## ORCA MARINE COOLING SYSTEMS BELLINGHAM, WA 98226

Indmar 350 2000 LTR & MPI Installation Instructions

400869 Half System

- 1. Disconnect the battery. Drain system according to your engine manual. If equipped, remove air filter base, the air filter and the cover. Place a rag in the opening. Loosen the clamps on the 1" hose at the front of the exhaust manifolds. Loosen the clamps on the 1-3/4" hose to the water pump. Remove the 1-1/4" hose to the oil cooler. Remove the thermostat housing with the 1" hoses attached and clean the gasket surface. Place a rag in here also to prevent parts falling in.
- 2. Set the new 160 degree thermostat in place. Place the fiber gasket on the thermostat boss and then the KA-015 water outlet. Secure with the 3/8" x 1" HCS and lock washers.
- 3. Replace the 1/2" plug in the intake manifold just left of the thermostat housing with the 5/8H x 1/2M brass 90° elbow and orient it to starboard. Remove the 1/2" plug from the side of the circulating pump and install the 5/8H x 1/2M brass hose barb. Connect the two hose fittings with the 5/8 x 16 wire hose unless you are installing a heater. If so, follow directions below.
- 4. Remove the oil cooler from it's mount and let it hang momentarily. Make sure no oil runs out. Re-use the original bolt and spacer to install one end of the 1/8" x 1" x 6" strap. Loosely attach the oil cooler to the other end of the strap with the 3/8" x 3/4" HCS, lock washer and nut.
- 5. Remove the lifting eye and install the shorter steel bracket (400073) with the ground-off corner in the bottom hole (see attached sketch). Use the 3/8" x 1-1/4" HCS and lock washer. Install the longer steel bracket (400074) in the corresponding hole on the starboard head. Place the cushion tapes on the brackets.
- 6. Set the heat exchanger in place and clamp loosely with the #88 clamps w/sleeves. Measure, cut and fit the 1-1/2" 90° degree formed hose between the water outlet and the fitting on the port end of the heat exchanger. Bring up the original 1-3/4" hose from the water pump and fit it to the heat exchanger. Measure, cut and fit the 1-1/4" 90° degree formed hose to connect the oil cooler to the heat exchanger.

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- 7. Attach the 1" x 16" heater hoses to the legs of the 1" x 1" x 1-1/4" 90 copper tee. Use the 1-1/4" x 8" heater hose to position the tee behind the water outlet hose. Measure, cut and fit the 1" heater hoses to the fittings on the front of the exhaust manifolds. The brass elbows are included if the factory fittings break.
- 8. Adjust the heat exchanger and all hoses and tighten all clamps. Fill the system with a maximum 50/50 mix of water and antifreeze so the liquid is just barely visible through the fill neck.
- 9. Idle to temperature with the pressure cap off. Add fluid if needed to maintain the level just below the fill neck. When the thermostat opens and the fluid begins moving in the tank you can replace the pressure cap.

## **HEATER OR WASHDOWN**

You cannot use the warm water wash down feature as provided. If you do you will be washing down with warm antifreeze. A special copper tee (400226) can be ordered to provide warm water for wash down.

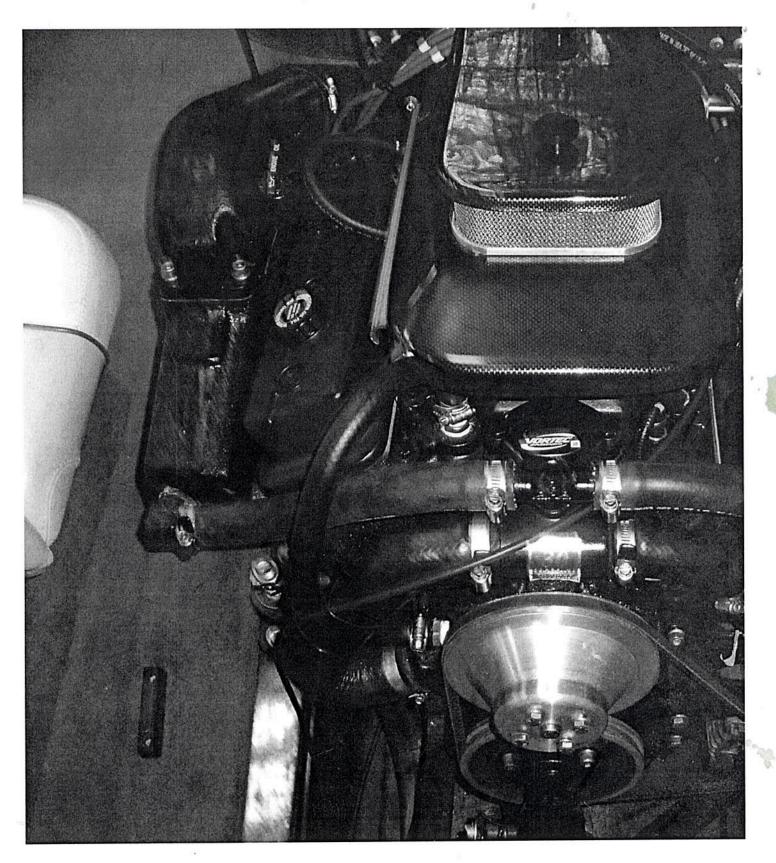
The heater will be supplied by the fitting on the top of the intake manifold. The return from the heater will be the fitting on the side of the water pump.

## **CAUTION:**

INSTALLATION OF THE PLASTIC COOLANT RECOVERY BOTTLE IS CRITICAL TO THE OPERATION OF THIS SYSTEM.

IT MAY BE INSTALLED ANYWHERE IN THE ENGINE COMPARTMENT BUT MUST MAINTAIN THE LEVEL OF LIQUID BETWEEN THE WARM AND COLD MARKS AT ALL TIMES.

THE RECOVERY BOTTLE ALLOWS FOR THE EXPANSION AND CONTRACTION OF THE ANTI-FREEZE SOLUTION IN NORMAL OPERATION.



Regards,

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HAMMERHEAD

