

## YOUR SOLUTION FOR DEMINING & COUNTER-IED



# MV-4



# Safe side of demining

Today the MV-4 is one of the best world renowned light category demining robotic system.

Its low profile and robust structure makes it highly resistant to any AP mines and UXOs with similar TNT equivalent, featuring exceptional maneuverability and highest safety with radio-operated distance of up to 1500 m.

The MV-4 has got compact dimensions and is well protected by HARDOX steel plates. In spite of its original design to destroy all types of AP mines, the MV-4 survivability is extremely high. It is capable to withstand AT mine detonation under its clearing tool (i.e. flail or tiller), with minimum damage, which is addressed in a field environment by the MV-4 crew.

## MULTIFUNCTIONALITY - TOOL ATTACHMENTS



**Flail tool**

The MV-4 with a standard flail head is a versatile remotely operated system that can be utilized in a number of scenarios: as the Mine Clearance Machine (MCM) to detonate hazards or as the Mechanical Ground Preparation Equipment (MGPE) to improve efficiency of mine clearance operations by reducing or removing obstacles: vegetation cutting and clearing, removal of tripwires, loosening of soil, removal of metal contamination, debris, boulders, rubble, others.



**Tiller Tool**

The MV-4 tiller head is another solution for both mine clearance and mechanical ground preparation operations. Its stiff levers with claws made of special steel are highly resistant to detonations, tier and wear.



**Segmented Roller Tool**

The Segmented Roller is another exchangeable tool primarily suitable for a limited-scale mine clearance of paths and small roads, area proofing, providing less disturbance to soil. It operates by pressure and rotation of its 12 independent rollers. The Segmented Roller is useful for verification of already cleared ground as well as a confidence building tool among local population.



**Robotic Arm**

This attachment with manipulator is the 360 degrees rotational platform used for lifting objects up to 400 kg. It is also suitable for a safe excavation of UXOs from various grounds, when manipulator is replaced with a bucket. Having additionally integrated NLJD (Non-Linear Junction Detector) and weapon carrier with 2 x 40 mm recoilless & stand-off disruptors, this fully remote controlled and video operated tool would become highly effective solution to locate, identify, destroy/neutralize various UXBs and IEDs from a safe distance using various solid and frangible projectiles.



**Gripper Tool**

The rotational Gripper is used primarily as rescue and cutting tool, to remove road blocks and other obstacles, safely handle dangerous objects with the maximum lifting capacity of 1500 kg.



**Dozer Blade Tool**

The Dozer Blade enables the MV 4 to work in soil containing ERW, to remove debris, road blocks and other obstacles, and to conduct limited-scale fortification activities.



**Rear Forklift**

This is the rear exchangeable tool primarily used in support operations: to lift various objects with the maximum loading capacity up to 800 kg, and can also be used as a "mule".



**Rear Shovel**

This is another rear exchangeable tool for logistic support operations. It can be used in a limited-scale construction activities.

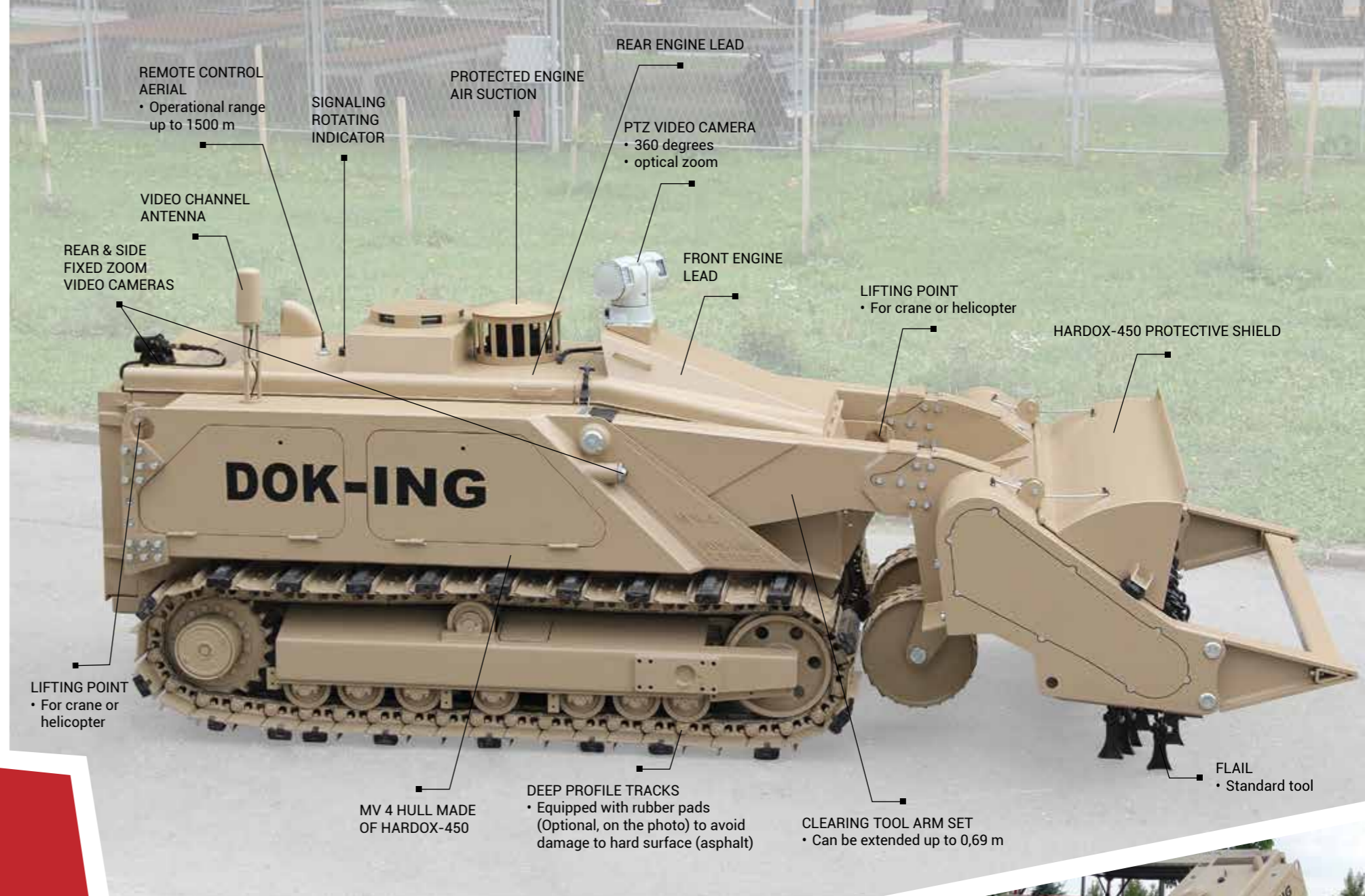


# MV-4 at glance



## APPROVED IN ALL CONDITIONS

The MV-4 demining robotic system has been designed and repeatedly modified to operate smoothly in all terrain and mine threat conditions, satisfying the highest requirements of safety, efficiency and cost-effectiveness.



## Excellent Maneuverability & Cross Country Performance

The MV 4 original design, compact size in conjunction with the powerful engine, provides it with high obstacle negotiation ability. It is able to operate on steep slopes, cross both natural and man-made obstacles (up to 1,2 m high and 1,5 m wide) and pass through water up to 0,45 m deep. The MV 4 can self recover itself by extending its Clearing Tool Arms for max 0,69 m.





# TRAINING, MAINTENANCE & AFTER SALE SUPPORT



The major advantage of DOK-ING is both producer and successful end-user of its demining robotic systems, hence the MV-4 machine is operator-friendly. Over 16 years history in practical demining with zero casualty rate, DOK-ING has transferred into a customer-focused comprehensive training course in English, Russian, Arabic, Croatian and other languages. All training is conducted in both theory and practice and provided for operators, mechanics and electricians.

The course is run for about 2-3 weeks depending on the number and type of the MV-4 supplied tools, future students' qualifications and their experience with remotely controlled demining robotic systems. Only candidates successfully passed training course and final test exam, would be certified to work with the MV-4.

The MV-4 is easily accessible for inspection, maintenance, trouble-shooting, repair and/or replacement. Maintenance and repairs can be carried out in a field or in a workshop conditions. The tools required are standard wrenches and additional specially modified tools. The recommended preventive maintenance is on a daily basis, while regular service is required to carry out after every 200 working hours.

As a commitment for high-quality reliable service to its customers, DOK-ING maintains adequate stocks of spare parts at the premises, has its own in-house service capabilities and can send a rapid response technical team at a short notice worldwide.

## EASY TRANSPORT

Due to its relatively small size, the MV-4 can be easily moved by different means of transportation. A standard 20 feet container is ideal for delivery by sea. The MV 4 can also be delivered by various types of cargo aircraft and the largest transport helicopters (Chinook CH-47, MI-26).

The most frequent mode of transportation is by road. Having precision driving power and steep climbing ability, the MV 4 can be loaded on any truck in few minutes by using special ramps.

Once in location, the MV 4 is ready for operational use in a couple of minutes.



**MV-4 TECHNICAL CHARACTERISTICS**

Dimensional data		Undercarriage		RADIO & VIDEO CONTROL	
Length without attachment (prime mover alone)	3100 mm	Transport speed	0-5 km/hour	Method of operation	remote control
Length total (w/std. flail tool retracted)	4510 mm	Operating speed in clearing mode (flail, tiller)	0.5-1.26 km/hour	Control of clearance depth	automatically adjusted
Length total (w/std. flail tool fully extended)	5130 mm	Operating speed with segmented roller	0.5-3 km/hour	Video control system	optional, available on request, 4 video cameras for prime mover
Length total (w/tiller tool)	5000 mm	<b>Obstacle Negotiation</b>		<b>PROTECTION</b>	
Length total (w/segmented roller tool)	4110 mm	Hill climbing ability (max grade slope °)	35	Protection level	Hardox-450 plates
Width without attachment (prime mover alone)	1530 mm	Side slope (°)	20	<b>Specification of Extra Attachable Operational Equipment</b>	
Width total (w/std. flail tool)	2015 mm	Vertical obstacle to climb	25 cm prime mover alone / 100 cm with flail tool	<b>Dozer Blade Tool</b>	
Ground clearance	260 mm	Vertical obstacle to descend	25 cm prime mover alone / 100 cm with flail tool	Dozer Blade dimensions (LxWxH)	400 x 2070 x 1158 mm
Height overall (w/std. flail tool)	1510 mm	Fording depth	45 cm	Length total (prime mover w/ dozer blade tool)	3580 mm
Mass basic vehicle (prime mover w/lubricants, no fuel)	5025 kg	Trench width (w/std. flail tool)	150 cm (arms fully extended)	Dozer Blade weight	560 kg
Mass basic vehicle (prime mover w/lubricants & fuel)	5085 kg	<b>Specification of Mine Clearing Equipment</b>		Dozer Blade pushing capacity	Up to 4 tones
Mass detachable tool(s)	500 - 2250 kg	<b>Flail Tool</b>		<b>Rotational Gripper Tool</b>	
Mass overall MV-4 (w/std. flail tool, w/lubricants, no fuel)	6115 kg	Flail tool dimensions (LxWxH)	1675 x 2015 x 1075 mm	Rotational Gripper dimensions (LxWxH)	1950 x 1940 x 988 mm
Mass overall MV-4 (w/std. flail tool, w/lubricants & fuel)	6175 kg	Flail tool weight	1090 kg	Length total (prime mover w/ rotational gripper tool)	5130 mm
<b>Engine</b>		Number of chains	34	Rotational Gripper weight	980 kg
Make & Model	PERKINS 1106D-E70 TA	Flail drum diameter	258 mm	Rotational Gripper claws' max opening	1450 mm
Engine Description	In-line, turbo-charged diesel, 4-stroke, direct injection, water cooled, electronically regulated, 6 cylinders	Flail tool clearing width	1725 mm	Rotation	360° in both directions
Rated power	186 kW (253 HP)	Flail rotation speed (rpm)	0-900 rpm	Rotational Gripper pushing capacity (hard surface)	5.5 tones
Rotation direction	Clockwise	Clearance depth in various terrain	≤30 cm (depending on terrain)	Rotational Gripper lifting capacity	1500 kg
Torque at rpm	1050 Nm at 1400 rpm	Performance in different terrain	500-2200 m <sup>2</sup> /hour	Video control	Optional one video camera, available on request
Engine weight (dry/wet)	506 kg/535 kg	<b>Tiller Tool</b>		<b>Rear Tool Holder w/ Connection Plate</b>	
Fuel capacity	70 liters	Tiller tool dimensions (LxWxH)	1790 x 2196 x 1275 mm	Rear Tool Holder dimensions (LxWxH)	1500 x 1020 x 1600 mm
Fuel consumption	15 - 25 liter/hour	Tiller tool weight	1728 kg	Rear Tool Holder weight	1000 kg
Cooling system type & volume	water cooled, 33 liters	Number of chisels	58	Rear Tool Holder max lifting angle	15°
Engine oil capacity	16 liters	Tiller drum diameter	475 mm	Rear Tool Holder max lifting height	2390 mm
<b>Undercarriage</b>		Tiller tool clearing width	1800 mm	Rear Tool Holder max loading weight capacity	800 kg
Tracks description	Metal tracks 300 mm width, deep profile	Tiller rotation speed (rpm)	0-450 rpm	<b>Rear Fork Tool</b>	
Number of metal track pads	44	Clearance depth in various terrain	≤35 cm (depending on terrain)	Rear Fork dimensions (LxWxH)	1400 x 1290 x 950 mm
Ground bearing pressure	0.43 kg/cm <sup>2</sup> (w/std. flail tool)	Performance in different terrain	500-2200 m <sup>2</sup> /hour	Rear Fork weight	172 kg
Power transmission	Hydrostatic system	<b>Segmented Roller Tool</b>		Rear Fork max lifting angle	15°
Type	Independent for propulsion and any tool's operation	Segmented roller dimensions (LxWxH)	1261 x 2260 x 1158 mm	Rear Fork max lifting height	2390 mm
Gearbox (multiplying)	Stibel 4362, I=0.697	Segmented roller weight	2115 kg	Rear Fork max loading weight capacity	800 kg
Gearbox oil capacity	2.6 liters	Roller segment mass	142 kg	<b>Rear Shovel Tool</b>	
Hydraulic oil capacity	200 liters	Number of rollers	12 Roller segments	Rear Shovel dimensions (LxWxH)	1720 x 930 x 720 mm
Track gearbox oil capacity	2 x 0.6 liters	Segmented roller drum diameter	108 mm	Rear Shovel weight	410 kg
		Roller segment diameter	610 mm	Rear Shovel max lifting angle	15°
		Segmented roller clearing width (12 pcs)	2070 mm	Rear Shovel max lifting height	2390 mm
				Rear Shovel max loading capacity	0,34 m <sup>3</sup>