Making a twin-screw Vosper MTB

More complex motorisation of the Airfix kit described by **Bert Lamkin**

IN MY first article on the Airfix Vosper last month, reference was made to the possibility of a multi-screw conversion. This article now deals with one way of adding the extra propeller. In view of the already well-laden boat, and the desire to keep as near as possible to the prototype's waterline, the additional weight of a suitable gearbox to drive all three propellers was out. So this second MTB is a twin screw job.

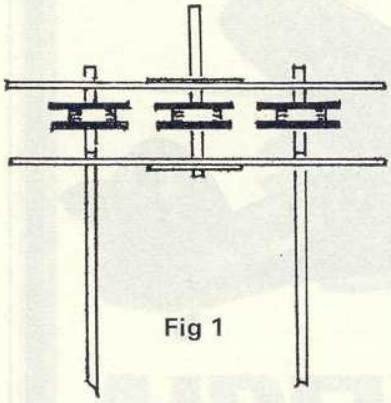


Fig 1

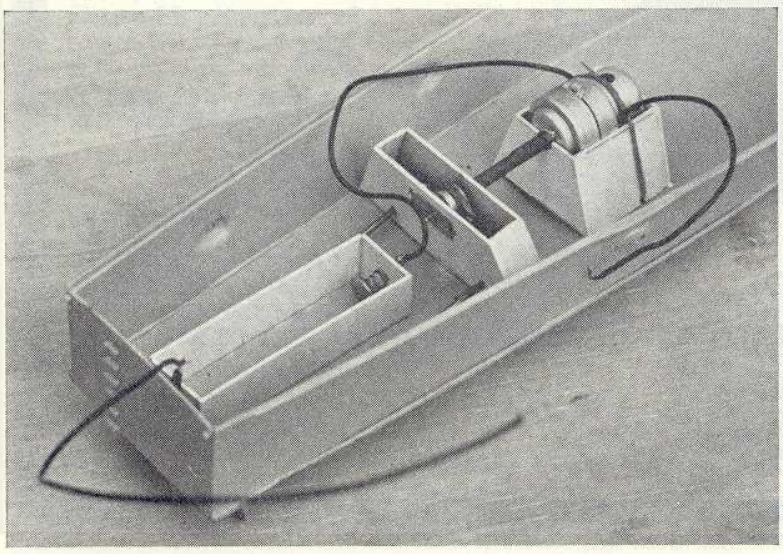
The photos **below and above right** *clearly show the motor assembly, pulley system and battery box in the Vosper hull.*

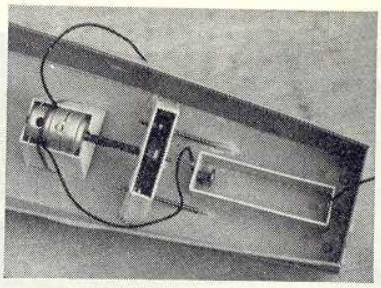
Aiming at a simple transmission unit constructed from items to hand, a system of pulleys was used instead of gears, the arrangement being shown in Fig 1.

Two rather important things to bear in mind with this project are to get adequate tension on the belt, and to reduce friction in the rotating parts to a minimum. For maximum contact between belt and pulleys, these would need to be equidistant from each other, but there is insufficient height below decks, so one has to compromise.

The two outer stern tubes are mounted on the hull as described previously, but this time they are a bit shorter—2¾ inches of small copper tube—Humbrol epoxy adhesive again being the 'glue'.

The shafts, silver steel rod just small enough to rotate freely in the tubes, are approximately 3½ inches long. They have short lengths of tube soldered on one end to provide a firmer fixing for the pulleys. Three of these are required, and if you have access to a lathe they can easily be produced from plastic rod or wood, about ¼ inch in diameter. I, however, used the flanged wheels from an Airfix overhead crane kit, these being cemented together with the flanges outside and drilled centrally to a tight fit on the enlarged ends of the shafts. The third pulley, which is directly coupled to the motor, has a piece of the same tube as its spindle. This projects about ¼ inch one side and half an inch or so the other.





The inboard support for the stern tubes forms the rear plate of the transmission unit and is shown in Fig 2. For this I used plastic card with a small metal plate —tin or brass—attached by lugs, to provide the bearing for the upper pulley. The support is cemented in position at right angles to the tubes, which project through slightly.

When this has set, lightly grease and slip the two shafts complete with pulleys

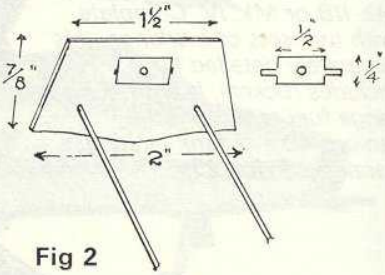


Fig 2

into place and check that they rotate quite freely. The two sides of the unit, ⅛ inch wide strips of plastic, are now cemented in place, their ends at an angle to align with the bottom of the hull.

The front of the unit shown in Fig 3 is also fitted with a metal plate as a bearing. The point to watch here when marking for the holes is that the shafts are at an angle but the top spindle is parallel to the bottom of the boat. The transmission unit, when complete, will in effect be leaning towards the stern.

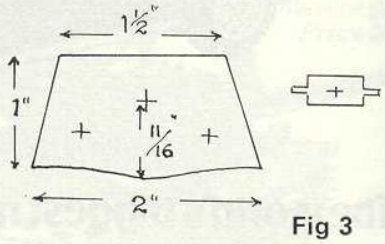


Fig 3

Before the front is fixed, the rubber band providing the drive must be slipped on to the pulleys. Choose a flat rather than square section band small enough to give sufficient grip but not so tight as to impose friction on the shafts; you may have to try several before getting the right one, and it must be sound. With

everything in place the top shaft should spin the others when turned between finger and thumb. With only 1½ volts on the motor, there is no room for any friction.

The motor and battery mounts are similar to those on the original conversion, although this time the motor is upside down to bring its shaft in line with the upper pulley spindle, the two are connected by a rubber sleeve—insulation from wire.

Incidentally, the motor used is not the smallest of the Japanese range, which is not quite man enough for the job.

The on/off switch can also be copied from the first article, or as an alternative one of the ventilators could be modified to operate a rotary type of switch.

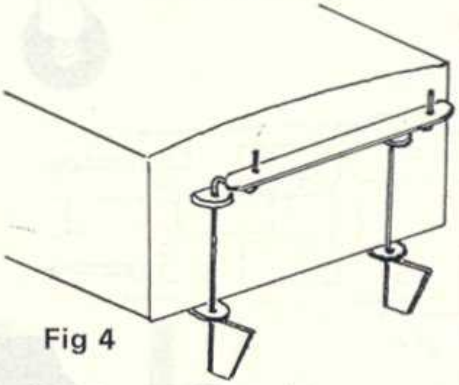


Fig 4

With the 'works' installed, two propellers from the kit have their bosses drilled to take the shafts and are epoxied in place, allowing a slight lateral movement. Be careful here not to attach the shaft to the tube. Steering, using two rudders, is achieved with a similar arrangement to the single method and is depicted in Fig 4.

Vosper II is now completed as before, keeping the rear half of the deck detachable for access to the 'engine room'.

'Pukka engineers' will possibly raise their hands in horror at the mechanics described above. I can only answer that it works, and one can always experiment.

The twin screws in place in the hull before final painting and before rudders had been attached.