

Navigator Trolling Motor, 35lb. thrust, 12VDC, Model 3500, Stainless Steel version, ~\$670

MarineTech Products. They are available from many sources, we bought ours from Cabela's.

They are designed for extended operation in Salt Water so some of the exposed parts (shafting, cotter pins) are made of Stainless Steel. These units however are only designed for 1-2 ft of submergence so the shaft seals are likely the most common type, 5 psi across the seal. We modified the thruster by replacing the outermost (of two) shaft seals with one designed for 50 psi to allow use in salt water up to 30 meters deep. We found a SKF seal of the correct size, .375" ID, .75" OD, .25 Deep, StainlessSteel Spring. Additional sealing was also done.

Tools and Parts- SKF seal P/N 3689 or equiv.

- offset screwdriver or tool as pictured,
- silicon grease
- small soft blow hammer
- 1/4" nut driver or socket
- RTV silicon sealant
- self fusing tape, 3M Scotch 70 (typical or equiv.)



Procedure-

- Remove 2 bolts
- Lube shaft lightly to minimize damage to seals

-Holding shaft steady so motor does not move (Other end has the brushes and should not be pulled apart), slowly with a twisting motion slide the endcap away from the housing. Continue till completely off the shaft.



-Make sure any spacers (fiber washers) that may have stuck to the inside of the endcap are placed back on the shaft.



Original seal- NOTE: lip and spring are towards the water (pressure) side.

The water pressure increases the seal effectiveness, new seal must be installed similarly.

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Remove the original seal- The seals are a tight fit when installed so they require some prying to remove. Be careful not to damage the housing seal wall area. The original seal will be destroyed, note the spring popped out. I pried in several directions before it started to move. A small screwdriver works too.



Do not damage the inner (2<sup>nd</sup>) seal.

Install new seal-

-add a thick film of Silicon grease in the cavity.

-Orient seal with lip and spring visible to the outside

-Drive carefully, square and evenly, the flat back of a large socket works well, using a soft blow hammer until fully seated.



Reassemble-

-Lightly lube shaft

-Note the orientation of the gaps in the magnets in the main housing where the bolts gain access to the threads in the rear endcap.

-with a twisting motion slowly slide endcap back onto shaft, line up with the gaps

-Make sure the flat rubber ring seal of the endcap(s) is not twisted, clean and lightly greased

-insert the bolts, a little grease on their threads and oring seals good idea, carefully slide and twist endcap and move bolts till they engage the threads. Twist back and forth and try to center movement so bolts are square to the back endcap. Tighten firmly.

-Fill lip gap where spring is with silicon grease, helps decrease corrosion of the spring. NOTE: Our unit, as modified, was immersed for 2 months with no visible damage to the seal spring and no leaks.

Test -Motor should run normally and identically to performance prior to seal change, Do not run "dry", except for quick check, seal needs lubrication.



Additional Sealing - (recommended)

The wire compression seal, the lock set screw and the ass'y bolts are all additional leak points.

-Squeeze a dab of RTV over the ass'y bolt heads.

-Squeeze a dab over the set screw to help seal it as well



-unscrew the wire seal nut, squeeze in a bit of RTV and distribute over the wire and rubber seal

-reassemble, carefully wipe the outside clean and wipe with a mild solvent like alcohol



-wrap the self fusing tape over the wire seal and housing, follow manufacturer's directions. Generally, zero tension on the 1<sup>st</sup> wrap then a lot of stretch with half laps until the last zero stretch wrap.



-Let set a day or so to let the tape fuse to itself.