

Q What should I do if I discover water in my oil (usually indicated by a light gray "milky" look to the oil)?

CAUTION: Before proceeding with remedial actions relative to the discovery of water in the oil, it's important to close the raw water through-hull, and remove all four spark plugs to determine whether or not water is entering into any of the combustion chambers. If water is found to be entering any of the cylinders, refer to a question and answer in this same section with the subject: "Water in cylinders, or running out of the carburetor intake throat".

A: Whenever water is discovered to be only in the oil, we recommend that the oil be changed at least three times, before moving ahead to more serious trouble shooting. If the oil cleans up, we make the assumption that weather conditions were right for condensation, or that some water may have splashed into the dip stick tube, etc. We hear of several episodes each year, where small amounts of water have shown up in the crankcase, for which there is never any cause found, and where (happily) the water never returns.

If the oil clears after the third change, and you want more assurance that there is no problem with any of your cooling jackets, you can perform a quick check of your water jacketed castings by pinching off the water discharge hose coming off the back of the manifold, for several ten-second pressure checks. A flexible impeller pump in good condition can produce 20 to 25 psi when deadheaded in this fashion. If there is a crack anywhere in the water jacketed castings, this amount of pressure will usually force water back into the oil at a rate that should be unmistakable.

If small amounts of water continue to appear in the oil after the third oil change, we recommend checking the following items (admittedly rather long shots) before moving on to more serious maintenance:

- 1) Inspect to see if a Sherwood or Jabsco water pump is installed on the engine. Both of these brands have the potential of passing a bit of water into the crankcase if their water seals leak and the weep holes in their housings become plugged with grease and crud. In this scenario, trapped water along the shaft of the pump can force past the second seal (the one preventing oil from coming out of the crankcase), and into the oil pan. Oberdorfer and MMI flexible impeller pumps have large weep holes in their housings, so they don't have this same potential.
- 2) Remove the valve cover to inspect for water entering into the valve chamber through a hole in the very center of the water jacket behind the valve springs. In some of the later model engines (usually with serial numbers over 194,000), Universal used a 1/4" pipe plug to close a hole in that area. The problem is that they used plain steel plugs which have a strong potential to fail after the 25 or so years since they were installed.

If water continues to come into the crankcase, and no other cause can be found, we would have to suspect a crack in the lower part of the water jacket within the block. The easiest way to pressure test the block (without removing the head) is to first plug the outlet of the thermostat housing. Then remove the hose from the outlet of the water pump, and install a Schrader valve in the end of the hose, so that a standard bicycle tire pump with a built in pressure gauge can be used for the test. A Schrader valve is the standard valve used on automobiles, and they are available at any auto parts store. The block should be able to hold 20 psi for an hour or more without a noticeable drop in pressure.

NOTE: Be sure to remove the spark plugs and double check the combustion chambers after the pressure test. In the unlikely event that a small leak in the head gasket or head was allowing a very small amount of water to enter the crankcase via one of the combustion chambers (and leaving no noticeable evidence within the combustion chamber itself), water should be in evidence within that combustion chamber after the pressure test.

If you have an early model engine, you can perform a pressure test on your early model engine using a bicycle pump with a built in pressure gauge as follows:

- 1) Remove the water fitting from the inlet to the water jacket side plate, and install a 1/4" pipe plug in the inlet. If you have previously replaced the 3/8" metal tube between the pump and the side plate with a rubber hose, it may be easier to remove the hose from the outlet fitting of the pump and install a plug in the end of the hose for the test.
- 2) Remove whatever fitting is installed in the outlet of the manifold, and install a reducer bushing and a Schrader valve in that location. A Schrader valve is the standard valve used on automobile tires, and they are available at any auto parts store.
- 3) Pressurize the block, head, and manifold to 20 psi. The cooling jackets should be able to hold 20 psi for an hour or more without a noticeable drop in pressure.

Finally, if the above pressure test does show that the cooling jacket in the block is leaking, it's most likely through a crack along the floor of the water jacket just below the water jacket side plate, or through a pin-hole leak in the lower part of one of the cylinder bores. See attachments for photos of such leaks. The photo of the pinhole leaks was taken after the cylinders were re-bored to accept sleeves. When pin holes first manifest, they really are the size of a pinhole. If the block is otherwise in good condition, leaks in these two areas are usually economically repairable. Unfortunately, the engine will need to be removed from the boat and disassembled to make the repair.

If your investigation runs full course and you do discover a leak in the cooling jacket within your block, please get back to us and we'll provide a few more details on crack repairing.

