



910MCV-2 AMCS

The MCV has been described as a »medieval mechanism” and a “mine munching monster”, and this 10 metres long, 18 tonnes heavy machine does have a somewhat intimidating effect on the viewer when the flail and its 72 chains start rotating and the hammers at the ends of the chains dig into the ground, often accompanied by a large cloud of dust. The effect on the mines is also very convincing - the mines are either detonated or torn apart. The 910MCV2 does its job, and it does it well!

Simple but extremely efficient clearing methodology

The concept of using a rotating shaft with chains for mine-clearing was already put into use during World War II, and it still works today. However, due to the addition of constantly updated modern technology the Hydrema 910MCV2 continues the good reputation and top quality of the first 910MCV by being one of the most successful and most modern mine-clearing vehicles available on the market today.

Largely speaking the 910MCV2 consists of a flail unit and a deflector shield, which are both attached to the rear chassis, and a cabin, which is placed on the front chassis. The front and rear chassis are connected with a pivot steering.

During mine-clearing, the 910MCV2 moves in the opposite direction to normal road travel with the flail unit in front and the cabin furthest away from the clearing area. The flail unit consists of a shaft with 72 chains attached, each with a hammer at the end, and during clearing the flail rotates at a speed of up to 440 rpm causing the hammers to dig into the ground where they either detonate the mines or tear them apart in a 3.5 m wide clearing path.

The 910MCV2 is constructed and tested for up to 10 kg TNT, and it clears both AP and AT mines whether placed on the surface or dug into the ground. The operating depth is controlled automatically or manually from inside the cabin and can be up to 40 cm in sandy soil conditions. By reversing the direction of rotation and “sweeping” the ground, the 910MCV2 is able to clear roads, landing strips and other hard surfaces with minimum damage to the surface.

Increased safety and better clearance

The 910MCV2 is equipped with two identical diesel engines, the Drive Engine and the Power Pack engine, which are mounted respectively on the front and the rear chassis. The Drive Engine is used for transportation and provides additional power to the flail during mine-clearing operation. The Power Pack engine is a separate engine fitted with hydraulic pumps, which power the flail and all the other 910MCV2 control functions including the hydrostatic drive.

The two engines have each their functions to supply, but with the series 2 of the 910MCV they both drive the flail unit, meaning that its clearing ability has been even further improved. Equally important, as an extra safety precaution the engines are able to switch functions so the 910MCV2 can change to transport position and leave the minefield safely with emergency driving even if one of the engines is damaged or breaks down. Furthermore, in case of an engine fire each engine compartment is equipped with a fire extinguishing system, which can be activated from inside the cabin.

Safety at work – even in a minefield

Safety is a major priority! Both the front and rear chassis are made of high tensile steel giving maximum protection against damage. The cabin is armoured to offer protection against firing and mine fragment debris up to a level of 7.62 x 51 mm AP, and there is a special blast deflection plate under the cabin to protect the driver in case of explosions below the vehicle. In addition, between the flail unit and the rest of the 910MCV-2 a deflector shield of armoured steel protects the vehicle against the pressure and the fragments from the explosions under the flail unit, and by following the ground contours both horizontally and vertically it ensures that mines do not slip under the vehicle. This is supported by the articulated chassis, which enables continued earth contact during the whole clearing process.

To support the driver, the 910MCV-2 is equipped with a computer system that enables electronic supervision and control of the main parameters and offers the choice of automatic driving. In automatic mode, the operator selects the terrain type, and the clearing is then fully automatic with automatic depth control. The system has been developed to provide the operator with extremely userfriendly information regarding adjustment as well as monitoring of information. The safety arrangements, together with the comfort offered in the cabin, give the driver good working conditions even at long hours of work and reduce the risk of human mistakes.

The cabin has computer-controlled equipment for monitoring the engines and the flail and for controlling the vehicle during driving and mine-clearing. From inside the cabin, joysticks control all important flail functions. Built into the armrests of the operator's seat - providing easy and ergonomic operation. All the windows are heated in order to prevent misting and to allow good visibility in all weather conditions. The cabin is equipped with a fresh air heating system as well as AC.

Tilt/turn system enables change of size

The wider the path that is cleared the faster the minefield can be cleared, but at the same time transportation can be a problem if the mine-clearing vehicle is too large. However, with the 910MCV2 this dilemma has been solved. A unique tilt/turn system means that the complete mine-clearing unit, with flail and deflector plate, can be stowed over the rear end of the machine for transportation, making the 910MCV2 less than 2.8 metres wide. However, once the 910MCV2 is at the place of mine-clearing, the hydraulic tilt/turn system is activated from within the cabin and in less than 2 minutes, without the use of tools, the 910MCV2 is ready for clearing. During mine-clearing it then clears a path with a width of 3.5 metres, wide enough even for an APC (armoured personnel carrier)!

The 910MCV2 is the only mine-clearing vehicle that can go directly from driving on public roads into a minefield and be ready for mine-clearing action so quickly and with so little work required. This allows the operator to spend less time outside the safety of the cabin and more time on clearing mines.

Successful operation

The Hydrema 910MCV-2 has been used in both Iraq and Afghanistan by the Danish- and Norwegian Army and the US Airforce to clear mines.

The 910MCV-2 AMCS version, specially designed to meet the US Army requirements, was sold to the US Government under a 5 year contract. US Army successfully used the 910MCV-2 AMCS in Afghanistan to clear mines - pryer to the sale.

A comfortable cabin

The 910MCV2 only requires one driver, but its comfortable cabin offers space for the operator, a commander and an instructor during transport or mine-clearing operations as well as space for additional equipment. All seats can be turned to forward or reverse position depending on the direction of operation.

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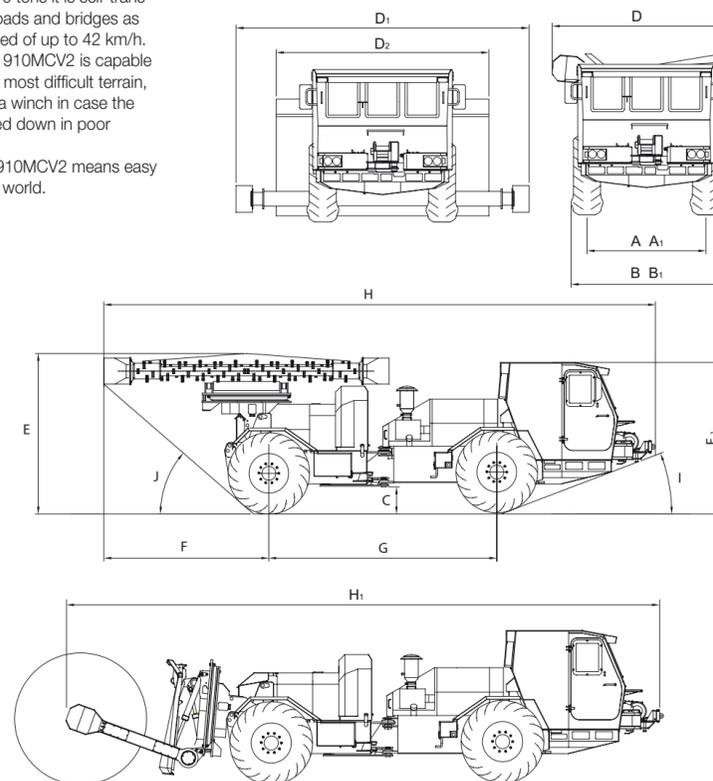
DIMENSIONS :

Weight with foam-filled EM tyres	18300 kg
Weight with foam-filled twin tyres	19180 kg
Front axle load (transport), EM tyres	8700 kg
Rear axle load (transport), EM tyres	9300 kg
A Track, EM tyres	1960 mm
A1 Track, Twin tyres	2050 mm
B Width with EM tyres	2420 mm
B1 Width with twin tyres	2640 mm
C Ground clearance	430 mm
D Width, (transport position)	2785 mm
D1 Width, (mine-clearing position)	4830 mm
D2 Width, (deflector shield)	3500 mm
E Total height (transport position)	2700 mm
E1 Total height (clearing position)	2510 mm
F Overhang, rear (transport position)	2710 mm
G Wheel base	3860 mm
H Length, (transport position)	9175 mm
H1 Length, (clearing position)	9950 mm
I Approach angle	23 °
J Departure angle	50 °

High mobility means worldwide usability

The 910MCV2 is large enough to clear mines of 10kg TNT in a path that is 3.5 metres wide but at the same time it is small enough to be transported by railway, and it even fits in a Hercules C130! Furthermore, with its maximum axle load of 10 tons it is self-transportable on the same roads and bridges as ordinary trucks at a speed of up to 42 km/h. With constant 4WD the 910MCV2 is capable of overcoming even the most difficult terrain, and it is equipped with a winch in case the vehicle becomes bogged down in poor ground conditions.

High mobility of the 910MCV2 means easy deployment all over the world.



TECHNICAL DATA :

Chassis:

Articulated chassis consisting of two main parts, front and rear chassis, which are assembled in the pivot at the top and in the pendulum bar and two hydraulic stabilizers at the bottom. The front chassis is designed with two separate fuel tanks integrated in the frame, each with a volume of 150 l. The rear chassis is designed as tank for the high-pressure cleaner (water or NBC cleaning fluid) with two connected tanks integrated in the frame, each with a volume of 100 l. Furthermore, in the back of the rear chassis, an integrated console contains the pivot points holding the flail and the deflector shield. Both the front and the rear chassis are made of high tensile steel giving maximum protection against damage.

High-pressure cleaner:

A high-pressure cleaner is placed in a box on the right side of the rear chassis. The tanks for cleaning fluid in the rear chassis have a total capacity of 200 l.

Cabin:

The cabin is manufactured as a one-piece-welded construction in armoured steel plates and with electrically heated windows of armoured glass. Thus, the self-supporting cabin is designed to be effective against calibre 7.62 mm x 51 AP according to DIN 52290-2 class 5. Air condition and two fully adjustable seats are standard. The operator's seat is fitted with heating and with adjustable armrests with joysticks.

Noise level inside cabin during road transport: 82 dB (A)

Noise level inside cabin during mine clearing: 81 dB (A)

Power:

The 910MCV2 has two identical 6-cylinder high-powered diesel engines, the Drive Engine and the Power Pack engine, which are mounted respectively on the front and the rear chassis. They each have a separate cooling-, exhaust- and air filter system. The cooling system for engine coolant and hydraulic oil has a hydraulically driven fan, which is reversible for easy cleaning of each engine. The air filter system is specially designed for very dusty conditions with active dust removal.

Specifications for both engines: Perkins 1006-6TW, 6 litres 6 cylinder with intercooler and turbo. 136-kW/185 hp at 2600 rpm. Max. torque 605 Nm at 1650 rpm. Fuel tank capacity: 150 l. The engines provide high torque with low fuel consumption and low exhaust emission corresponding to ECE R49.

The 910MCV2 is equipped with two transmission systems:

Power shift transmission: ZF ERGO-POWER 6WG160, 6-speed, fully automatic “ERGO-POWER” Soft-Shift transmission with 100% intelligent electronic control. Electronically controlled pressure on each clutch ensures completely smooth gearshift without any loss of tractive effort. The electronic gearshift can be controlled manually as well as automatically. Number of gears: 6 forward/3 reverse. Speed: Road transport 0-42 km/h. Mine-clearing 0-12 km/h (hard surface). Permanent 4-wheel drive.

Hydrostatic transmission: The vehicle is also equipped with a hydrostatic drive unit. This drive unit is supplied from the hydraulic system and is used for low speed mine-clearing operations as well as for emergency transportation. This enables mine-clearing operations at very low speed and emergency transportation in case of a failure in the power shift transmission. A separate joystick can adjust speed continuously. The hydrostatic transmission can be engaged and disengaged from inside the cabin by use of an electro-hydraulic switch system. Speed: Mine clearing 0-1.4 km/h (terrain).

Axles:

The machine is equipped with two rigid, fixed axles. The axles have hub reduction and built-in maintenance-free oil-immersed disc brakes. The front axle is equipped with limited slip differential. These axles are specially designed for earthmoving equipment. The design is completely closed and especially designed for use in very rough terrain.

Brakes:

The 910MCV2 has a hydraulically activated servo-assisted dual-circuit braking system. The system uses the normal hydraulic oil tank as a reservoir and does not require special brake fluid. The brake system remains fully operational during emergency driving with one engine. The parking brake: Fail-safe disc brake fitted to gearbox. Electro hydraulically activated.

Steering:

The 910MCV2 has hydrostatic pivot steering with two double-acting rams and a steering unit. In case of engine stop, there is emergency steering. When driving in the reverse direction for mine clearing purposes, the machine is steered by joysticks. ±35° steering angle. ±11° pendle angle straight and at max steering angle.

Turning radius:

Transport mode: 8100 mm. Clearing mode: 9200 mm
Auto clearing mode: 18000 mm

Hydraulic system:

The machine is equipped with two separate hydraulic piston pumps, one on the Drive Engine and one double pump on the Power Pack Engine.

Pump 1: Mounted on Drive Engine, variable pump 160 l/min at 2200rpm. Supply for the right side flail motor.

Pump 2: Mounted on Power Pack engine, variable pump 160 l/min at 2200rpm. Supply for the left side flail motor.

Pump 3: Mounted on Power Pack engine, variable pump 160 l/min at 2200rpm. Supply for the hydrostatic drive, joystick steering, winch/hydraulic option, deflector, flail assembly, flail arm, swivel, high-pressure cleaner/ emergency brakes.

Pump 4: Mounted on Drive Engine, dual gear pump 2x4 l/min at 2200 rpm. Supply for steering, brakes and fan.

Pump 5: Mounted on Power Pack, gear pump 28 l/min. Fan supply.

Electric system:

The vehicle is designed with a 24 V electrical system separate for the Drive Engine and the Power Pack engine. It is equipped with separate NATO slave kit for both engines. All cables outside the cabin have mechanical protection. The fuse boxes are mounted in the cabin. The vehicle is equipped with the necessary lamps and signalling equipment for legal driving on roads. Capacity of battery: 2 pcs of 12v, 72 Ah. Alternator at Drive Engine: 100 A. Alternator at Power Pack engine: 55 A.

Tyres:

EM 17.5R25 foam-filled tyres as standard or 620/55 26.5 twin foam-filled tyres as an option. The four equally sized foam-filled tyres can be non-directional or twin type tyres for lower ground pressure.

Flail:

The flail unit is powered by two diesel engines giving power to two hydraulic motors for continuous variable rotation speed in both directions. Rotation speed, free running: 0-440 rpm. Rotation speed, clearing: 350-390 rpm. Flail diameter: 2.20 m. Hammer weight: 900-1100 gram. Numbers of hammers: 72. Two types of hammers: vegetation and pressure. Clearing width: 3.50 m.

Flail and shield:

Behind the flail is an armoured deflector shield plate for protection against blast effect and fragments. Flail and shield plate level can be adjusted independently of each other, both manually and automatically by means of hydraulic cylinders. The stowing operation is carried out in few minutes using hydraulic cylinders controlled by joysticks from inside the cabin, and it does not involve any tools.

Winch:

It is hydraulically driven and electro-hydraulically operated. The maximum tractive effort at inner wire winding: 7200 kg. Approximate wire length of 28 m.



Developed for YOUR benefit...

- ◆ Clears up to 10 kg TNT
- ◆ Windows and cabin are armoured to 7.62 AP fire
- ◆ Surface-clears roads, runways and other hard surface areas
- ◆ Two identical engines which can replace each other increase safety and ease the support and maintenance
- ◆ Flail and shield always follow the ground contour to prevent mines from slipping under
- ◆ Front and rear wheels run in the same tracks for improved safety and excellent terrain abilities
- ◆ Unique Hydrema "YAW" system provides clear cut-out even with lost chains – presently as the only flail on the market!
- ◆ Easy deployment to area of operation
- ◆ Transportable in a Hercules C130
- ◆ Self-transportable on roads at up to 42 km/h
- ◆ Converts from transport - to clearing mode in less than 2 minutes
- ◆ Computer controlled flail system provides easy steering and operation
- ◆ Has its own Field Support Team - operating worldwide!



A/S HYDREMA EXPORT

Gt. Kirkevej 16

DK-9530 Støvring

Tel.: +45 98 37 13 33

Fax: +45 98 37 19 96

e-mail: hydrema@hydrema.com

www.hydrema.com

GB

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Foto may show optional equipment - Subject to alterations - 0855328 - 06/2012

