

COMBINED SYSTEMS AND DUAL CAPABILITY FLAIL OR TILLER | MEDIUM SIZE | MCV-DOVE

KMCRI | South Korea

GENERAL DESCRIPTION

The *MCV-Dove* is a multi-purpose mine clearing vehicle, manufactured by the Korea Mine Clearing Research Institute (KMCRI). Based on an excavating machine, its cab is fully protected by 12 mm steel plate and 30 mm strengthened glass. The bottom plate of the cab is armoured by a double layer of steel plate. The cab can be heated or air conditioned.

Available attachments are:

- > a vibratory screen bucket for separating mines from soil dump
- > a rotation grab for taking out trees and other obstacles
- > an electric magnet for picking up metal mines and ferrous debris
- > a crushing roller for destroying mines in the soil

These attachments can be easily connected to the arm of excavating machine and quickly changed to suit terrain conditions. The system is easily operated by one person. A special extension basket can be mounted to detect the mines without stepping on the ground.



MCV-DOVE | Crushing roller and the electro magnet

CLEARANCE METHODOLOGY

Vibratory screen bucket

The vibratory screen bucket is used for digging soil and separating mines from the soil dump. It is worked by hydraulic power vibrating the steel mesh inside rigid bucket so that fine soil passes through the mesh, leaving any mines or ERW on the screen. The working speed is about 50 m³/h or 200 m²/h depending on soil conditions.

Rotation grab

The rotation grab is primarily used in mountainous area with dense trees. The operator uses the grab to pull trees from the ground. Hydraulically powered, it has strong teeth and can rotate through 360°. It can also pick up rocks and other large debris.

Electric magnet

The electric magnet detects and removes mines or metal particles remaining after earlier clearance work. The electromagnetic rake is used for final checking of cleared areas. It works from the machine's own electric power.

Crushing roller

The crushing roller is used to crush and detonate AP mines. Hydraulically powered, it has carbon teeth on a rotating roller. Rotating speed is 500 rpm and working depth is usually 30 cm.

MACHINES IN USE TO DATE

Machines with full attachments are working in Iraq and Korea.

ENGINE, FUEL AND OIL

The 25-ton excavator has a six-cylinder diesel engine with an average consumption of 30 litres per hour. All attachments are driven by hydraulic power from the engine.

FACTORY SUPPORT

A basic spare parts kit is supplied by the manufacturer. Operator training and heavy maintenance can be provided on request. The machine has a one-year warranty.

MAINTENANCE AND SUPPORT

Daily basic visual checks as well as oil level control and greasing can be done easily by the operator. The system needs to be transported between sites on a low loader.

TESTS AND EVALUATIONS

In 2000, a Korean Army test found that the cabin was undamaged by the blast of an M15 AV mine (10 kg TNT).

In 2005, the Korea Defense Agency for Technology and Quality tested the screen bucket against live AP and AV mines.

REPORTED LIMITATIONS AND STRENGTHS

Limitations

- > Wet soil clogs the screen bucket and crushing roller.

Strengths

- > Simple and rugged design.
- > Easy to adapt to changing conditions.

DIMENSIONAL DATA

1. Length without attachment	10,020 mm (for transportation)
2. Length total	12,650 mm (boom and attachment, average)
3. Width without attachment	2,990 mm
4. Width total	2,990 mm
5. Clearing Working width	Depends on the attachments
6. Height Overall	3,100 mm
7. Mass Basic vehicle	22,000 kg
8. Mass Detachable unit(s)	1,000 kg (average)
9. Mass Overall	25,000 kg

OPERATIONAL DATA

10. Wheels Tracks (description)	600 mm Std tracks
11. Ground Bearing Pressure (kPa)	44.1 kPa
12. Hill climbing ability (in degrees)	35°
13. Number of Chains Chisels Tools	N/A
14. Beat pattern (hits per m ²) at different operating speeds	N/A
15. Length of Chains Tools	N/A
16. Diameter of flail drum	N/A
17. Rotation Speed	N/A
18. Clearance Working depth in varying terrain	Depends on the attachments
19. Working Speed (m ² /h)	
> Light Soil Medium Vegetation	Depends on the attachments
> Medium Soil Medium Vegetation	Depends on the attachments
> Heavy Soil Dense Vegetation	Depends on the attachments
20. Control of Clearance Working depth	Depends on the attachments
21. Additional attachable working tools	Extension basket (optional)
22. Armour	12 mm armour plates, 30 mm armour glass
23. Remote controlled	No
> greatest distance	
24. Transportation	
> short distances	Flat bed trailer
> long distances	
> sea transport	
> air transport	

SYSTEM STATUS AND DEPLOYMENT

25. Machines in use	12
26. Other types	Small version
27. Location of use	Iraq, Korea
28. Totally cleared so far (m ²)	3,000 m ²

ENGINE | FUEL | OIL

29. Engine	DB58TIS / 6-cylinder diesel engine
30. Engine power at the flywheel	
31. Sufficient power supplied to working tool	
32. Fuel capacity	350 l
33. Fuel consumption	Not given
34. Separate engine for working unit	No
35. Cooling system	Water cooled
36. Oil capacity (both engines)	340 l
37. Hydraulic oil capacity (both engines)	120 l

COSTS

38. Cost of system	On request
39. Other costs	On request
> training	On request
> spare part set chains belts	On request
40. Availability for hire	On request

OTHER

41. Operator comfort	
42. Air conditioning	Yes