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Changing the Raw Water Pump Seals on the MD2030

Posted on [November 13, 2013](#) | by  [Mark Cole](#) | Posted in

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Replacing Seals in the Volvo MD2030 Raw Water Pump

Eventually, your raw water pump will begin to leak water or oil out the weep slot in the side. This is the sign that it is time to change the seals.

New seals are easily purchased through Depcopump.com at half the price of Volvo. The pump is a Johnson pump and these are common lip seals. This wiki will refer to oil seals and water seals, but they are the same type of seal. The distinction is only to describe which order they go on, not which seal to use.

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If your bearings are also bad, then this wiki will show you how to access the bearings, but not replace them. Replacing the bearings just requires the old bearings to be removed and the new ones pressed onto the shaft

Let's get started.

Step 1. Remove the pump. Undo the 4 bolts in the corners and the pump slides out. Keep a rag handy to place in the hole to prevent oil from dripping out. Here is a picture of the pump off the engine showing the gear on the shaft that needs to be removed:



Step 2. Remove the shaft gear. This will take a gear puller. Undo the nut holding the gear – put a large screwdriver or the like in the slot in the opposite side of the shaft to keep the shaft from turning while you undo the nut. When the gear releases from the tapered shaft, it will sound like a gun shot. Change your underwear and move onto the next step.

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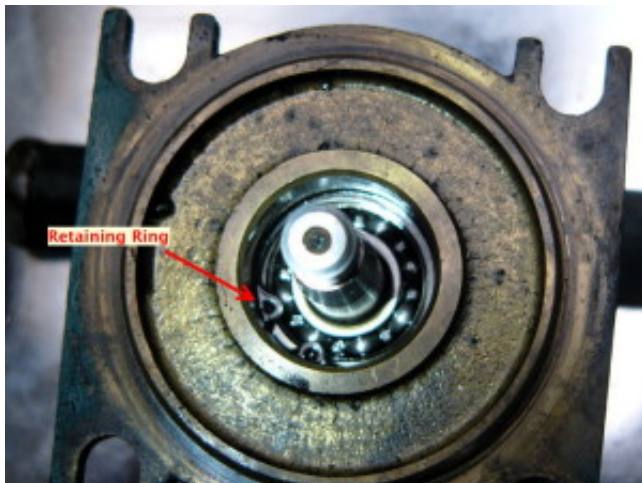
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Step 3. Remove the retaining ring holding the bearing and shaft assembly in the pump housing. The retaining ring (Cerclip, C-ring, etc – it has many names) is shown in the pump housing in the first picture. The second picture shows it removed using retaining ring pliers. Do yourself a favor and spend the \$3 (Harbor Freight) to get these pliers – they are very handy on a boat. If you are too cheap, then remove the ring using small screwdrivers, or needle nose pliers, or any of the myriad ways everyone uses for removing these clips.





Step 4. Remove the shaft from the pump housing. This part is a bit tricky, but not difficult. The problem is that the shaft must be driven back out of the housing while the pump body is supported and the shaft is free. You have many choices of ways to accomplish this. Here, I used a short piece of 2" PVC pipe to support the pump body and allow the shaft to drop free. You can also drill a hole in a piece of wood to allow the shaft to drop through while the wood supports the pump body.



Once the pump body is supported and the shaft is free to drop, place a block of wood on the front end of the shaft and use a mallet to gently tap the shaft out of the pump body. Remember, the shaft is removed through the back of the pump. Don't wang on it! It should tap out fairly easily. If it doesn't because the bearing are corroded to the housing, apply penetrating oil, let sit and try again. If you wallop it, you

stand a good chance of damaging the shaft.



Here is the shaft, bearing assemblies and seals. **PLEASE NOTE:** I removed the seals before taking a picture, so quickly placed them back for a picture. However, I placed the spacer in the wrong direction. So don't use this picture as a guide.



Instead, remember this: the correct orientation for reassembly is oil seal with open end facing aft, followed by spacer with the feet facing aft resting on the oil seal, followed by the o-ring sling washer, followed by the water seal with the open end facing forward.

I will repeat this later because I forgot to take a picture of that part.

Step 5. Remove old seals and clean up the shaft. The

seals just slide off the shaft. The shaft will probably have some cruft on it like in the picture. Use some fine emory and clean up the shaft. Be careful not to scratch it up.



You may have grooves in the shaft where the seal lips wear on it. If these are too deep, you will need to replace the shaft or sleeve it with a speedy-sleeve. In this picture of the (mostly) cleaned shaft, you can see some slight grooves in our shaft. These are not a problem so the shaft was reused.



Step 6 (optional). Modify the new seals. This picture shows a new seal next to an old one. These lip seals contain a garter spring in them that helps to hold the lip in compression on the shaft. The problem with these springs in this application is that they corrode and lose their functionality. The next picture shows the corroded remains of the spring from our old water seal, along with the sprung

spring from the oil seal.



You have the option of removing that spring and replacing it with a similar sized o-ring. The internal diameter of the o-ring is what is important – use one with the same ID as the garter spring. The o-ring will not corrode and not weaken over time. This will give your pump seals a longer life. It is possible to order seals with o-rings instead of garter springs, but that requires some legwork to find the correct part. I find it simpler to just order the Johnson pump seals and replace the garter springs myself.



Step 7. Reinstall the shaft and bearings. Don't put the seals back on the shaft until you reinstall it in the pump body. Reinstalling the shaft is the reverse of taking it off. Place it on your pump body support with the shaft hole in it (the 2" PVC pipe in my case here) – only this time it is placed upside down compared to last time. You will be installing the shaft from the rear of the pump body. Using a block of wood and hammer, line up the bearings as straight as possible and very gently tap the shaft down. Again, don't wang on it! If you do, the bearings will go in crooked and you will have a much larger problem on your hands. Gently tap it and the shaft will align straight as the bearings go into the housing.



Step 8. Install the new seals. The new seals need to be carefully and straightly pressed into the pump body. Put some grease on the shaft to help prevent damaging the seal lips and slide the oil seal onto the shaft **with the open end**

facing down (aft) and closed end facing up (forward). Use an appropriate-sized deep socket and mallet to very gently tap the seal down into the body.



Next, place the spacer on the shaft **with the legs down toward the oil seal and the flat part up toward the water seal.** Place the o-ring on top of the spacer.

Place the water seal on the shaft **with the open end facing up (forward) and the closed end facing down (aft) toward the oil seal.** Tap it in place using the socket and mallet just as you did the oil seal.

When you are done, you can look in the water weep slit on the side of the pump and see the oil seal<>spacer<>o-ring<>water seal all in their proper places. The purpose of the spacer is to allow any oil or water leaking past either seal to weep out the hole before passing through the opposite seal. The o-ring is just a sling washer to act as a secondary defense – anything reaching that is forced out the weep hole.



Step 9. Reinstall the shaft gear and bolt the pump back on the engine. Luckily, reinstalling the gear does not require a change of underwear as no shocking noise will occur. Simply place it on the shaft and tighten the nut down hard to press the gear onto the taper.

You are done! Install the impeller (don't worry about which way the vanes go – they will all go right on the first turn) and close it up. Run the engine and look for any oil or water exiting from the weep hole.

Mark on Reach – Manta 40 #39

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