

## COMBINED SYSTEMS AND DUAL CAPABILITY FLAIL OR TILLER | MEDIUM SIZE | ARMTRAC 400

Armtrac Ltd. | United Kingdom

### GENERAL DESCRIPTION

The *Armtrac 400*, introduced in 2008, is a medium-size, multi-tool machine fitted with 10 mm armour around the driver's cab, 37 mm toughened glass (polycarbonate/glass laminate) and 6 mm of armour protecting the chassis. The frame and chassis is a fully welded X-frame type section using off-the-shelf JCB track and frame components.

The Armtrac 400 is used with a flail system or tiller tool with an automatic depth control for mine action purposes; for constructional work it uses a four-in-one bucket to load trucks and level or grade roads. Forklift tines can be fitted, useful for site preparation and for unloading equipment without additional machinery. A roller as well as a sifter system can also be fitted to the extending boom. The sifter can be towed from the rear tow hitch and connected to the hydraulic power take-off (PTO) drive. The performance speed of the sifter and roller system is 10 km/h.



ARMTRAC 400 | With sifter

The flail and tiller tool are designed to withstand AP and AV mine blasts. The survivability was tested with a crew member on board in the cabin driving the track over a 6 kg Belgium AV mine. The track split but no damage occurred to the cabin and the operator was not injured. The track was repaired in one day.

The Armtrac 400 has a PTO shaft and a three-point linkage at the front and rear. The Mine Sift and Separation System produced by the manufacturer can be fitted to the rear of the Armtrac 400. The flail or the tiller system is mounted to the front PTO shaft. The machine has a track cruise control and automatic depth control for operator comfort. The cabin can be raised to 1.5 m, enabling the operator to have a 360° view.

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Fire suppression systems are fitted to all Armtracs in the engine bay, hydraulic bay and cabin. The system operates automatically or manually. The cabin roof also has an escape hatch. Armtrac 400 can be operator driven or remote controlled with a range of 750 m. Airlift is possible by an Ilyushin 76 aircraft and on road by using a low-bed truck.

### **CLEARANCE METHODOLOGY**

The overall width of the vehicle is 3.76 m, with a working width of 3 m. The rotor operates from 300 to 410 rpm clockwise and clears ground by both flail and tiller to a depth of 30 cm in light soil; the flail alone clears to 40 cm in all soil conditions. The tiller has 66 chisels and the flail has 76 chains. Clearance depth adjustment is regulated automatically and can be overdriven manually by the operator.

The manufacturer claims that the Armtrac 400 can climb and flail slopes of up to 45° and clear areas at a rate of 3,000 m<sup>2</sup>/h in light soil and 1,400 m<sup>2</sup>/h in heavy soil. The claimed performance for vegetation cutting is 3,000 m<sup>2</sup>/h in low vegetation, 2,700 m<sup>2</sup>/h in medium vegetation and 1,450 m<sup>2</sup>/h in high vegetation.

### **MACHINES IN USE TO DATE**

There are 15 machines currently working, including one in Sudan. The Armtrac 400 has been in service since 2008.

### **ENGINE, FUEL AND OIL**

The tractor has a diesel Deutz BF6M engine (300 kw) with fuel consumption from 35 to 45 litres per hour. Fuel capacity is 470 litres and the hydraulic oil capacity is 800 litres.

### **FACTORY SUPPORT**

As it is based on JCB machines, parts for the Armtrac 400 are available off-the-shelf worldwide or from the manufacturer. A spare parts catalogue is provided on a memory stick or as a paper hard copy.

The manufacturer recommends a two-week training course of mechanics and drivers. Training can be provided in-country or at Armtrac's UK training school. With the purchase of two or more machines training is free of charge for six months.

Manuals and documentation are part of the purchase package and available in Arabic, English and French. There is a 12-month or 1,000 hours warranty and factory follow-up. With the purchase of two or more machines Armtrac offers the services of an engineer and a service vehicle in-country for 12 months free of charge. The cost of a set of working tools is based on customer requirements.



ARMTRAC 400

### **MAINTENANCE AND SUPPORT**

Maintenance schedules, as per manufacturer's recommendations, are in the manuals, and can vary according to working conditions.

A one hour daily check and a two hour weekly service are recommended. Initial 50 hr and 300 hr services will be carried out by a qualified Armtrac service engineer. A basic workshop complete with welder, generator and tools is adequate for on-site maintenance.

Armtrac recommends operation and maintenance by two operator/mechanics.

### **TESTS AND EVALUATIONS**

The Armtrac 400 is undergoing working trials in Sudan with G4S (a US company which bought RONCO). G4S performance reports on square metres performed and breakdowns are available on request from Armtrac.

## REPORTED LIMITATIONS AND STRENGTHS

### Limitations

- > The flail system creates huge dust clouds, as with all flail systems in dry environments.
- > The maximum road speed is 10 km/h, therefore the machine should be transported by a low-bed truck from site to site.

### Strengths

- > Can withstand an AV mine blast under the flail and tiller unit.
- > Good vegetation cutting ability.
- > The cabin can be raised to 1.5 m enabling the operator 360° visibility.
- > Can be used as a forklift and loading truck.
- > The telescopic boom extension can be used to free the machine if it becomes stuck.
- > Airlift is possible.



AV mine detonations

## DIMENSIONAL DATA

1. Length without attachment	5,550 mm
2. Length total	With tiller attached 7,400 mm With flail attached 7,550 mm
3. Width without attachment	2,510 mm
4. Width total	3,670 mm
5. Clearing   Working width	3,000 mm
6. Height   Overall	3,300 mm
7. Mass   Basic vehicle	12,000 kg
8. Mass   Detachable unit(s)	3,500 kg
9. Mass   Overall	15,500 kg

## OPERATIONAL DATA

10. Wheels   Tracks (description)	Tracks
11. Ground Bearing Pressure (kPa)	0.48 kg/cm <sup>2</sup> (6.83 lb/in <sup>2</sup> )
12. Hill climbing ability (in degrees)	45°
13. Number of Chains   Chisels   Tools	Chains: 76   Chisels: 66
14. Beat pattern (hits per m <sup>2</sup> ) at different operating speeds	Not given
15. Length of Chains   Tools	Flail chain 1,000 mm
16. Diameter of flail drum	Tiller: 1,200 mm   Flail: 2,200 mm
17. Rotation Speed	410 rpm
18. Clearance   Working depth in varying terrain	Maximum 40 cm
19. Working Speed (m <sup>2</sup> /h)	
> Light Soil   Medium Vegetation	2,900 m <sup>2</sup> /h
> Medium Soil   Medium Vegetation	2,300 m <sup>2</sup> /h
> Heavy Soil   Dense Vegetation	1,400 m <sup>2</sup> /h
20. Control of Clearance   Working depth	Automatic depth control
21. Additional attachable working tools	Bucket/blade, fork lift tines, back hoe, standard bucket, Armtrac sifter
22. Armour	10 mm ARMOX and 37 mm glass 7.6 (NATO Ball)
23. Remote controlled	
> greatest distance	750 m
24. Transportation	
> short distances	Low loader or air transport by Iljushin 76
> long distances	
> sea transport	
> air transport	

## SYSTEM STATUS AND DEPLOYMENT

25. Machines in use	2 (classified orders 14)
26. Other types	Armtrac 75 Armtrac 75T, Armtrac 100, Armtrac 200, Armtrac sifter and Armtrac trimmer
27. Location of use	Sudan and demonstration
28. Totally cleared so far (m <sup>2</sup> )	144,000 m <sup>2</sup>

## ENGINE | FUEL | OIL

29. Engine	Deutz
30. Engine power at the flywheel	300 kw
31. Sufficient power supplied to working tool	Not given
32. Fuel capacity	470 l
33. Fuel consumption	35-45 l/h
34. Separate engine for working unit	No
35. Cooling system	Water cooled
36. Oil capacity (both engines)	25 l
37. Hydraulic oil capacity (both engines)	800 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	Suspension seat, four point safety harness
42. Air conditioning	Yes