

Boom Boat Impeller drive shaft and steering shaft

This component is probably the most difficult part to produce on the whole boat and its accurate construction is essential for efficient and reliable operation.

The main drive shaft is a steel rod 75 mm in length and 3mm in diameter. The top 1cm should be tapped with an M3 thread. The bottom 1 cm should be ground to give a semicircle profile. While doing this ensure the shaft remains straight as any bend will interfere with the smooth operation of the drive gearing. Once complete the shaft ground end can be pressed into the D hole of the 3D printed impeller. It will be necessary to preheat the shaft to allow the pressing. After the press and while the shaft is cooling check the perpendicular alignment of shaft and impeller and adjust if necessary.

The steering shaft is cut from 6mm brass tubing and is required to be 50 mm long. The tube can be pushed into the 3D printed impeller housing so that its end is flush with the inner surface of the impeller housing. Add some superglue to fix in place.

Two bushes are required at the top and bottom of the brass tube. They should be interference fit to the inside of the tube and have a central hole of 3mm in diameter to take the main drive shaft. These have been turned on a lathe out of Durlin (a PTFE type substance) which Laurie kindly gave me.

If all is well the drive shaft and impeller can be slid into the impeller housing and steering shaft assembly and the impeller should spin freely. Finally before fixing to the boat it is best to pack the inner of the steering shaft with grease to prevent water from entering into the boat.

