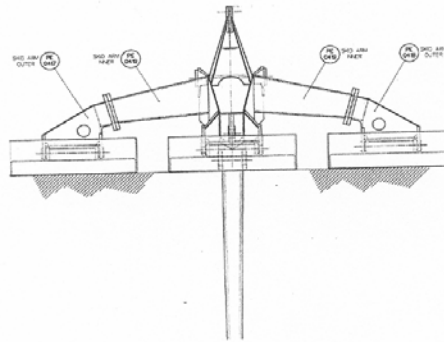




Detrenching Grapnel Mk3

Manufacturer	SMD Ltd
Weight	3 Tonnes
Length	5.9m
Width	3.5m
Height	3.5m
Maximum Towing Tension	15 Tonnes
Shear Pin Failure Load	15 Tonnes Approximately
Tine Types: -	
Detrenching	2m
Maximum Working Depth	100m
Acoustics: -	
Command Unit	Applied Acoustics PAM 2520
Pingers	Applied Acoustics 10kHz Type 669-138
Hydrophone	Applied Acoustics 7914A

SMD 2 Meter DETRENCHING GRAPNEL



OPERATING & MAINTENANCE MANUAL & DRAWINGS (ASSET No SMD 2M DG001)

1 OUTLINE DESCRIPTION AND SPECIFICATION

1.1 Outline Description

The grapnel is a steel fabrication supported on three skids that is towed across the buried cable. It has one soil engaging tine designed to allow the buried cable to slide up until it contacts a force operated switch which operates a sonar device to indicate cable capture to the towing vessel. The cable detector switch may be easily replaced by a passive cable cutter if required.

The normal cutting depth of the tine is 1.0m, however the grapnel is supplied with a tine for working at 2.0m in soft soil only to meet the initial project requirements.

The cable detector is connected to a slightly modified Applied Acoustic Engineering 816 transponder. This operates on channel 33 when the grapnel is the right way up and channel 22 when a cable is against the striker plate. If the grapnel is upside down, the transponder gives no signal. On correct reorientation the transponder automatically resets to channel 33.

The grapnel is protected by a shear pin in the connection between the tine and chassis. This is set to fail at about 15t pull, allowing the tine to pivot backwards. No parts are lost on shear pin failure.

The three skids are similar in size to the cable plough skids and are designed to fit the cable plough so that they can be used as spares in the event of an emergency.

The grapnel can be dismantled to allow shipping inside an ISO 20' container.

1.2 Specification

Size Overall	:	5.9m long 3.5m wide 3.5m high
Weight	:	3.0t approx
Pull force	:	15t maximum
Sonar Beacon	:	Applied Acoustic Engineering 816 (modified)
Charger	:	To suit above
Water Depth	:	100m
Launch System	:	Short wire rope link and connector supplied to allow deployment on tow wire. (Recovery wire not supplied).
Skids	:	Larger than usual skids are provided to allow interchangability with the plough in case of emeraency.

5 OPERATION

The grapnel weighs about 3 tonnes and can be deployed and recovered using an A-frame crane of fixed gantry. The principle is to lower the grapnel to the seabed in a horizontal attitude using the tow wire which is then automatically released from the deployment hook when the machine lands on the seabed. The tow wire is attached to the deployment lift point by the tow link (PC8418). This link is also attached to the tow point by the intermediate tow rope (PE0606). When the grapnel lands on the seabed, the tow link slips off the deployment lift point and the tow rope is only attached to the towing point. The machine is subsequently lifted from the seabed hanging vertically from the tow wire with the cable in the throat of the tine and recovered to deck.

If necessary, the final recovery may be carried out horizontally by a recovery rope attached via a shackle through one of the 40mm diameter holes in the hook of the deployment lift point. This rope should be long enough to reach the deck and will be tied to the tow wire. It will usually be attached to a separate winch or crane when lifting the machine.

If the grapnel cannot be fetched inboard vertically, it is lifted vertically from the seabed to a transfer depth at which the crane is attached to the recovery rope. This allows it to be brought inboard horizontally.

After recovering horizontally it may be necessary to re-deploy the grapnel with the cable cutter in place of the cable detector switch. This change may be accomplished with the tine in its working position. First, the striker plate is taken off by removing the 32mm diameter pin: this also releases the cable detector switch. The harness is disconnected from the EO connector and blanked and the compensator is removed from its bracket. The manifold is unscrewed from the compensator and the manifold, hose and EO connector are fed downwards through the slot in the underside of the chassis. The cable detector switch assembly, manifold, hose and EO connector should be removed from the grapnel without dismantling. The blanked end of the harness should be stowed safely inside the chassis.