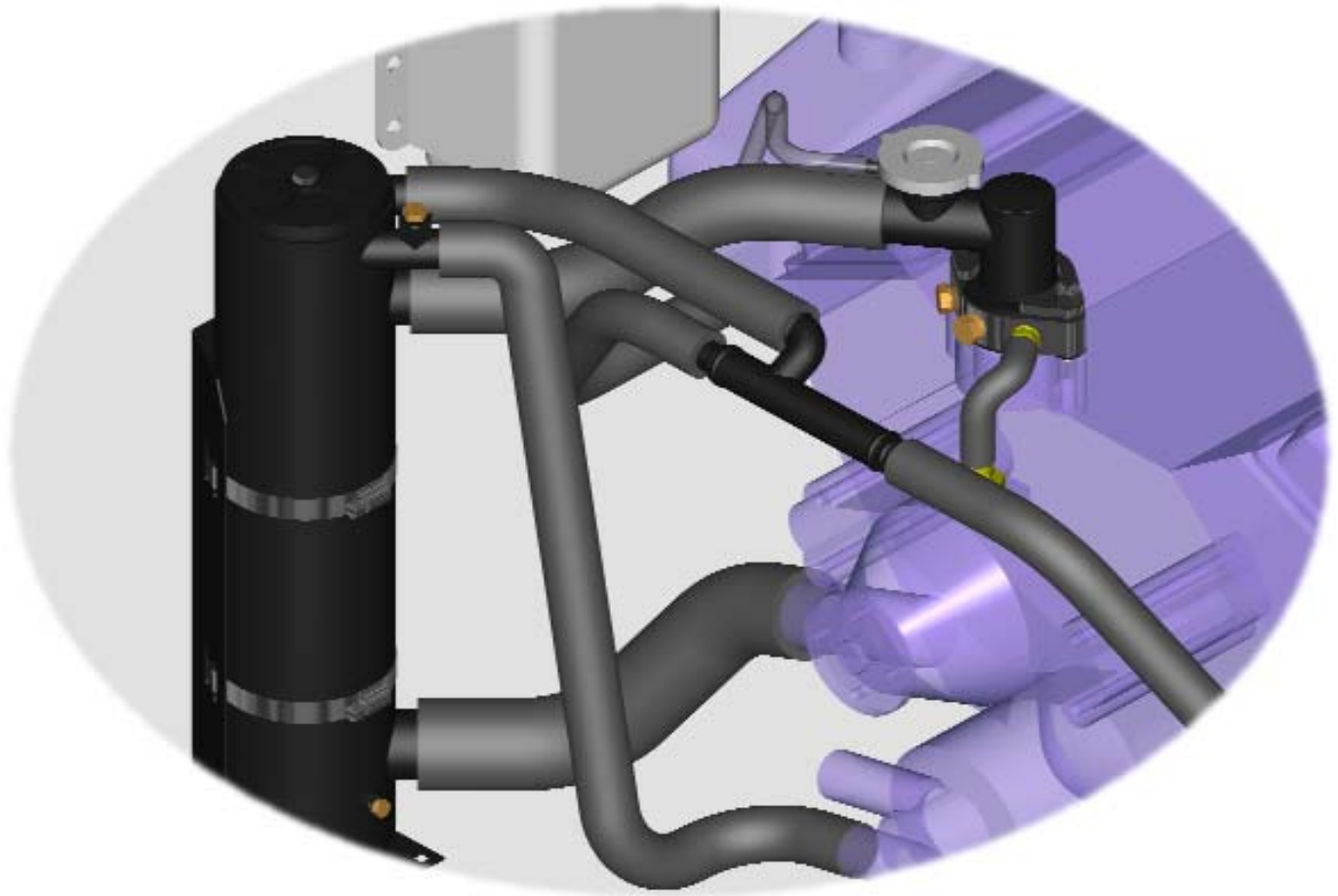


MRM-5439

Remote Mounted Block Only Freshwater 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 instructions have been written to cover most installations on most Volvo V-8 engine conversions made after 2000. The system is remote-mounted. The system cools the block only.

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

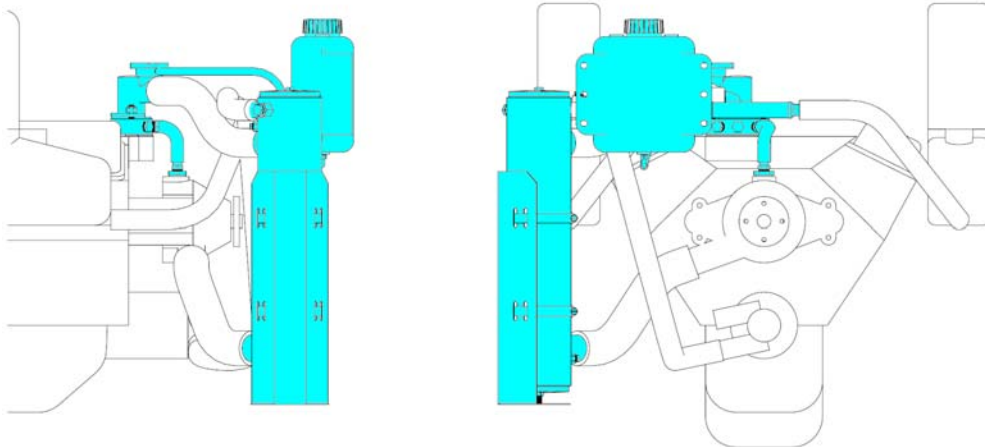
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The installer must make sure that the overall installation is safe and in accordance with Coast Guard and industry standards.

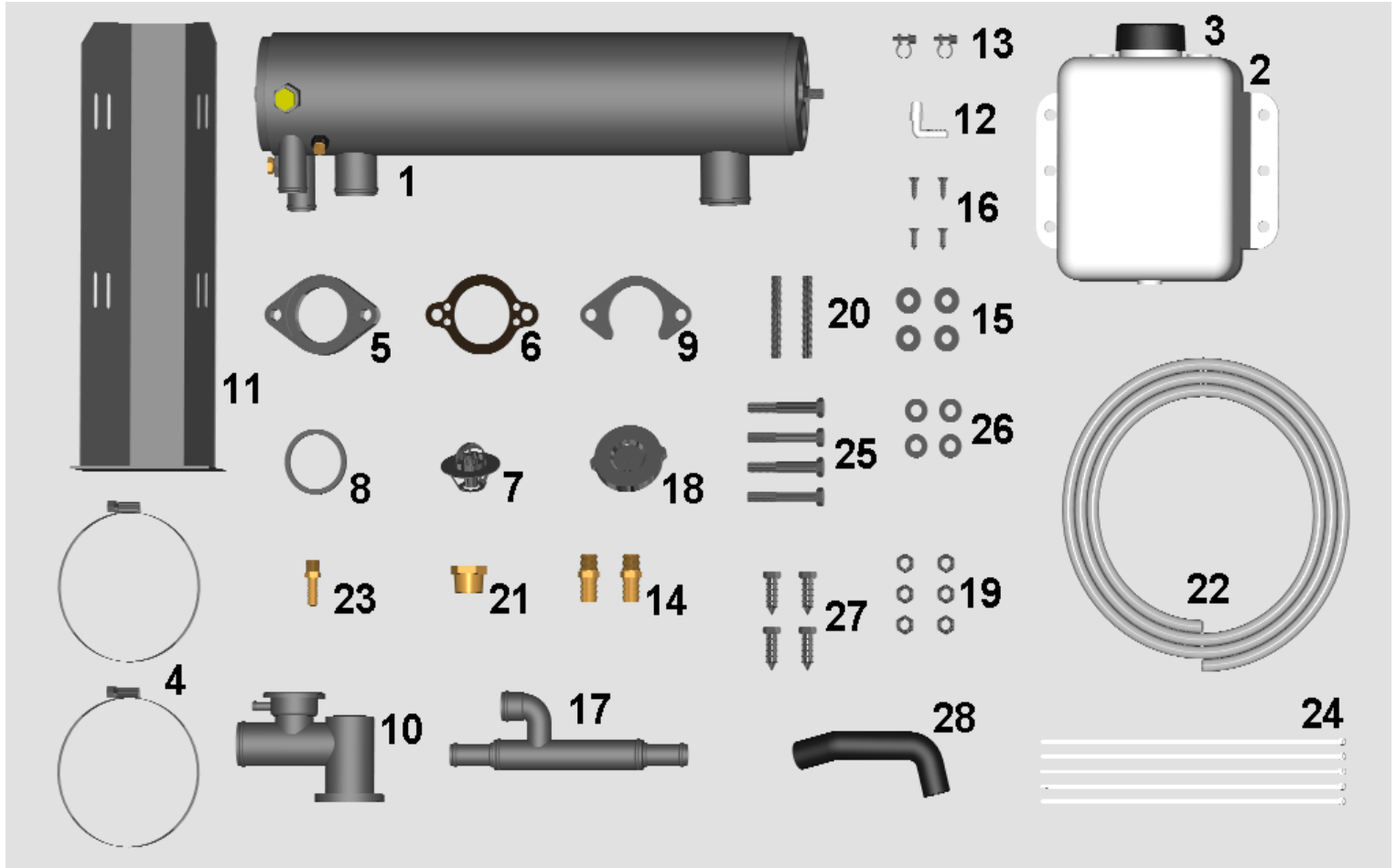


Installation tools

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
Hose Cutter or Knife
Gasket scraper

Items Included in kit:



Item	Qty.	Part Number	Description	Item	Qty.	Part Number	Description
1	1	M5439-4166	Heat Exchanger	15	4	4300-2802	5/16" Washer
2	1	5001-1327	Expansion Tank	16	4	4300-2801	#12 x 3/4" Flat Head Screw
3	1	5000-1763	Cap, Expansion Tank	17	1	5000-1607	Tee Assembly 1"x3/4"x3/4"
4	2	5200-1610	Hose Clamp #72	18	1	4000-1857	Pressure Cap 16#
5	1	4007-2003	Thermostat Spacer	19	6	4300-2791	3/8-16 Nylon Locking Nut
6	1	4500-3004	Grounded T'stat Hous. Gasket	20	2	4300-3123	3/8-16 x 2-3/4" Stud
7	1	5000-3012	Thermostat	21	1	3000-3099	Bushing, Brass 3/4"x3/8" NPT
8	1	4500-1622	Gasket, Rubber Thermostat	22	1	5102-2125	5/16" ID x 48" PVC Hose
9	1	4000-2618	Hold Down Plate	23	1	3000-3119	1/4" NPTx5/16" Hose Adapter
10	1	5000-3120	Rotateable Thermostat Housing	24	5	5000-1154	Tie Wraps
11	1	5000-2873	Bracket	25	4	4300-2810	3/8-16 x 2.50" Bolt
12	1	5000-1343	1/8" NPT x 5/16" Hose Adapter	26	4	4300-2811	Washer, 3/8, SS
13	2	5200-1344	Mini Clamp #02	27	4	4300-2809	Lag Screw #12 x 1 1/4"
14	2	3000-1351	3/8" NPT x 5/8" Hose Adapter	28	1	5100-1846	Hose, 5/8" ID Molded

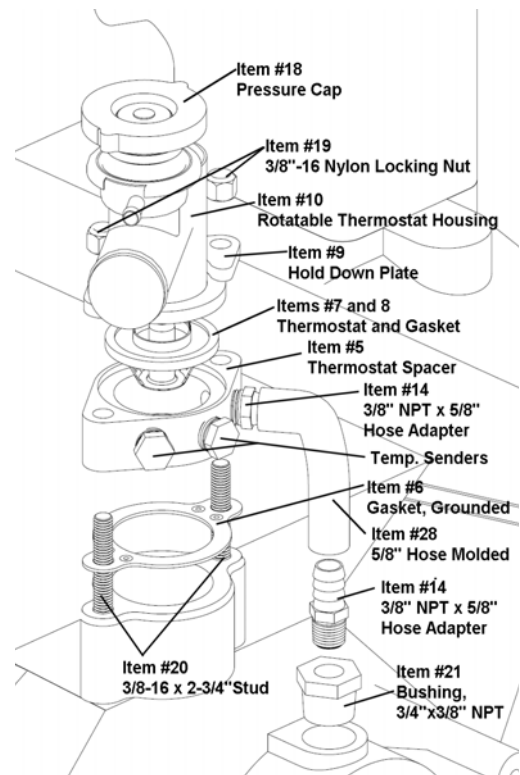
Installation Steps

1. Disconnect both cables from the battery.
2. Drain water from block by removing plug from lower side of engine block. If engine has a central drain system, disconnect hoses and remove the quick disconnect fitting in bottom of engine block.
3. Remove hoses from the existing thermostat housing. Save all hose clamps
4. Disconnect wire(s) from temperature sender(s) and 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.
5. Remove and discard existing thermostat housing, thermostat, and gasket. Scrape gasket surface clean. Do not allow debris to fall into engine.
6. 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.

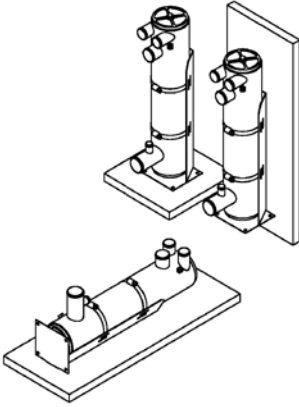
7. Install rubber thermostat gasket (Item #8) onto thermostat (Item #7).
8. Install the temperature sensors and 3/8" NPT X 5/8" hose adapter (Item #14) into the spacer (Item #5). Do not use thread sealant on sensors.

Note: Monitor Products strongly recommends that you install an audible "buzzer" type alarm, if the engine is not currently equipped with one. These overheat alarms are usually combined with low oil pressure alarm and are very reasonable in price.

9. Install 3/8"-16 x 2.75" studs (Item #20), gasket (Item #6), spacer, thermostat and thermostat housing with filler neck (Item #10) with hold down plate (Item #9) and 3/8-16 nylon locking nuts (Item #19). Install pressure cap (Item #18).

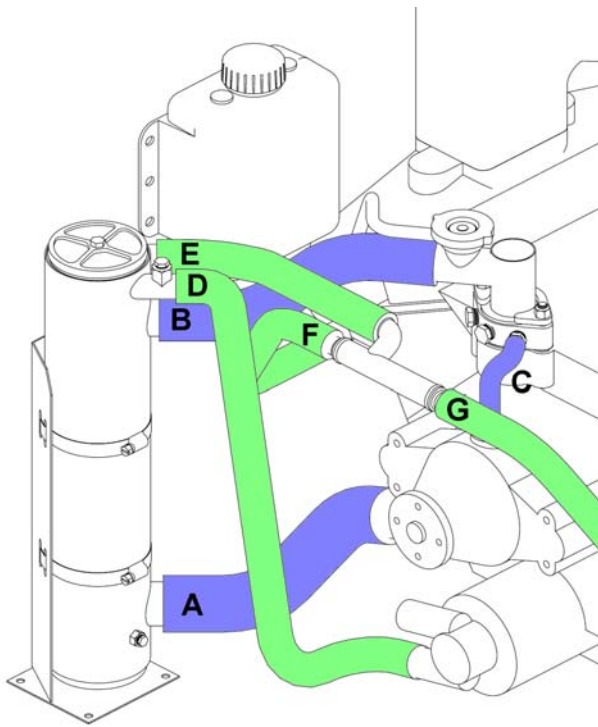


10. Remove the 3/4" NPT plug from the top of the circulating pump and replace with 3/4" NPT to 3/8" NPT bushing (Item #21). Thread the 3/8" NPT x 5/8" hose adapter (item #14) into bushing. Install the 5/8" ID molded hose (Item #28) from the 5/8" adapter on the spacer to the 5/8" adapter on the circulating pump. If a galley water or cabin heater is used this hose can be extended to the heater.



11. Position heat exchanger (Item #1) and mounting bracket (Item #11) where they are to be mounted, keeping them as close to the front of the engine as possible to minimize the length of hoses required and their related pressure drops. **Note: The heat exchanger must be below the level of the filler neck on the thermostat housing.** The heat exchanger may be mounted on any horizontal or vertical surface. Monitor Products, Inc recommends a vertical mounting on the starboard side and slightly in front of the engine, it allows for easier hose routing and draining of the raw water side during winterization.

12. Determine all hose routes to make sure that they do not contact any belts or fuel lines. In some cases the 3/4" ID hoses connected to the bottom of the exhaust manifolds can be reused, if the 1" ID hose from the heat exchanger to the tee assembly (Item #17) can be routed to allow it. Reference figure shows the basic hose routing from the recommended mounting location. Reference hose lengths are from the recommended mounting location and are approximate.



- A. 1-3/4" ID - Heat Exchanger Jacket Water Outlet to Pump Inlet (15")
- B. 1-1/2" ID -Thermostat Housing Outlet to Heat Exchanger Jacket Water Inlet (15")
- C. 5/8" ID - Bypass (molded hose included)
- D. 1" ID - From Raw Water Pump to Raw Water Inlet (27")
- E. 1" ID - Raw Water Outlet to Raw Water Tee (15")
- F. 3/4" ID - Raw Water Tee to Bottom Front of Manifold (25")
- G. 3/4" ID - Raw Water Tee to Bottom Front of Manifold (25")
- H. 5/16" ID - Raw water to water cooled fuel pump if equipped not shown (36")

Don't forget hose clamps when purchasing your hose.

13. Mount the bracket.
 - a. If mounting to a bulkhead, use 3/8" x 2 1/2" bolt (Item #25), 3/8" nuts (Item #19), and 3/8" washers (Item #26).
 - b. Otherwise use #12 lag screws (Item #27). Do not drill into fuel tanks, water tanks, or any other critical areas. Do not contact any belts or fuel lines.
14. Secure the heat exchanger to the bracket with supplied #72 hose clamps (Item #4).
15. Connect the hoses:
 - a. Connect the 1 3/4" ID jacket water hose from the outlet side of heat exchanger to the jacket water pump inlet.
 - b. Connect 1 1/2" ID hose from thermostat housing to inlet side of heat exchanger.
 - c. Install 5/8" ID bypass hose from 5/8" hose barb on the thermostat spacer to 5/8" hose barb on the circulating pump. Reconnect temperature sensors at this time.
 - d. Connect 1" ID raw water supply hose to the inlet on the heat exchanger.
 - e. Connect 1" ID raw water outlet hose from the outlet on the heat exchanger to the raw water tee.
 - f. Connect 3/4" ID hoses from raw water tee to bottom of exhaust manifolds.
16. If you have a raw water cooled fuel pump, remove the 1/4" NPT plug from the raw water inlet fitting on the heat exchanger and replace with 1/4" NPT x 5/16" hose adapter (Item #23) and connect to fuel pump with 5/16" ID hose.
17. Install the 1/8" NPT x 5/16" hose barb plastic elbow (Item #12) into the bottom of the expansion tank (Item #2). Expansion tank cap (Item #3) should already be in place. Mount the expansion tank on a vertical surface next to heat exchanger using #12 x 3/4" flat head screw (Item #16) and washers (Item #15). The tank should be located where it is easy to see and fill. Keep it as close to the heat exchanger as is practical and with the top of the tank level with the top of the filler neck.

The exact level of the expansion tank is not critical. If the tank is higher than the heat exchanger it is necessary to pinch tubing shut whenever pressure cap is removed or system will overflow. If mounted excessively low it is IMPORTANT that the upper rubber gasket of the pressure cap seals perfectly or system may draw air back instead of coolant when the system contracts due to cool down.

18. Route the clear 5/16" hose (Item #22) between the filler neck and the expansion tank elbow. Secure in place with mini-clamps (Item #13).
19. Use tie wraps (Item #24) to make sure that hoses or other parts are not in contact with critical engine components such as belts and fuel lines.
20. Reinstall plugs in bottom of engine block.
21. 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
4000-1857	Pressure Cap, 16# SS
5000-3012	Thermostat
4500-1622	Gasket, Rubber Thermostat
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