



OCTOPUS

SERVICE PROCEDURE - SP006
REV A 11-06-2008



OC16SUK08 - SEAL KIT INSTALLATION – 38mm BORE LINEAR DRIVE

APPLICABLE MODELS

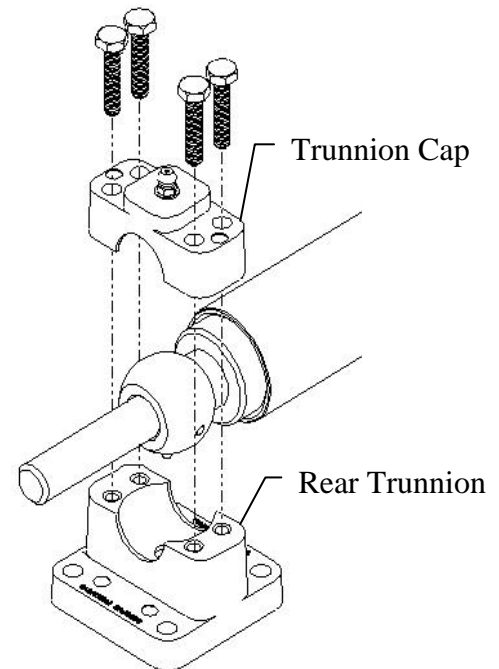
- a. All styles of Octopus Hydraulic 38mm Bore Linear Drive.

REQUIRED PARTS:

- a. Basic shop tools – small vice – wrenches – vice grip – cloth – oil container – sharp needle like probe – small funnel – automotive transmission fluid.
- b. Seal Kit part # OC16SUK08 – for 38mm Bore Cylinders

A. DISMANTLING THE UNIT

- i. Mark the electrical wire connection, disconnect – remove the actuator from the boat. See Graphic 1 for rear Trunnion breakdown guide.
- ii. Drain the oil from the bypass valve and pumpset by inverting the unit.
- iii. Mark the hose connections – disconnect the 2 hoses from the bypass valve body.
- iv. If the unit is a Remote style, place pump set/bypass valve to one side.
- v. If the unit is a Mounted style, the pump set/bypass valve can stay attached.
- vi. Purge the oil from the cylinder - put the 2 hose ends into the oil container – slowly push the cylinder shaft completely in and out.
- vii. Using a soft cloth to pad the cylinder shaft, hold the shaft gently in the vice. Unscrew (counter clockwise) the rod end from the end of the cylinder shaft. If the rod end does not unscrew easily, you may have to apply some heat to the rod end as it is held in place with 'loctite'. If flats are available on the cylinder shaft, you may also use a wrench.
- viii. Mark the hose connections – disconnect the 2 hoses from the elbows – remove the 2 elbows from the cylinder ports.
- ix. Place the 2 hoses and elbows to one side.

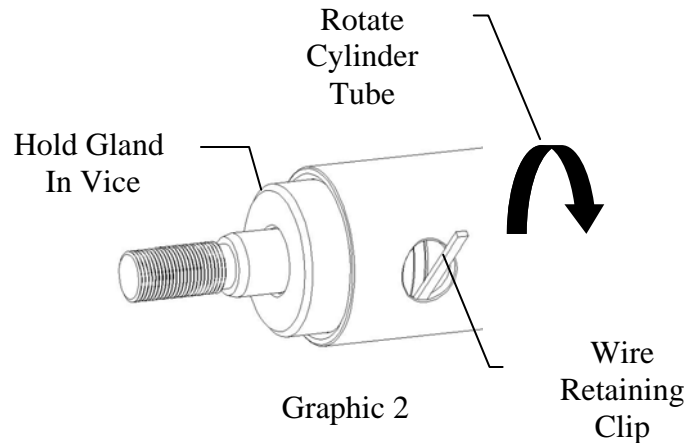


Graphic 1

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- x. Using a cloth to pad the surface, grasp the cylinder front gland firmly in the vice.
- xi. Using a firm hand grip, rotate the cylinder tube about the front gland.
- xii. Look inside the cylinder port as the tube rotates and you will see a wire clip in a groove within the port. See Graphic 2.
- xiii. One end of the clip is hooked, the other end is straight – position the tube port hole above the straight end of the clip.
- xiv. Using a small screwdriver blade, lift up the end of the clip approx ¼ in (6mm).
- xv. Rotate the cylinder tube against the raised clip end so as to feed the clip out through the port hole.
- xvi. When the clip is completely removed – the gland can be gently pulled out of the cylinder tube end.
- xvii. Repeat operations ix through xv on the cylinder rear gland.
- xviii. Pull the cylinder shaft out of the tube.
- xix. Using a sharp needle like probe - stab the ‘O’ ring and back up washer inside each gland and remove them through the shaft hole.
- xx. Using a sharp needle like probe - remove the ‘O’ rings off the outside of each gland and the ‘U’ cups off the piston.



B. INSPECTING THE COMPONENTS

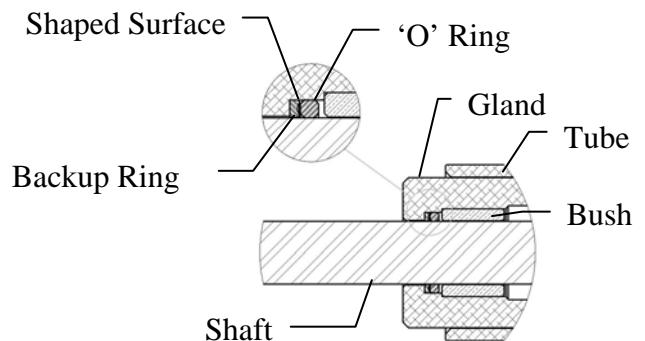
- i. These seals do not usually fail prematurely without some external cause.
- ii. This can be a mark or nick on the surface of the shaft or cylinder tube bore or even a glob of varnish on the shaft.
- iii. After you dismantle the drive, thoroughly examine these surfaces for wear or damage.
- iv. If there are deep marks on the cylinder tube bore or on the shaft, these parts must be replaced.
- v. Minor wear on these components is acceptable. Wear marks can often be polished out using a 600 grit wet and dry sandpaper.
- vi. Check the drained oil for signs on contamination. If the oil is contaminated, flush out the pump set and bypass valve with solvent. Do not take the pump apart – fill the reservoir with solvent and run the pump in both directions.

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C. ASSEMBLING THE UNIT

- i. Install the 'U'cup seals onto the piston. The lips of the cups should face outwards.

Note: The 38mm seal kit includes 2 different sets of 'U'cup. Install the set that matches the 'U'cup just removed. Discard the other set.



Graphic 3

- ii. Install the back up rings and 'O' rings inside the bore of the cylinder glands. Position the back up ring closest to the outside face of the gland, with the shaped surface contacting the 'O' ring. See Graphic 3
- iii. Install the 'O' rings onto the outside on the cylinder glands.
- iv. Insert the cylinder rod into the cylinder tube to approx mid position. Care must be taken not to damage the 'U' cup as they cross the clip groove and cylinder tube cross hole. Use oil on the parts and rotate gently as they pass these areas.
- v. Assemble the cylinder front gland – first onto the cylinder shaft and then into the cylinder tube. Care must be taken not to damage the outer 'O' rings as they cross the clip groove and cylinder tube cross hole. Use oil on the parts and rotate gently as they pass these areas. Align the tube cross hole with the gland threaded hole.
- vi. Using a cloth to pad the surface, grasp the cylinder front gland firmly in the vice.
- vii. Rotate the cylinder tube until the small hole to hook the retaining wire clip in the gland becomes visible in the tube cross hole. Hook the end of the new retaining wire clip in this hole – Rotate the cylinder tube so as to feed the clip into the groove. The direction of rotation should be so as not to block the threaded hole in the gland. Stop rotating the tube when the cross hole in the tube aligns with the gland threaded hole.
- viii. Repeat steps v. through vii. For the rear gland.
- ix. Install the 2 elbow fittings using a liquid thread sealant – Loctite 542 is recommended. Do NOT use Teflon tape; this can disintegrate with the resulting particles causing blockages. The port threads are tapered – from hand tight use a wrench to tighten for a further 1-1/2 turns. From this point a maximum of 1 more turn is acceptable to align the fitting with the hose.
- x. Install the rod end onto the end of the cylinder shaft, secure using Loctite 242 on the threads.
- xi. Re-assemble the pump set/bypass valve to the cylinder.

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D. FILLING AND BLEEDING

- i. Open the 2 brass screws on the front of the bypass valve 2 full turns each.
- ii. Energize the solenoid valve coil with 12 or 24 volts dc. - (red wires = 12v – green wires = 24v) – polarity not important.
- iii. Remove breather filler cap from reservoir – insert funnel – fill with clean automotive transmission fluid.
- iv. Orient the unit at an angle of approx 30 degrees from horizontal - so that the reservoir is at the highest point.
- v. Gently push and pull the cylinder shaft back and forth until all the air has vented through the reservoir. Do not allow the reservoir to become empty during this procedure.
- vi. The unit is full when no more air vents into the reservoir.
- vii. Remove the funnel – set fluid level to approx ¼ inch (6mm) below the shoulder of the reservoir – replace the filler breather cap.
- viii. Close the 2 brass bleeder screws firmly.

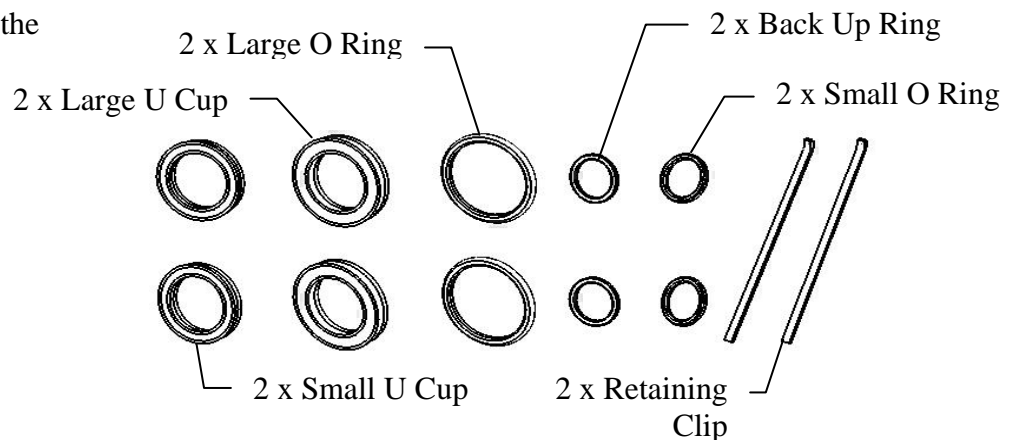
E. TESTING THE UNIT

- i. Energize the solenoid valve coil with 12 or 24 volts dc. – (red wires = 12v – green wires = 24v) – polarity not important.
- ii. Apply the same voltage to the 2 motor wires (1 orange and 1 black) – polarity not important. The motor should start and run the cylinder shaft to the end of its stroke.
- iii. Reverse the polarity to the motor wires and the cylinder shaft should run to the opposite end of its stroke.
- iv. Repeat steps i. through iii. Several times.
- v. As the shaft reaches the extreme end of stroke, it will come to an abrupt stop. Do not allow the pump to run on against this stop for more than 1-2 seconds.

The unit can now be installed back into the boat. Keep an eye on the fluid level for the first few weeks of operation and top up as needed.

F. PARTS KIT

OC16SUK08 KIT includes the following parts:



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