

Ask a Marine Technician

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Tip of the Month: For stuck fasteners, I think Kroil is the king of penetrants. It's not sold in stores, you have to order it direct at www.kanolabs.com.

Correction: Last month I recommended Ideal Noalox® as an electrical wire anti-oxidant because it is available at local hardware stores. Noalox® is 15-20% zinc powder by weight and isn't the best choice. I would stick with Sanchem NO-OX-ID® instead.

Q. Any tips for changing my raw water impeller?

A. I think what makes the job a lot more pleasant is the proper tools. Many sources mention using a pair of screwdrivers or various pliers to grip and pull the impeller out. Those approaches might work but proper tools make the job less stressful.

When you have good access to the pump, an impeller puller is a great tool to have.

Both Sea-Dog Line and Jabsco make widely available impeller pullers. I called Sea-Dog Line to check and the diameters in Figure 1 for their pullers are the outer diameters of the entire impeller, fin tip to fin tip.

To use the puller, insert the two fingers between the impeller fins, landing roughly halfway down the height of the impeller hub. Tighten the two side knobs evenly, until the fingers have a good grip (you'll develop a feel). Then tighten the center knob against the pump shaft to remove the impeller.

Inspect the impeller for cracks and missing pieces. A subtle failure to watch for is the bond of the rubber to the impeller bushing can break and allow the impeller to spin on the bushing. If the impeller looks great but there is no cooling water, this might be the problem. Also check for intake blockages.

If there are missing impeller pieces, they are not far away. They don't dissolve, but instead collect, blocking cooling packages. They are jammed up somewhere downstream of the pump, for example at a heat exchanger or transmission oil cooler. You have to get those pieces out!

If engine or transmission oil temperature has been running hot, the impeller pieces might be the problem.

Many impellers and pumps use a parallel keyway and square keystone to lock the impeller and pump shaft so they rotate together. Other pumps instead use a Woodruff key. The Woodruff key is just as easy to remove but harder to replace. The Woodruff key looks like a nickel cut in half to create a semi-circle. The impeller will have a square slot to receive the flat side of the semi-circle. The shaft will have a milled semi-circular slot to accept the curved side of the key.

Any misalignment of the impeller slot on the key causes it to sew-saw right out of the slot when you attempt to seat the impeller. The way to prevent this is to make a mark on the circular face of the pump shaft, where the impeller puller pressed, in line with the key slot. Shine a light down the impeller bore and line its square slot up with the Woodruff key and press it home by hand. I like to use Dow Corning 111 o-ring grease to help hold the key in the slot if needed. I would avoid using any old grease to prevent problems with rubber incompatibility.

In some situations, a great custom plier based tool sold by Bay Shore Marine (bayshoremarineengines.com) in Annapolis would be a great help. Look for it under *Featured Items* at the bottom of their home page. They have an excellent video showing how to use it.

Remember to order a new gasket or o-ring to fit your pump with your new impeller if it's not included.

Some brands of pump have OEM impeller kits that include a small packet of glycerin to lube the impeller for the first start up when the pump will be dry. You can buy larger bottles of glycerin at pharmacies. It's great for the impeller lubrication as well as a big help in getting hoses onto fittings.

Sea-Dog Line	660040-1	2-1/4" to 2-9/16"
	660020-1	3-1/16" to 5"
Jabsco	50070-0040	1-9/16" to 2-9/16"
	50070-0080	1-9/16" to 2-1/4"
	50070-0200	2-9/16" to 4-5/8"

Figure 1 – Impeller Puller Models

Please send questions and comments to ubbasktech@gmail.com. All emails will be answered.