

MFH-5320

Fresh Water Cooling

Kit Instructions



MONITOR PRODUCTS, INC.

15400 Flight Path Dr

Brooksville, FL 34604

Tel: 352-544-2620 Sales: ext 201

Technical Support: ext 209

Fax: 352-544-0870

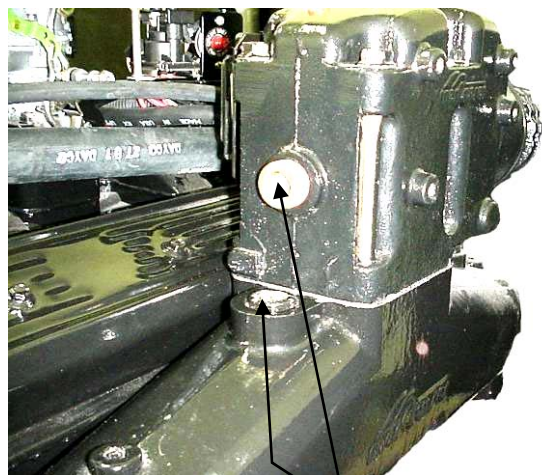
IMPORTANT

Before you unpack the kit and start installation, make sure you have the correct kit for your engine by studying these installation instructions and the MFH-5320 specification document. This system is for use with late model Mercury/MerCruiser engines only. The system is front-mounted at the level of the thermostat housing and the engine must have the alternator mounted on the starboard side of the engine and the power steering pump on the port side. The heat exchanger is flush with the extreme starboard side of the engine and therefore, not suitable for V-drive engines. This kit is intended for engines with serpentine belts (single, ploy-V belts) only.

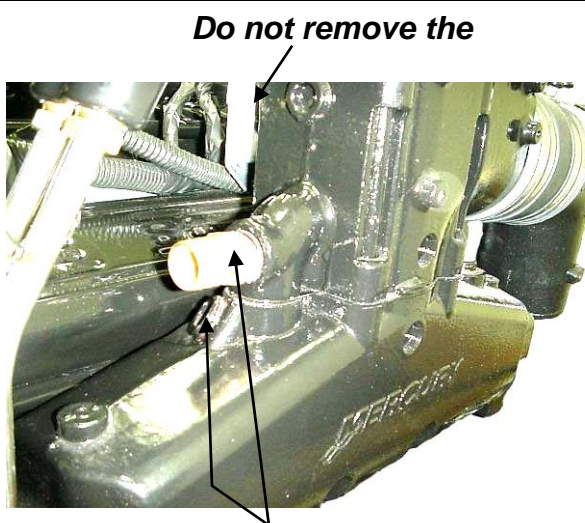
For the following applications, the appropriate kit must be ordered:

For Non-Dry Joint exhaust systems, V8 serial #'s below 0M600000, V6 serial #'s below 0M615000 Kit #MFH-5320-A is required.

For Dry Joint style exhaust systems, V8 serial #0M600000 & above, V6 serial #0M615000 & above Dry Joint Kit #MFH-5320-B is required.



Remove these two plugs per side from Non-Dry Joint Exhaust



Remove one plug and one straight fitting per side from Dry Joint Exhaust

These instructions cover a normal installation situation. Sometimes problems can occur due to engine variations and boat builder or owner modifications. If you encounter such problems, call Monitor Products, Inc. for support during normal business hours.

If you, by mistake, received the wrong kit for your type of engine or run into other insurmountable installation problems you may return an undamaged kit for exchange or credit. To get return authorization, call Monitor Products with information about the problem and how the kit was purchased.

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After completing installation, these Instructions should be placed with the owner's manual for future use.

The installer must make sure that the overall installation is safe and in accordance with Coast Guard and industry standards.

MFH-5320 Parts List

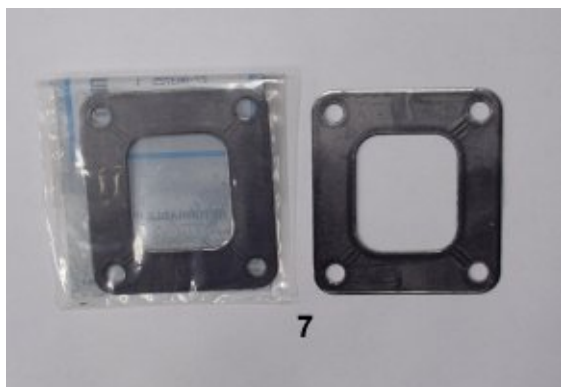
Item	Qty	Part Number	Description
1	1	M5320-4196	Heat Exchanger Assembly
2	1	5001-2611PC	Bracket Upper Assembly
3	1	5001-2612PC	Bracket Lower Assembly
5	4	5000-2637	Spacer 1" OD X 1"
6	1	4500-1381	Gasket Thermostat Housing
8	1	5001-1327	Tank Expansion 3qt
9	1	5000-1763	Cap Expansion Tank
10	5	5000-1154	Tie Wraps Plastic 10"
11	1	0320-2080PC	Coupler 1-1/4" OD X 3" Bead
12	1	5000-2646PC	Tee 1-3/4" Bead X 3/4" Bead
13	1	5000-1343	Fitting 1/8 NPT X 5/16" Elbow
14	4	5000-1979PC	Fitting 3/4 NPT X 1" Elbow
15	2	5000-1980PC	Fitting 3/4 NPT X 1" Straight
16	2	5000-2673PC	Fitting 3/4 NPT X 1" Elbow
17	1	5100-1722	Cap-Rubber Manifold 1" ID
18	1	5100-2704	Cap-Rubber Manifold 1-1/4" ID
19	2	5101-2672	Hose 1/2" ID X 14.0" Clear PVC
20	4	5102-2124	Hose 3/4" ID X 2"
21	1	5105-2124	Hose 3/4" ID X 4"
22	1	5102-2125	Hose 5/16" X 48" Clear PVC
23	1	5100-2642	Hose 1" ID - Elbow Molded
24	3	5105-2126	Hose 1" ID X 12"

Item	Qty	Part Number	Description
25	1	5118-2126	Hose 1" ID X 21"
26	2	5117-2126	Hose 1" ID X 30"
27	1	5102-2126	Hose 1" ID X 9"
28	1	5103-2134	Hose 1-1/4" ID X 24.0"
29	1	5102-2129	Hose 1-3/4" ID X 4.75"
30	2	5200-1344	Clamp SS Mini, 23/64 X 29/64
31	2	5200-1401	Clamp Hose #12
32	15	5200-1144	Clamp Hose #16
33	4	5200-1143	Clamp Hose #24
34	4	5200-1475	Clamp Hose #28
35	2	5200-1610	Clamp Hose #72
37	2	4300-2694	HHCS 3/8-16 X 3" SS
38	4	4300-2791	Nut 3/8-16 SS Nylon
39	2	4300-2790	Nut 5/16-18 SS Nylon
40	2	4300-2676	Nut M8 X 1.25 ZP
41	2	4300-2708	Stud 3/8-16 X 1-3/4" SS
42	2	4300-2675	Stud M8 X 1.25 X 50mm Blk Oxide
43	2	4400-1497	Drain Plug 1/4 NPT
44	1	4400-1314	Drain Plug 3/8 NPT
45	1	5000-2668	Plug Removal Tool 9/16 Hex
46	4	4300-2801	#12 Phillips Flat Head Screw
47	4	4300-2802	Washer 5/16 Flat



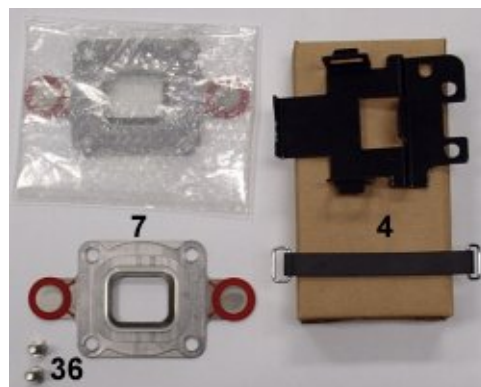
KIT “-A” SPECIFIC PARTS LIST

Item	Qty	Part Number	Description
4			
7	2	4500-1824	Gasket Block-off Non-Dry-Joint
36			



KIT “-B” SPECIFIC PARTS LIST

Item	Qty	Part Number	Description
4	1	5000-2680	Bracket Lube Kit
7	2	4500-2648	Gasket Block-off Dry-Joint
36	2	4300-1277	HHCS 3/8-16 X 3/4" SS

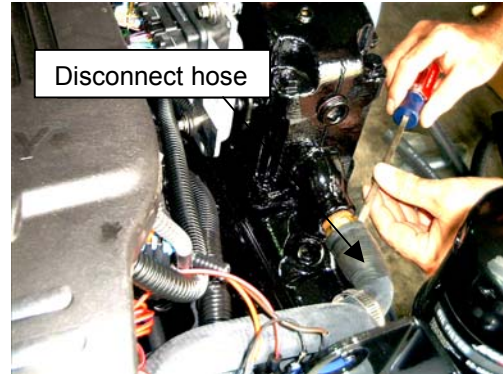


INSTALLATION TOOLS & SUPPLIES

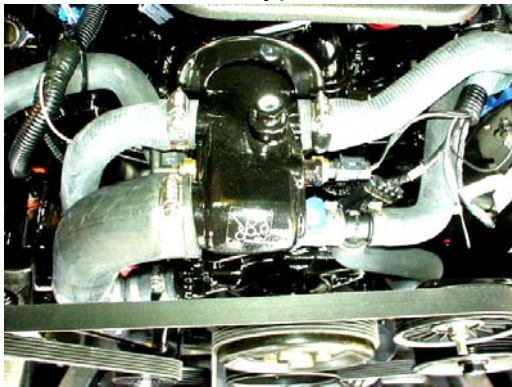
Flat head screw driver
Phillips head screw driver
11/16" deep socket or box wrench
7/8" open end wrench or crescent
9/16" socket or box wrench
Knife
Gasket scraper
Thread sealant
RTV silicone gasket sealer
Antifreeze solution (See flush and fill instructions)

INSTALLATION STEPS

1. Disconnect BOTH cables from the battery.
2. Drain engine block by removing plugs from both, lower sides of engine. For 2001 or newer MPI engines, the block drain hoses will need to be disconnected and the quick connect fittings removed from the block.
3. Disconnect hoses from exhaust elbows.



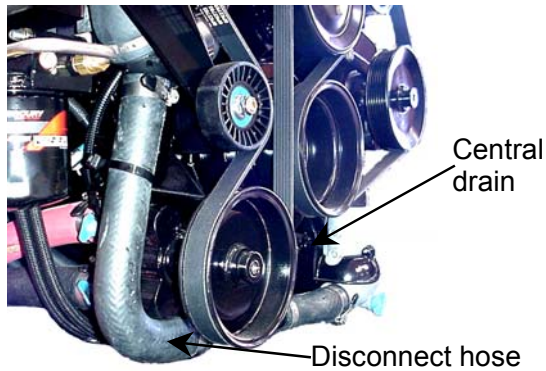
4. Disconnect all hoses from the thermostat housing.
5. Remove the temperature sending unit(s) and/or pipe plug from the thermostat housing. Set these aside for later use. MONITOR PRODUCTS strongly recommends that you install an audible "buzzer" type alarm, if the engine is not currently equipped with one.



6. Remove and discard existing thermostat housing, thermostat, gasket and bolts.
7. Flush the engine.
 - a. If the engine is new, flush briefly with fresh water through thermostat opening. Use a garden hose with a clean rag around it.
 - b. If the engine is used, more thorough flushing is required. MONITOR PRODUCTS recommends the purchase of a good quality flush-&-fill kit and engine flushing/cleaning fluid. Please follow the manufacturer's recommendations.

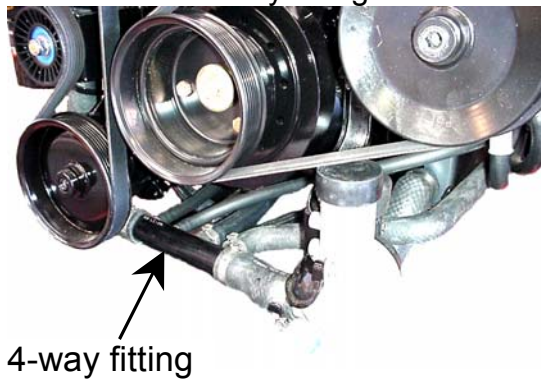
SKIP TO STEP #17 IF ENGINE IS NOT EQUIPPED WITH A CENTRAL DRAIN SYSTEM

8. Remove the 1-1/4" formed inlet hose. Set this hose aside for later use.



9. Install the 1-1/4" cap (Item 18) & #24 clamp (Item 33) to replace the hose removed in step 8.

10. Disconnect 4-way fitting with hoses and discard.



11. Replace the two 1/4" NPT quick connect fittings on the engine block and with 1/4" NPT plugs (Item 43).

12. Disconnect bypass hose assembly and discard.



13. Cap off the bypass outlet on top of the distribution housing using the 1" cap (Item 17) and #16 clamp (Item 32).

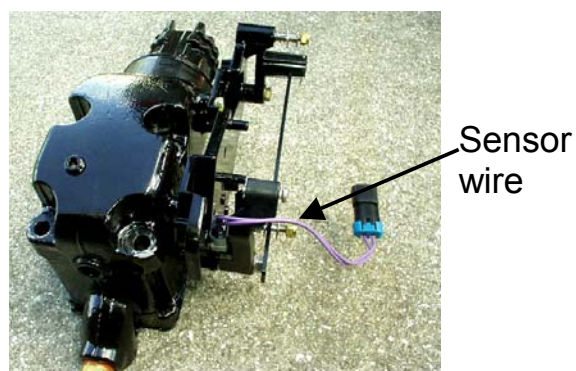
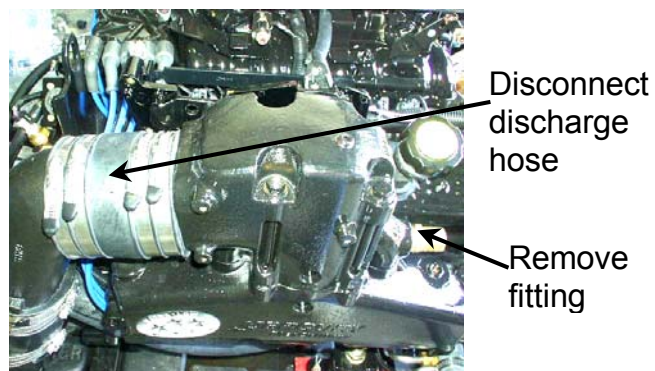
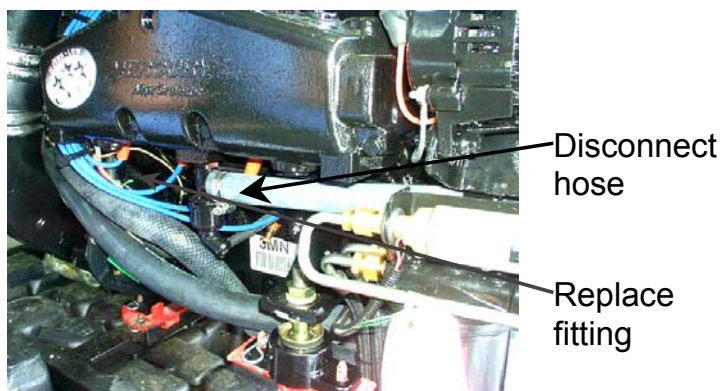
14. Disconnect hoses from bottom of each exhaust manifolds.

15. Replace fitting on bottom of each exhaust manifold with an elbow 3/4" NPT fitting (Item 14).

16. Disconnect the discharge hoses from the exhaust manifold elbow.

17. For Dry joint engines, remove the straight fittings from the exhaust elbows.

For Non-Dry joint engines, remove the corresponding pipe plug.



18. Disconnect sensor wire from starboard exhaust elbow.

19. Remove the starboard exhaust elbow.

20. Disconnect wiring harness from port exhaust elbow.



21. Remove the port exhaust elbow.

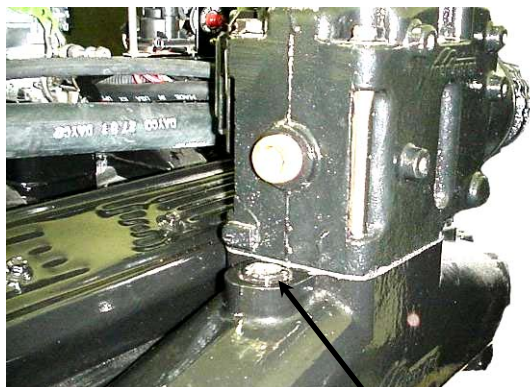
22. Clean the old gasket material from the exhaust elbows, exhaust manifolds, and intake manifold. Avoid gouging the sealing surfaces as this could create leaks. Do not allow the debris to fall into the holes.

23. For a V-8 Non-Dry joint engine, using the supplied tool (Item 45), replace the $\frac{3}{4}$ " NPT plug in the top of each exhaust manifold with a $\frac{3}{4}$ " NPT short elbow fitting (Item 14). Install a $\frac{3}{4}$ " NPT straight fitting (Item 15) in each exhaust elbow where the straight fittings were removed in step #17.

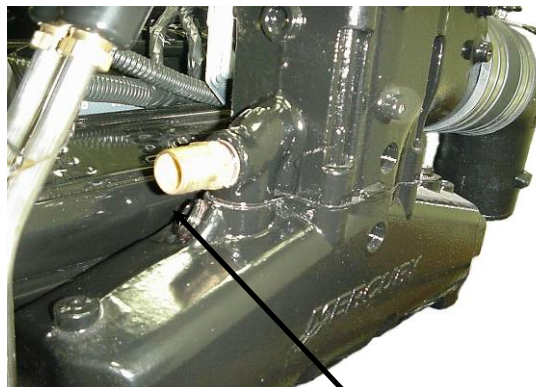
For a V-8 Dry joint engine, using the supplied tool (Item 45), replace the $\frac{3}{4}$ " NPT plug in the top of each exhaust manifold with a $\frac{3}{4}$ " NPT straight fitting (Item 15). Install a $\frac{3}{4}$ " NPT short elbow fitting (Item 14) in each exhaust elbow where the straight fittings were removed in step #17.

For a V-6 engine, using the supplied tool (Item 45), replace the $\frac{3}{4}$ " NPT plug in the top of each exhaust manifold with a $\frac{3}{4}$ " NPT long elbow fitting (Item 16). Install a $\frac{3}{4}$ " NPT short elbow fitting (Item 14) in each exhaust elbow where the straight fittings were removed in step #17.

USE PIPE THREAD SEALER. DO THIS WHILE THE ELBOW IS SEPARATED FROM THE EXHAUST MANIFOLD.

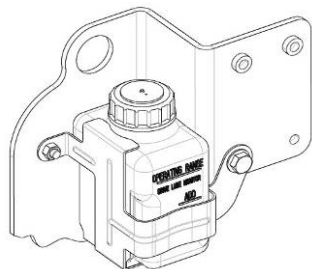


V8 NON-DRY ENGINE:
Replace plug with short elbow fitting

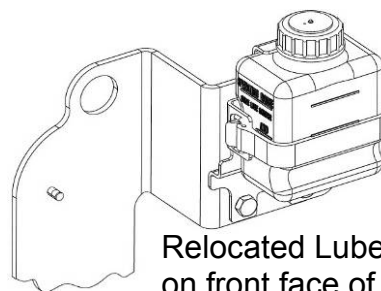


V8 DRY ENGINE:
Replace plug with straight fitting

24. Install the exhaust elbow block-off gaskets (Item 7). For dry-joint applications, install the gasket with flange up. (Reference the orientation arrow on the gasket)
25. Slide the exhaust elbows back into the discharge hose and install bolts. Torque to 20-35 ft-lb using a crisscross pattern.
26. Reconnect wires.
27. Tighten the discharge hose clamps.
28. FOR DRY-JOINT ENGINES, relocate the drive lube reservoir using the supplied kit (Item 4) and $\frac{3}{8}$ -16 X $\frac{3}{4}$ " fasteners (Item 36).



Lube oil bottle mounted to inside face of lift eye bracket

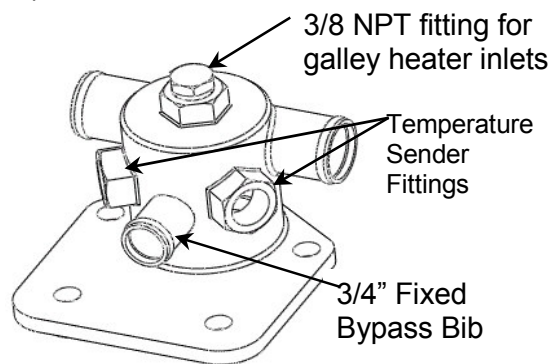


Relocated Lube oil bottle mounted on front face of lift eye bracket using included lube oil bracket, strap and fasteners

29. Install the thermostat-housing gasket (Item 6). Use RTV silicone sealer of both sides of the gasket. (The thermostat will no longer be located in the intake manifold. It is included in the heat exchanger.)
30. Install the Lower Bracket Assembly (Item 3) using the appropriate fasteners and torque to 25-30 ft-lb.
- Metric: M8 x 50mm Stud (Item 42) & M8 nut (Item 40)
 - Standard: $\frac{3}{8}$ x $1\frac{3}{4}$ Stud (Item 41) & $\frac{3}{8}$ nut (Item 38)

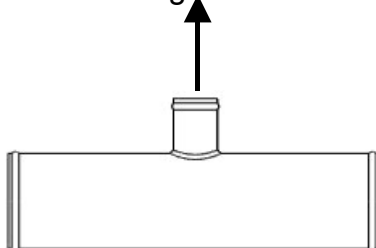


Lower heat
exchanger
bracket



31. IF YOUR BOAT IS NOT EQUIPPED WITH A GALLEY HEATER, install the $\frac{3}{8}$ " NPT plug (Item 44) in the top of the Lower Bracket Assembly. If you do have a galley heater, install a fitting for the heater inlets in this hole. The galley heater outlets should return to the jacket water pump.
32. Install the temperature sending unit(s) and/or plug saved from step #5 into the Lower Bracket Assembly. (Do not use thread tape or pipe dope, as these will prevent the sensor from grounding properly.) MONITOR PRODUCTS strongly recommends that you install an audible "buzzer" type alarm, if the engine is not currently equipped with one.
33. Reconnect the sensor wires.
34. Install the $\frac{3}{4}$ " x 4" hose (Item 21), $1\frac{3}{4}$ " x $1\frac{3}{4}$ " x $\frac{3}{4}$ " tee (Item 12) and #12 clamps (Item 31) to the front of the Lower Bracket Assembly. (Trim hose to prevent interference between the belt and the other hoses.)

To lower heat
exchanger bracket



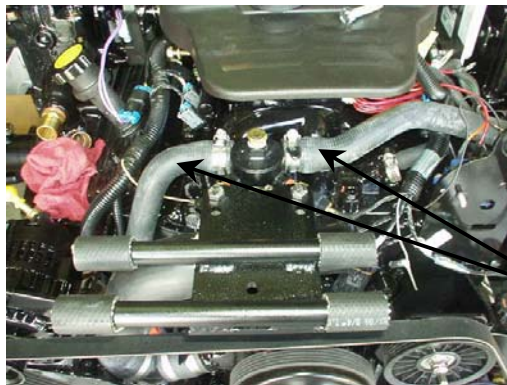
35. Install the hose from the jacket-water pump, originally connected to the thermostat housing, to the tee.
36. Install the $1\frac{3}{4}$ " x $4\frac{3}{4}$ " long hose (Item 29) using a #28 clamp (Item 34) to the other end of the tee.



Upper bracket assembly with isolators

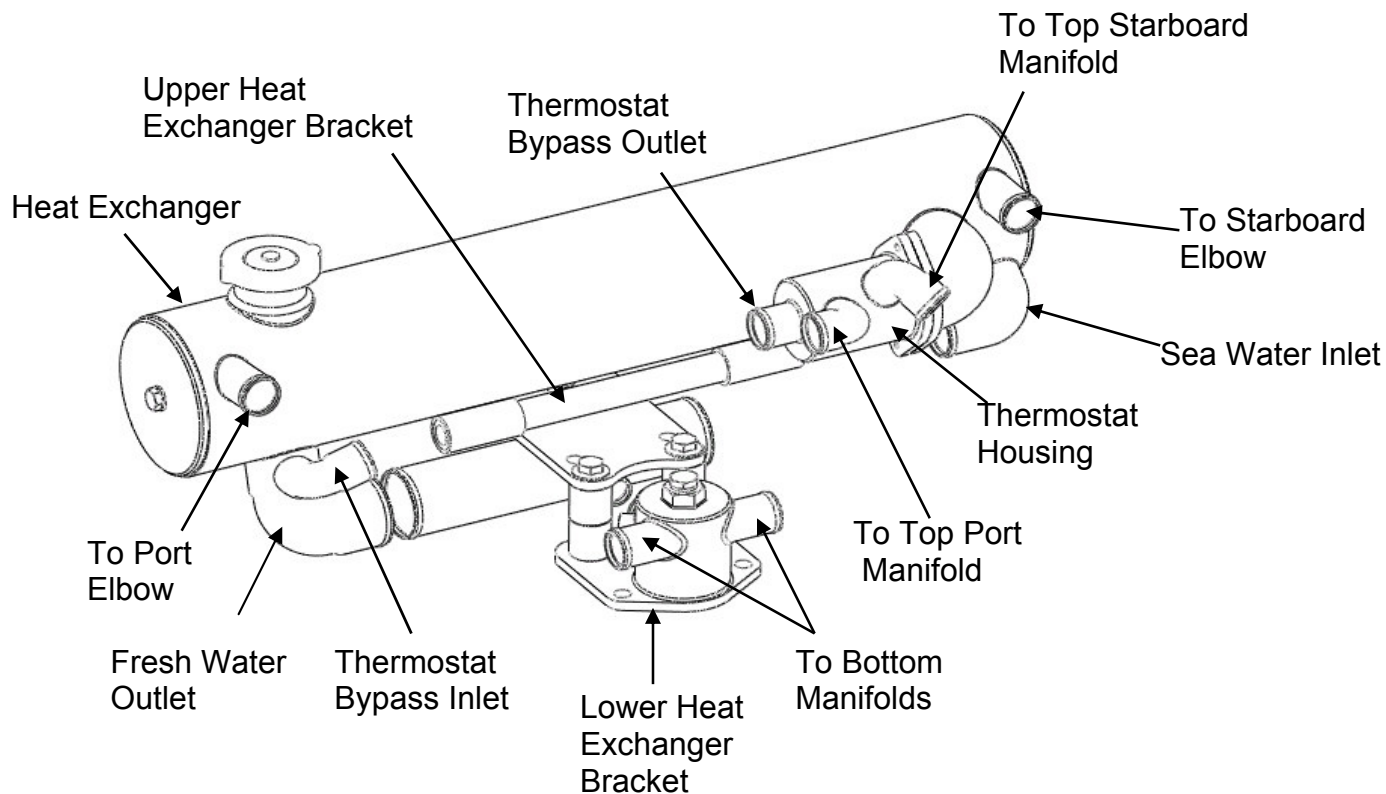
37. Install the 1" O.D. spacers (Item 5) and the Upper Bracket Assembly with Isolators (Items 2 & 20) using the supplied 3/8-16 fasteners (Items 38 & 37). Use the correct set of bracket mounting holes to center the heat exchanger over the tee.

38. Connect the existing hoses (if usable) from the bottom of the exhaust manifold to either side of the Lower Bracket Assembly. If the existing hoses are not usable install the 1" x 30" hoses (Item 26) and # 16 clamps (Item 32).



Install hoses to thermostat

39. Place the heat exchanger (Item 1) onto bracket while sliding its Outlet Elbow into the hose connected to the tee.



40. Straighten #72 clamps (Item 35), and then slide the ½" x 14" clear hoses (Item 19) onto them.



41. Clamp the heat exchanger (Item 1) to the bracket with the clamps from step #1.

42. Install the 1" x 12" hose (Item 24) and two #16 clamps (Item 32) from the Thermostat Bypass Outlet on the heat exchanger to the Thermostat Bypass Inlet on the heat exchanger. You may need to trim the hose to prevent kinking.

43. Install a 1" x 12" hose (Item 24) and two #16 clamps (Item 32) from the top port exhaust manifold to the heat exchanger thermostat housing. You may need to trim the hose to prevent kinking.



Emissions tube

Install
1" x 12" hose

44. Install a 1" x 9" hose (Item 27) and two #16 clamps (Item 32) from the top starboard exhaust manifold to the heat exchanger thermostat housing. You may need to disconnect the emission tube for clearance. You may need to trim the hose to prevent kinking.

45. If possible, install the pre-existing hose from the port exhaust elbow to the heat exchanger using two #16 clamps (Item 32). If the pre-existing hose does not work, or is damaged, use the molded 1" hose (Item 23) instead. Trim the hose to suit.



Install molded
hose



Install
1" x 12" hose

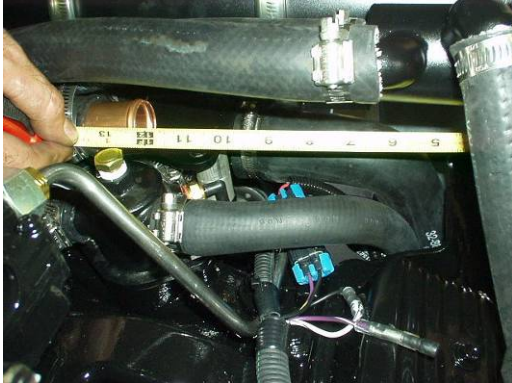
46. Install a 1" x 12" hose (Item 24) and two #16 clamps (Item 32) from the starboard exhaust elbow to the heat exchanger.

SKIP TO STEP #49 IF ENGINE IS NOT EQUIPPED WITH A CENTRAL DRAIN SYSTEM

47. Install the 1¼" x 24" hose (Item 28) and two #24 clamps (Item 33) from the central water drain to the hose coupler (Item 11).
48. Install the 1-¼" hose from step #8 to the coupler and to the Raw Water Inlet on the heat exchanger using two #24 clamps (Item 33).

SKIP TO STEP #51 IF YOUR ENGINE IS EQUIPPED WITH A CENTRAL DRAIN SYSTEM

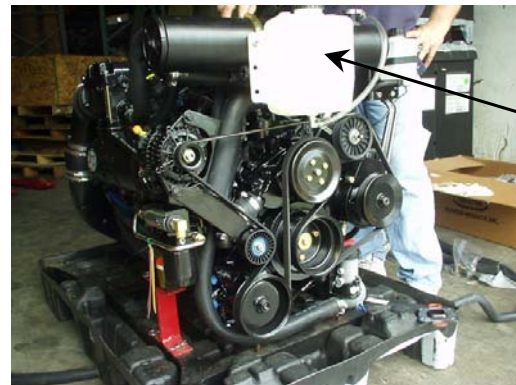
49. Install the hose coupler (Item 11) to the Raw Water supply hose with #24 clamp (Item 33).



50. Measure the distance from the coupler to the Raw Water Inlet on the heat exchanger. Trim and install the 1¼" x 24" hose (Item 28) between the coupler and the Raw Water Inlet.

51. Install the ⅛ NPT elbow (Item 13) to the bottom of the expansion tank (Item 8). Do not use thread tape or pipe dope.

52. Install expansion tank onto front of the heat exchanger using nylon-locking nuts (Item 39) and 2 5/16 flat washers (Item 47). If space in front of engine does not allow installation on heat exchanger, install on vertical surface next to engine. Use #12 Phillips screws and 5/16 flat washers (Items 46 & 47). Keep as close to heat exchanger as is practical with top of tank level with top of heat exchanger.



Expansion tank

53. Route the clear 5/16" hose (Item 22) between the heat exchanger filler neck and the expansion tank elbow. Secure in place with #02 clamps (Item 30).
54. Use tie wraps (Item 10) to make sure that hoses or other parts are not in contact with critical engine components such as belts and fuel lines.
55. Double check total installation and make sure all fasteners, fittings, and hose clamps are tightened properly. See separate Filling and Start-Up instructions.

MONITOR PRODUCTS strongly recommends that you install an audible "buzzer" type alarm. These overheat alarms are usually combined with low oil pressure alarm and are very reasonable in price.

Replacement Parts

Part Number	Description
5000-1763	Cap, expansion tank, 2-¼ vented w/tee
4000-1857	Pressure cap, 16# SS
5000-1709	Thermostat with control
4500-1381	Gasket, thermostat housing
4500-1622	Gasket, rubber thermostat
4500-1082	O-Ring, Buna-N
4500-2005	Gasket, 4" (end cover)