

# The Double-Barrelled Winch/Capstan

John Gould

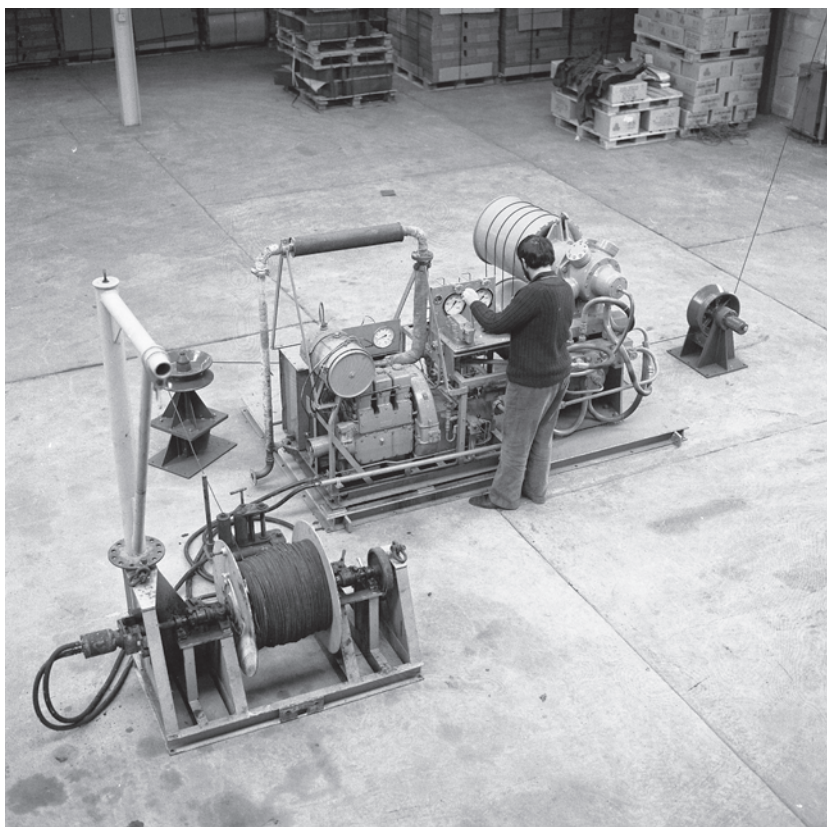
It was in 1966 that NIO first started to measure ocean currents using recording current meters suspended on moorings. The first two cruises were in 1965 on Discovery Cruise 6 (in the Faroe Bank Channel) and then on Cruise 10 in 1966 in the NE Atlantic. The only winch in Discovery capable of handling the weight of the approx. 1 ton anchor was the trawl winch on the after deck. The sections of mooring wire, only 4 or 6 mm diameter and joined together with shackles, were wound onto the winch under tension and then paid out slowly and carefully as the anchor and instruments were lowered into position.

It was a hazardous operation with high risk if the wire snagging on the shackles (wrapped in canvas for some slight degree of protection) or becoming jammed in the narrow guide rollers. The layout can be seen in the attached photo with Jim Crease watching the wire. It was quite clear that some better method was needed.



At that time we collaborated closely with Woods Hole Oceanographic Institution (WHOI) who had just established their [buoy group](#) and in 1965 started repeated deployments of subsurface moorings at Site D on the continental slope south of Martha's Vineyard.

We decided to establish a similar test mooring site on the continental slope in the north of the Bay of Biscay (a site that was frequently passed by ships en route to the N Atlantic). What was needed was a better winch that could handle a 1 ton load, would handle the shackles and connectors between wire lengths and ideally that could be transferred from ship to ship.



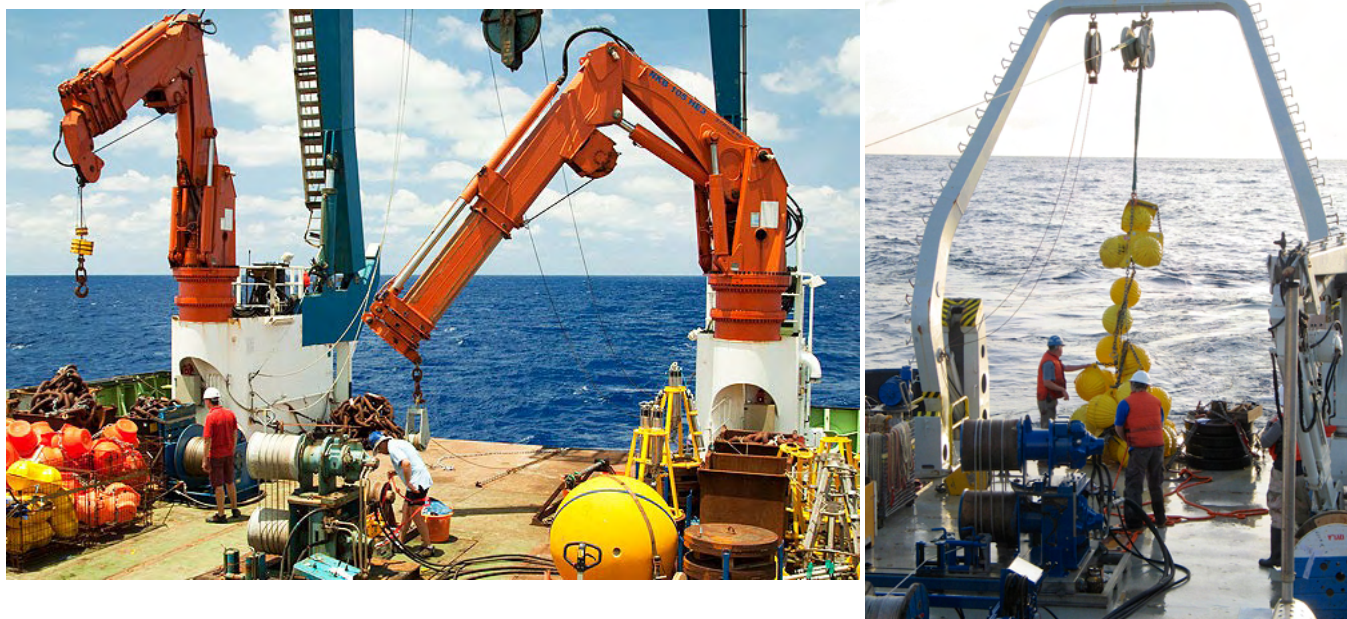
Dennis Gaunt took inspiration from a method used in the textile industry. Having thread wrapped round two barrels whose axes were not parallel allowed multiple turns to be separated and tension to be high on one side than the other. So was born the double barrelled winch (or capstan – for that was what it really was) was born. The picture on the left shows Bob Wallace with DBC in the yard at Wormley showing the two components. Left the low tension storage unit with interchangeable drums and centre the air-cooled diesel engine, hydraulic power pack and the heart of the unit – the two angled drums.

The innovative design proved its worth and in its portable form was used to deploy and recover moorings on the *Vickers Venturer* (see Bob Wallace's first cruise article), *Gardline Surveyor*, *RRSs Discovery* and *Shackleton*, and *RV Cirolana*

As ships become modernised and had built in hydraulic ring mains a version was produced and marketed by [Lebus](#) that could be easily "plumbed in". These versions were used extensively on the *RRS Charles Darwin* and on the refitted *Discovery*.

Lebus Engineers, based in Sittingbourne, Kent, continue to market the double barrelled capstan and it is being used in the USA by Woods Hole, Scripps Institution of Oceanography, University of Washington and in Europe by NERC and by the Netherlands Institute for Sea Research ([NIOZ](#)) for their new vessel *Pelagia*.

Below are recent photos of the winch deploying a mooring on the [RAPID](#) array of moorings monitoring the North Atlantic overturning circulation on 26.5°N (left) and from the Scripps Institution's *RV Sproul* in the Pacific (right) .



So, the clever winch designed by Dennis Gaunt and first driven by Bob Wallace in 1969 is still going strong after 46 years!!