

MODIFICATION TO THE BILGE AND SEA WATER PUMPS FITTED IN 17.5 METRE JINGHA TYPE TRAWLERS

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This paper brings out the difficulties encountered with the Bilge and sea water circulating pumps which are fitted and drawn in series alongwith a fresh water pump in the 17.5 m. fishing trawlers.

INTRODUCTION

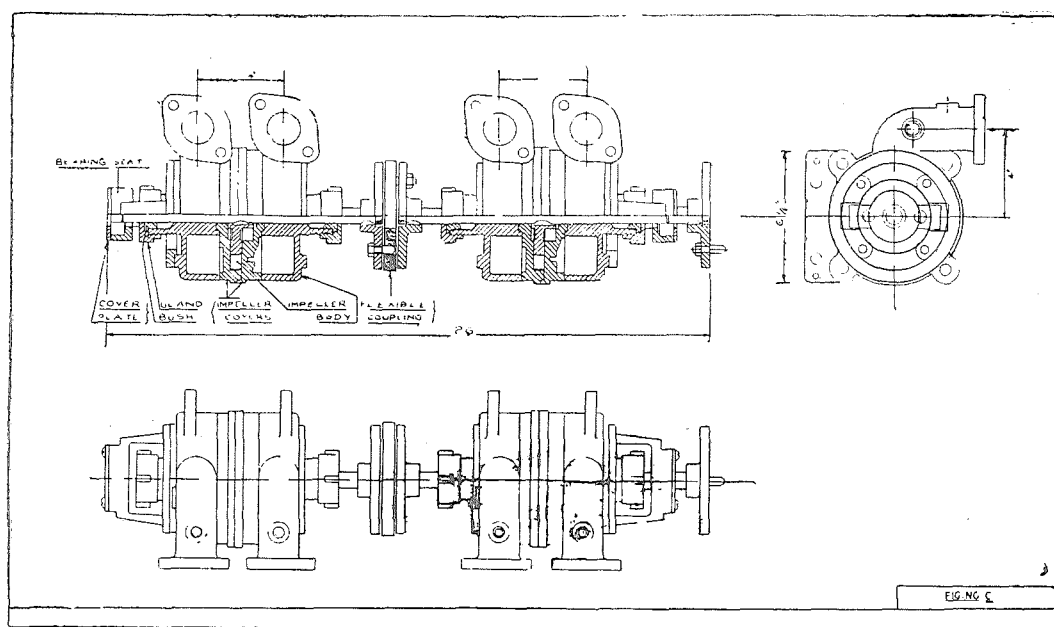
The Deep Sea Fishing Organisation, Bombay have procured a score of Jingha type trawlers of overall length 17.5 m. constructed indigenously at various ship building yards. While operating these vessels this department faced various difficulties and breakdowns and efforts were made to rectify these defects with suitable modifications. One such difficulty was with the bilge and sea water circulating pump. These pumps, being of impeller type, were provided with imported seals, replacement to which was difficult to procure. There have been frequent leakage through seals, breakage of coupling, impeller bearing, shaft bearing, air locking. Hence a modified bilge and circulating pump replacing the seal with a gland with provision to change the gland without dismantling the whole set was designed and successfully tried in one of the vessels. Details of modifications effected and results of trials are presented in this communication.

MATERIAL AND METHODS

The set up of the pump is shown in figure 'A'.

The sea water pump circulates sea water through heat exchanger which in turn cools the fresh water circulating through the main engine. The bilge pump which is similar in every respect to the sea water circulating pump is fitted in series with the sea water pump while the fresh water pump is of different construction. The drive for the fresh water pump is taken from the main engine drive shaft through gears which change the direction of pump. The pump operates at 1000 r. p. m. The pump is coupled to two other centrifugal pumps with flexible coupling shown in drawing (Fig. 'B').

Fig. 'C' shows modified centrifugal pump fitted on to the main engine. The main modification is the replacement of water seals with $\frac{1}{4}$ " gland packing which can quite easily be tightened without dis-



tapping new holes in the cylinder block. The original tap holes were plugged and revetted over. The sea water lines as well as the bilge lines both inlet and discharge require modification due to the fact that there has been longitudinal displacement of the pumps to the extent of approximately 50 mm. There was no need to replace the pipes but some were heated and bent to suit the new position of the pump flanges. As the bilge pumps run dry when the bilges are not connected, it was necessary to have the pipe connection between the delivery of the sea circulating pump and suction side of the bilge so as to prevent the bilge running dry thereby burning packing and overheating the shaft. The discharge of both the pumps are more than the original as the clearance between the impeller and pump body has been maintained to the minimum.

Modifications carried out to the pump did not result in any increase in the cost. Additional expense to the extent of Rs. 200/- per boat has to be incurred for fixing the pump to the engine.

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