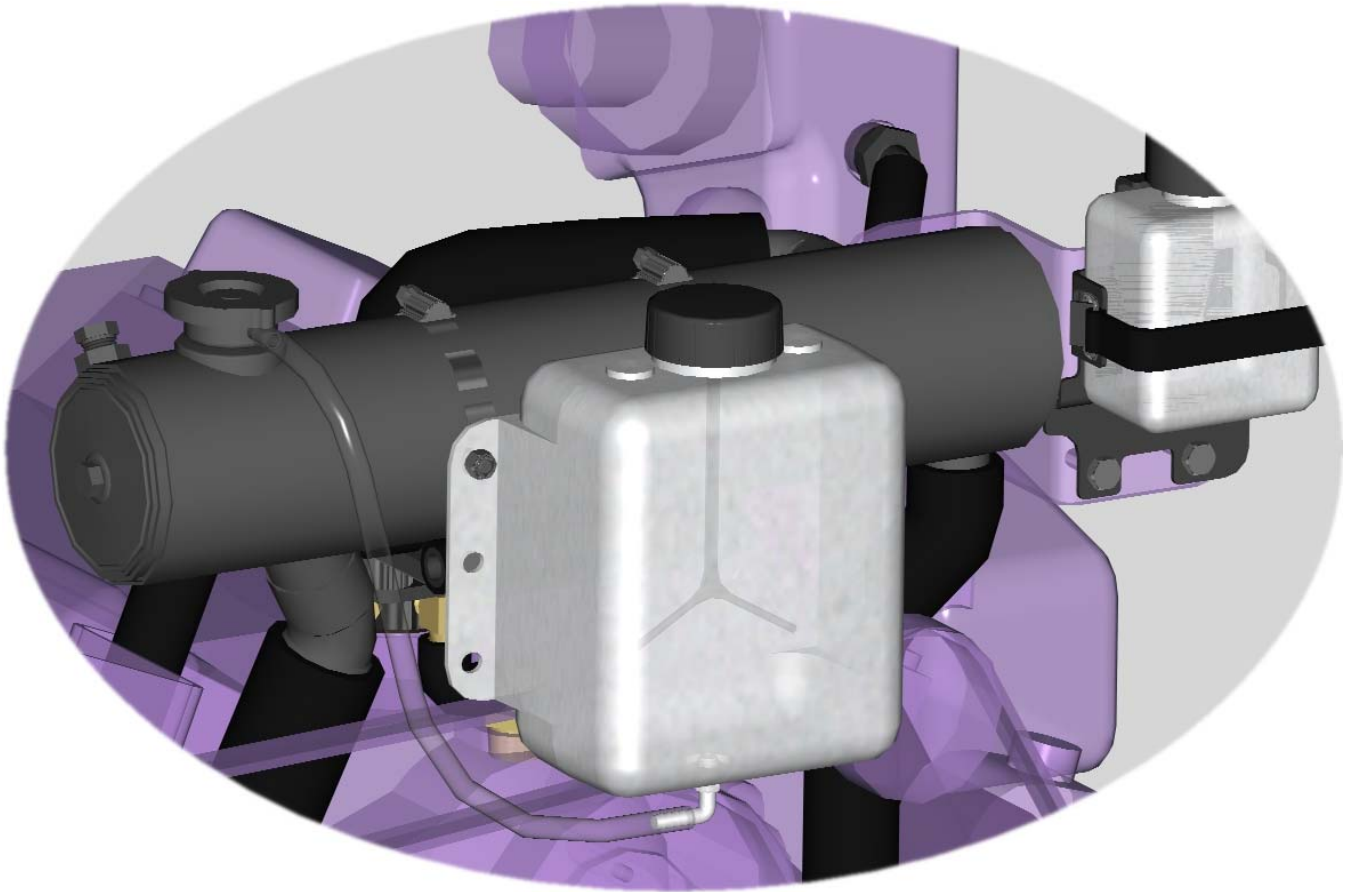


MFH-5433

Block Only Fresh Water Cooling Kit Instructions



MONITOR PRODUCTS, INC.

15400 Flight Path Dr
Brooksville, FL 34604

Tel: 1-800-334-4591 or 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 right kit for your engine by studying these installation instructions. These installation instructions have been written to cover most sterndrive and inboard installations on Mercruiser small block engine conversions with Dry-joint exhaust manifolds. The system is front mounted at the level of the thermostat housing, the engine must have the alternator mounted on the starboard side of the engine, and the power steering pump mounted low on the port side of the engine. The heat exchanger is 22 inches long. The heat exchanger is flush with the extreme starboard side of the engine and therefore, not suitable for V-drive engines.

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

If you determine this is the wrong kit for your type of engine:

- Call the distributor you purchased the kit from for their return policy.
- If you purchased the kit from Monitor Products Inc., call 1-800-334-4591 for a return authorization. No returns will be accepted without this authorization. The kit must be in new condition and repacked in its original packaging to qualify for credit or replacement. See return policy for complete details.

MONITOR PRODUCTS, INC.

1-800-334-4591

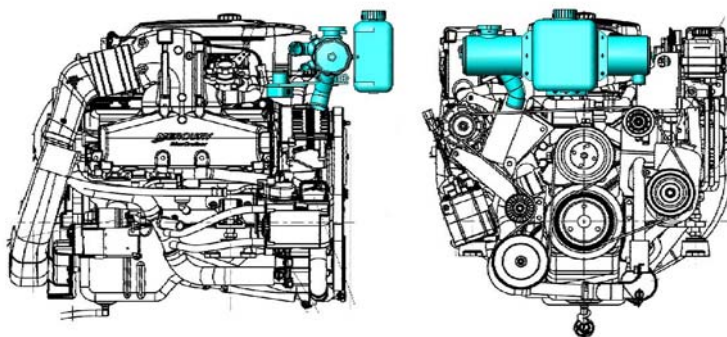
Tel: 352-544-2620

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

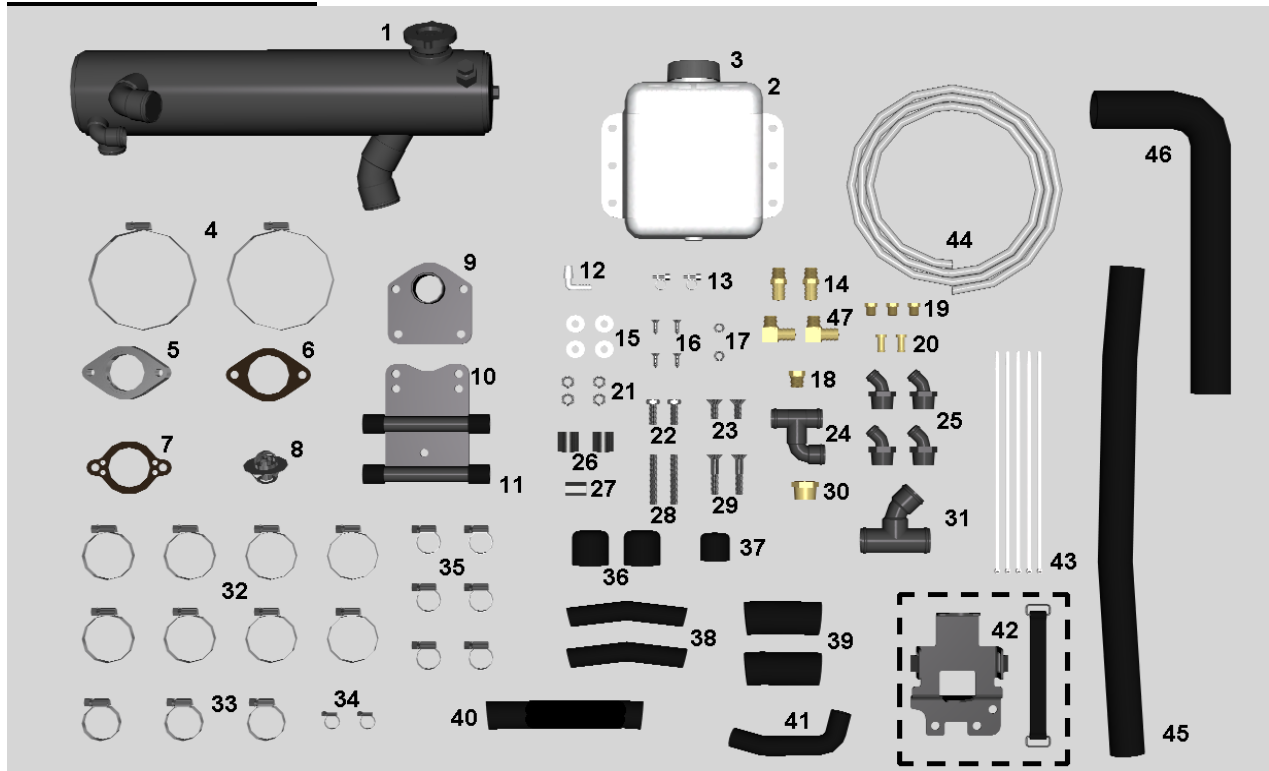


Installation tools & supplies

Flat head screw driver
Phillips head screw driver
11/16" deep socket or box wrench
9/16" socket or box wrench
7/16" socket or box wrench
3/16" hex key

7/32" hex key
Hose Cutter or Knife
Gasket scraper
RTV silicone gasket sealer
Antifreeze solution (See flush and fill instructions)

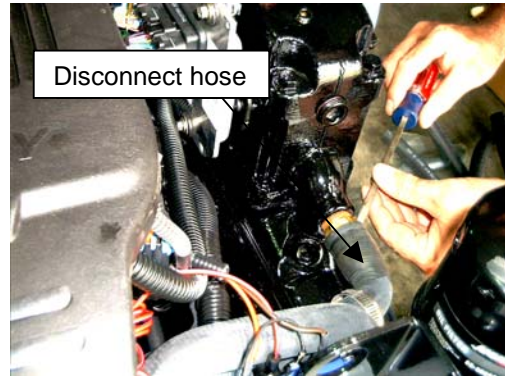
Items included in kit:



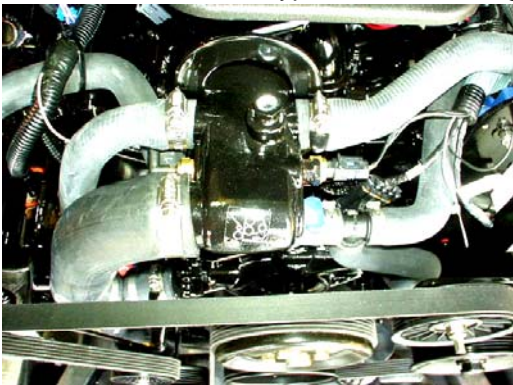
Item	Qty.	Part Number	Description	Item	Qty.	Part Number	Description
1	1	M5433-4166	Heat Exchanger	25	4	5000-3100	Fitting 3/4" NPT x 5/8" Hose
2	1	5001-1327	Expansion Tank	26	2	5000-2637	Spacer, 1" OD X 1" Long
3	1	5000-1763	Cap, Expansion Tank	27	1	5000-2668	Plug Removal Tool , 9/16" Hex
4	2	5200-1610	Hose Clamp #72	28	2	4300-3015	3/8-16 x 2-1/2" Stud
5	1	4005-2003	Thermostat Spacer	29	2	4300-3102	3/8-16 x 2" Flat Head Bolt
6	1	4500-1381	Thermostat Housing Gasket	30	1	3000-3099	Bushing, Brass 3/4"x3/8" NPT
7	1	4500-3004	Grounded T'stat Hous. Gasket	31	1	5000-3105	Y-Fitting
8	1	5000-3012	Thermostat	32	8	5200-1143	Hose Clamp #24
9	1	5000-3021	Lower Bracket	33	3	5200-1144	Hose Clamp #16
10	1	5003-2611	Upper Bracket	34	2	5200-2651	Hose Clamp #02
11	4	5115-2124	Isolators	35	6	5200-1401	Hose Clamp #12
12	1	5000-1343	1/8" NPT x 5/16" Hose Adapter	36	2	5100-2704	Cap 1 1/4" ID
13	2	5200-1344	Mini Clamp #02	37	1	5100-1722	Cap 1" ID
14	2	3000-1351	3/8" NPT x 5/8" Hose Adapter	38	2	5114-2128	5/8" ID x 5.5" Hose
15	4	4300-2802	5/16" Washer	39	2	5107-2134	1 1/4" ID x 3.5" Hose
16	4	4300-2801	#12 x 3/4" Flat Head Screw	40	1	5125-2126	1" ID x 9" Hose
17	2	4300-2790	5/16-18 Nylon Locking Nut	41	1	5100-1846	5/8" Molded By-pass Hose
18	1	4400-1314	3/8" NPT Plug	42	1	5000-2680	Lube Reservoir Relocation Kit
19	3	4400-1497	1/4" NPT Plug	43	5	5000-1154	Tie Wraps
20	2	4200-3109	Hose Plug 5/8"	44	1	5102-2125	5/16" ID x 48" PVC Hose
21	4	4300-2791	3/8-16 Nylon Locking Nut	45	1	5103-2134	1 1/4" ID x 24" Hose
22	2	4300-1730	3/8-16 x 1" Bolt	46	1	5100-1290	1-1/2" ID x 14" x 6-1/2" Hose
23	2	4300-3101	3/8-16 x 1" Flat Head Bolt	47	2	3000-1342	3/8" NPTx5/8" 90° Hose Adapter
24	1	5000-3014	Raw Water Splitting Tee				

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 with central drains, the block drain hoses will need to be disconnected and the quick connect fittings removed from the block.
3. Disconnect hoses from exhaust elbows.



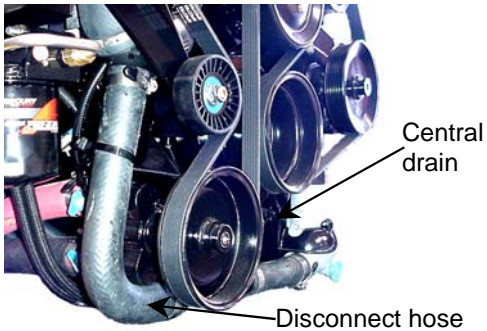
4. Disconnect all hoses from the thermostat housing.
5. Remove the temperature sending unit(s) and/or pipe plug from the thermostat housing. Set these aside for later use. **MONITOR PRODUCTS strongly recommends** that you install an audible "buzzer" type alarm, if the engine is not currently equipped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



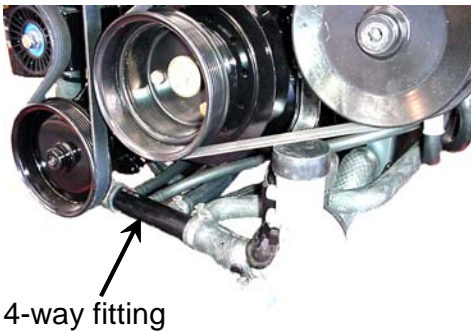
6. Remove and discard existing thermostat housing, thermostat, gasket and bolts.
7. Flush the engine.
 - a. If the engine is new, flush briefly with fresh water through thermostat opening. Use a garden hose with a clean rag around it.
 - b. If the engine is used, more thorough flushing is required. **MONITOR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

SKIP TO STEP #15. IF ENGINE IS NOT EQUIPPED WITH A CENTRAL DRAIN SYSTEM

8. Remove the 1-1/4" formed inlet hose.



9. Install a 1-1/4" cap (Item #36) & #24 clamp (Item #32) at both locations from which hose was removed in step 8.



10. Cut both block drain hoses about 2" from 4-way fitting and plug with hose plugs (Item #20) using clamps (Item #34).

11. Disconnect 1 1/4" hose between the 4-way fitting and the central drain and discard. Replace with two 1 1/4" x 3.5" hoses (Item #39) (trim as needed) and Y-fitting (Item #31) using hose clamps (Item #32).

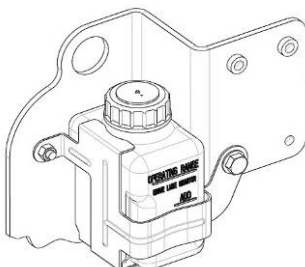
12. Disconnect bypass hose assembly and discard.



13. Cap off the bypass outlet on top of the distribution housing using the 1" cap (Item #37) and #16 clamp (Item #33).

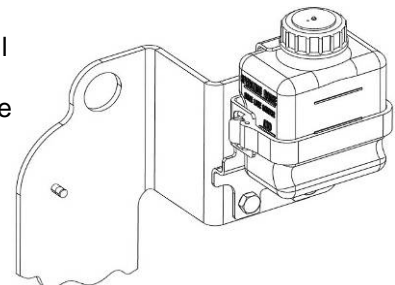
14. Route 1 1/4" X 24" hose (Item #45) along the same path the bypass assembly was run and connect to Y-fitting using hose clamp (Item #32).

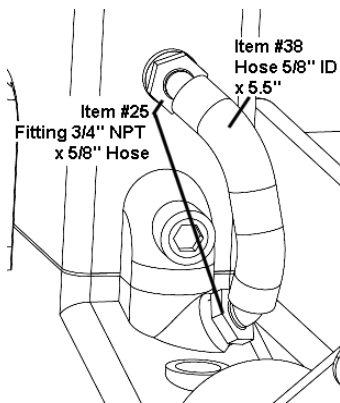
15. Relocate the drive lube reservoir using the supplied kit (Item #42) and 3/8-16 X 1" fasteners (Item #22).



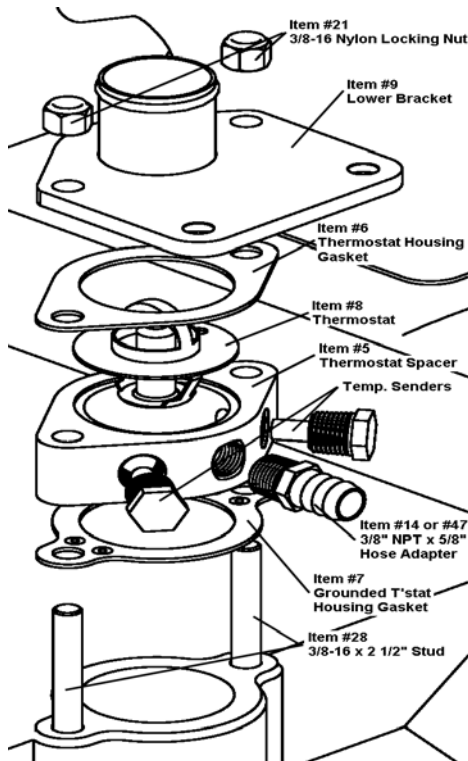
Lube oil bottle mounted to inside face of lift eye bracket

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





16. Remove the straight fittings from the exhaust elbows.
17. Using the supplied tool (Item #27), replace the 3/4" NPT plug in the top of each exhaust manifold and the front of each exhaust elbow with a 3/4" NPT 45° fitting (Item #25). Install one of the 3/4" NPT plugs you removed in each exhaust elbow where the straight fittings were removed in step #15. You may need to disconnect the emission tube for clearance.
18. Install the 5/8" ID x 5.5" hoses (Item #38) between 3/4" NPT 45° fittings using #12 hose clamps (Item #35). You may need to trim the hose to prevent kinking.



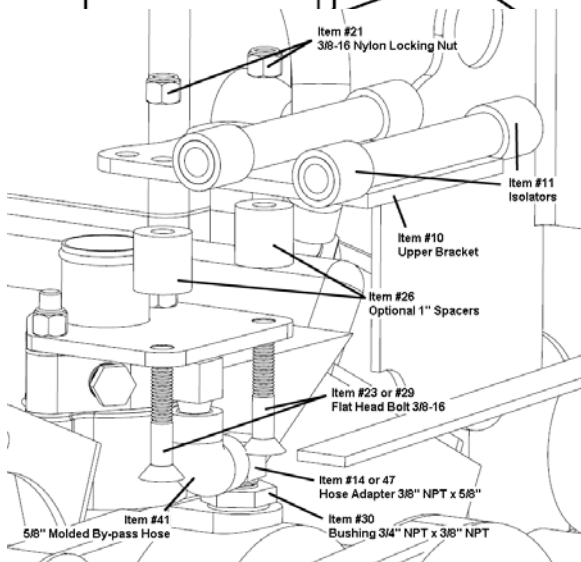
19. Clean the old gasket material from the intake manifold. Avoid gouging the sealing surface as this could create leaks. Do not allow the debris to fall into the holes.
20. Install two 3/8-16 studs (Item #28) into intake manifold.
21. Install gasket (Item #7), spacer (Item #5), thermostat (Item #8), gasket (Item #6), and lower bracket (Item #9). Tighten 3/8-16 nuts (Item #21) securely.

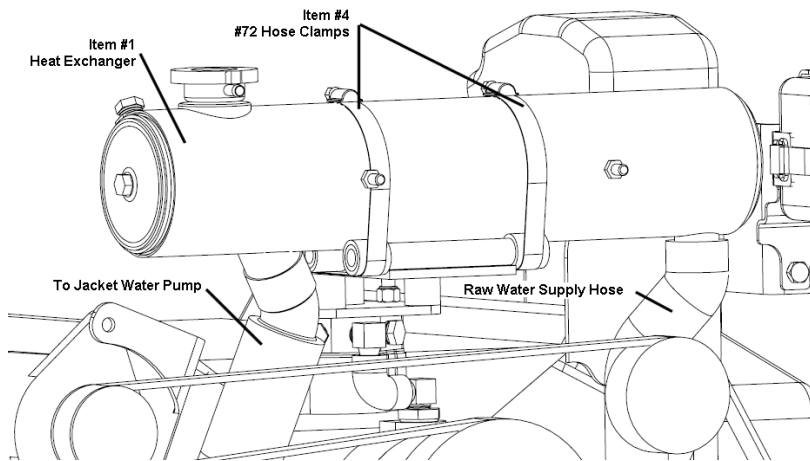
22. Thread straight hose adapter (Item #14) or 90° hose adaptor (Item #47) into center threaded hole in spacer.
23. Thread temperature sender into spacer. If overheat alarm is used, thread into the other threaded hole of spacer. If not, install 3/8" plug (Item #18). Reconnect wire to temp senders. We strongly recommend 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.

24. Remove 3/4" NPT plug from top of water pump. Install 3/4" NPT x 3/8" NPT bushing (Item #30) and 3/8" NPT x 5/8" hose adapter (Item #14) or 90° hose adaptor (Item #47) to top of water pump. Attach 5/8" ID hose (Item #41) using clamps (Item #35) to hose adapter on spacer and hose adapter on water pump. Trim as necessary. If cabin heater or galley water heater system hook-up is used this 5/8" hose is extended to heating devices and back.

25. Install upper bracket (Item #10), with the 3/8-16 X 1" flat head screws (Item #23) and 3/8-16 nylon locking nuts (Item #21). There is some adjustability in the bracket for different engine configurations, be sure that when heat exchanger is installed it will not interfere with any belts, fuel lines, or hatches and covers. Two 1" spacers (Item #26) and longer bolts (Item #29) are supplied to clear belts in some applications. See Fig. # 3.

26. Install isolators (Item #11) onto bracket rails (if not already installed).



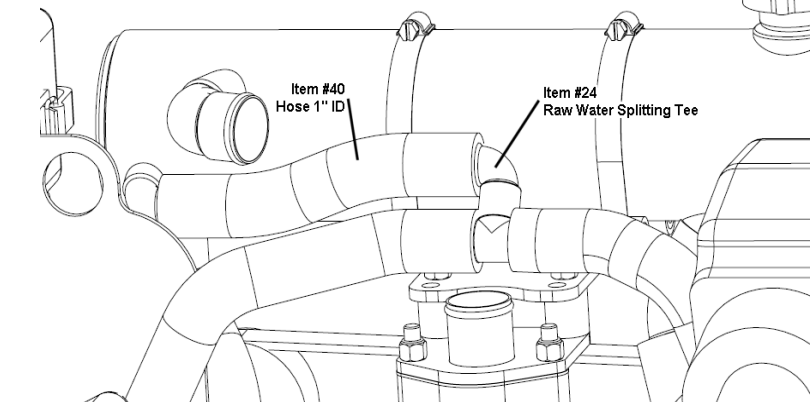


27. Install heat exchanger (Item #1) on rails of upper bracket and secure with two large hose clamps (Item #4). See Fig. # 4.

28. Connect raw water supply hose (or the hose you installed in Step #14) to the fitting on the bottom of the heat exchanger using hose clamp (Item #32). Supply hose may need to be trimmed. Trim hose as required to engage fitting fully.

29. Trim 1 3/4" molded hose running from circulating pump to engage 1 3/4" fitting on heat exchanger. Secure using existing clamps.

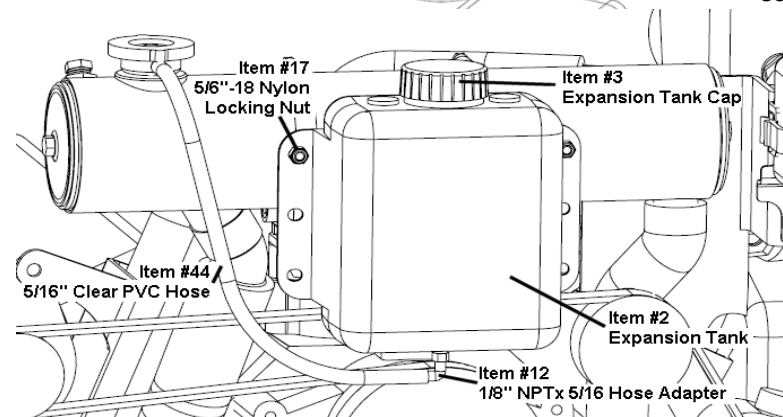
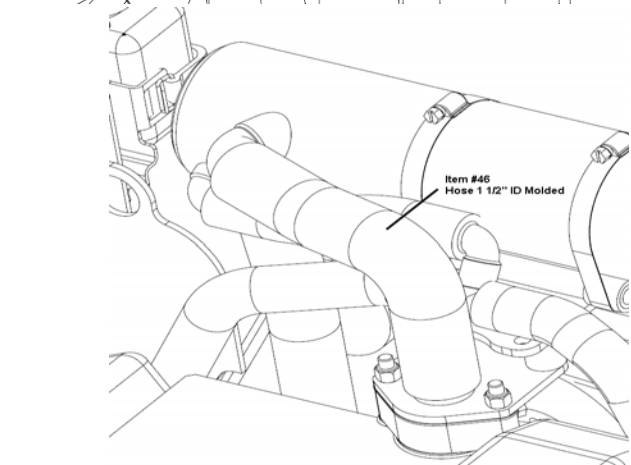
30. Connect tee assembly (Item #24) to heat exchanger at top rear right side of heat exchanger with 1" ID hose (Item #40) using clamps (Item #33). Place Tee assembly on top of heat exchanger bracket and between 1 1/2" fitting and heat exchanger. Attach hoses leading to bottom or front of exhaust manifolds to each side of tee assembly. Use existing hose clamps.



31. Connect heat exchanger to lower bracket with 1 1/2" ID molded hose (Item #46) using clamps (Item #32). Trim hose as needed.

32. Thread 1/8" NPT x 5/16" hose adaptor (Item #12) into bottom of expansion tank (Item #2) using sealer. Expansion tank cap (Item #3) should already be in place.

33. Mount overflow bottle on studs on front of heat exchanger using 5/16-18 nylon locking nuts (Item #17). If space in front of engine does not allow installation on heat exchanger, install on vertical surface next to engine using washers (Item #15) and screws (Item #16). Keep as close to engine as is practical, with top of tank at the same level as the top of heat exchanger.



34. Connect 5/16" clear PVC hose (Item #44) to the fitting on filler neck and elbow on bottom overflow bottle with mini clamps (Item #13).

35. Use tie wraps (Item #43) to make sure that hoses or other parts are not in contact with critical engine components, such as belts and fuel lines.

36. Reinstall engine block drain plugs. For 2001 or newer MPI engines with central drains, replace the two 1/4" NPT quick connect fittings you removed with 1/4" NPT plugs (Item #19). (An additional 1/4" NPT plug is provided to replace the quick drain fitting in the jacket water return hose on 7-point drain systems.)
37. Double check total installation and make sure all fasteners, fittings, and hose clamps are tightened properly. See Filling and Start-Up Instructions in Fresh Water Cooling General Maintenance Manual.

We strongly recommend 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
4000-1857	Pressure Cap, 16# SS
5000-3012	Thermostat
4500-1381	Gasket, Thermostat Housing
4500-3004	Grounded T'stat Hous. Gasket
4500-1082	O-Ring, Buna-N
4500-2005	Gasket, 4" (end cover)
4400-1044	Zinc Anode, 3/8"NPT, 1-1/4" Long