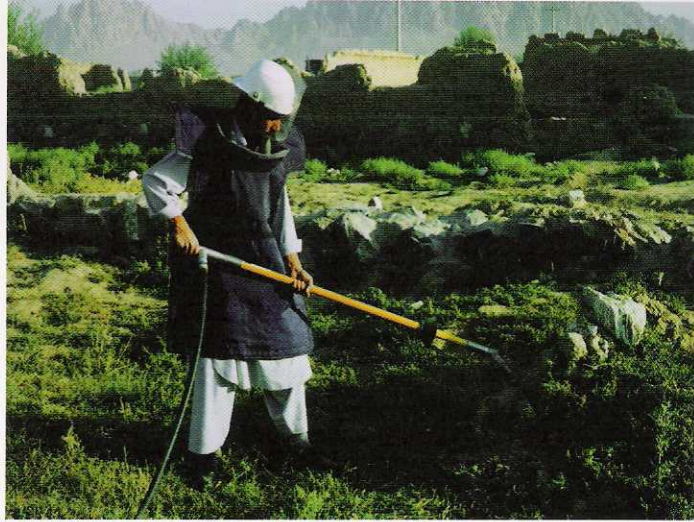




Developmental Technologies 1998



Air Spade



Objective

Provide a safe standoff capability to rapidly excavate AP and AT mines.

Description

The Air Spade is an integrated assembly of a commercial air compressor, a gasoline or diesel powered engine, and a specially designed air nozzle that creates a focused jet of air at supersonic velocity. It is designed for the safe and rapid excavation of landmines and other battlefield debris, and is primarily used during demining operations. During the digging process, the Air Spade provides the capability to breakup and remove hard packed soil and clay from buried mines faster than current digging methods. The pressure exerted on solids and nonporous objects is too low to activate mines.

The civilian cart mounted Air Spade utilizes a single cylinder, air-cooled Briggs and Stratton gasoline engine, a single stage reciprocating air compressor, and a specially designed air nozzle at the end of shaft attached to a 50-foot long hose. This hardware is integrated onto a commercially available man portable two-wheeled cart. The nozzle creates a focused Mach 1.5 supersonic air stream that safely and rapidly removes the surrounding soil from buried landmines.

Contractor/Developer

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MINES

Performance

Preliminary operational test and demonstration suggest that the Air Spade excavates mines faster and easier than current digging methods. These results have led to additional testing in Cambodia and Afghanistan. The Air Spade is simple to operate, easily transported into the field and can be maneuvered by one operator. It increases the operator's efficiency and safety when excavating mines or mine-like targets. The device is quiet to operate (<90 dB), and has low fuel consumption.

Limitations

- The Air Spade is not for usage in heavily vegetated areas because the root structure interferes with the focused air jet.
- The system may prove difficult to handle in severe terrains and environments.
- The system is not suitable for usage in areas suspected of containing motion sensitive fuzing mines.

Status

The Air Spade is available immediately. To discuss the possibility of obtaining this item for field testing through the U.S. Government Humanitarian Demining Program, contact the DoD point of contact listed on page 3 of this catalog.



Compared to current digging practices, the Air Spade reduces operator fatigue and back strain, and the air tool provides a safer standoff for deminers.



The specially designed air nozzle creates a focused jet of air at Mach 1.5 speed for easy mine excavation.



The Air Spade is especially useful against deep buried mines in dry hardpacked soil.

Specifications

Civilian Air Spade Unit:

Engine: 6.7 kw (9 hp), 4-cylinder, OHV, air-cooled, gasoline

Air Compressor: Single stage, 4 cylinder cast iron construction air receiver tank with ASME safety relief valve

Undercarriage:

Unit: Steel base plate with tow bar

Size: 91cm (36in) L x 76.2cm (30in) W x 71cm (28in) H

Weight: 136 kg (300 lbs.)

Controls: Manual shut off valve; air pressure gauge

Handtool:

Compressed air: Emits laser like jet of air at Mach 1.5 speed

Weight: 0.7 kg (1.5 lbs.)

Trigger: Dead man trigger with trigger guard

Handle: Insulated

Hose: 7.6m (25 ft) flexible air hose with quick disconnect

***Manufacturer's suggested price: \$9,500.**