

# Modified Water Spray Chumming System for Pole and Line Fishing of Tuna

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A water spray chumming system consisting of a 65 x 50 mm centrifugal pump driven by the propulsion engine through a PTO clutch and 'V' pulley power transmission system has been developed for the pole and line fishing of tuna. Water is sprayed through pipe loop system fitted on the edge of the fishing platform of the boat through small holes. The distance of the spray length can be adjusted by controlling the flow of the pump discharge water through a wheel valve.

At present two persons per boat are employed for manual spraying of sea water for chumming the fish during pole and line fishing of tuna in Lakshadweep islands. The manual operation is not effective and cannot be done continuously for obvious reasons. Attempts have been made to develop a mechanical spraying system by installing a new diesel pump set in the boat which called for additional capital cost, fuel and higher maintenance. The development, however, did not take off due to technical and economic considerations. So attempts have been made to develop a mechanical chumming system and this paper describes the details of the system.

## *System arrangement*

The water spray arrangement system installed in a pole and line rigged 7.6 m boat is shown in Fig. 1. The propulsion engine of the boat is a TM2 Kirloskar water cooled engine developing 16 HP at 1800 r.p.m. The fishing operations during which the water has to be sprayed 3 to 5 m away from the boat, are to be carried out at the lowest speed of the boat as the tuna has to be attracted by the live baits thrown from the boat. This necessitates that the engine has to run at the minimum r.p.m. and it has to deliver the power for both propulsion as well as for driving the pump. The drive for the 65 x 50 mm centrifugal pump was taken from the cooling water pump drive through a power take off Cone clutch. A counter

shaft was provided to facilitate the installation of the pump in a suitable location and the drive is taken through double groove 'V' pulley system. The minimum r.p.m. at the cooling water pump drive shaft of the engine was 800 and the sizes of the pulleys are appropriately adjusted to obtain the pump r.p.m. of 1500 at the minimum boat speed. The pump suction is connected to the sea-cock by PVC flexible piping through a non-return valve. The delivery side is connected to the spraying pipe loop system fixed on the edges of the fishing platform and an outlet valve is provided on one side of the pipe loop which will help to control the spray. A remote control is provided for the Cone clutch so that the system can be easily operated whenever required without entering the engine room.

## *Tests and trials*

The working and arrangements of the system was finalised after exhaustive tests and trials. The spray control valve was operated and checked the extent of control possible. The engine was run at different r.p.m. and the spray discharge at different r.p.m. was checked. It was observed that sufficient spray could be obtained at the lowest r.p.m. of the engine without overloading the engine at the minimum speed of the boat.

## *Cost of the system*

A comparison of the cost of separate diesel pump set and the present main engine

Table 1. Comparison of the cost of different engine systems

	Cost of main engine drive system	Cost of diesel engine pump set
	Rs.	Rs.
3 HP Kirloskar diesel engine with 50 x 40 mm pump	—	5,619.00
50 x 40 mm centrifugal pump 1500 r.p.m.	1,200.00	—
V pulleys, double grove 20 cms	120.00	—
V pulleys, double grove 10 cms 3 nos.	240.00	—
Cone clutch with remote control and installation charges	1,650.00	—
V belts -4 nos.	200.00	—
Counter shaft with bearings, bearings blocks, base etc.	800.00	—
Labour and miscellaneous	290.00	381.00
	4,500.00	6,000.00

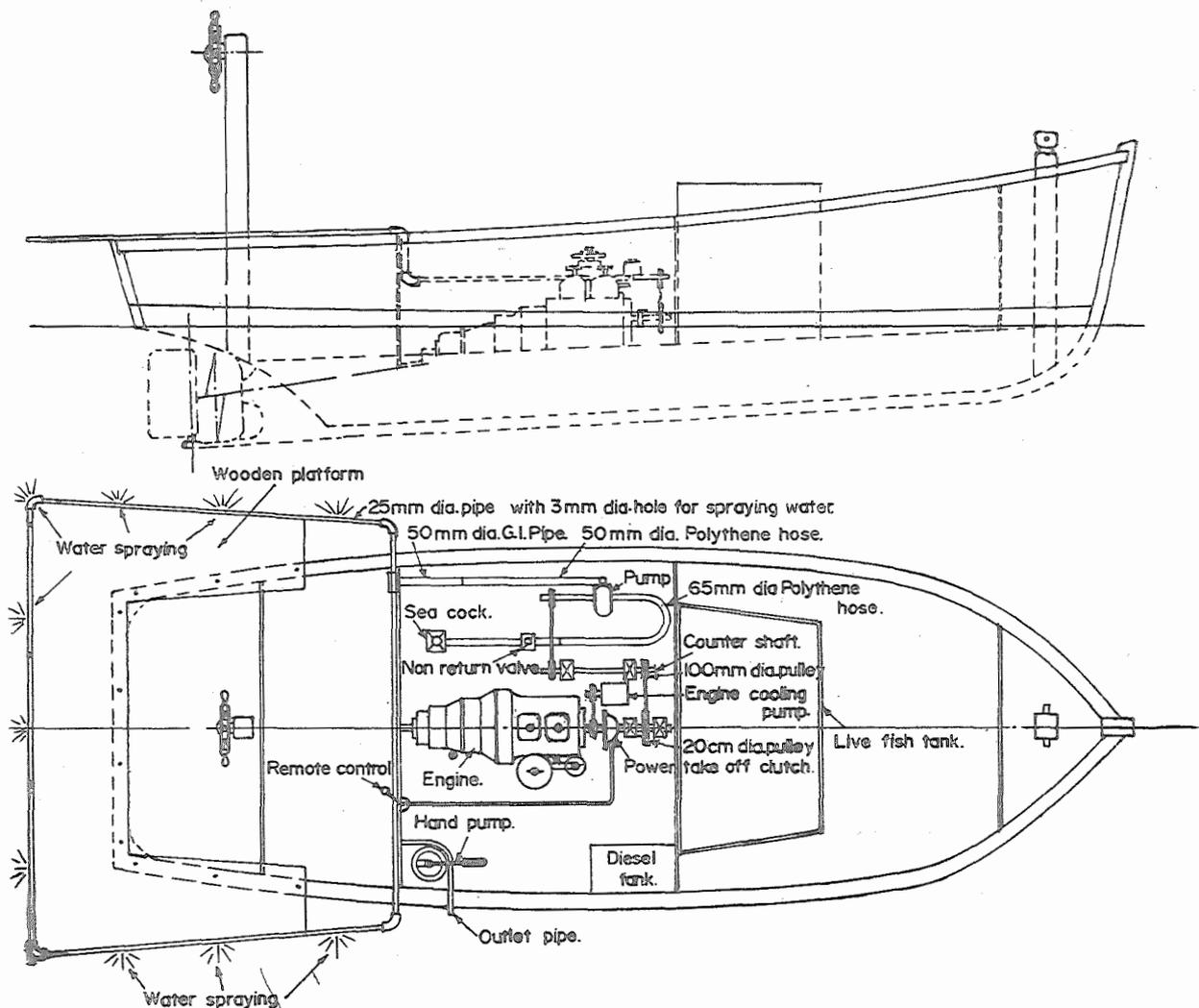


Fig. 1. Water spray chumming system for pole and line fishing from 7.6 m vessel

drive system is carried out and is shown in Table I.

From Table 1 it is clear that the present system is cheaper than even the cheapest diesel pump set available in the country. The fuel cost and additional maintenance cost also will work out cheaper than a separate pump set. On further trials it has been found that a cheaper method can be employed for the chumming system. On

adapting this type of mechanical chumming system the additional human effort required in pole and line fishing could be reduced and the efficiency of fishing increased.

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