

# Multi-Rig Trawl Systems

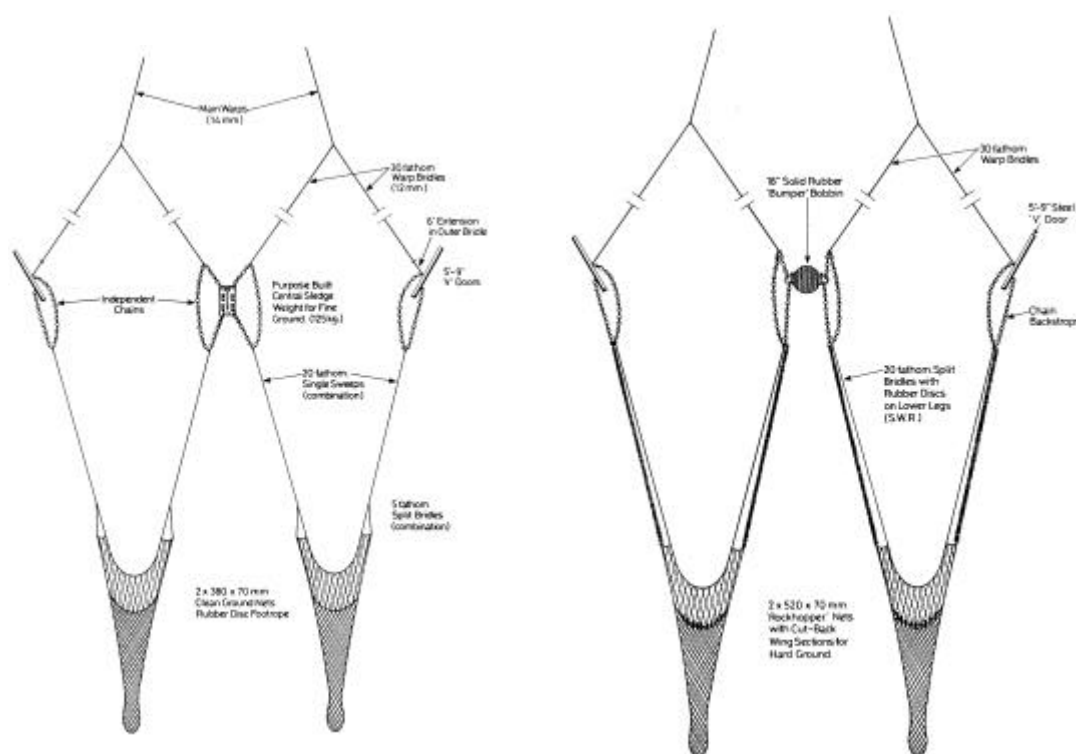
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The increasing interest in multi-rig trawl systems prompted the Sea Fish Industry Authority's Industry Development Unit in Hull, to develop and test a number of twin-trawl rigs that could be suitably adopted by fishing vessels of typical stern trawler design. The multi-rig systems were designed to be used by vessels without the requirement of expensive modifications to deck machinery or handling arrangements. To this end, the rigs developed were for use with a standard two-barrel winch using a two warp arrangement, as opposed to the three warp systems which require a three-barrelled main winch.

Most of the rigs described in this Data Sheet have been tested in both sea trials and in full commercial fishing operations mainly fishing for *Nephrops*. Much of the development work was carried out in the *Nephrops* fishery on the North West coast of Scotland with the invaluable assistance of Skipper Hamish Philp and the crew of the 'CYGNUS STAR' (B293).

The fishing gear and operations described relate to vessels in the 12-15 m class, of about 150-200 H.P. However, the basic principles apply to any size or horse power of vessel. Fishing gear is simply scaled up or down to suit the individual situation. The net size must be carefully selected to obtain optimum efficiency and to remain within the towing capabilities of the vessel. When changing from a single net operation to a multi-net one, it is better to select two smaller nets that are capable of being towed with a degree of power in reserve.

The following is an outline description of the basic two-warp, twin-rig arrangement. Full details of the rigging arrangements are shown in the figures.

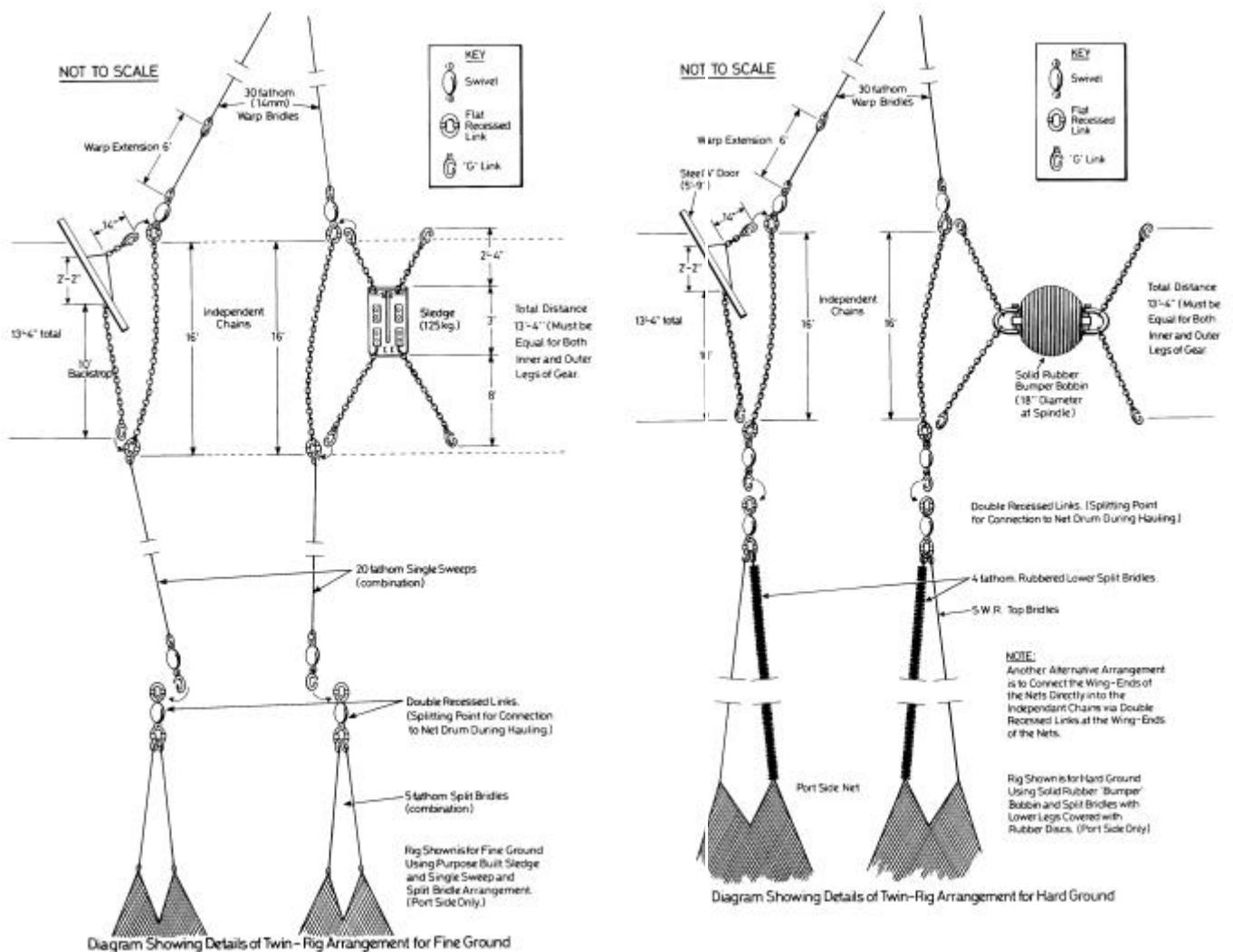


The vessels main warps are extended by the addition of two warp extension wires at the end of each warp, connected by-way of swivels. These wires should ideally be compatible with the existing warps (i.e. of the same diameter). However, winch barrel capacity may limit this and it may be necessary to reduce the size of the warp extensions. Care must be taken not to reduce the wire diameter by too much and so run the risk of parting wires during normal operations.

Experience gained during sea trials and in commercial operations has shown that 30 fathom extensions are required to spread the gear sufficiently. Warp bridles/extensions of up to 70 fathoms have been tried and have produced a more flexible rig. The longer extensions allow more control and adjustment of the spread of the rig.

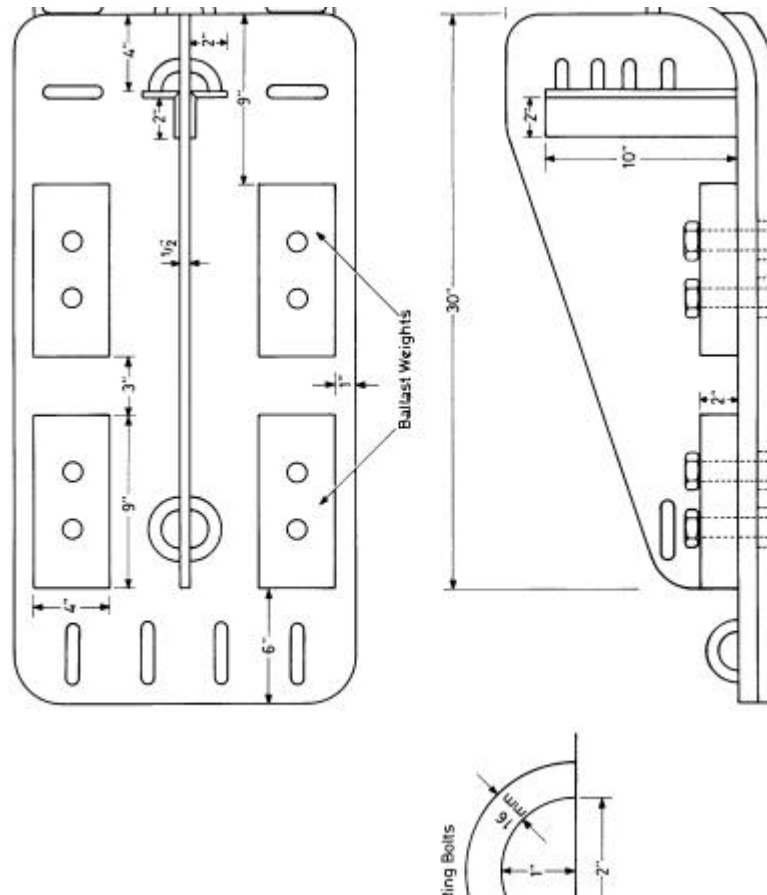
The four extension wires form the outer connections from the main warp to the trawl doors, and the inner towing connections to the central weight or 'clump' as it is sometimes known.

The commonest form of centre weight used for this type of trawling has been heavy chain or anchor cable. Whatever is used, the important factor is that it is of sufficient weight to ensure ground contact and to keep the nets in constant contact with the seabed.



Seafish have tried a number of types of centre weight in an attempt to reduce drag factors without adversely affecting ground contact of the gear. The weight of the 'clump' is also an important factor from the handling point of view on board the vessel.

For operations on 'clean ground' a purpose built steel sledge weight was employed, designed to traverse the seabed with a minimum of drag.



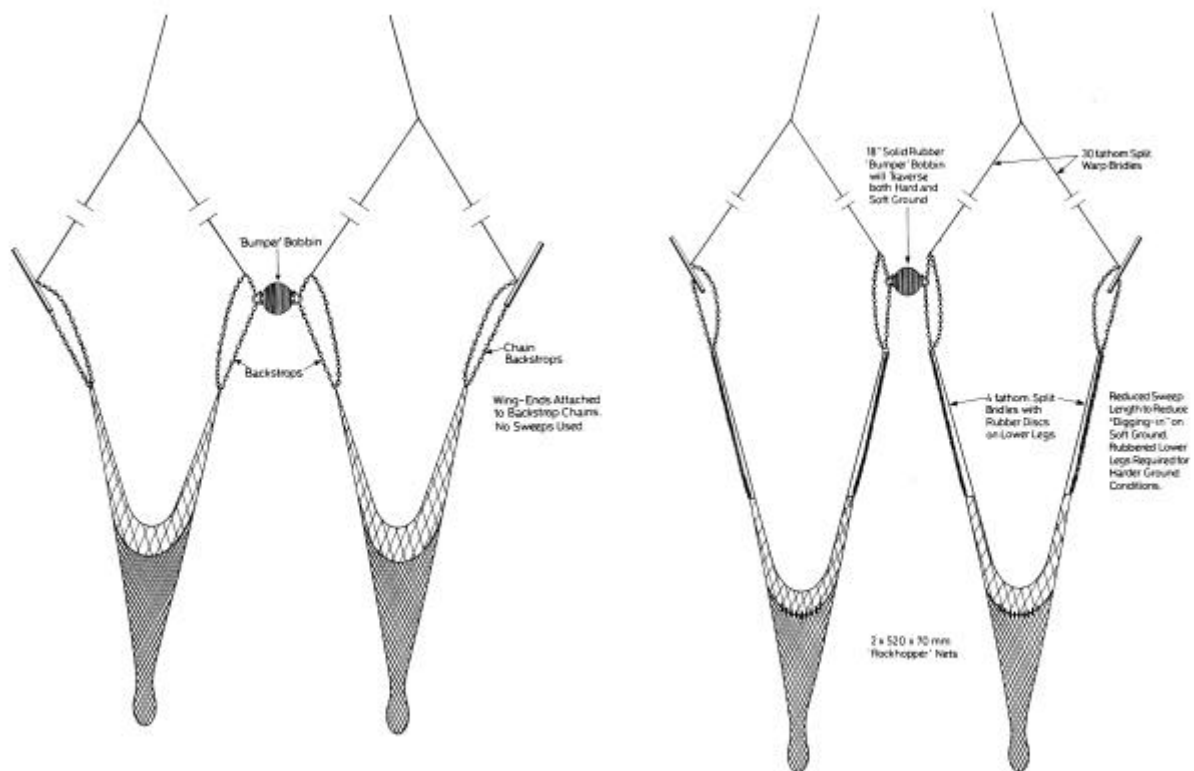
For 'hard ground' operations for use with 'Rockhopper' trawls a solid rubber 'bumper' bobbin was used. The round bobbin was rigged so as to bounce across uneven ground and thus reduced the danger of the centre weight 'coming fast'. This was later changed to a steel, concrete filled bobbin when greater weight was required.

These modifications and developments have enabled this twin-rig arrangement to be used successfully on hard ground for large quality *Nephrops* on grounds off the North West coast of Scotland.

In order to keep both nets of a twin-rig system, in line during towing, the spreading force of the doors must be allowed for by extending the outer warp bridles. It was found that an extension of 6 feet was required for the rigs used. This length differential cannot be taken as standard for all rigs and must be determined for each individual rig by practical experience.

The twin-trawl system requires the use of either a slightly larger trawl door, or a more efficient door, than that used for a similar single trawl operation.

Bridle arrangements can be varied as with the single net operations. Details of some of the bridle rigs that have been tried by Seafish are shown in the figures. Sweep and bridle combinations can be varied to suit fishing conditions. The factors affecting the rigging of bridles and sweeps etc. apply to twin-trawl systems as they do to single nets.



The handling of the two-wire twin-trawl system is straight forward and does not pose any great problems. The hauling and shooting operations do tend to be more time consuming in the initial stages. This is to be expected when you consider that twice as much gear is being used. The use of a net drum greatly eases the handling of this gear. Since both port and starboard wires, sweeps and bridles etc. travel through one gallow block on each side of the vessel it is advantageous to have all corresponding links and connections well marked to avoid unnecessary 'foul ups' during hauling and shooting.

During Seafish's trials with the twin-trawl systems, it was found to be advantageous to secure the centre weight outboard on a quick release or slip hook arrangement. This kept the handling of the heavy clump weight to a minimum and made for easier hauling and shooting.

It was found that the twin-trawl system could be handled as easily as the single net operation once skipper and crew had familiarised themselves with the system. The advantages of the system certainly outweigh the disadvantages.

More detailed information about these twin-trawl rigs and any other information on multi-rig trawl systems can be obtained from the Sea Fish Industry Authority's Industrial Development Unit, St. Andrews Dock, Hull, HU3 4QE. A small charge is made to cover printing and posting costs.

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