



Cutting Grapnel

Asset no. GA 2-1 and 2-2

Cable Types: -	Lightweight and Armoured Cable Up to 100mm Diameter
Grapnel Dimensions: -	
Length	2.8m
Width	1.12m
Height	1.0m
Weight	1.85 Tonnes
Maximum Operating Depth	2000 Fathoms (3657m)
Operating Temperature	Minus 5C to + 50C
Storage Temperature	Minus 40C to + 50C
Power Pack Dimensions: -	
Length	1.0m
Width	0.8m
Height	1.2m
Weight	1.0 Tonne
Power Supply	3 Phase, 415V, 50 Hz
Oil Type	Tellus 32
Gas Type	Oxygen Free Nitrogen
Acoustic Receiver	114 or Equivalent
Pinger	138 or Equivalent



1 DESCRIPTION

Substantial accidental damage can be caused to submarine cables that need to be lifted from the sea-bed to a surface repair ship, particularly when there is insufficient slack in the cable to allow it to be lifted unbroken.

Cable and Wireless (Marine) have introduced the Cutting Grapnel as a simple and highly effective solution to the problem. It will cut the most heavily armoured communications cables at depths down to 2000 fathoms with only the minimum of disturbance caused to the cable line.

After being hydraulically charged the cutting grapnel is lowered to the sea-bed, to a maximum depth of 2000 fathoms and dragged across the cable line to the point where it hooks the cable. Progress of the 'catch' is monitored on the ship, as the grapnel has an in-built acoustic transmitter.

Once hooked, the previously charged hydraulic guillotine cuts through the cable. Because the cutting action is hydraulic and not by means of cable tension little disturbance is caused either to the cable itself or to the repeaters. Cuts can be made to all thicknesses of cable, from lightweight to heavily armoured.

Once the cut is made, the Cutting Grapnel is retrieved and two cable ends are lifted using conventional grapnels.

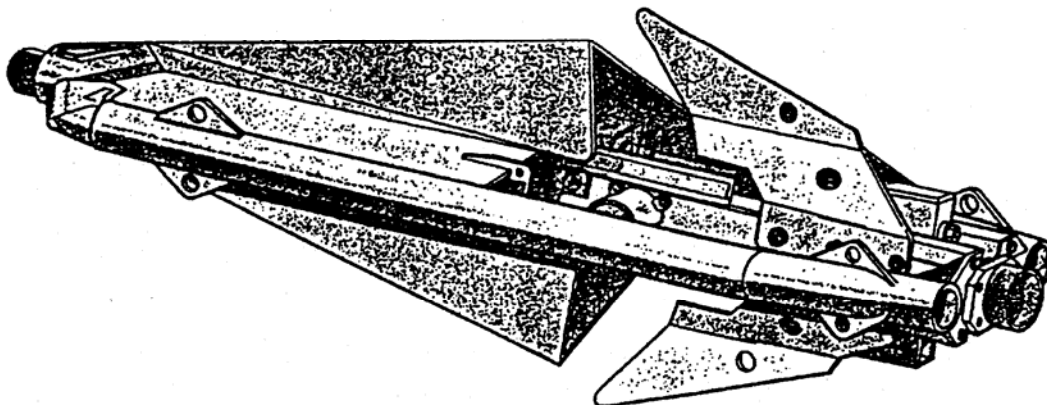


FIGURE 1 THE ACTIVE CUTTING GRAPNEL ASSEMBLY

1 General Description of Sonar Equipment

The pinger makes a noise which sounds like a very loud high-pitched 'ping' every few seconds. The hydrophone is an underwater microphone with a small built-in amplifier. It can hear the pings up to five miles away in water. The signal from the hydrophone is fed to the receiver and can be heard from its loudspeaker, seen as a blip on the screen.

While the grapnel is being towed searching for the cable (trawl mode), it pings every eight seconds at a frequency of 9.1 kHz. As soon as the cable is hooked it triggers the grapnel hydraulics and this switches the pinger to one every second, at a frequency of 9.6 kHz. Once the operation is complete the ping rate switches to one every four seconds at a frequency of 10.1 kHz.

*** Further reference should be made to the HSE Manual contained in Appendix A.**

1.2 Technical Data

Weight of Active Cutting Grapnel	1984.1 lbs	900 kg
Weight of Power Pack	2204.6 lbs	1 000 kg
Overall Length of Active Cutting Grapnel	85.98 ins	2184- mm
Maximum Height of Active Cutting Grapnel	32 ins	813 mm
Maximum Width of Active Cutting Grapnel	10 ins	254 mm
Length of Power Pack	56.1 ins	14254 mm
Height of Power Pack	55.1 ins	1400 mm
Width of Power Pack	39.37 ins	1000 mm
Power Supply	415 volts 3 phase 50 Hz	
Material	BS 4360	
Operating Temperature	-5° C to +50° C	
Storage Temperature	-40° C to +70° C	
Operating Depth	3657.5 m	2000 fathoms