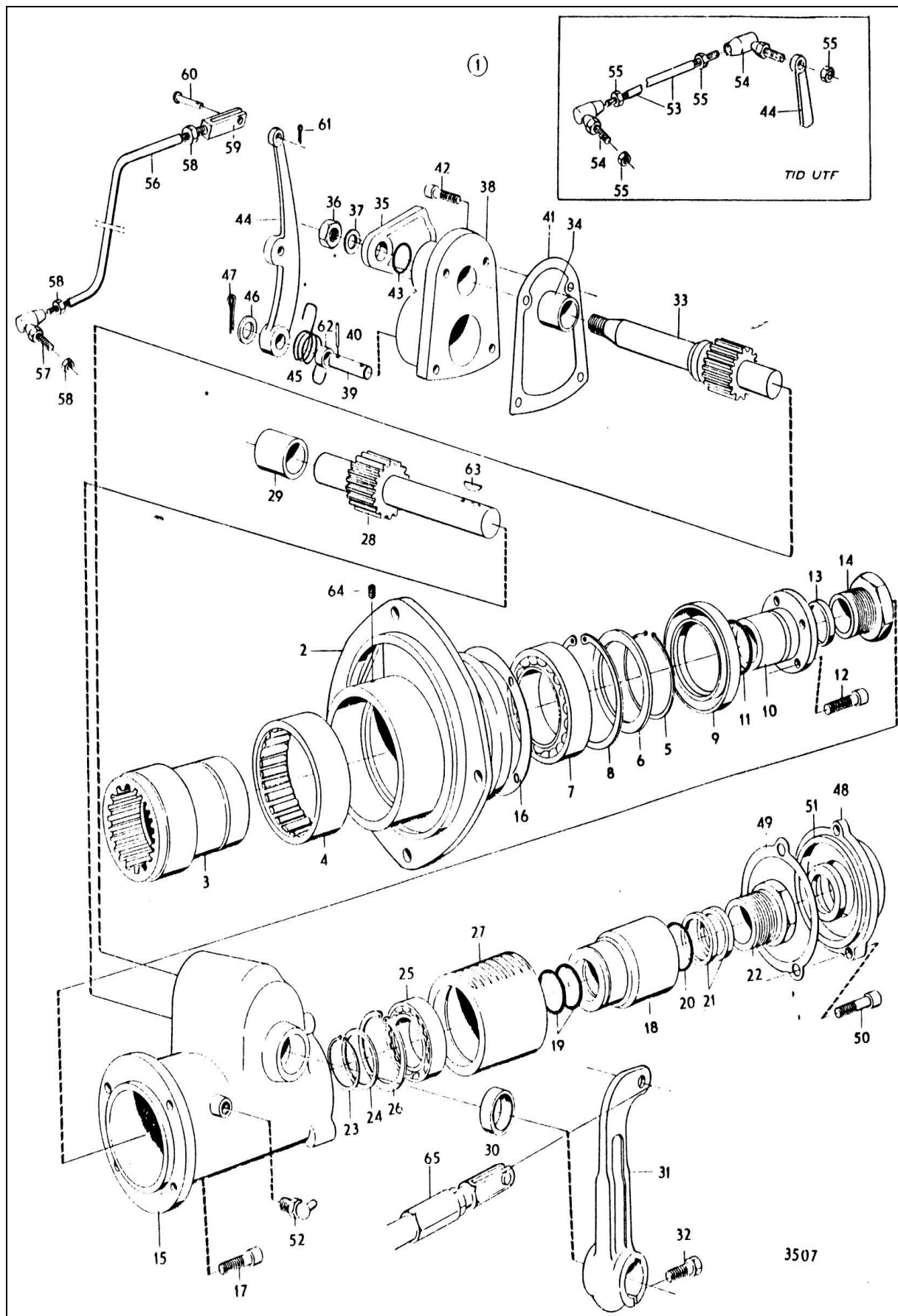


COMBI OVERHAUL

Stripping the COMBI

1. Take up the cockpit floor.
2. Stuff a rag under the propeller shaft to stop tools etc. falling into the keel.
3. Remove wooden bulkhead.
4. Remove the air filter.
5. Disconnect the throttle link (**54-1**).
6. Disconnect the control cable by removing the clevis pin.
7. Remove the operating lever (**31-1**) and key.
8. Release the cam (**35-1**), slacken the nut and give a sharp tap.
9. Release the end cover (**48-1**).
10. Remove the throttle control cover (**38-1**) with the shaft (**33-1**).
11. Remove the shaft (**28-1**).
12. Unbolt and pull back the COMBI box casing (**15-1**).
13. Fit 5/8" Whitworth spanner to the clamp-nut (**14-1**) and jam against the starboard engine bearer. Rotate the flywheel anti-clockwise to undo the nut (considerable leverage will be required as the nut is tightened to 80 lb/ft)
14. Drive the propeller shaft inward slightly by fulsome blows on the end of the propeller boss so as to release the clamp rings (**13-1**).
15. Pull back the propeller shaft by levering between the propeller boss and the stern bearing. Thespanners for undoing the clamp nuts are ideal for this purpose.
16. Remove the key (**28-2**), clamp rings (Note their order), and the clamp nut.
17. Bolt back the COMBI casing to the engine (avoids bending the shaft). 2 Allen bolts will suffice.
18. Pull the shaft back until the end of the sleeve (**27-1**) is exposed. At the bottom of the sleeve (opposite the gear teeth) and about 12mm in will be found a hole. If the propeller is rotated, a corresponding hole will be found in the sleeve (**18-1**). A steel bar is now inserted in the aligned holes to lock both together and rested on a block of wood placed on the hull to protect and spread the load.
19. If the control tube is to be changed, unscrew the propeller boss 2 turns **CLOCKWISE** (Left Hand Thread).
20. Now slacken the clamp nut (**22-1**) using 3/4" Whitworth spanner. You will probably need a 2foot lever.
21. Remove the locking bar and push the sleeve (**18-1**) back into the COMBI box and replace the end cover (**48-1**) and secure.
22. By pushing the propeller forward and then giving a sharp pull back (and repeat) the controltube with shaft can be disengaged from the sleeve.
23. Remove the propeller and shaft from the boat.
24. Remove the COMBI casing from the engine and clean all parts.



COMBI OVERHAUL (MD6A DIESEL)

Replacing the 'O' rings & oil seals

There are 3 'O' rings in the sleeve (18-1) ensure they are in the correct grooves. The edge seal in the cover (48-1) faces aft to keep out the dirt. Check and if necessary replace the bearing race (25-1). If the fit into the sleeve (27-1) is slack then use Loctite Bearing Fit.

Overhauling the Stern Gland

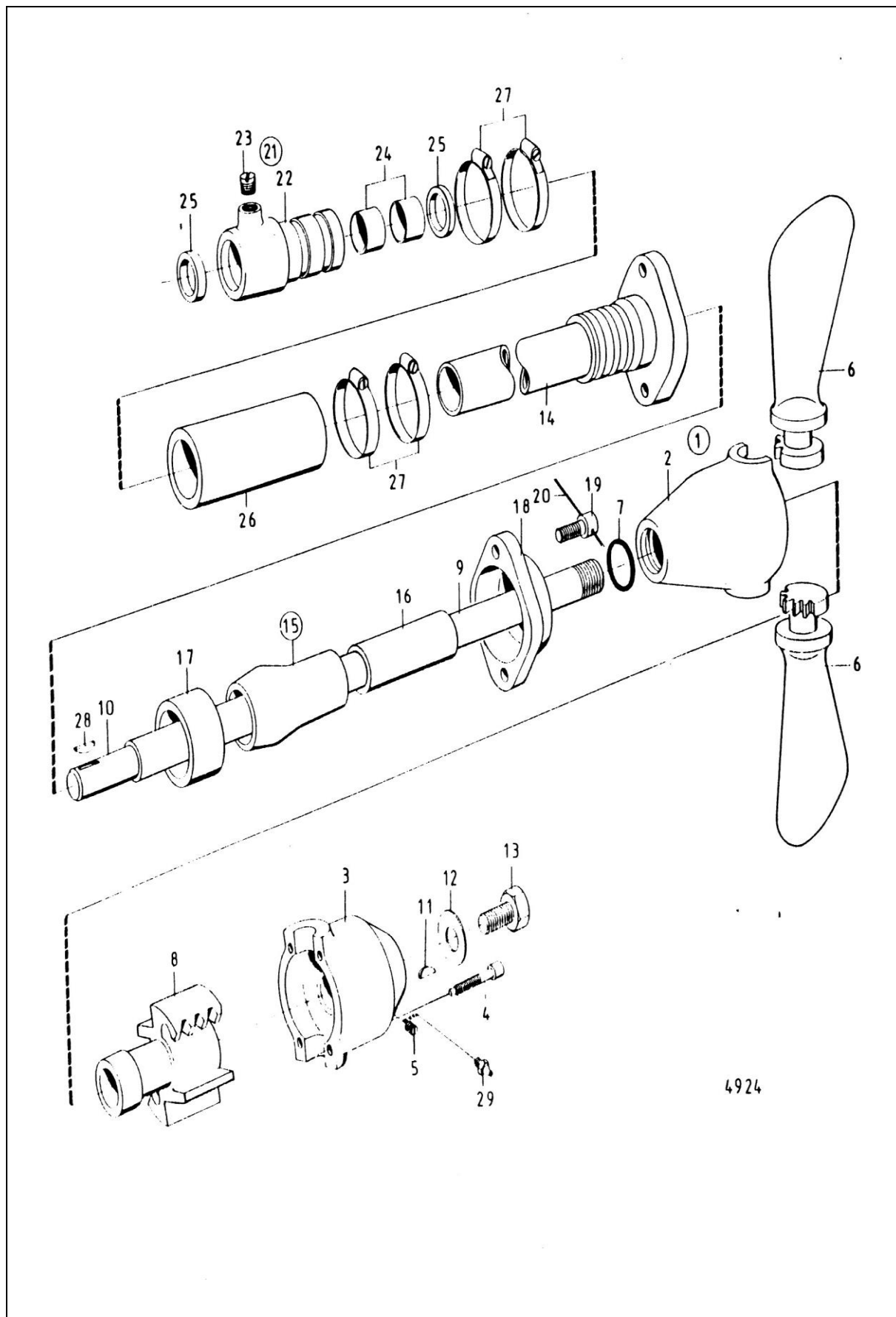
Remove the 2 edge seals, drive out the 2 white metal bearings. Clean and fit new bearings and seals (both seals face aft).

Replacing the Stern Bearing

Remove the bearing carrier. Press out the tufnol bush (this can be collapsed with a saw cut). Press the new bearing into the carrier. No lubricating holes need to be drilled with the new Nyloil Bearing. Refit to yacht but do not tighten the Allen bolts.

Replacing the Control Tube

1. Undo the 4 Allen bolts in the propeller boss.
2. Scribe a mark to locate the 2 halves of the boss.
3. Slide forward half of the casing (3-2) off the control tube.
4. Note position of the propeller blades to the operating rack (9-2). Slide the operating tube and rack off the shaft.
5. Unscrew the rack from the tube and clean out the threads in the rack thoroughly.
6. Assemble the new tube to the rack hand-tight and ensure the inside of the tube and rack are clean.
7. Reassemble the propeller boss, ensuring that the propeller blades are on the correct sides. Check that the blades will twist from fully feathered to full ahead/astern.



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Re-assembly of the COMBI

(N.B. Thoroughly

grease all components)

1. Insert the propeller shaft into the stern tube.
2. Lubricate the stern gland with Shell Outboard Oil.
3. Carefully fit the gland over the control tube by hand and secure (taking care not to damage theseals).
4. Assemble the locking rings and the nut into the sleeve (**18-1**) ensuring that the locking rings are still free to move.
5. Assemble the sleeve (**18-1**), end cover (**48-1**) and the COMBI casing then attach to the engine (do not forget the gaskets).
6. Slide the propeller shaft forward so that the end cover (**48-1**) can be detached and slipped onto the shaft.
7. Reverse operations **18 & 20** in the stripping instructions, ensuring that the control tube has engaged with the 'O' ring (**20-1**).
8. Ensure there is no burr where the locking pin has been inserted in the sleeve the release theCOMBI casing from the engine and pull back.
9. Reverse the stripping instructions **16 & 13** but before completely tightening the clamp nut pull back on the shaft so that the key touches the clamp rings (this reduces the risk of disturbing the timing if a rope is caught round the shaft).
10. Temporarily fit the shaft (**33-1**).
11. Place some grease in the COMBI casing and assemble to the engine.
12. Check that the propeller blades will rotate from fully feathered to full ahead/astern.
13. Place blades in the neutral position (athwart ships) there are punched marks about 3mm long onthe root of one blade and on the propeller boss (do not mistake the join in the casing) these should be in line.
14. The shaft (**33-1**) should now be fitted so that the keyway is at the top.
15. Fit the key and operating lever (**31-1**). The key can be filed for an easier fit.
16. Fit the end cover (**48-1**).
17. Operate the control lever to ensure full movement can be obtained.
18. Replace the cover (**38-1**) with the shaft.
19. Ensure that the neutral timing marks are accurately in line on the propeller boss and blade. Position the throttle cam (**35-1**) so that the ridge on the cam is in line with the follower roller on the throttle control lever. Carefully tighten the clamp nut (**36-1**).
20. Check the setting and reconnect the cable. If the cockpit control lever's neutral does not coincide with the propeller's neutral then adjust by unscrewing the outer of the telescopic section at the end of the control tube and adjusting the split brass olive on the cable.
21. Refit the throttle link ensuring that when the COMBI is in neutral the throttle is only just closed.
22. Replace the air filter and the bulkhead.
23. Fit the header tank for the stern gland and fill.
24. Remove the rag protecting the bilge.
25. Tighten and wire the Allen bolts on the stern bearing.

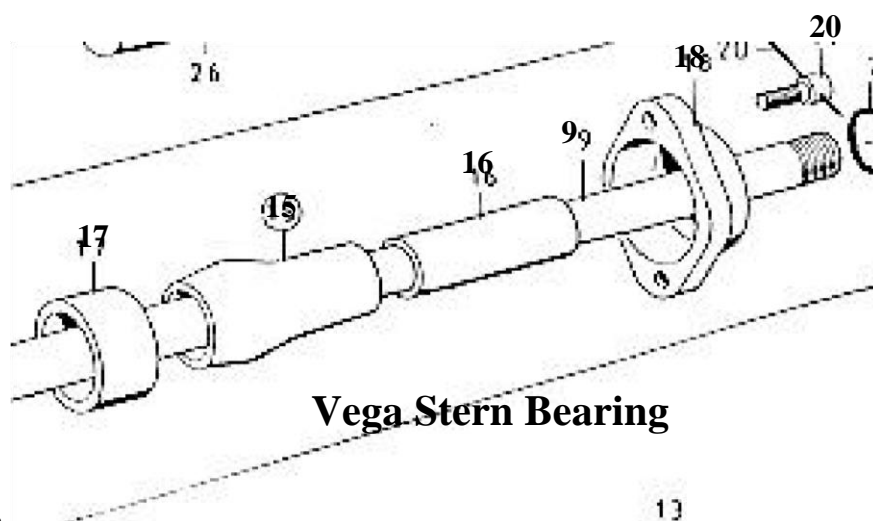
THE VEGA STERN BEARING

Having marvelled at the wonder of the Stern Bearing and how to replace it I thought it was about time I understood the workings.... This all happened whilst replacing the COMBI, Control Tube, Stern Gland and Stern Bearing of Southern Comfort(V1703) - This had not been touched from new (1973) !!

The original Stern Bearing on the Vega was a Tufnol bush pressed into the Stern Bearing Housing. This had four holes drilled through the Tufnol and the housing to allow water lubrication. The revolving Control Tube is the main cause of wear especially in muddy, abrasive waters.

Most other marques of boats have a "Cutlass Bearing". This is a bronze cylinder with a channelled rubber insert which allows water to lubricate the shaft whilst turning within the cutlass bearing. Some Vegas now have these fitted but this entails the housing being removed and bored to allow the fitting of the much larger diameter of the Cutlass Bearing sheath. I have seen three Vegas with this arrangement Chelabelle(V1399), Velgia (V3444) and Eager Vega (V3314). The numbers prove this is not an original fitting but owners have found this a satisfactory answer to the Tufnol Bush.

The other answer is the preferred one !! We have made some Stern Bearings using a material called "NYOIL". This is an oil impregnated nylon that allows the engine to be run without lubricating the stern bearing with water - great advantage whilst repairing and checking single-handed. These are made slightly oversize to allow for differing sizes of stern bearing housings. They should be pressed from the forward end of the removed housing and then using a fine round file ensure a sliding fit of 25mm - Control Tube Diameter. If you are not sure about fitting then send the housing to Steve Birch and the bearing can be fitted exactly for a small fee to VAGB Funds.



15. Stern
Housing

16. Stern Bearing

17. Rubber Bush

Bearing

18. Hosing Clamp

20. Allen Bolt x 2

9. Control Tube