Wheeled Detrenching Grapnel
1.1m, 1.5m & 1.8m WDTG

The Wheeled Detrenching Grapnel comprises of a prefabricated steel shank with a skid secured by a pin at the front end and a pivoted wheel support and Grapnel crown on the rear end.

The tine is fixed to either side of the Grapnel crown. The rear of the grapnel is supported on wheels. These reduce friction and allow the free flow of soil being pushed up by the tine. They also keep the overall towing force as low as possible and allow steady control of the grapnel working depth. The wheels are mounted on an axle support containing two bushes with a thrust washer at either end of the housing.

Two types of fluke can be mounted on the Grapnel crown depending on the application. They are as follows:

- For detrenching work (cable recovery) a narrow type fluke
- For burial assessment mode a wide replaceable fluke tip similar to a plough share tip

Detrenching Work

The grapnel can also be fitted with a sensor which indicates when the rear of the grapnel is riding out of the seabed. This may occur if the grapnel encounters a hard underlying layer of rock or if it engages a boulder. A second sensor can be fitted to provide an indication when the front of the grapnel lifts up, due to insufficient tow rope being deployed. The grapnel is fitted with a third sensor (trigger) to indicate when a cable rides up on the fluke. The grapnel is fitted with a fourth sensor which is connected in parallel with the third sensor to indicate when the grapnel is upside-down.

Acoustics

For ease of cable recognition, the grapnel can be fitted with an acoustic transmitter system. The fluke has a trigger mounted near the grapnel crown. When cable rides up the fluke and forces against the trigger a sound pulse from the pinger mounted on the wheel arm changes, indicating that the cable has been located. The sound pulses can either be picked up by hull mounted transducers or by a hydrophone lowered over the ship's side. The signals are then relayed to a receiver unit.

The standard fluke tine / fluke tip penetration is 1.1m, 1.5m & 1.8m. At this setting the grapnel will maintain a full working depth in all uniformly friable seabeds. It will however ride over hard underlying layers that it cannot penetrate. The grapnel is designed to withstand towing forces of 25t and 12t at the tine/ fluke tip. To protect the grapnel from permanent damage, forces in excess of these figures cause a shear pin to fail, allowing the fluke to rotate over the obstruction. The grapnel can then be recovered to the ship and a new shear pin fitted.

Grapnel Specifications

	Part number - 0001-1704	Part number - 0001-1213	Part number - 0001-1705
Description	1.1m	1.5m	1.8m
Weight	1.9t	2t	2t
Length	5.2m	5.2m	5.2m
Width	2.7m	2.7m	2.7m
Height	2.2m	2.6m	2.9m
Max towing tension	25t	25t	25t
Load pin failure	90t Approx	102t Approx	126t Approx

Acoustics Specification

Command Unit:	Applied Acoustics PAM 3510

Pingers:	Applied Acoustics Transducer
Hydrophone:	Applied Acoustics PAM 3 Dunker 3190

- Tests beacons from many manufacturers
- Splash proof keypad
- Configures 1000 series beacons via serial link
- 6 hour battery life
- Can test all wideband / spread spectrum channels available in the 1000 series beacon
- Supplied with test transducer 3102
- Will test HPR400, HPR30, Sonardyne, Trackpoint / ORE &
- Applied acoustic tone and spread spectrum
- 3000m rated
- Heavy duty dunking transducer with cage.
- Stainless steel body
- Hemispherical coverage
- 30m cable