Carb

5.0/5.7 LX/V8 MerCruiser
"Block Only Cooling" With Serpentine Belt
Kit #MC-338 Installation Instructions

San Juan Engineering Heat Exchangers provide thermostatically controlled fresh water cooling for marine engines. When installed on the engine, it does not increase the height, width, or length to the 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 craftsman that have made San Juan Engineering the leader in our field for over 44 years. San Juan Heat Exchangers prolong engine life by preventing corrosion in the cylinder block. A hot water or cabin heater is now possible with fresh water cooling.

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 left hand side, the idler pulley on the right hand side.

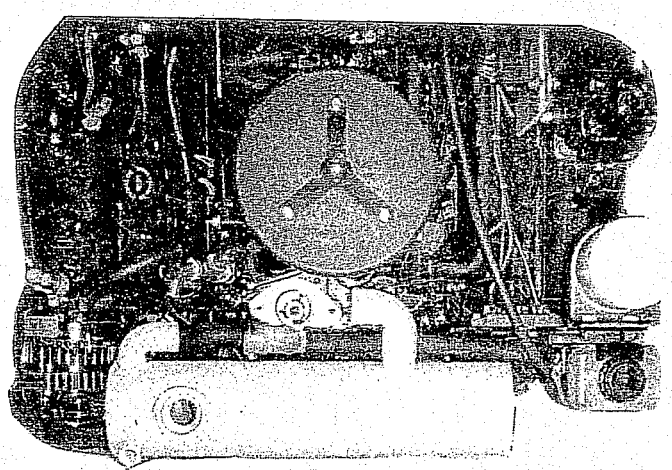
2. Disconnect battery cables.

3. Locate original thermostat housing assembly at top, front, center of engine. Disconnect wire connected to the high water temperature alarm sending unit and the wire connected to the water temperature sending unit. Be sure wires are re-connected to the same sending units.

4. Remove all hose clamps and hoses connected to this assembly. Use care not to destroy hoses or hose clamps, they will be used later. Leave all hoses connected at their other ends.

5. Remove thermostat housing assembly from engine by taking out the (2) 9/16" head bolts at back end of housing. Carefully remove plastic retainer and thermostat, high water temperature alarm sender and water temperature sender from housing. These will be used later. Discard original thermostat housing, lifting strap and bolts. You will replace these with new parts from your SJE kit.

6. Remove the 1/2" NPT pipe plug from the intake manifold, this is located slightly in front and to the left of the thermostat, next to the left valve cover. Figure 2 cross assembly; thread these parts into the manifold in this order: 1/2" NPT X 3/8" NPT bushing, 3/8" X 1-1/2" nipple, 3/8" cross, then the 3/8" NPT X 90 degree X 5/8" hose adapter. Thread temperature sending units into the threaded holes in cross. Tighten both senders firmly, using caution not to over tighten. We recommend using pipe thread sealant when installing threaded fittings. Always use a back-up wrench on threaded NPT female fitting i.e.., temperature sending units and zinc anode. Next, remove the 1/2" NPT pipe plug located on the left side of the engines circulating pump, remove the plug and install the 1/2" NPT X 5/8" straight hose adapter. This hose should be trimmed for cleanest installation i.e.. no kinking or chafing on metal parts. Now use the 5/8" ID hose supplied in your kit and (2) #10 clamps and plumb the cross assembly on the intake manifold to this fitting.



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7. 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.

IMPORTANT: When connecting cabin or hot water heater, certain requirements must be met.
A. Supply hose (from engine to heater) and return hose (from heater to engine) MUST NOT EXCEED 5/8 in. (16 mm) inside diameter.
B. Make heater connections ONLY at locations described in the following instructions.
C. Check complete system for leaks after heater is connected into cooling system.
D. Check for overheating condition (of engine) after heater is connected.

CAUTION!

Heater must be mounted lower than the fill cap on the heat exchanger. If the heater is higher than the fill cap on the heat exchanger and some coolant is lost from the system, an air pocket may form in the closed cooling system. This can cause the engine to overheat.

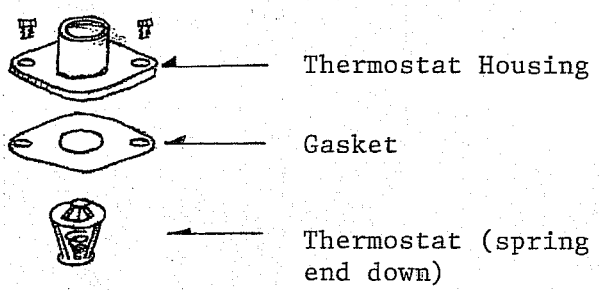


FIGURE 2

8. Clean thermostat housing gasket surface on the intake manifold. Insert original thermostat, spring end down (Figure 1). Position new gasket, supplied in your SJE kit between thermostat and thermostat housing. Secure thermostat housing with the (2) 3/8" X 7/8" bolts and lock washers. Tighten the two bolts firmly and evenly.

9. Locate the alternator bracket lower brace (flat steel bar that is mounted from the front of the alternator to a bolt on the head), remove the bolt on the head and install bracket #MC338LH with a 3/8" NC X 1-1/4" bolt and lock washer into the hole. Set the rubber strip onto the cradle of the bracket.

10. Remove the belt tensioner upper 3/8" bolt and install bracket #MC338RH with a 3/8" NC X 1-1/4" bolt and lock washer into the hole. Set rubber strip onto the cradle of the bracket.

11. (2) 1" hoses that were connected to the original thermostat housing now should be connected to the salt water divider tee with the 1-1/4" OD elbow pointing up and to the left. Add 1-1/4" X 6" hose and (2) #20 clamps, clamp onto tee.

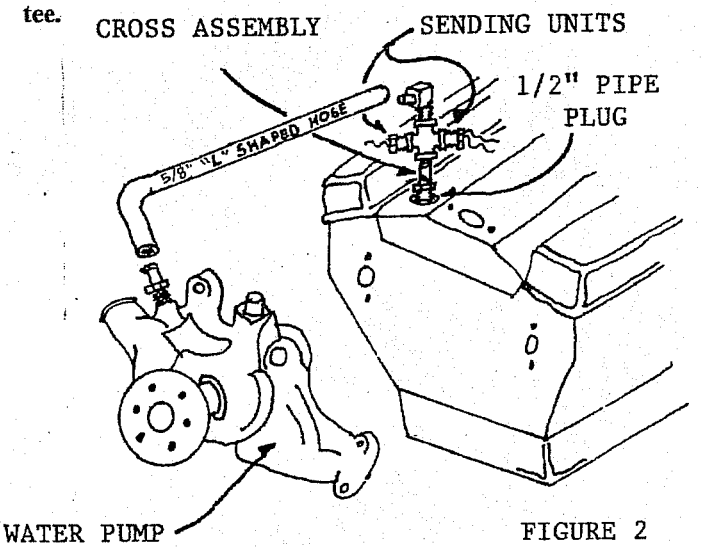


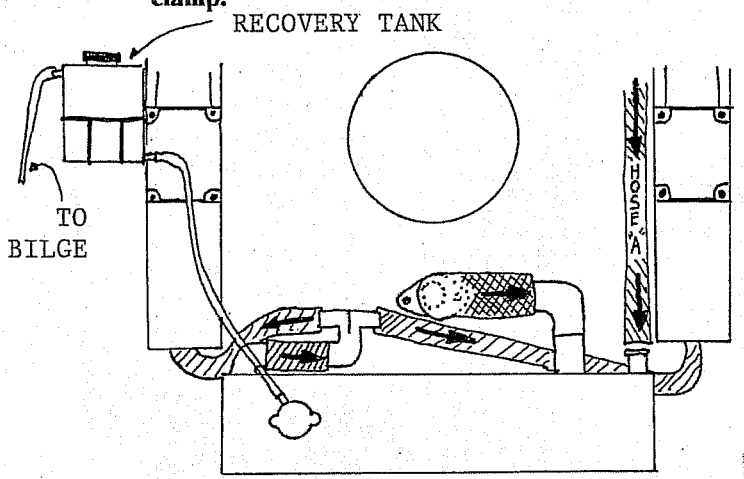
FIGURE 2

12. Using the 90 degree 1-1/2" hose elbow and (2) #24 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" hose barb 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. Connect all hoses. Tighten clamps firmly.

NOTE: Some shifting and twisting of the heat exchanger may be necessary to install and help keep hoses from chaffing on engine parts.

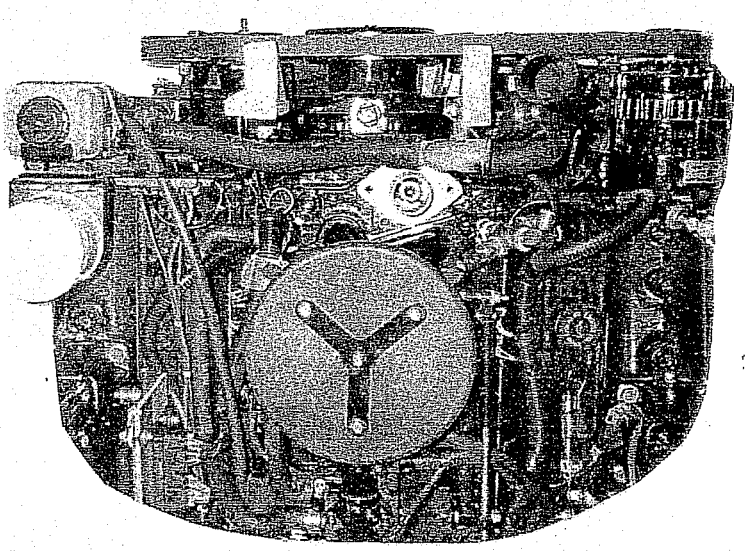
13. Carefully cut the 1-1/4" raw water hose on the right hand side of engine. Use the hose cutting guide to acquire the correct length. This hose is referred to as "Hose A". With hose cut to length, slide original hose clamp loosely over hose and slip hose over the 1-1/4" hose nipple located on the lower right hand end of the heat exchanger. Tighten hose clamp firmly. Now install the 1-1/4" X 6" hose (originally installed onto the copper tee) to the 1-1/4" OD fitting on the left side of the heat exchanger. Clamp firmly.

14. Using the hose cutting guide, carefully cut the 1-3/4" fresh water suction hose located on the left hand side of the fresh water pump. Referred to as "Hose B" in the cutting guide. Loosely slide the original hose clamps over hose and slip hose on to the 1-3/4" hose nipple located on the left hand bottom of the heat exchanger. Tighten hose clamp.



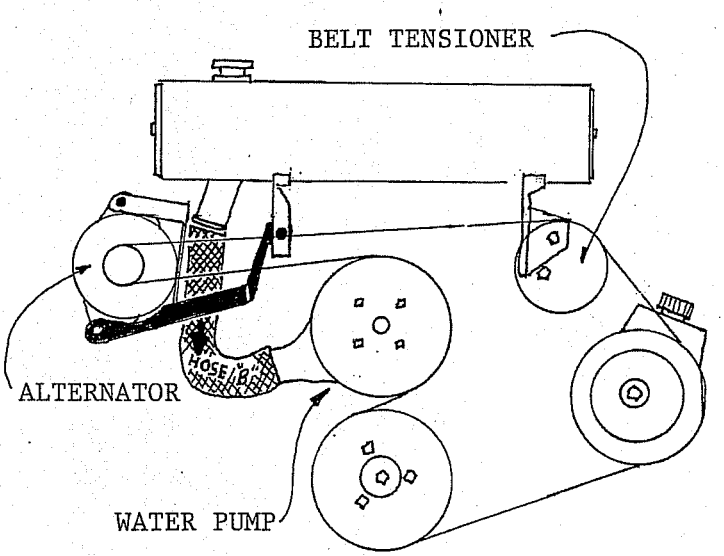
15. This system uses a recovery type accumulator tank for the expansion of the coolant and also removal of air from the system. Secure the plastic expansion tank in best location, preferably at the same level as the heat exchanger or higher and also for checking fluid with ease. Cut a piece of 5/16" hose to connect the spud at the heat exchanger fill neck to the spud at the bottom of the expansion tank. Use the (2) 5/16" spring clamps to secure the hose. Fill accumulator tank to cold line. Fill through the fill cap neck on heat exchanger until water is overflowing at the fill neck. As it is IMPORTANT to remove all air from the system, leave the fill cap off after starting engine and be prepared to refill water into the fill neck as AIR is removed and water level drops. All air must be out of system if it is to work properly. This may take 10 minutes, or more, or running the engine in neutral at 1,000 to 1,500 RPM at the dock. Do Not run the engine at all without a water supply to the water inlet on the lower unit. The sea water pump will be damaged or destroyed if run dry. When you are sure all air has been purged from the system and the water level has stabilized at the fill neck and it is full, install the fill cap and add water to the cold line on the expansion tank. Do not remove the fill cap when engine is hot! Coolant capacity is approximately 14 quarts.

16. The zinc anode retards corrosion in the raw water side of the cooling system. Check occasionally and replace when 3/4 eroded.



Fresh Water
Raw Water
Water Flow

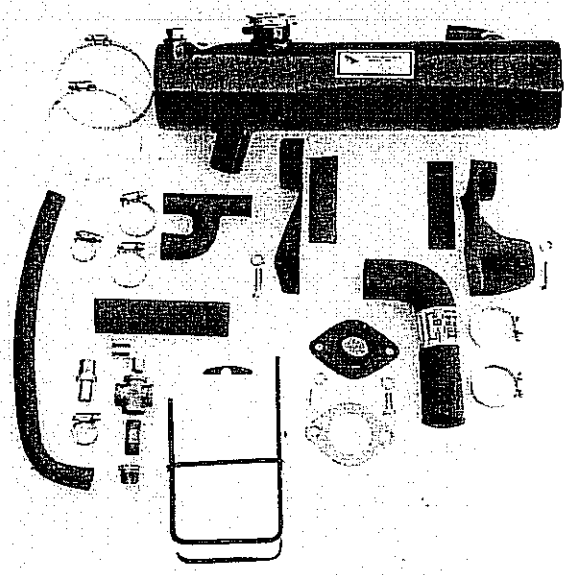
17. Check to make sure all hose clamps and bolts are firmly tightened before moving on to start-up procedures.



For installation and technical assistance, or information on other San Juan products, please call (360) 734-1910.

'5.0/5.7 LX/V8 "Block Only" Cooling Kit #MC338

Parts List		*Description*
MC 338-0	1	Installation Manual
MC 338-1	1	Heat Exchanger
MC 338-2	1	Salt Water Divider Tee
MC 338-3	1	Thermostat Assembly
MC 338-4	1	RH bracket #MC338RH
MC 338-5	1	LH bracket #MC338LH
MC 338-6	1	Expansion Tank Assembly
MC 338-7	1	Pressure Cap (14 lb.)
		Hoses
MC 338-8	1	70541, 1-1/2" 90 degree elbow, HE to Thermostat Assembly
MC 338-9	1	1-1/4" X 6" HE to Salt Water Divider Tee
MC 338-10	1	5/8" "L" Shaped Hose, Fresh Water by-pass
MC 338-11	2	#64, HE bracket
MC 338-12	2	#24, HE to Thermostat Assembly
MC 338-13	2	#20, HE to Salt Water Divider Tee
MC 338-14	2	#10, Fresh Water by-pass
		Gasket
MC 338-15	1	Thermostat, GMT-1
		Fittings
MC 338-16	1	3/8" NPT X 5/8" hose, 90 degree #53EB
MC 338-17	1	1/2" NPT X 5/8" hose, #54SB
MC 338-18	1	3/8" X 1/2" Brass Bushing
MC 338-19	1	3/8" X 1-1/2" Brass Nipple
MC 338-20	1	3/8" NPT Brass Cross
		Bolts, Nuts and Washers
MC 338-21	2	3/8" X 7/8" Thermostat housing
MC 338-22	2	3/8" X 1-1/4"
MC 338-23	4	3/8" Lock Washers
MC 338-24	1	3/8" NPT Zinc anode (in heat exchanger)
MC 338-25	2	Rubber Strips for Brackets
	1	Hose Cutting Guide
	1	Warranty/Before Leaving The Dock
	1	Winterizing Sheet



Packed by_____ Date_____

Form #MC338-02