

A new horizontal marine engine

Why always a vertical engine, asks H. J. TURPIN. With care, this unit will give extremely good-and long-service

I HAVE often wondered why almost every steam-driven model boat is fitted with a vertical engine, for with this type of engine space has to be provided for its upper end in the deck cabin or some kind of keel weight has to be added.

The main object of this horizontal design, which was originally introduced for the boat section of Enfield and District M.E.S., is to maintain a very low centre of gravity. Two other points: the propeller drive can be taken off in a forward or rearward direction and separate piston valves are provided for steam and exhaust.

In my original model it was found that at low speeds and low boiler pressure the rotary motion was a little irregular owing to the small outside diameter of the flywheel-1 1/2 in. This has since been enlarged to 1 3/4 in. and is now very satisfactory.

This horizontal engine is suitable for boats up to 40 in. and a propeller up to 2 1/2 in. dia. of normal pitch. But I must emphasise that first class work must go into this engine if first class performance is to be achieved; particular attention must be paid to the piston valves, valve setting, flywheel and bevel-drive unit.

DUAL VALVE CHAMBERS

As the procedure for machining cylinders, pistons and piston rods has often been given in this journal, all that need be mentioned here are the dual valve chambers. The steam ports are circular holes, No 36 dia., drilled at 5/8 in. centres-and the position of where they enter the valve chamber is important, as it affects the valve timing; likewise the lengths 13/32 in. and 31/64 in. on the piston valves.

The valves are 5/16 in. dia. and both these and the holes in the cylinder should be lapped smooth, parallel and round.

How tight should the valves fit the holes? well, a good test is to clean and dry thoroughly all the surfaces of both components, hold the cylinder with the valve chambers vertical and assemble the valves so that a light

touch will allow gravity to draw them through.

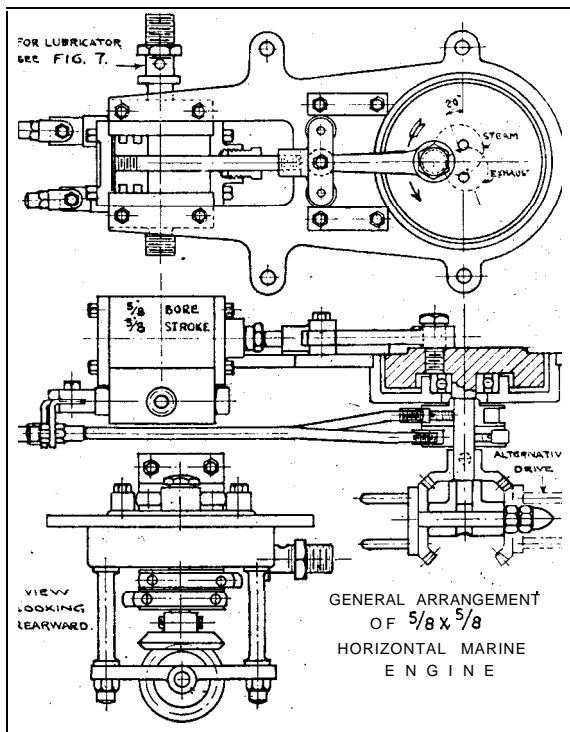
THE ECCENTRICS

As the flywheel shaft is vertical the weight of the eccentric sheaves is taken, on the lower flanges of each eccentric. That is why ample area is provided by the 15/16 in. dia. to keep the valve rod square and steady. Note that the amounts of eccentricity are different for steam and exhaust.

The drawing calls for surface hardening, but this should not be until the valve system has been assembled and found correct. The proper setting for the eccentrics is shown in the general arrangement drawing (Fig. 1).

On the prototype the valve rods are made of 1/8 in. dia. welding rod and are quite satisfactory. Particular care

Right: Assembly; note the separately adjustable valves



Below: Three-quarter view of engine, showing bevel, drive

