

Repair of internal water leaks on the inline 6 Mercury engine.

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I have worked on and raced inline 6 Mercury engines since the mid 70's. During this time the number one complaint was leaking exhaust plates. I have seen or tried almost every "fix" you can imagine. I can't list all of the "fixes" that don't or didn't work.

Some still try to use Mercury's Resweld, epoxy solution. Doesn't work well. Keep in mind Mercury hasn't really worked on or addressed this issue since the late 70's despite the length of time the inline 6 were made.

I can't say for sure but I believe all of the inner side plates available from Mercury were made many years ago in one batch. This too leads to some of the problems.

The solution I have found is using modern materials, certain assembly/inspection methods and specific parts.

Water jacket leaks, exhaust water leaks into the cylinders can cause the following symptoms; hard starting, loss of a few hundred RPM at WOT, rough idle, poor acceleration, not being able to get on plane, engine shutting off at low speeds.

To diagnose a water leak the easiest thing to do is simply look at the spark plugs immediately after running the engine. This is best done on a cold engine. Back the boat to the water, start the engine run it until warmed up at idle speed. Pull the boat from the water and pull the spark plugs checking for water droplets on the plugs, or a milky brownish film on the plug.

There are two types of leaks in the exhaust area. The inner plate is the one most blamed. However I have found that in most cases it isn't the culprit. But here is how to fix it.

There are three plates, for simplicity I will refer to them as the inner plate, middle plate and outer plate.

When replacing the exhaust plates always use a new inner plate. If you absolutely can not get a new plate you may be able to straighten a good used plate on a wood table. A real old plate, or one with corrosion or extreme bowing, will continue to leak. **Use ONLY the Mercury gasket with the thermo sealer**, it will be glossy. Do not use any aftermarket gaskets here or the uncoated Mercury gasket. It is possible to get either one from Mercury. They are the same part number! Just take it back before you open the package and re-order. Use a high

temp red RTV, NOT the copper type and coat both sides of the inner plate gasket with a **very thin coat** and install the plate using red permanent loctite. Be careful not to put too much sealer on or you will block the cooling holes. Follow the torque specs and pattern.

Examine the block very carefully for any cracks around the port area and bolt holes. Chase the holes with a 5/16 tap. Clean the bolts of any carbon, corrosion, replace them if they are defective in any way. Make sure the mating surface is absolutely clean and dry, lacquer thinner or acetone work well..

Next, put the block on its side with the exhaust side up. Put a small dab of grease on the length of the diverter of the inner plate, just a film of a few thousands of an inch. Place the middle exhaust plate on the block **without a gasket**. Do not bolt it down, you are just inspecting the sealing. Look for light around the outside of the plate where it meets the block. File or mill the middle plate until there is no grease transfer from the inner plate and no light around the outside. I use a surfacing table belt sander, but a hand file will do fine. Once filed or milled properly, there will be no light around the block, install both plates, middle and outer with black high temp RTV on the gaskets. A thin coat here too. Once again chase the threads and use Loctite either the red or the removable blue. Torque to specs.

What I have found is when the block reaches temperature, the block and inner plate move and expand. The middle plate then high centers on the inner plate and opens up the water passages to the inside of the block. Since I have changed how I do the exhaust I have had zero leaks.

Let it sit at least 24 hours before use.

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