

# SAN JUAN FRESH WATER COOLING SYSTEMS

## 5.7 EFI MerCruiser 350 Magnum M.P.I. GEN+ Block Only Cooling Kit # MC-317 Installation Instructions

San Juan Engineering Heat Exchangers provide thermostatically controlled fresh water cooling for marine engines. Its compact installation fits within overall engine dimensions, allowing for installation in most existing engine compartments. Designed to ensure years of satisfactory service, the entire unit is constructed of pure copper with silver Alloys. This system is built by quality craftsmen that have made San Juan Engineering the leader in their field for over 35 years.

San Juan Engineering Heat Exchangers prolong engine life by preventing corrosion in the cylinder block. Anti-freeze solution can be added to the coolant if boat is used in extreme cold weather. Draining the sea water side of the heat exchanger is required when the boat is not in operation.

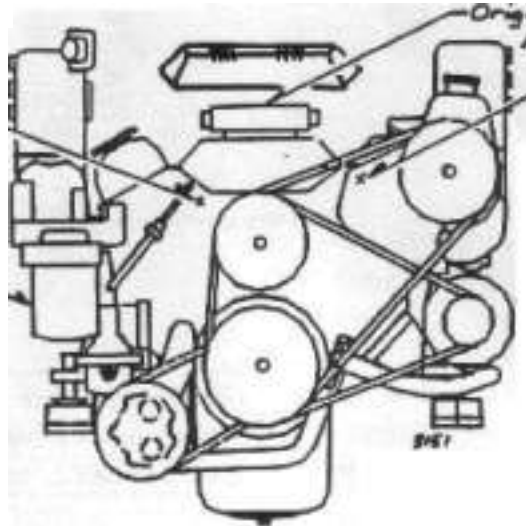
Installation is simple. All necessary parts are supplied and no special tools are required.

1. All instructions are given while facing the front of the engine. The alternator is on the right hand side, the fuel pump on the left hand side.

*Fig. 1*

Left hand bracket  
mounting point

Fuel filter



Original Thermostat  
Assembly

Right hand bracket  
mounting point  
Remove top bolt  
on lifting bracket

Figure 1

**San Juan Engineering and Manufacturing Co.**

766 Marine Drive Bellingham, Washington 98225 USA Phone (360) 734-1910 Fax (360) 734-9683

6. Remove the thermostat housing assembly from your SJE kit (Figure 2).

7. Take out the two 1/2" hollow headed pipe plugs on each side of the Thermostat housing. Take out 1/2" pipe plug on the water pump (Hole used for bi-pass) screw in straight 1/2" NPT to 5/8" hose Fitting (save 1/2" plug for thermostat housing). Take the 3/8 x 1/2" pipe bushing screw into opening on right side of thermostat housing and screw in one wire sending unit. Take close 1/2" pipe nipple, tee and 90 degree fitting, screw into 1/2" hole on left side of thermostat housing and screw the two wire sending unit pointing forward.

Be sure thermostat 1B pointing UP.

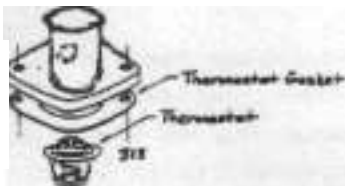
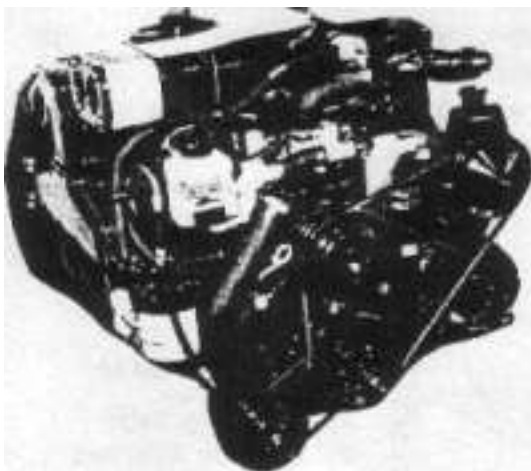


Figure 2



8. Using the 27" piece of 5/8" hose and (2) hose clamps, plumb these two fittings together following the route shown in Figure 3. This is your fresh water by-pass and can also be used for a heater. For a heater, plumb the bottom of the heater to the by-pass outlet next to the thermostat assembly, the top of the heater to the outlet at the water pump.

9. Clean thermostat housing gasket surface on the intake manifold. Insert original thermostat, spring end down (Figure 2), Position new gasket, supplied in your SJE kit between thermostat and thermostat housing. Secure thermostat housing with the (2) 3/8" by 1" bolts. Tighten the two bolts firmly and evenly.

10. Remove the top front, left hand bolt from the power steering pump bracket (Figure 1). From your kit install the RH heat exchanger bracket, marked RH MC317-2 using the 3/8" by 1-1/2" bolt, lock washer and flat washer. Tighten bracket bolt firmly.

11. Use a lock washer and flat washer on the 3/8" by 1" bolt. Install LH heat exchanger bracket, marked LH MC317-3 using the empty hole located on the top, inboard side of the left head (Figure 1). Tighten bracket bolt firmly.

12. Carefully cut the 1-1/4" raw water hose, "Hose A" on the right side of engine (Figure 3). Use the hose cutting guide on the insert page to acquire the correct length.

13. Using the hose cutting guide, cut the 1-3/4" Fresh water suction hose, "Hose B" located on the left side of the fresh water pump (Figure 3).

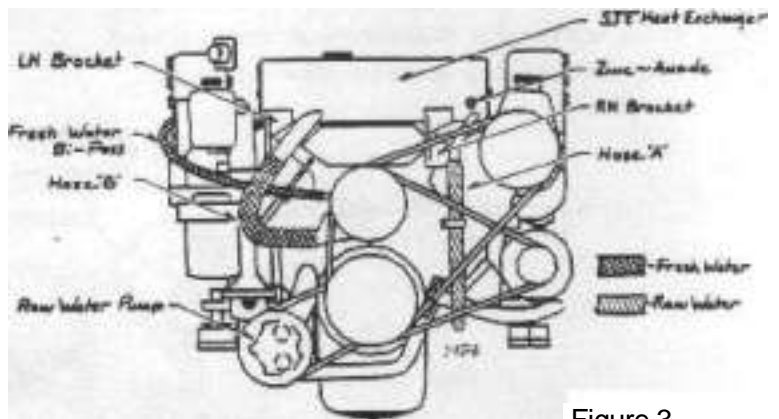
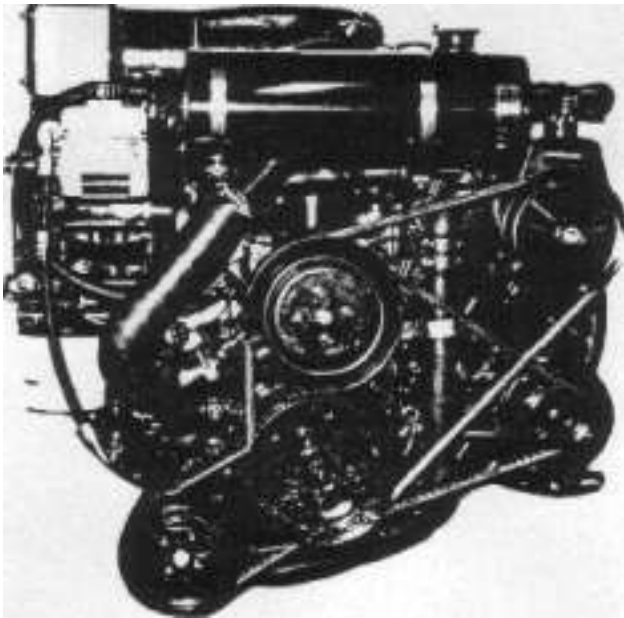


Figure 3

Use caution when tightening threaded fittings. Always use back-up wrench on threaded NPT female fittings ie., temp senders and zinc anode.

14. Using the 90 degree 1-1/2" hose elbow and (2) #14 hose clamps provided in your kit, connect the thermostat assembly to the heat exchanger. Slip the hose clamps loosely over the hose first, then slide the hose onto the thermostat assembly. The other end of the hose is connected to the 1-1/2" spud on the back, right hand side of the heat exchanger. This can be attached as you slowly set the heat exchanger tank down into its brackets.

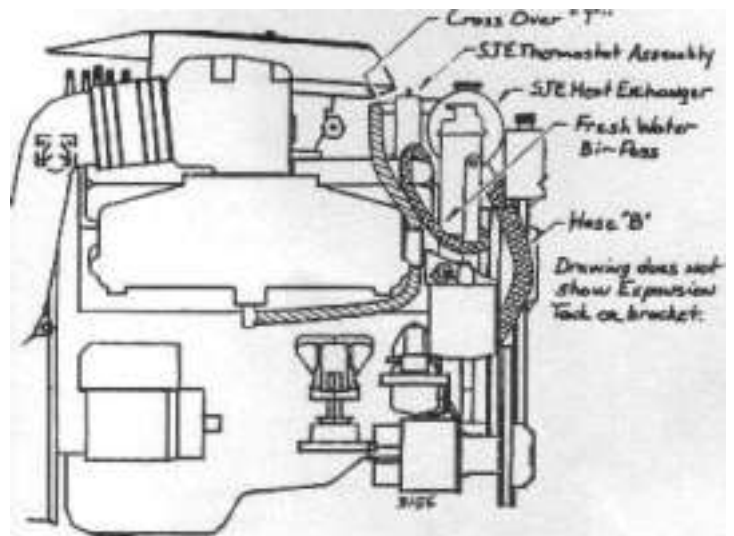
15. Connect raw water crossover divider tee to two 1" hoses from each manifold, then connect 1-1/4" (#70959) curved hose to top of 1-1/4" spud that connects to the heat exchanger pointed up. Connect other end when setting the heat exchanger down into its brackets.



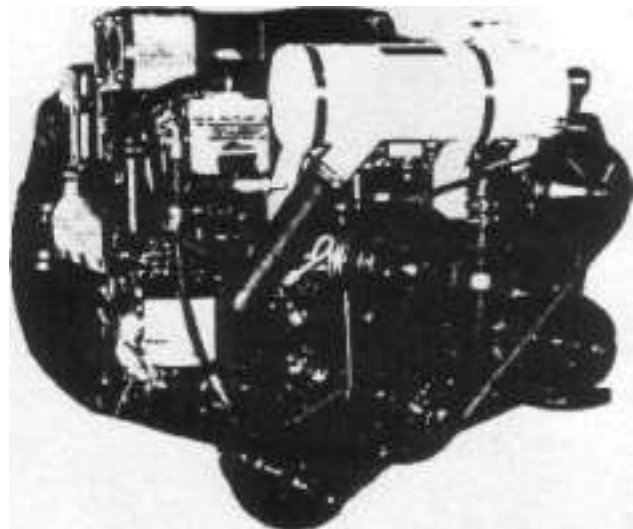
16. Place heat exchanger on brackets keeping the right end approximately 1/4" from the steering pump. Use the large #550 hose clamps to secure. Tighten clamps firmly. Connect hoses "A" and "B" to the spuds at the bottom of heat exchanger, Use the original hose clamps.

For installation and technical assistance, or information on other San Juan Engineering & Mfg. Co. Products, Please call (360) 734-1910 or fax 360) 734-9683

17. Mount the plastic accumulator tank in its wire hanger in a vertical position, near the engine and as high as possible. The stern location is the most desirable on stern drive boats. Install the plastic tube onto the heat exchanger overflow spud, just under the heat exchanger fill cap. Then route the tube in the least obstructual path and connect to the lower nipple on the plastic tank. Use spring clamp to secure tube to tank. Be sure that there is no sharp bends or kinks in this tube. Then place rubber hose supplied on tanks top overflow spud.



18. The zinc anode retards corrosion in the raw water side of the cooling system. Check occasionally, replace when 3/4 eroded. Make sure all hose clamps & bolts are firmly tightened before moving onto the start-up procedures.

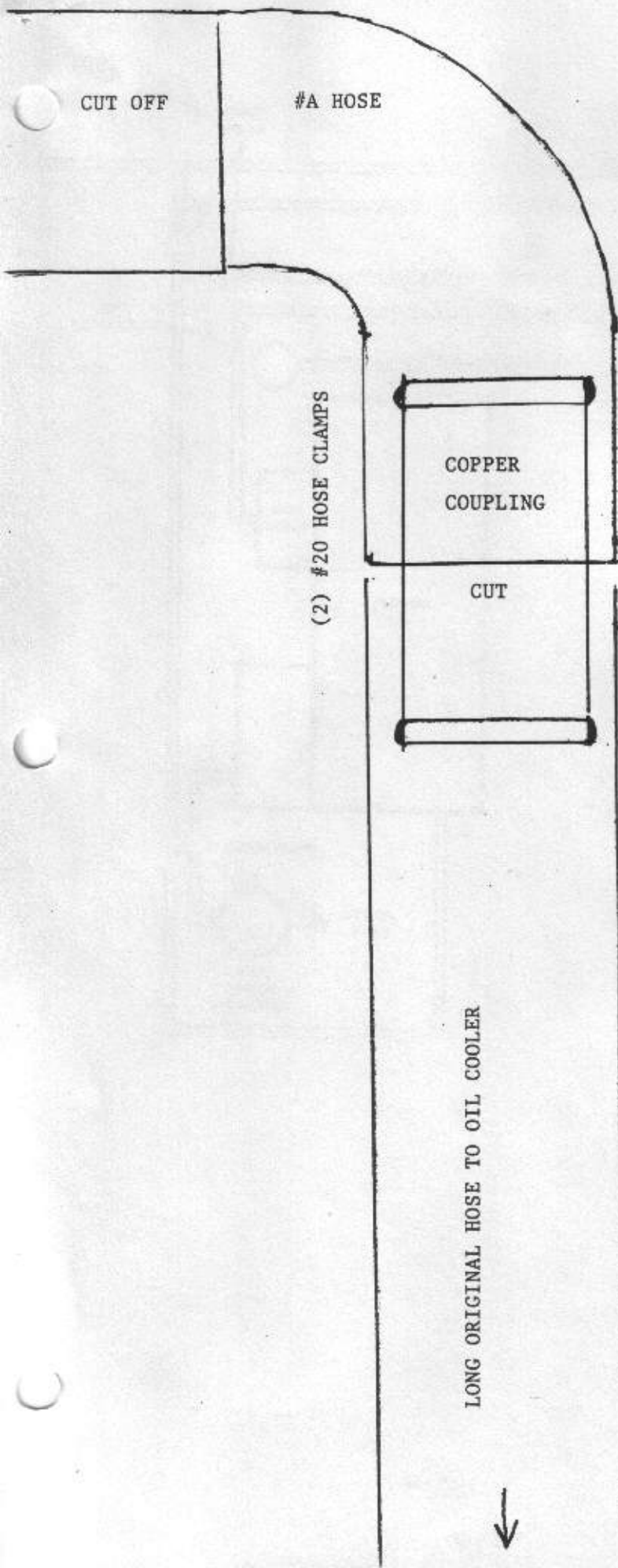


## 5.7 EFI MerCruiser 350 Magnum M.P.I. Gen+, Block Only Cooling

### Parts List

MC317-0	1	Instruction Manual
MC 317-1	1	Heat Exchanger
MC 317-2	1	RH Mount
MC 317-3	1	LH Mount
MC 317-4	1	Plastic Exp. Tank w/parts pressure cap, plain cap, hose & clamps
MC 317-5	1	Thermostat Housing #2025
MC 317-6	1	Thermostat Gasket #SJE-023-4A
		<u>Fittings</u>
MC 317-7	1	#54SB
MC317-8	1	#54EB
MC 317-9	1	1/2" X 1/2" X 3/8" Tee
MC 317-10	1	1/2" Close Galv. Nipple
MC 317-11	1	1/2" X 3/8" Bushing Galv.
		<u>Hoses</u>
MC 317-12	1	5/8" X 27"
MC317-13	1	#70959 Curved Hose (Cut)
MC 317-14	1	#70541 Curved Hose (Cut)
		<u>Hose Clamps</u>
MC 317-15	2	#10
MC 317-16	4	#20
MC 317-17	2	#24
MC 317-18	2	#550
		<u>Bolts</u>
MC 317-19	3	3/8" X 1"
MC 317 20	1	3/8" X 1-1/2"
MC317-21	4	3/8" Lock Washers
MC 317-22	2	3/8" Flat Washers





HOSE CUTTING GUIDE

