

REPLACE SHAFT BEARINGS

INSTRUCTION VERSION 1.0 – NOVEMBER 2016

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BOTTOM BEARING AND TOP BEARING

All shafts are machined to 1in outer diameter at the top where the drive unit fits on. The shaft has an increased diameter just below the Top Bearing 24. To change the Bottom Bearing 25, without the use of special tools, the top bearing is first removed, using the rudder shaft to knock it out upwards. The shaft can then also be used to knock out the bottom bearing.

Remove Drive Unit

1. With Locking Pin #61 inserted, move the Ratio Knob #21 to the far right.
2. Slacken Fork Bolt #58 and Shaft Bolts #55.
3. Remove the Pin #61 and lift the drive unit off the rudder shaft. Remove the Fork Arm #71 from the top of the rudder shaft as it becomes free. **Helpful Tip:** If the drive unit can not be moved upwards, use the OPENER: Remove one of the Bolts #55 (or any M10 bolt) and screw it into the threaded 'opener' hole between the two bolt #55 locations, until it touches the casting on the other side of the gap. Now tighten this bolt carefully, a quarter turn at a time (so opening the

drive unit frame casting around the rudder shaft tube) until the drive unit can be lifted off. Take care not to overly 'open' the clamp onto the shaft.

4. Loosen the appropriate bracket bolts sufficient to remove the shaft

Remove Bearings and Shaft

5. Slacken Shaft Collar Screw #46 and remove the Shaft Bottom Collar #26.
6. Punch out Race Collar Pin #28. **WARNING:** Pin #28 in the Shaft Race Collar #27 prevents the rudder shaft from dropping downwards out of the tube. Best have the bottom of the shaft on something solid – terra firma.
7. Remove Shaft Race Collar #27 and Shaft Ball Race #31. **WARNING:** The 19 small nylon balls sit below the collar. Best to carefully pour those 19 into a bucket.
8. Use the shaft inside the tube to knock out the bearings. First lift the tube a fist length or so and bring it down onto the top bearing. A few such hits and the Bearing will pop out. Turn the shaft and tube upside down and do the same for the Bottom Bearing.

Replace Bearings

9. The shaft bearings 24 and 25 can be replaced using a soft-faced hammer, or a steel hammer, using a plastic or timber pad on the bearing flange.

Re-assemble

10. Slide the shaft back in and replace the 19 nylon balls #31, Shaft Race Collar #27 and Race Collar Pin #28.
11. Replace the Bottom Collar #26 so there is a small gap between it and the Shaft Bottom Bearing #25 – business card size. Ensure no binding.

Replace Drive Unit

12. Replace the drive unit after reviewing the installation instructions – 'Assembly of Drive Unit onto Shaft'

MID BEARING

Since 2008, all shaft assemblies include Mid Bearing 24M. This is recommended for bigger and faster boats. If your pre-2008 Hydrovane has a 1.25in shaft, you may wish to add a mid bearing.

Hand file ridge inside shaft tube

1. The mid bearing can be inserted in either end of the shaft tube. A cavity has been machined out of each end of the tube for the top and bottom bearings. You can feel a lip or ridge at the end of the cavity caused by the machining (not noticeable in new assemblies – has a smoother transition) – the edge between the machined section and the unmachined wall of the tube. That ridge must be filed down – otherwise there is not enough space for the Mid Bearing to fit in the tube. This will take a bit of work.

Devise a 'Pusher'

2. A suitable ram must be devised to push the bearing half way up the tube. **Helpful Tip:** 1in (25mm) plumbing PVC pipe – add the related cap – the cap has an OD of 42mm or 1.65 in – about right.

Install Mid Bearing

3. Mix dish soap in water then pour some in the tube and slosh it around so the surface is slippery.
4. Insert the Mid Bearing (has two rubber 'O' rings) so that it is clear of that machined lip.
5. Ram it up to a position of about half way up the tube.
6. Proceed with installing the two other bearings.