

Yamanashi Hitachi | Japan

GENERAL DESCRIPTION

The *Hitachi BM307* demining machine series is based on the company's most commonly used hydraulic excavator with a special demining attachment on its arm. Two attachments, a rotary cutter (tiller system) and a flail hammer can be attached. These can be complemented by a magnet or metal detector if needed. The magnet is intended to speed demining by reducing the false alarm rate caused by scrap metal. The cutter unit's bit is mounted on a rotating drum directly connected to a hydraulic motor.

The BM307 series is available in five weights from 19 tonnes to 35 tonnes. Any type of machine above 24 tonnes can be equipped with either the cutter or the flail attachment. A rake-grapple can be added to both attachments to remove bushes and stones. The flail system performed well in a 2006 field trial in Cambodia, going through a survivability test using AV mines without critical damage.

The machine can also be used for construction or agriculture with the application of other attachments, such as a bucket. One operator controls the machine from a cab protected by special bullet-proof glass (Rexguard) and high-tension steel plates. Critical parts – such as the hydraulic cylinder, fuel tank and hydraulic oil tank – are protected against fragmentation mine detonations.



BM307 V33 | Flail head attached

CLEARANCE METHODOLOGY

The rotary cutter rotates at up to 530 rpm with a working width of 1,200 mm. The cutter's 48 bits cut vegetation, fragment stones and destroy AP mines to a depth of 300 mm. The hydraulic arm can reach to 10 m. The flail head rotates at 400 rpm and destroys AP mines to a depth of 300 mm. As the attachments are attached to the arm of the hydraulic excavator the machine can work on undulating or steep ground.

MACHINES IN USE TO DATE

Rotary cutter

- > Two BM307s (version S16) in Cambodia since 2000.
- > One BM307 (version V20) in Afghanistan since June 2000 (with UNOCHA).
- > Two BM307s (version V20) in Nicaragua since September 2001.
- > Twenty BM307s (version V27) in Vietnam since June 2003.
- > Eight BM307s (version SG16) in Cambodia since July 2003.
- > Two BM307s (version V21 wheel type) in Afghanistan since November 2003.
- > Fourteen BM307s (version SG16) in Cambodia since June 2005.
- > One BM307 (version V23 with metal detector) in Nicaragua since September 2001.
- > Two BM307s (version V33) in Angola since August 2007.
- > Two BM307s (one version V23 and one version V35) in Afghanistan since September 2007.

Flail hammer

- > Two BM307s (version V33) in Angola since August 2007.
- > One BM307 (version V35) in Afghanistan since September 2007.

ENGINE, FUEL AND OIL

The engine is an ISUZU 6HK1 202 kw diesel and the system uses standard oil types for engine, gear box and hydraulics. Fuel consumption varies from 25 to 45 litres per hour.

FACTORY SUPPORT

Spare parts – including consumable parts such as cutter bits, bearings, seals, etc. – are included in the purchase package. Availability of spares is good due to a worldwide servicing network. One month's training is provided in the buyer's country. Training courses for operators and maintenance staff are included in the purchase package. Manuals are provided in the language required by the purchaser. Comprehensive manuals and documentation are part of the purchasing package. Warranty period is one year or 1,000 hours, whichever comes first. A spare parts catalogue is available.

MAINTENANCE AND SUPPORT

Regular maintenance – daily, monthly and other periodic checks – is required as per the operating instructions. Daily servicing takes 30 minutes, weekly servicing takes one hour.

TESTS AND EVALUATIONS

No information provided.

REPORTED LIMITATIONS AND STRENGTHS

No information provided.

DIMENSIONAL DATA

1. Length without attachment	5,840 mm
2. Length total	Rotary cutter: 13,600 mm Flail hammer: 15,000 mm
3. Width without attachment	3,290 mm
4. Width total	3,290 mm
5. Clearing Working width	Rotary cutter: 1,200 mm Flail hammer: 1,600 mm
6. Height Overall	3,160 mm
7. Mass Basic vehicle	35,000 kg
8. Mass Detachable unit(s)	Rotary cutter: 3,000 kg Flail hammer: 4,900 kg
9. Mass Overall	Rotary cutter: 38,000 kg Flail hammer: 39,900 kg

OPERATIONAL DATA

10. Wheels Tracks (description)	Tracks / Grouser-shoe Std. 600 mm Opt. 700 mm
11. Ground Bearing Pressure (kPa)	54 kPa
12. Hill climbing ability (in degrees)	35°
13. Number of Chains Chisels Tools	Rotary cutter: 48 Flail hammer: 50
14. Beat Pattern (hits per m ²) at different operating speeds	Not given
15. Length of Chains Tools	Rotary cutter: 195 mm Flail hammer: 860 mm
16. Diameter of drum	Rotary cutter: 559 mm Flail hammer: 267 mm
17. Rotation Speed	Rotary cutter: ~530 rpm Flail hammer: ~400 rpm
18. Clearance Working depth in varying terrain	~300 mm
19. Working Speed (m ² /h)	
> Light Soil Medium Vegetation	RC 700 m ² /h FH 500 m ² /h
> Medium Soil Medium Vegetation	RC 600 m ² /h FH 400 m ² /h
> Heavy Soil Dense Vegetation	RC 500 m ² /h FH 250 m ² /h
20. Control of Clearance Working depth	Manual
21. Additional attachable working tools	
22. Armour	Armoured cabin, protection cover on fuel tank, hydraulic tank, cylinders and hoses of front devices
23. Remote controlled	
> greatest distance	Option 100 m
24. Transportation	
> short distances	
> long distances	By trailer or own trip for short distance
> sea transport	
> air transport	

SYSTEM STATUS AND DEPLOYMENT

25. Machines in use	Two units to be operated in Angola from Sep 2007
26. Other types	Not given
27. Location of use	Angola
28. Totally cleared so far (m ²)	Not given

ENGINE | FUEL | OIL

29. Engine	ISUZU 6HK1
30. Engine power at the flywheel	202 kw
31. Power at the working tool	Not given
32. Fuel capacity	630 l
33. Fuel consumption	25 - 40 l/h
34. Separate engine for working unit	No
35. Cooling system	Water cool
36. Oil capacity (both engine)	41 l
37. Hydraulic oil capacity (both engine)	180 l

COSTS

38. Cost of system	Not given
39. Other costs	Not given
> training	
> spare part set chains belts	
> repair costs for one year	
40. Availability for hire	Yes

OTHER

41. Operator comfort	Suspension seat, radio, hot and cool box
42. Air conditioning	Full auto air conditioner