

SAN JUAN FRESH WATER COOLING

5,7 LX/V8THUNDERBOLT V IGNITION "Block Only Cooling" With Flat Serpentine Belt Kit #MC-320 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 craftsmen that have made San Juan Engineering the leader in their field for over 39 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.

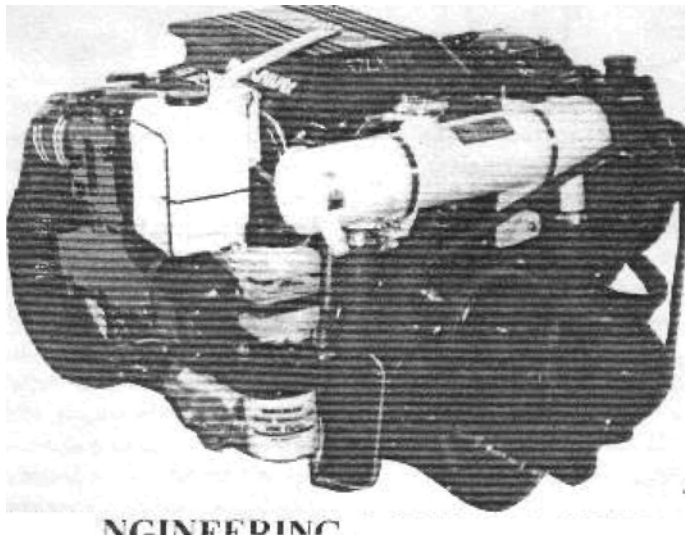
Installation is simple. All necessary parts are supplied and no special tools required.

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.
2. Disconnect battery cables.
3. Locate original thermostat housing assembly at top, front, centre 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" 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 3). Cross Assembly: Thread 1/2" x 3/8" bushing and 3/8" x 1-1/2" nipple, Cross and 3/8" NPT to 5/8" hose 90° fitting together for by-pass hose. Retrieve from your SJE kit the new thermostat housing assembly (Figure 2). Install thermostat with pointed end up. Install gasket and bolt down, using (2) 3/8" x 1-1/4" bolts and lock washers provided. 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 fittings i.e., temperature sending units and zinc anode



7. 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 all fittings snugly. Using the 13" 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.

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. (16mm) 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 of 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.

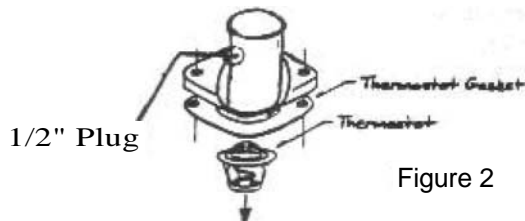


Figure 2

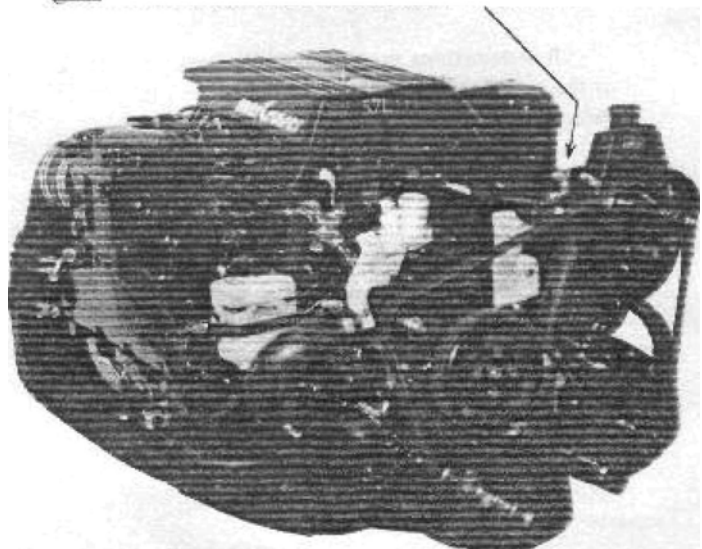
8. Clean thermostat housing gasket surface on the intake manifold. Insert original thermostat, spring end down (Figure 2). Position new gasket supplied in your SJE kit between thermostat and thermostat housing. Secure thermostat housing with the (2) 3/8" x 1-1/4" bolts and lock washers. Tighten the two bolts firmly and evenly.

9. Remove top front right hand nut from steering pump bracket. From the kit, install RH heat exchanger bracket, #MC-319-4RH using NYLOCK NUT. It is essential to use NYLOCK NUT. Tighten nut firmly.

10. Remove top bolt under belt tightening pulley. Install LH heat exchanger bracket #MC-319-5LH using (3) SPACER WASHERS under bracket with washer and lock washer. Tighten bracket bolt firmly.

11. (2) 1" hoses that were connected to the original thermostat housing now should be connected to the salt water divider tee. Add 1-1/4" x 7" hose and clamp onto tee.

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 on its brackets. Connect all hoses. On some engines, the lifting gears bracket may have to be bent slightly back.



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. 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.

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 clamps 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.

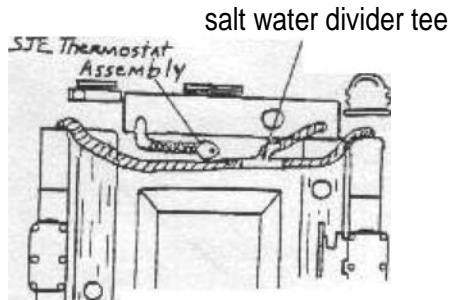


Figure 3

16. With the expansion tank bracket facing you, thread the #88 hose clamp through the two slotted holes in the bottom of the bracket. Slide tail of the hose clamp and bottom the bracket down between the left exhaust manifold and valve cover. Tighten hose clamp so bracket is loosely held in place. Attach exp.tank brace between the tank bracket and the center stud of the flame arrester, using 1/4" washer in kit and existing nylock nut (do not over tighten). Use the top center hole and the 3/8" bolt, nut and lock washer provided in your kit to secure brace to bracket. After brace is secured tighten the #88 hose clamp firmly. Mount the expansion tank to the bracket using the 1/4" bolts, nuts and washers in your kit. Cut to fit the piece of 5/16" hose to connect the spud at the fill neck of the heat exchanger to the spud at the bottom back of the expansion tank. Use the (2) 5/16" spring clamps to secure the hose. Use the remainder of the hose as an overflow, attaching one end to the spud at the top of the tank and running the other towards the bilge. NOTE OPTION: Expansion tank may be mounted in the transom area or wherever desirable.

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

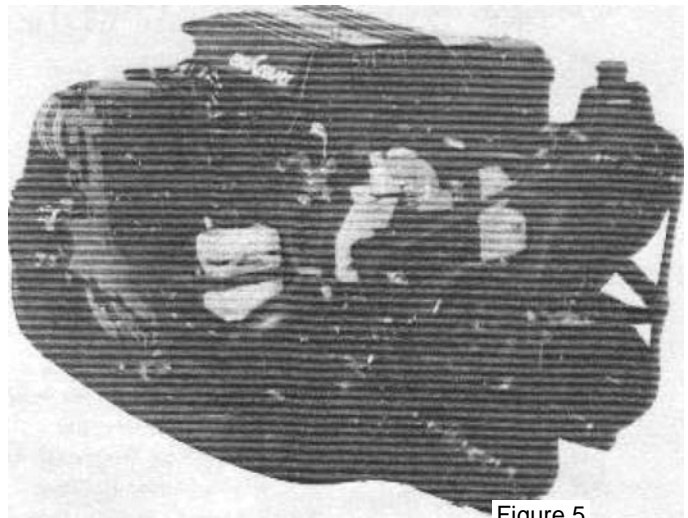
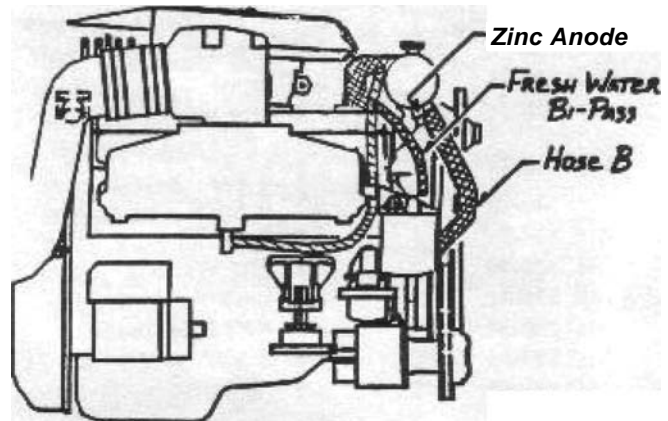


Figure 5

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

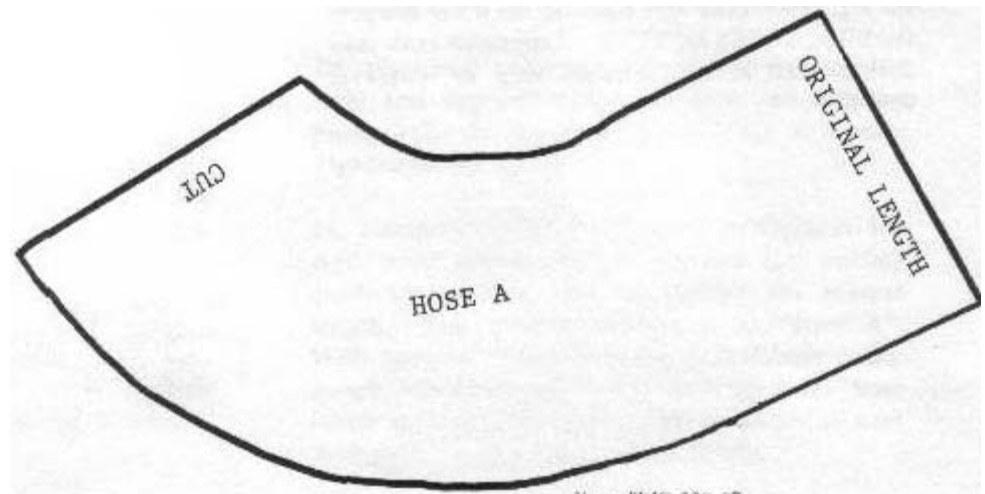
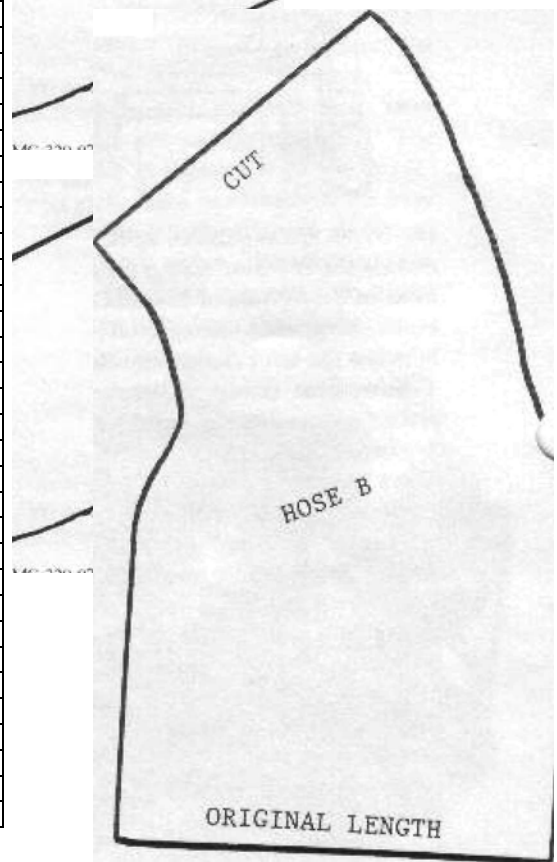
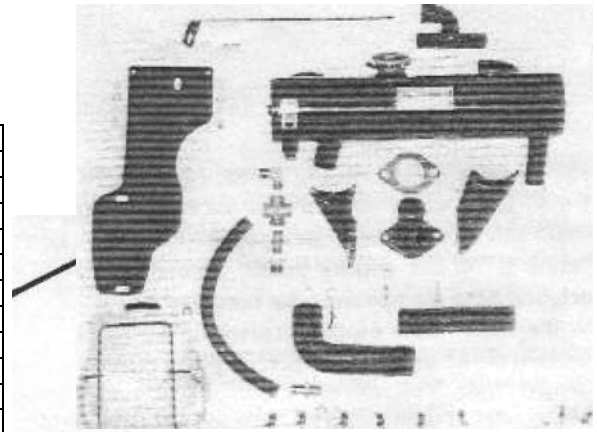


For installation and technical assistance, or information on other San Juan Products, please call (360) 734-1910

San Juan Engineering providing the highest quality of craftsmanship for over 39 years.

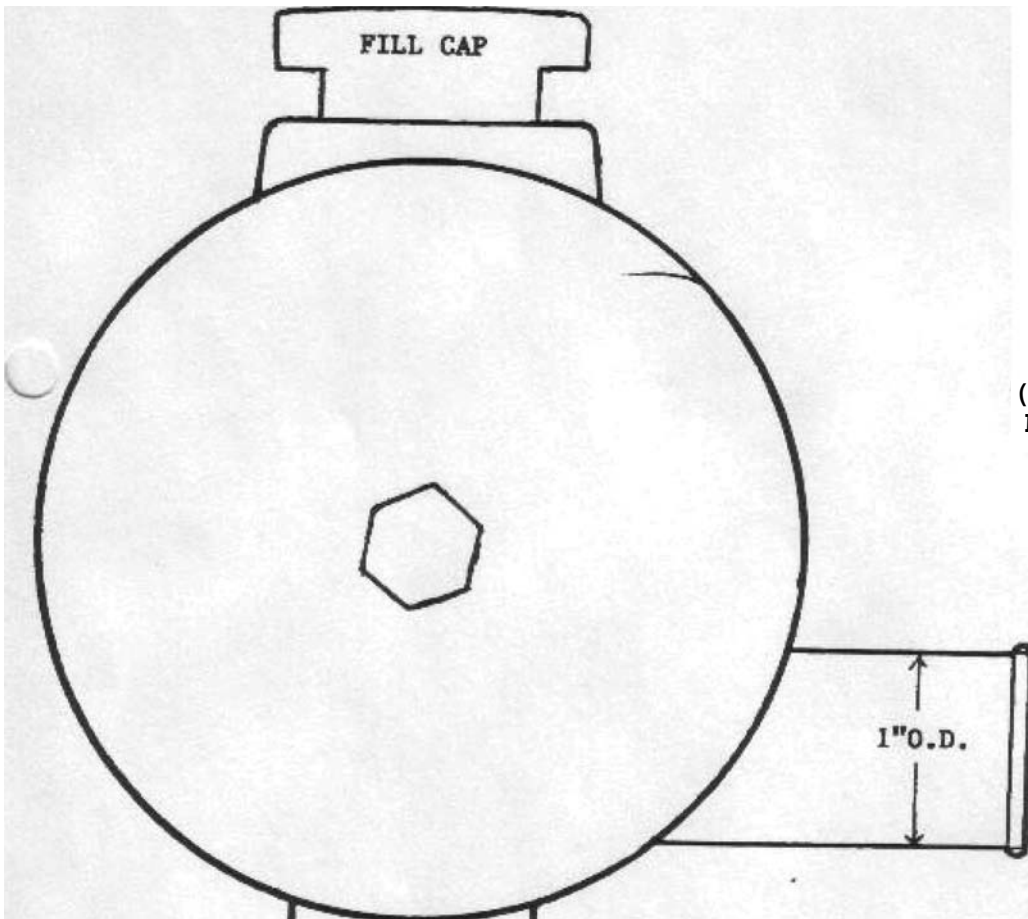
5.7 LX/V8 THUNDERBOLT V IGNITION
 "BLOCK ONLY COOLING" W/SERPENTINE BELT

<i>Parts List</i>		<i>Description</i>
MC-320-0	1	Installation Manual
MC-320-1	1	Heat Exchanger
MC-320-2	1	Salt Water Divider Tee
MC-320-3	1	Thermostat Assembly #2025
MC-320-4	1	RH Bracket #MC-319-4RH
MC-320-5	1	LH Bracket #MC-319-5LH
MC-320-6	1	Expansion Tank
MC-320-7	1	Exp. Tank Bracket
MC-320-8	1	Exp. Tank Bracket Brace
MC-320-9	1	Pressure Cap
<i>Hoses</i>		
MC-320-10	1	1-1/2" 90 degree elbow, HE to Thermostat Assy #70541
MC-320-11	1	1-1/4" x 7" HE to Salt Water Divider Tee
MC-320-12	1	5/8" x 13" Fresh Water by-pass
MC-320-13	1	5/16" x 47", Exp.Tank Overflow (Cut to fit)
<i>Hose Clamps</i>		
MC-320-14	2	#64 HE Bracket
MC-320-15	2	#24, HE to Thermostat Assembly
MC-320-16	1	#88, Exp.tank Bracket
MC-320-17	2	#20, HE to Salt Water Divider Tee
MC-320-18	2	#10, Fresh Water By-pass
MC-320-19	2	5/16" Spring Clamps. Exp.tank Hose
<i>Gasket</i>		
MC-320-20	1	Thermostat, SJE 023-4A
<i>Fittings</i>		
MC-320-21	1	3/8" NPT x 5/8" Hose, 90 degree #53EB
MC-320-22	1	1/2" NPT x 5/8" Hose, Straight, Fresh Water by-pass
MC-320-23	1	3/8" x 1-1/2" Brass Bushings
MC-320-24	1	3/8" x 1-1/2" Brass Nipple
MC-320-25	1	3/8" Cross
MC-320-26	1	1/2" pipe plug
<i>Bolts, Nuts and Washers</i>		
MC-320-27	1	3/8" x 1"
MC-320-28	2	3/8" x 1-1/4"
MC-320-29	1	3/8" x 1-1/2"
MC-320-30	5	3/8" Flat washers
MC-320-31	4	3/8" Lock washers
MC-320-32	1	3/8" NPT Zinc Anode
MC-320-33	2	1/4" x 3/4"
MC-320-34	2	1/4" Nuts
MC-320-35	3	1/4" Flat washers
MC-320-36	2	1/4" Lock washers
MC-320-37	1	3/8" Nut
MC-320-38	1	3/8" Nylock Nut



RAW WATER SUPPLY
SUPPLEMENT SHEET FOR MERCUISER ENGINES 4.3 - 5,0 - 5.7
P/N# MC319 - MC320 - MC321 - MC322

TOP



(ONE OF THESE OPENINGS
MUST BE CAPPED OFF)

RAW WATER IN ALONG
VALVE COVER FROM STERN
DRIVE PUMP

USE RUBBER END CAP TO
CLOSE OFF FITTING NOT
BEING USED AND CLAMP

DISCARD RUBBER END CAP
THAT YOU DO NOT USE

RAW WATER IN FROM
OIL COOLER

HOSE CUTTING GUIDE