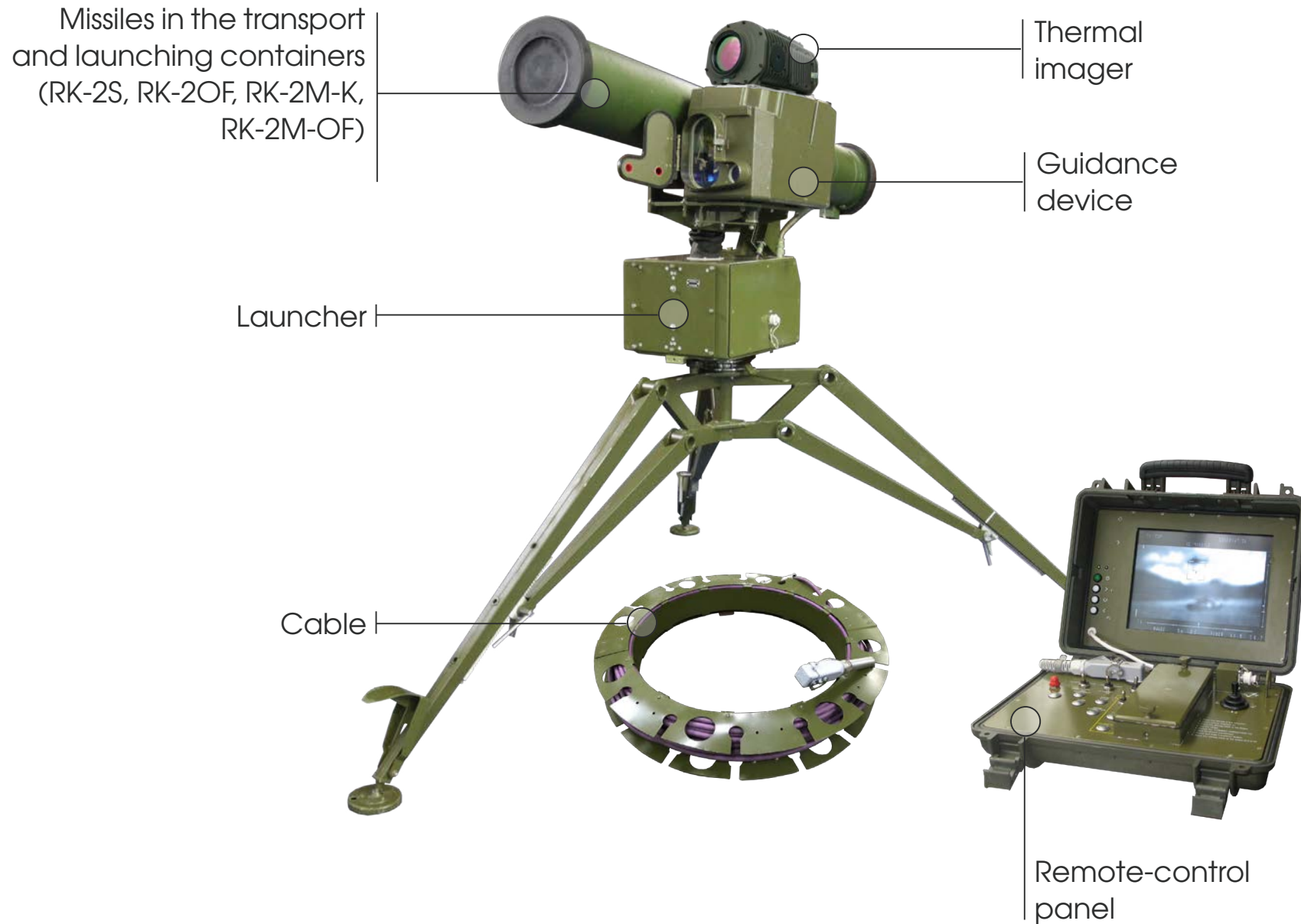
	RK-2S, RK-2OF Missiles	RK-2M-K, RK-2M-OF Missiles
<b>Range of fire, m:</b>		
• at day time	100-5000	100-5100
• at night time	100-3000	100-3000
<b>Missile guidance system</b>	by laser beam with target tracking in TV or thermal imaging channels in manual or auto mode	
<b>Warhead:</b>		
• tandem hollow-charge, armor penetration behind ERA, mm	not less than 800	not less than 1000
• high-explosive fragmentation with EFP:		
- armor penetration, mm	not less than 60	not less than 120
- number of fragment, pcs.	not less than 600	not less than 1000
<b>Weight, kg:</b>		
• Missile in container	30	37
• Launcher	38,2	38,2
• Remote-control panel	14	14
• Guidance device	15	15
• Thermal imager	4,1	4,1
<b>Overall dimensions, mm:</b>		
• missile caliber	130	152
• container length	1360	1435
• container outer diameter	140	162
<b>Operating temperature range, °C</b>	from minus 40 up to +60	



# ATGM «SKIF» PERFORMANCE



# SYSTEM STRUCTURE



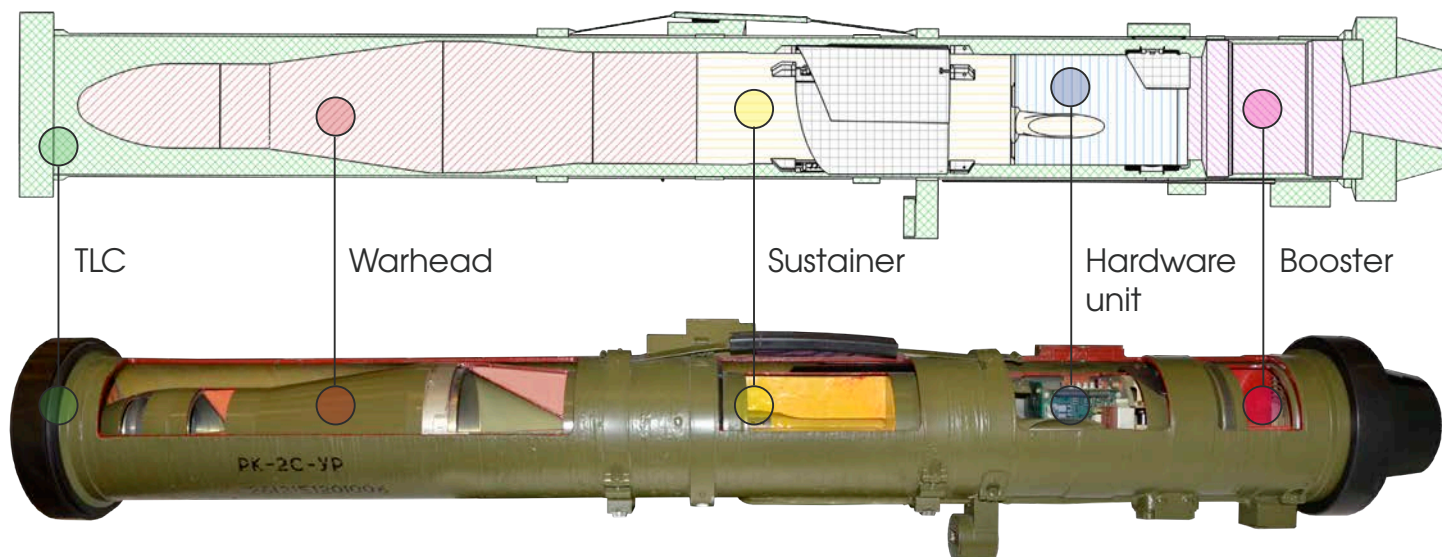


# ANTITANK GUIDED MISSILES IN THE TRANSPORT AND LAUNCHING CONTAINERS

Antitank guided missiles RK-2S, RK-2M-K with tandem hollow-charge warheads and antitank guided missiles RK-2OF, RK-2M-OF with high-explosive fragmentation warheads are designed to destroy manpower and stationary and mobile modern armored targets with combined, carried or monolithic armor including ERA (explosive reactive armor) and also pinpoint targets like permanent fire positions, lightly armored objects and hovered helicopters, at any time of day or night.

Anti-tank guided missile in transport and launching container consists of:

- Guided missile components:
  - sustainer,
  - warhead,
  - hardware unit.
- Booster.
- Transport and launching container (TLC).



# GUIDANCE DEVICE



- The guidance device is intended for forming:
- target visual TV surveillance, wide and narrow fields of view
  - informational field of laser emission.

Acquisition range of common target by the aiming channel of the TV sighting channel in the daytime, km	not less than 6,5
Angular FOV of the aiming channel	1°15 x 0°50 (12 units)
Angular FOV of the survey channel	4°20 x 3°10 (4 units)
Weight, kg	15
Overall dimensions, mm	415x210x215

# THERMAL IMAGER

Availability and a model of the thermal imager is defined by the delivery agreement.



The thermal imager is intended for target image formation, visible in IR spectrum in narrow, medium and wide FOV, and also for the image inversion and image quality adjusting. It is used for detection of IR emission in day and night time under difficult metrological conditions and also concealed target detection.

Acquisition and recognition range of the common target in night time, km	4
Sensor type	MWIR, cooled
Spectral range, $\mu\text{m}$	3-5
Sensor sensitivity (NETD), mK	not more than 25
Field of view angles:	
• narrow	1,80°x1,44°
• medium	6°x4,8°
• wide	35°x28°
Sensor resolution	640x512
Weight, kg	4,1
Overall dimensions, mm	170x256x146



# REMOTE-CONTROL PANEL



The remote-control panel is designed for distant control of the system at a distance of 50 m, where the operator can control launching, guidance device and thermal imager.

Structurally the remote-control panel is made as tightly closed case-container wherein the indicating unit and indicating-control unit are installed and electrically connected by bundle.

Power supply voltage, V	from 10 to 14
Power consumption, A	not more than 2,5
Weight, kg	14
Overall dimensions, mm	415x345x205

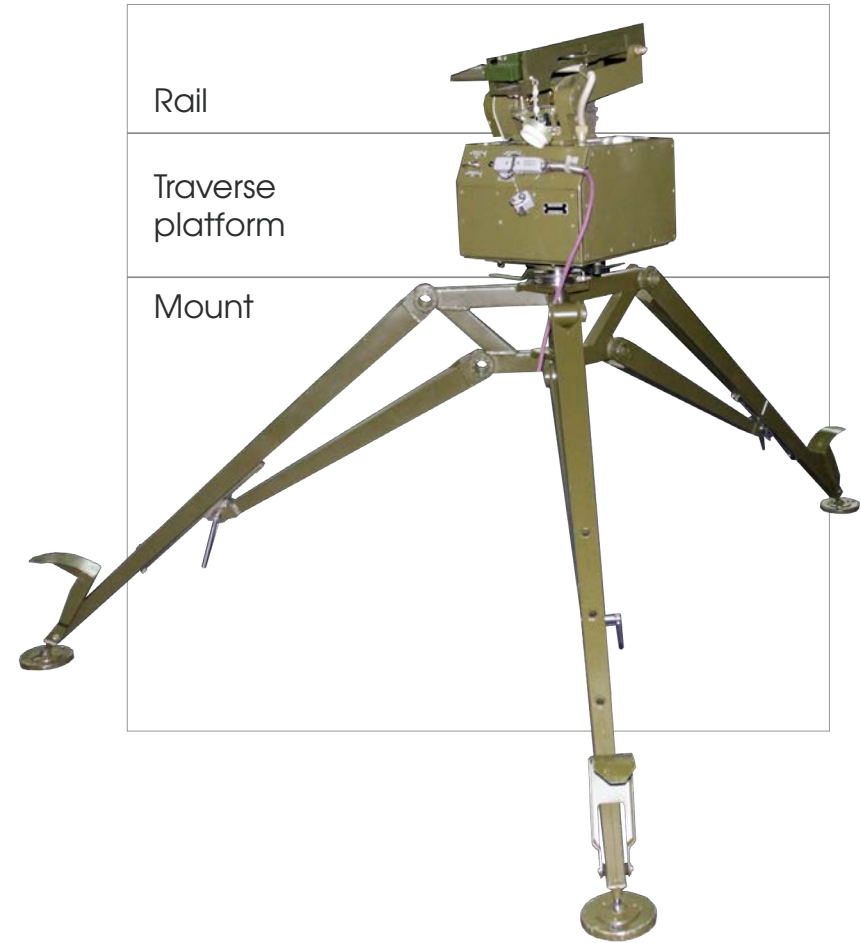
# LAUNCHER

The launcher as a part of the system is intended to:

- install the missile, guidance device and thermal imager on the traverse platform;
- ensure rotation of the traverse platform with the missile, guidance device and thermal imager in vertical and horizontal plane by command from the remote-control panel;
- ensure target tracking by command from the remote-control panel;
- ensure missile launching by command from the remote-control panel.

It consists of a mount, a traverse platform and a rail.

<b>Traverse platform rotating range, °:</b>	
• in vertical	from minus 7 to +27
• in horizontal	from minus 81 to +81
<b>Travers platform rotating speed, °/s:</b>	
• in vertical	from 0,02 to 1,00
• in horizontal	from 0,02 to 2,00
<b>Power supply voltage (accumulator), V</b>	from 22 to 28
<b>Average power consumption, W</b>	not more than 100
<b>Weight, kg:</b>	
• traverse platform	22
• mount	16,2
<b>Overall dimensions, mm:</b>	
• traverse platform	1758x1460x1460
• mount	1220x490x445





# TRANSPORTATION

The system in the manufacturer's packaging allows transportation by rail, water and air transport (including aircrafts without sealing cargo compartments at altitudes up to 12 km) without distance and speed limits of transportation, without limits of quantity of loads and unloads, take-offs and landings.

The system in the manufacturer's packaging allows transportation by wheeled and caterpillar vehicles on all types of roads and off-roads with the maximum allowed in these conditions speeds of vehicles at the distance up to 10 000 km.

In the traveling position the system is carried by combat crew or delivered by automobile transport. In order to deliver the system to the firing position, the components are placed in canvas packs and bags.

The permissible transportation distance of the system by road in packs is not more than 1000 km. The permissible distance of carrying the system components in packs is not more than 100 km.

The combat crew composition required to deliver the system to the firing position is determined by the operating organization, depending on the distance to the firing position and a quantity in the missile packs.

## COMPONENTS OF THE SYSTEM FOR DELIVERY TO THE FIRING POSITION



Pack with the guidance device



Pack with the launcher



Bag with the mount



Pack with the remote-control panel



Bag with the charger



Pack with the missile

## STORAGE

The system in the manufacturer's packaging can be stored in heated and unheated storages as well as in the field conditions.

The shelf life of the system depends on the storage conditions:

- 10 years in warehouse heated and unheated storages in the manufacturer's packaging;
- or two years in the field conditions in the manufacturer's packaging.

During storage the system can be transferred from one type of storage to another within the specified storage periods. The sequence of alternation of the system storage types is unconditioned.

## MAINTENANCE

Maintenance is carried out in order to check technical condition of the system and consists in periodic performance of works intended for keeping it in the constant combat readiness.

Additional control and testing equipment is not required during the system and missiles operation.

The following types of maintenance are established for the system components:

- Running service (Routine maintenance),
- Maintenance No. 1

Running service is carried out by the operator during the hours foreseen by operating organization's day plan. Running service is conducted before and after the march and after the system was in unfolded position in the field, but at least once a month, if the system has not been used and was in the stowed position. The content of the works is in the Servicing manual of the system and they mainly consist of the external examination of the components, checking of the power supply charges.

Maintenance No. 1 is carried out by the operating organization every six months under operation or annually during storage. The content of the work is in the Servicing manual of the system and mainly consists in checking of the guidance device alignment.



# TRAINING



The supplier of ATGM system “Skif” can train Customer combat crews in use of the system.

According to the agreement of the Parties, training can be carried out in the country of the Customer.

The training program for the use of the system is calculated for 30 calendar days and consists of theoretical and practical training courses using “SKIF-UTS1.10” individual training simulator to train the gunner and the commander of “Skif” crew, as well as using KTK training and checking kit.

The training course ends with missile firing training.

In order to optimize the training process of ATGM crews and economical use of military missiles, the supplier delivers in agreement with the Customer:

- “SKIF-UTS1.10” Simulator for the individual preparation of the gunner and the commander of ATGM “Skif” crew;
- The overall mass mock-up of the anti-tank guided missile in the Transport and Launching Container for training the crew of ATGM operation;
- Training cut-away mock-up of the anti-tank guided missile in the Transport and Launching Container for ATGM design and composition study.

# “SKIF-UTS 1.10” SIMULATOR

Simulator “SKIF-UTS1.10” is designed for theoretical training, formation and improvement of skills of ATGM system “Skif” use in the conditions of the classroom.



The simulator allows to:

- study the parameters, characteristics, structure, rules and methods of the combat use of ATGM “Skif”;
- form and improve the skills of searching, detecting, identifying, tracking and defeating simulated targets during the day or at night under different weather conditions;
- carry out training launches without consumption of ammunition and system life time;
- monitor and evaluate the level of personnel theoretical knowledge, acquired practical skills of operating with the system at the same time it is possible to print out the results of training with indication of erroneous actions;
- save in the computer database the results of crew training with the ability to display the results on the computer screen or print them out.



# COMPARISON CHARACTERISTICS OF THE ANALOGUE ARTICLES

	<b>“Skif”, RK-2M (Ukraine)</b>	<b>“Spike-LR” (Israel)</b>	<b>“Cornet-E” (RF)</b>
<b>Range of fire, m</b>	5100	4000	5500
<b>Missile guidance system</b>	by laser beam with target tracking in TV or thermal imaging channels in manual or auto mode	IR seeker	semi active by laser beam
<b>Warhead type</b>	tandem hollow charge, high-explosive fragmentation	tandem hollow charge	tandem hollow charge
<b>Armor penetration behind ERA, mm</b>	no less than 1000	700	no less than 800
<b>Missile in container weight, kg</b>	37	26,5	29
<b>Missile caliber, mm</b>	152	130	152
<b>Use in conditions of high dustiness</b>	provided (electric control surface actuator)	-	not provided (air dynamic actuator with air input)
<b>Control with help of remote control</b>	provided	not provided	not provided
<b>Operational temperature range, °C</b>	from minus 40 to +60	from minus 32 to +49	from minus 40 to +60

# ADVANTAGES OF THE MAN PORTABLE ANTITANK MISSILE SYSTEM “SKIF”



The use of new technical solutions in ATGM system “Skif” allowed achieving a number of advantages:

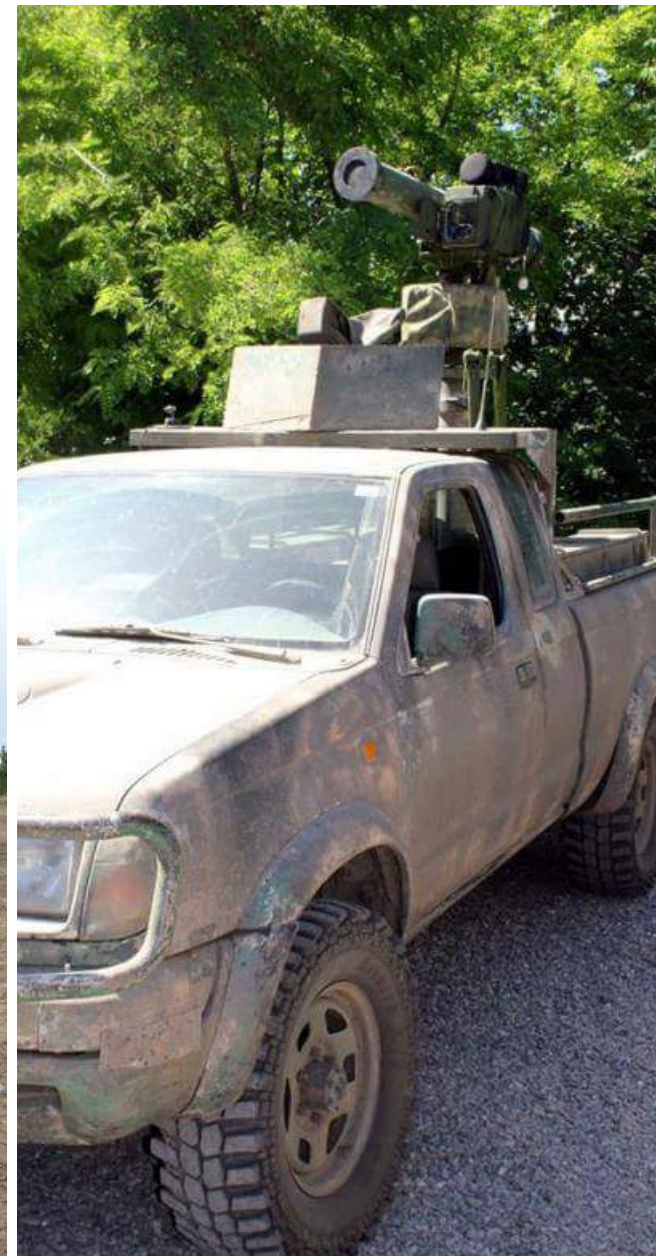
- Safety of the gunner is ensured by using the remote-control panel of the system that is located in a shelter at a distance of up to 50 m from the launcher;
- Effectiveness of firing in the conditions of combat use is ensured by using the automatic television target tracking system and controlling the missile flight along by laser beam without the participation of the operator;
- Increase of the distance and guidance accuracy is provided by an increased energy reserve of the laser control channel;
- Concealment of the guidance channel is ensured by the use of guidance in the low-energy level of the emission;
- High level of armored target defeat behind Explosive Reactive Armor is provided by the use of a tandem hollow-charge warhead;
- High noise immunity of the guidance system.



# DIFFERENT APPLICATIONS OF ATGM “SKIF”

Main advantage of “SKIF” ATMG is the remote control which gives possibility to use “SKIF” as the independent RCWS, mounted on various types of platforms, including APCs, IFVs, civil cars, buggies etc.

Every “SKIF” ATGM standard box is equipped with mounting kit which can be easily installed on almost any metal surface.





# AMULET REMOTE CONTROL WEAPON SYSTEM

"AMULET" RCWS capable to fire standard "SKIF" missiles in calibers 130 mm and 152 mm. The RCWS is equipped with standard "SKIF" guidance unit (two fields of view day cameras and laser channel) and can be equipped with cooled or uncooled thermal camera. "Amulet" can perform observation and surveillance using the 360 degrees rotation platform. The system is fully remotely controlled.



# SPECIFICATIONS OF AMULET COMBAT MODULE



Weight of combat module with armament, kg	385
Overall dimensions with armament, mm	1440x755x790
Maximum steering rate, °/s: <ul style="list-style-type: none"> <li>• in azimuth</li> <li>• in elevation</li> </ul>	<div>5</div> <div>5</div>
Guidance angles, ...°: <ul style="list-style-type: none"> <li>• in azimuth</li> <li>• in elevation</li> </ul>	<div>±360</div> <div>from minus 9 to +25</div>
Combat readiness time, min	3
Operating temperature range, °C	from minus 32 to +50



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