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EXPERIENCE WITH AN IMPROVED POWER BLOCK FOR PURSE SEINING.

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ABSTRACT

This paper is describing a new improved power block for coastal purse seiners. To increase the pulling force on the floatline an extra hydraulic roller is fitted to an ordinary power block. This arrangement reduce the strain of hauling the floatline.

The new power block arrangement was tested in combination with the automated net stacking system, the hollow ring needle and the radio remote controlled skiff earlier developed by FTFI. These combined systems could cut the the labour requirement on vessels less than 80' to three men, and greatly reduce the strain of work. Demonstration of the complete net hauling system is documented on video tape.

INTRODUCTION

Among the Norwegian coastal purse seine fishermen, there has been a great demand for reducing the stress on the crew and the man power requirement. The greatest strain and labour requirement during purse seine operation is for hauling back the net.

During 1976-78 the Institute of Fishery Technology Research (FTFI) developed a new automated net stacking system (BELTESTAD 1978), by which the number of crew could be reduced by about two. To improve the efficiency of the purse seining operation and to reduce the strain of work still further, FTFI during 1979-1982 developed a new type of hollow ring needle and tested this in combination with the automated net stacking system (BELTESTAD 1982).

Furthermore, FTFI has developed a radio remote control system for the purse seine skiff (OLSEN 1982). This system released the man operating the skiff for other more useful work on board the vessel during the most work-consuming part of the fishing operation.

To avoid tearing of the webbing during shooting, it is very important to minimize the skew between the float- and the leadline. When hauling back the net with power block the general problem is that the floatline slips in the block. Accordingly the floatline is hauled back with lower speed than the leadline. To reduce the slipping of the floatline the power blocks have been equipped with hydraulic tilt cylinder and pressure wheel. However, none of this equipment has been satisfying and very often it is needed two men to haul the floatline to minimize the shew.

To reduce the slipping of the floatline FTFI has in cooperation with Rapp Hydema A/S, a power block manufacturer, constructed an extra hydraulic driven roller fitted to the power block. This equipment was tested during autumn 1982 and spring 1983 on board the commercial 70' purse seiner, M/S

"Bådsvik", in conjunction with automated net stacking system and the radio remote controlled skiff system.

EQUIPMENT

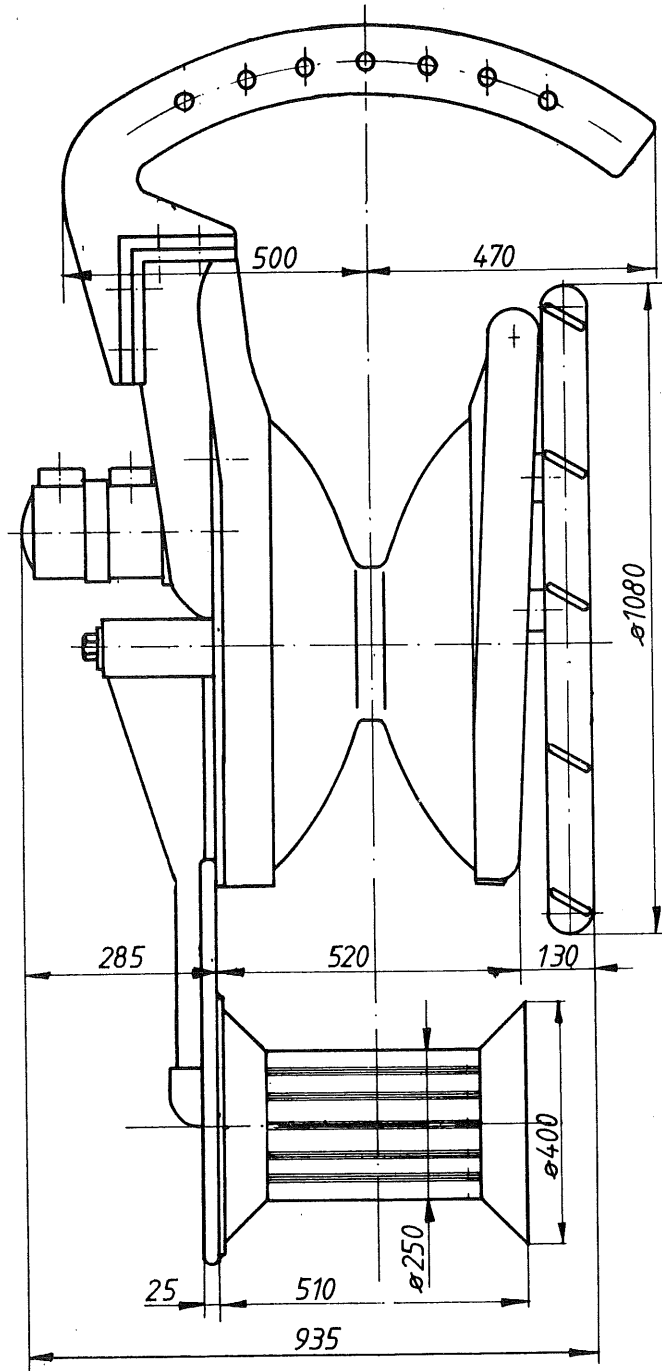
The power block with roller is shown in Fig. 1. The power block is the same as described by BELTESTAD (1982), but the tilt cylinder is removed. The hydraulic roller motor is driven by the same hydraulic system as the power block. The speed of the roller is adjusted by a fluid control valve mounted on the power block. The angle of the roller in relation to the power block can be adjusted by a hydraulic cylinder, controlled by a hydraulic valve mounted on the upper deck.

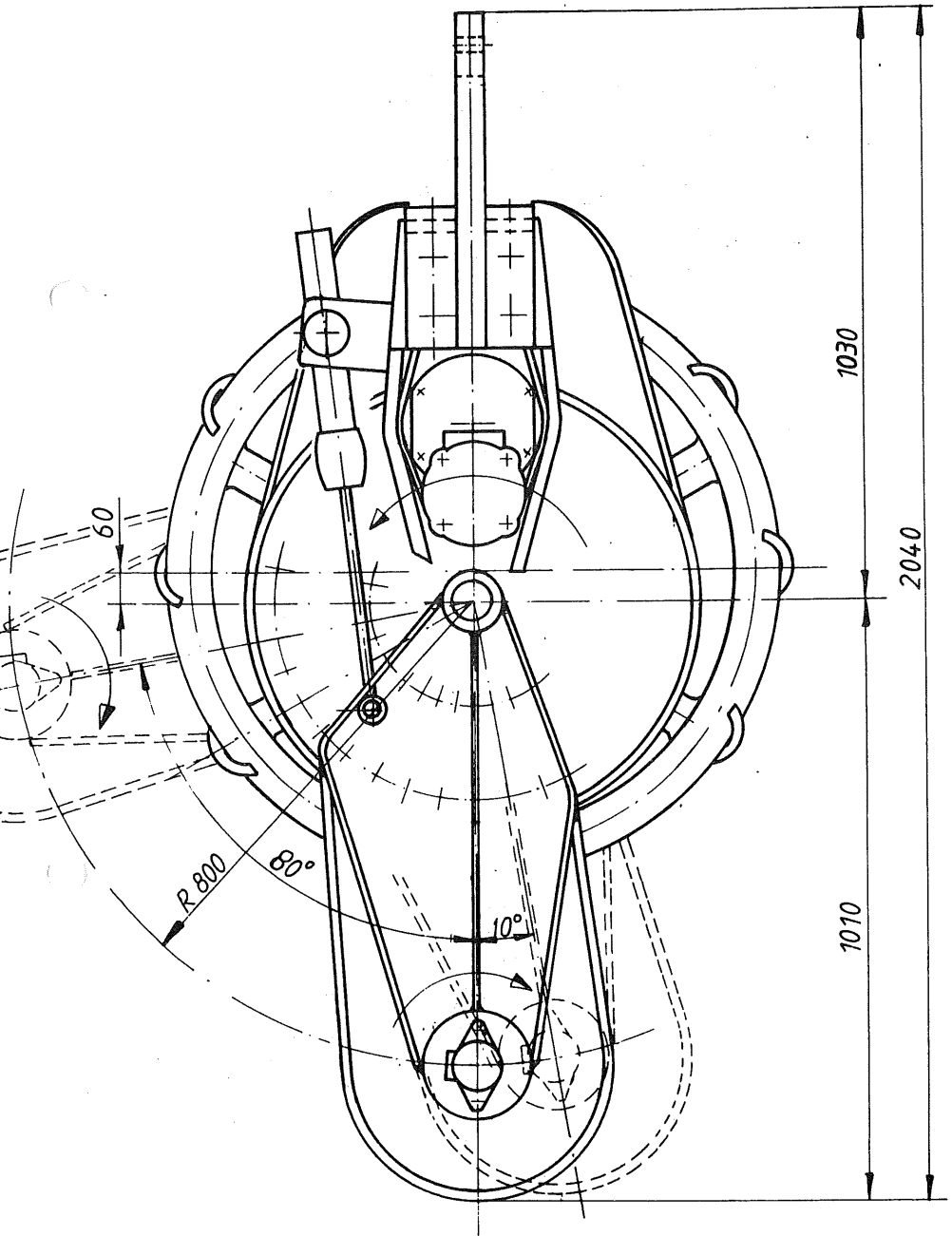
OPERATION

Most of the fishing operation procedure is described by BELTESTAD (1982). Here, only the hauling operation through the power block is described:

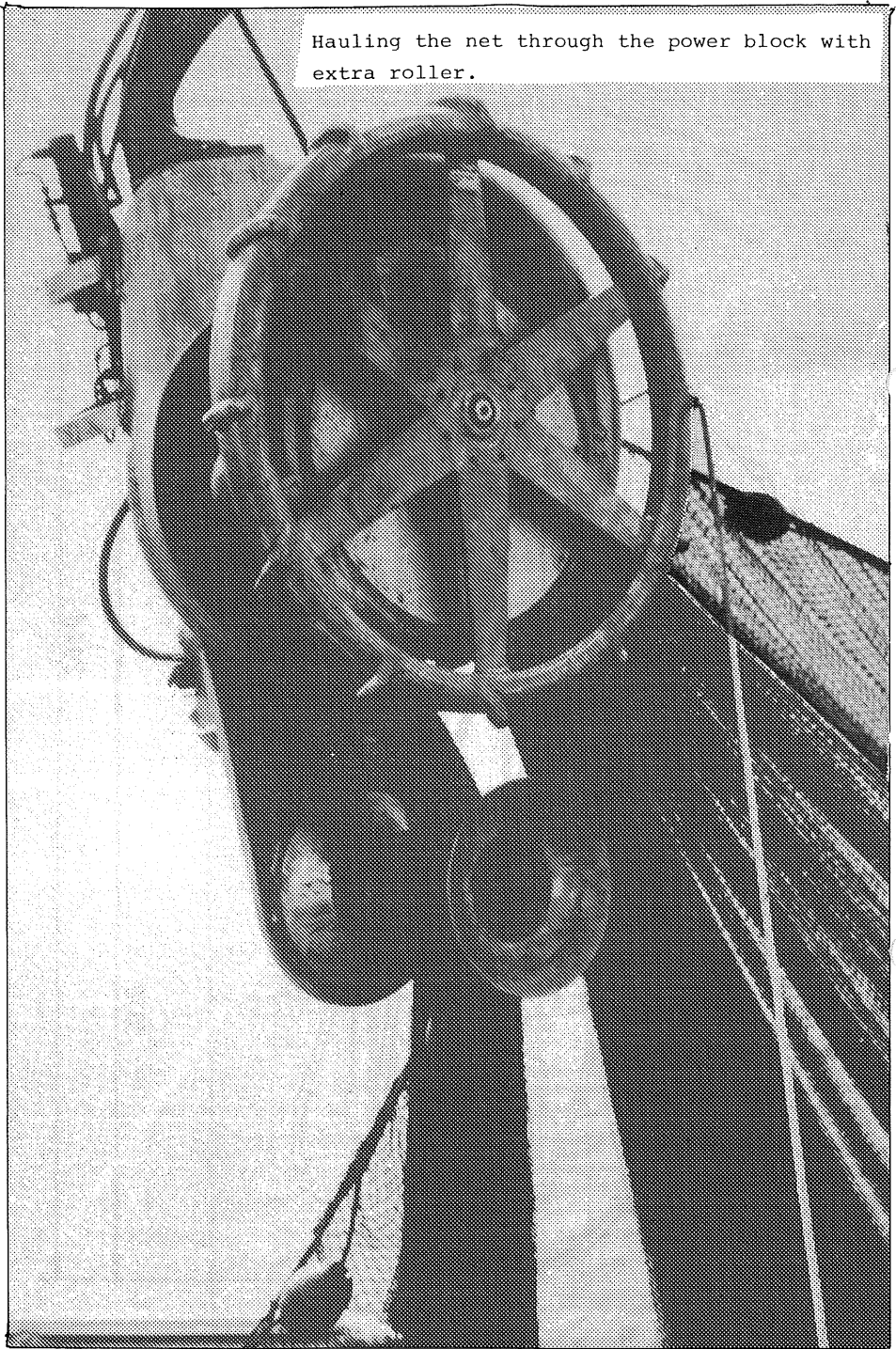
Before the net hauling is starting the purse seine is laid in the power block and over the roller (Fig. 2). The speed of the roller is adjusted once for all to be a little bit faster than the hauling speed of the power block. The angle of the roller is adjusted to be about vertical in relation to the power block. As the net is hauled back, the roller is pressing the net against the bottom of the power block and the floatline is not slipping. Usually the leadline is lying in the bottom of the power block and the floatline over the webbing. The floatline will then have larger radius than the leadline and subsequently higher hauling speed. If the floatline is coming in too fast, this can be adjusted by swinging the roller out of the vertical position by means of the hydraulic cylinder. The floatline will then slip in the

Fig. 1. Power block with extra roller.





Hauling the net through the power block with extra roller.



block. Accordingly the skew between the float- and the leadline can be regulated by the angle of the roller without manual stress.

CONCLUSION

This new power block with the extra roller has greatly reduced the problem of skew between the float- and leadline and eliminated the strain of hauling the floatline.

In conjunction with the automated net stacking system, the hollow ring needle and the radio remote controlled skiff, it is possible on vessels less than 80' to carry out the fishing operation with only three men.

These four systems, the automated net stacking system, the hollow ring needle, the radio controlled skiff and the power block with extra roller can be used in combination or independant of each other.

REFERENCES

- BELTESTAD, A.K. 1978. Automated gear handling of purse seine. Coun.Meet.int.Coun.Explor.Sea, 1978 (B-4):78-80 (Mimeo).
- BELTESTAD, A.K. 1982. New gear handling systems for coastal purse seining. Coun.Meet.int.Coun.Explor.Sea, 1982 (B:37):1-9 (Mimeo).
- OLSEN, L.O. 1983. Remote control of purse seine skiff. ICES WG. meeting Ijmuiden, 2-6 May 1983:1-2.