

4.3 LXH GEN + MerCruiser Block Only Cooling Kit #MC-319 Installation Instructions

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PPT Webstore

San Juan Engineering Heat exchangers provide thermostatically controlled fresh water cooling for marine engines. Its compact installation does not increase the height, width or length and 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. Only draining the sea water side of the cooling system from the zinc anode in 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.

Note: Included in this kit is extra parts to accommodate the engine with either the one piece or two piece manifolds.

2. Disconnect battery cables.

3. Locate original thermostat housing assembly at top, front, center of engine (Figure 1). 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.

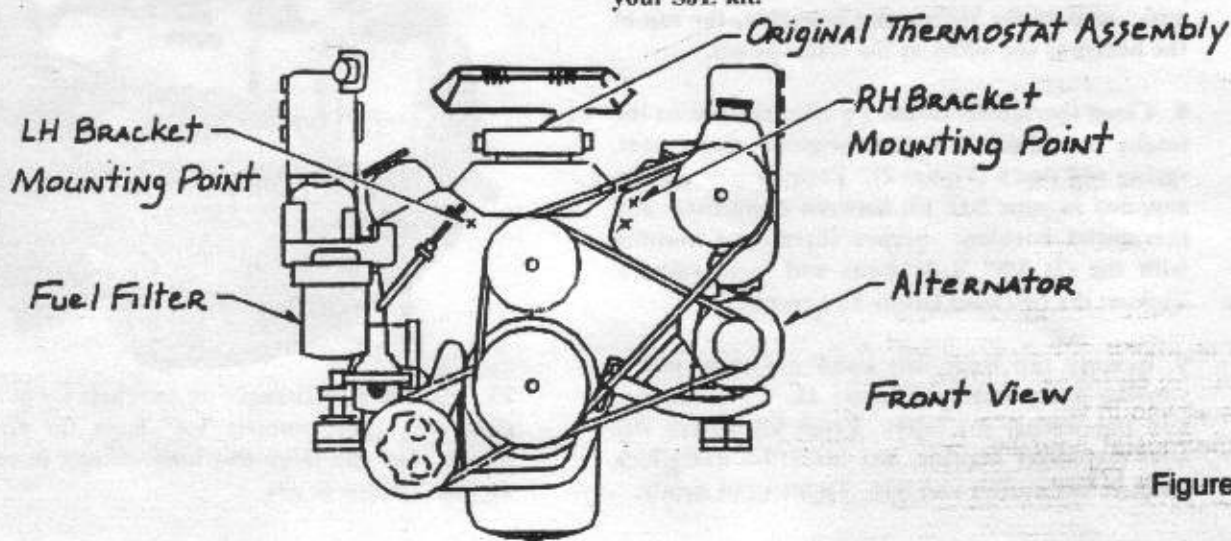


Figure 1

6. Retrieve from your SJE kit the new thermostat housing assembly (Figure 2). Thread the original water temperature sender, sender with the larger probe, into the NPT threaded hole directly below the thermostat outlet to left. Thread original high water temperature alarm sender into the remaining threaded hole on thermostat outlet (Figure 2). Tighten both senders firmly, using caution not to over tighten. We recommend using pipe thread sealant when installing threaded fittings.

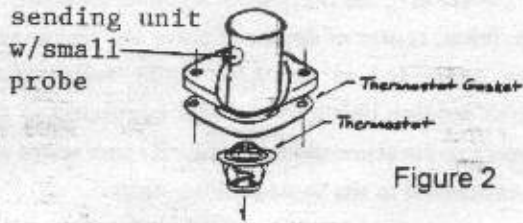


Figure 2

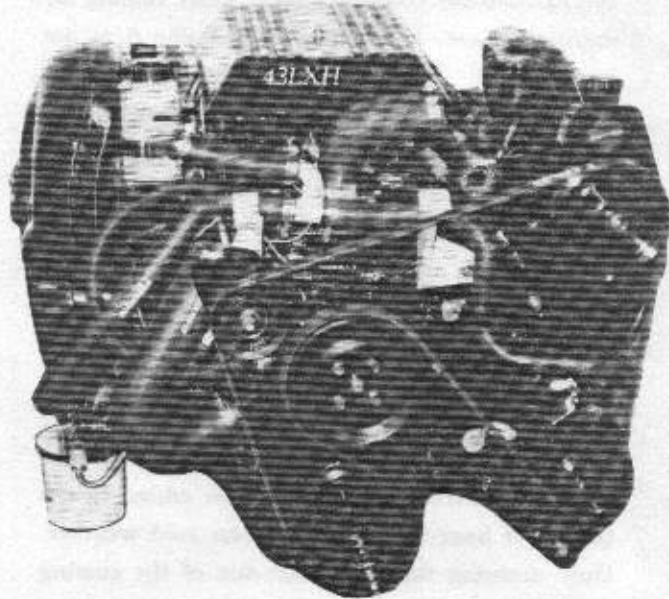
7. Remove the 1/2" pipe plug from the intake manifold. This is located slightly in front and to the left of the thermostat, next to left valve cover. (Figure 4). Thread (1) 1/2" pipe to 5/8" hose straight fitting into the hole. Remove the 1/2" pipe plug located on the left hand side of the fresh water pump, just above the large 1-3/4" suction hose. Thread (1) 1/2" pipe to 5/8" hose straight fitting into this hole. Tighten both fittings snugly. Using the 20" piece of 5/8" hose and (2) #8 hose clamps, plumb these two fittings together. For the cleanest installation, this hose length should be trimmed to suit. 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.

8. 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" X 1" bolts and lock washers. Tighten the two bolts firmly and evenly.

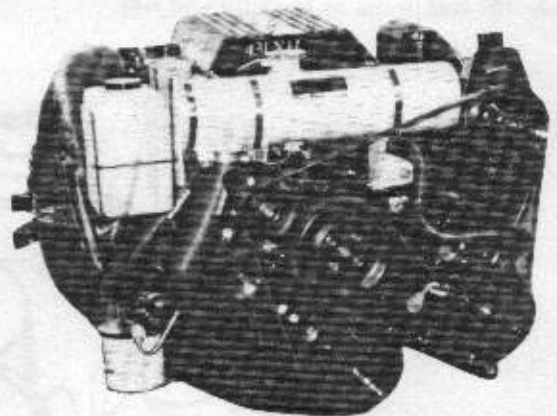
9. Remove top front, left hand nut from power steering pump bracket (Figure 1). Save this nut and flat washer for later. From kit, install RH heat exchanger bracket, RH MC319-4 using lock washer, flat washer and nut. Tighten nut firmly.

10. Install LH heat exchanger bracket, marked LH MC319-5. Tighten bracket bolt firmly. Due to (2) different idler brackets, you can use either 1-1/4" bolt or 1-1/2" bolt with 3 washers. Bend dip stick to right or outside belt.

11. Connect all hoses as in Figure 4, 5, and 6.



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 on to 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.



13. Place heat exchanger on brackets keeping the right end approximately 1/4" from the steering pump. Use the large #64 hose clamps to secure. Tighten clamps firmly.

14. Carefully cut the 1-1/4" raw water hose on the right hand side of engine (Figure 5). Use the hose cutting guide on the last page 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 heat exchanger. Tighten hose clamp firmly.

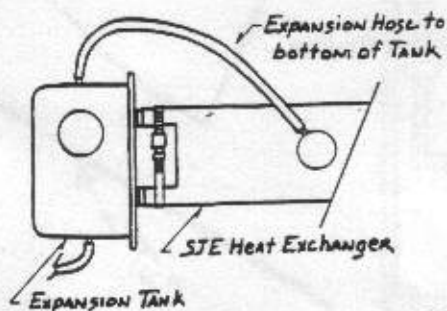
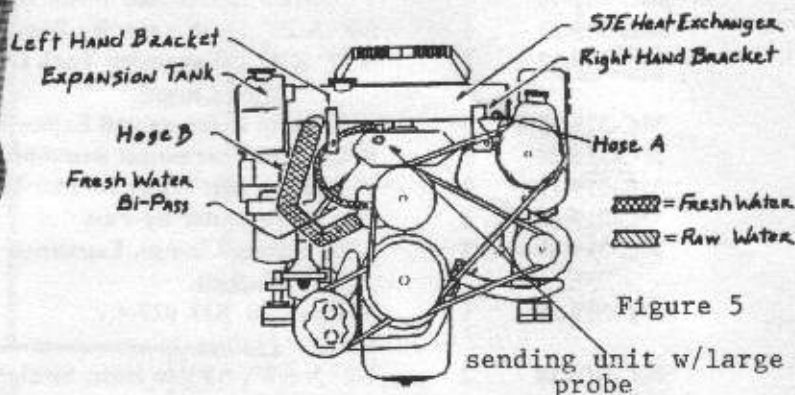
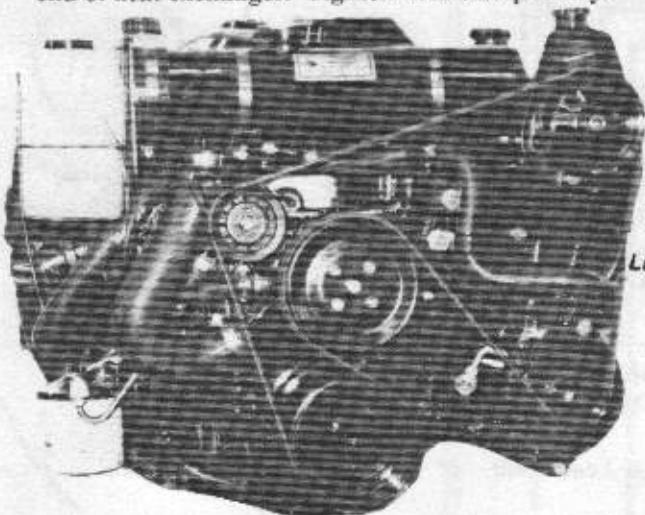


Figure 3

15. 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 clamp over the 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 firmly. (Figure 5).

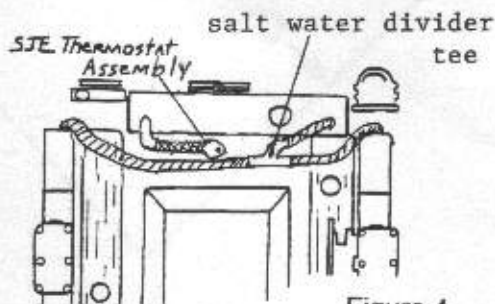


Figure 4

16. Secure plastic expansion tank to aluminum bracket using the 1/4" bolts, washers and nuts. Position the plastic expansion tank assembly on the left end of heat exchanger. Use the #64 hose clamp to secure tank to heat exchanger. In some applications this assembly can be relocated to any desirable location including the transom area. Cut a piece of 5/16" hose to connect the hose barb at the heat exchanger fill neck to the hose barb at the bottom of the expansion tank. Use the (2) 5/16" spring clamps to secure the hose (Figure 3). The remaining hose is used as an overflow, attach one end to the barb at the top of the tank the other towards the bilge.

17. The zinc anode retards corrosion in the raw water side of the cooling system. Check occasionally and replace when 3/4 eroded. Check to make sure all hose clamps and bolts are firmly tightened before moving on to start-up procedure.

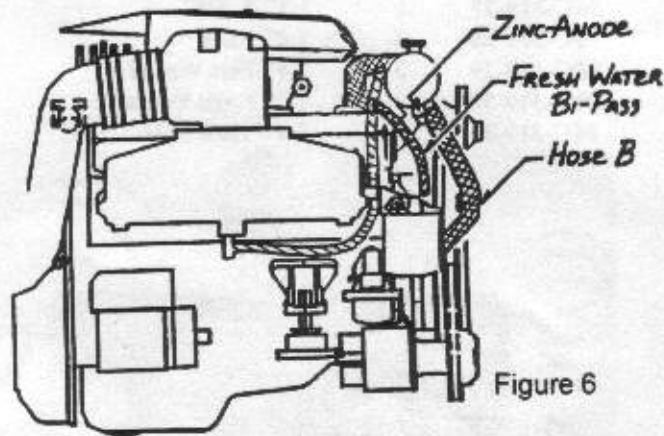


Figure 6

Use caution when tightening threaded fittings. Never over tighten and always use back-up wrench on threaded NPT female fittings i.e., temperature senders & zinc anode.

4.3 LXH GEN + MerCruiser Block Only Cooling Kit #MC-319

Parts List

		<u>Description</u>
MC-319-0	1	Installation Manual
MC-319-1	1	Heat Exchanger
MC-319-2	1	Salt Water Divider Tee
MC-319-3	1	Thermostat Assembly #2025
MC-319-4	1	RH Hanging Bracket
MC-319-5	1	LH Hanging Bracket
MC-319-6	1	Expansion Tank
MC-319-7	1	Exp. Tank Bracket (MC-313-7)
MC-319-8	1	Pressure Cap

Hoses

MC-319-9	1	1-1/2" 90 degree elbow, HE to Thermostat assembly #70541
MC-319-10	1	1" X 5-1/2" HE to Salt Water Divider Tee
MC-319-11	1	5/8" X 20" Fresh water By-Pass
MC-319-12	1	5/16" X 47", Expansion Tank Overflow

Hose Clamps

MC-319-13	3	#68, HE to Brackets and Expansion Tank
MC-319-14	2	#24, HE to Thermostat Assembly
MC-319-15	2	#16, HE to Salt Water Divider Tee
MC-319-16	2	#08, Fresh Water By-Pass
MC-319-17	2	5/16" Spring Clamps, Expansion Tank Hose

Gaskets

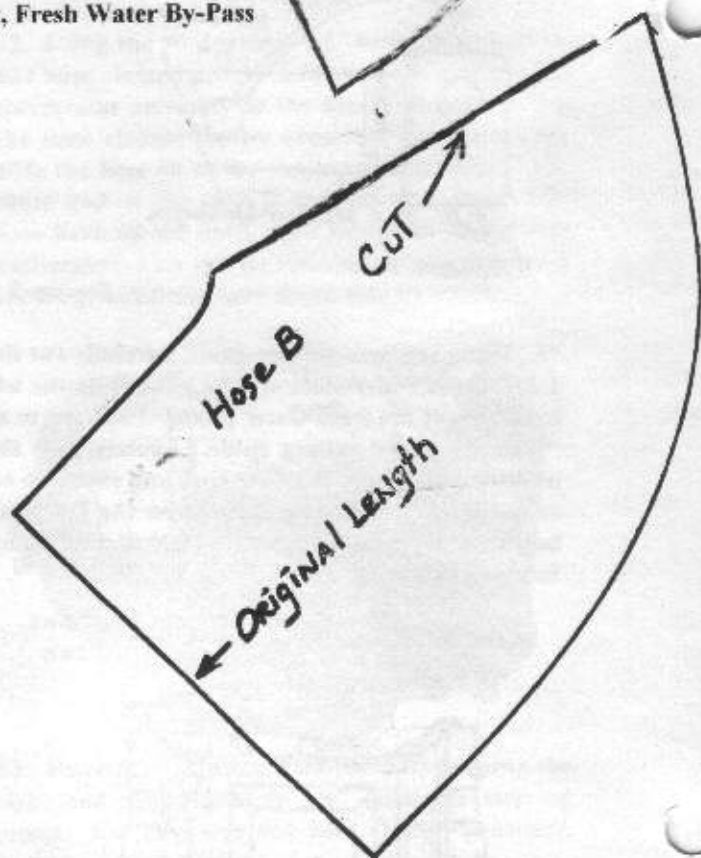
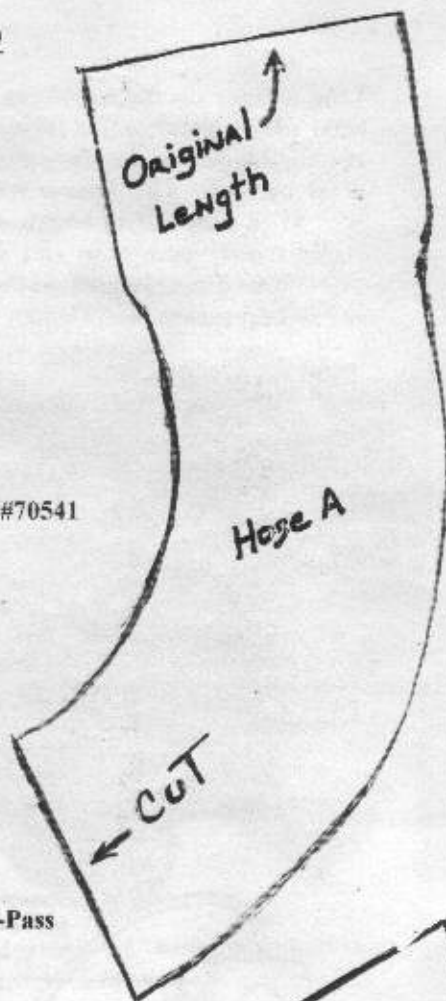
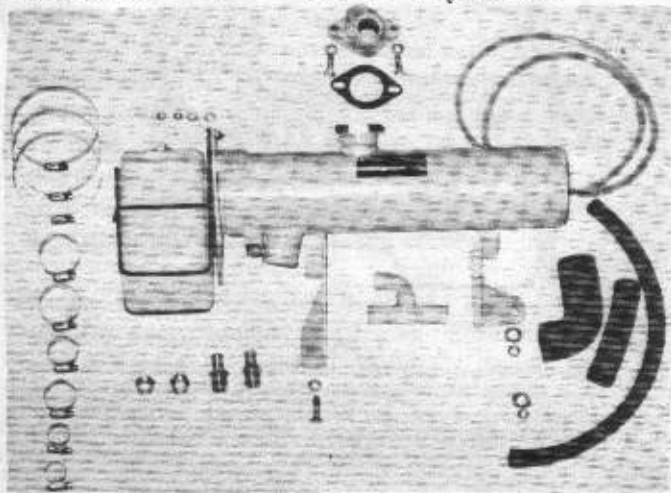
MC-319-18	1	Thermostat, SJE 023-4A
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Fittings

MC-319-19	2	1/2" X 5/8", NPT to Hose, Straight, Fresh Water By-Pass
MC-319-20	2	3/8" X 1/2" Brass Bushings

Bolts, Nuts and Washers

MC-319-21	2	3/8" X 1"
MC-319-22	1	3/8" X 1-1/4"
MC-319-23	1	3/8" X 1-1/2"
MC-319-24	4	3/8" Flat Washer
MC-319-25	4	3/8" Lock Washers
MC-319-26	1	3/8" NPT Zinc Anode
MC-319-27	2	1/4" X 3/4"
MC-319-28	2	1/4" Nuts
MC-319-29	2	1/4" Flat Washers
MC-319-30	2	1/4" Lock Washers
MC-319-31	1	3/8" Thin Nylock Nut



RAW WATER SUPPLY
SUPPLEMENT SHEET FOR MERCUISER ENGINES 4.3 - 5.0 - 5.7
P/N# MC319 - MC320 - MC321 - MC322

