MFV-5241 Volvo Penta/OMC Freshwater Cooling Kit Instructions





MONITOR PRODUCTS, INC.

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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 Late model GM (Chevy) based V6/V8 engines lacking power steering or with power steering pump mounted low on port side of engine. The system cools the block only.

NOTE:

- 1. Heat exchanger is mounted on the starboard side in front of the exhaust manifold. Therefore, fuel line may have to be re-routed to avoid contact with the heat exchanger.
- 2. Especially on V-6 engines, the wire harness may have to be re-routed to avoid contact with the heat exchanger. Use Volvo elbow adapter part number 3857494.

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, 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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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 Vice–Grip Pliers 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	M5241-4146	Heat Exchanger	21	1	5111-2128	Hose 5/8" x 26"
2	1	4000-2004	Thermostat Housing	22	1	3000-2018	3/8" Hose Barb to ¼" NPT Adapter
3	1	5000-1150	Thermostat 160°	23	1	4400-1314	3/8" NPT Brass Drain Plug
4	1	4004-2003	Thermostat Housing Spacer w/ Bypass	24	1	5000-1343	Plastic Elbow 1/8" NPT x 5/16" Hose Barb
5	2	4500-1381	Thermostat Gasket	25	1	5001-1327	Expansion Tank
6	1	3000-1342	Brass Elbow 3/8" NPT x 5/8" Hose Barb	26	4	4300-2801	Screw, #12 Phillips Flat Head x .75"
7	1	3000-2017	3/8" NPT x 3/8" NPT Bushing	27	4	4300-2802	Washer, 5/16", Flat
8	4	4300-1575	3/8-16 X 2" HHCS	28	1	5102-2125	5/16" PVC Hose x 48"
9	1	5000-2004	Bracket	29	2	5200-1344	7/16" Mini Hose Clamp
10	1	5002-2012	1" OD Spacer x .75" long	30	5	5000-1154	Tie Wraps 11"
11	1	5100-1996	1-3/4" ID Molded Hose	31	1	5000-1763	Expansion Tank Cap
12	2	5202-1133	4" Wrap-around Clamp	32	1	5000-3059	Bracket
13	2	4300-1402	3/8-16 X 1.25" HHCS	33	2	0501-2110	Spacer, 1" X 1.8"
14	2	4300-1280	3/8" Hex Nut	34	2	4300-2810	3/8-16 X 2.50" HHCS
15	1	5001-2012	1" OD Spacer x 1-1/8" Long	35	2	4300-2791	3/8-16 Self-locking Hex Nut
16	1	5100-1290	1-1/2" ID Molded Hose	36	2	4300-1374	3/8-16 X 3.25" HHCS
17	2	5200-1143	Hose Clamp #24	37	1	5000-1283	U-Turn Adapter1 ¼" to 1"
18	1	5001-1383	3⁄4" Splicer Painted Black	38	1	5107-2134	Hose 1 ¼" X 3 1/2"
19	1	5111-2124	¾" x 16-1/2" Hose	39	1	5117-2126	Hose 1" X 30"
20	2	5200-1353	Hose Clamp #08				

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Installation Instructions

1. Drain water from engine. Drain plugs are located on each side of engine block. Remove plugs and set aside for further use.



- Remove and discard 1-3/4" ID molded hose, connecting thermostat housing to circulation pump. Save hose clamps. See Figure #1.
- 3. Disconnect the temperature sensor by unscrewing it from the thermostat housing, and then set the sensor aside.
- Disconnect 1" raw water inlet hose from thermostat housing. See Figure #1. Leave other end attached to pump, save hose clamp.
- 5. Disconnect both hoses that go from the thermostat housing to the front of the exhaust manifolds at the thermostat-housing end. Leave hoses attached at

Figure # 1

manifolds. Both hoses will be used later. Save clamps. See Figure #1.

FUEL INJECTED ENGINES ONLY On fuel injected engines disconnect 3/8" hose at thermostat housing.

- Remove and discard thermostat housing, gasket, and bolts. Scrape the gasket surface clean; especially the groove where the new thermostat will be located. Avoid getting debris into thermostat opening.
- 7. Flush engine.
 - a. If engine is new, flush engine briefly with fresh water through thermostat opening. Use a garden hose with a rag around the thermostat opening.
 - b. If the engine is used, more thorough flushing may be needed. See separate instructions.
- Install new thermostat housing. Install 3/8" NPT brass elbow (Item #6) onto spacer (Item #4), the brass elbow should face the port side of the engine





when tight. Place thermostat (Item#3) between thermostat housing casting (Item #2) and 1" spacer (Item #4). Use two 3/8" bolts (Item # 8) and two gaskets (Item #5) one on each side of spacer. Tighten bolts. Install brass fitting (Item #7) into spacer. See Figure #2.

NOTE: If no temperature sensor is used install 3/8" plug (Item # 23) into brass threaded nut.

9. Using thread sealer, install temperature sensor in 3/8" NPT fitting on the side of the spacer. Reconnect wire to the temperature sensor.

If your engine lacks the bolts shown in Figure #3, skip to step 15.



Figure # 3



- 10. Remove and discard two bolts shown.
- 11. Install bracket (Item #9) using 3/8-16 x 1 1/4" (Item #13) and 3/8-16 x 2" (Item #8) with spacer (Item # 10) in the lower hole. See Figure #4.
- 12. Install hose (Item #11) on inlet of fresh water pump with existing hose clamp.
 - Tighten hose clamp. Slip second hose clamp on hose but leave loose. See Figure #6.
- 13. Install upper and lower wrap-around clamps (Item #12) below filler neck by spreading clamp and closing tightly around heat exchanger (Item #1).
- 14. Mount heat exchanger by slipping lower 1-3/4"

Figure # 4

fitting into hose previously mounted on the fresh water pump. Moisten hose for easy installation. Mount upper clamp to topside of support bracket with 3/8-16 x 1 1/4" bolt (Item #13) and 3/8" nut (Item #14). A pair of vice–grip pliers will prove useful here. Hold heat exchanger in position, so that the fresh water outlet is in line with the thermostat housing shown in Figure #2. Partially tighten upper clamp. Position heat exchanger so that the lower outlet and the inlet of fresh water pump are lined up and normal hose engagement exists. Place a wraparound clamp at the lower end of the heat exchanger using a 3/8-16 x 2" bolt (Item #8), spacer (Item #15) and 3/8" nut (Item #14) and attach the assembly to the lower hole on the support bracket. Once heat exchanger is in the proper position, tighten both upper and lower clamp bolts. Skip to Step #18.



Figure # 5

- 15. Install bracket (Item #32) to front of jacket water pump by removing bolts from left side of water pump and installing the bracket using 3/8"-16 x 2 1/2" bolts (Item #34). See Figure #5.
- 16. Install hose (Item #11) on inlet of fresh water pump with existing hose clamp. Tighten hose clamp. Slip second hose clamp on hose but leave loose. See Figure #6.
- 17. Install upper and lower wrap-around clamps (Item #12) below filler neck by spreading clamp and closing tightly around heat exchanger (Item #1). Mount heat exchanger by slipping lower 1-3/4" fitting into hose previously mounted on the fresh water pump. Moisten hose for easy installation. Mount upper clamp to top hole in bracket with 3/8"-16 x 3.25" bolt (Item #36), spacer (Item #33) and 3/8" self locking nut (Item #35). A pair of vice–grip pliers will prove useful here. Hold heat exchanger in position, so that the fresh water outlet is

in line with the thermostat housing shown in Figure #2. Partially tighten upper clamp. Position heat exchanger so that the lower outlet and the inlet of fresh water pump are lined up and normal hose engagement exists. Place a wraparound clamp at the lower end of the heat exchanger using 3/8"-16 x 3.25" bolt (Item #36), spacer (Item #33) and 3/8" self locking nut (Item #35) and attach the assembly to the lower hole on the bracket. See Figure #5. Once heat exchanger is in the proper position, tighten both upper and lower clamp bolts.

Important: Make sure that heat exchanger is mounted rigidly and it does not touch either the fuel line or the fuel filter.





- 20. Raw water hook-up either:
 - Attach the 1" hose that was connected to the original thermostat housing, to 1" elbow on top left side of the heat exchanger. Use existing clamps.

Or

b. Connect 1 ¼" hose (Item #38) to raw water pump outlet using existing hose clamp. Connect U-turn adapter (Item #37) to 1 ¼" hose using hose clamp (Item #17). Connect 1" *Figure # 7* x 30" hose (Item #39) to U-turn adapter win other and of 1" hose to heat exchanger

- 18. Install hose (Item #16) and two hose clamps (Item #17) from thermostat housing to 1-1/2" fitting on heat exchanger. Trim to fit. See Figure 6.
- 19. Install hose splicer (Item #18) into existing raw water hose attached to starboard exhaust manifold. Make sure half of the splicer is inserted in the hose, and install and tighten using existing hose clamp. Install hose (Item # 19) from hose splicer to 3/4" straight fitting on the top right side of the heat exchanger using hose clamp (Item # 20). Bring hose attached to port manifold to $\frac{3}{4}$ " elbow at the top rear of the heat exchanger. Cut off excess hose. Use existing clamp. See Figure # 6.



x 30" hose (Item #39) to U-turn adapter with hose clamp (Item #37). Attach other end of 1" hose to heat exchanger raw water inlet connection using existing hose clamp. See Figure #7.

21. Install by-pass hose (Item # 21) from brass elbow (Item #6) on the 1" spacer, to the 5/8" elbow attached to the fresh water outlet elbow at the bottom of the heat exchanger. Use hose clamp (Item #20). See Figure #6.

FUEL INJECTED ENGINES ONLY On fuel injected engines, remove ¼" NPT plug from top left rear side of the heat exchanger. Replace plug with 3/8" hose barb (Item #22). Attach 3/8" hose to 3/8" hose barb, using existing clamp.

- 22. Install elbow (Item #24) to bottom of expansion tank (Item #25) using thread sealer.
- 23. Install expansion tank on vertical surface next to the heat exchanger using screws (Item # 26) and washers (Item #27). The tank should be located where it is easy to see and fill. Keep it as close to the heat exchanger as practical and with the top of the tank level with the top of the heat exchanger. The exact level is not critical.

NOTE: 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 vital that the upper rubber gasket of the pressure cap seals perfectly or the system may draw air instead of coolant, when the system contracts due to cool down.

- 24. Install tubing (Item # 28) from heat exchanger to expansion tank with clamps (Item #29). Tubing may be cut to size, but keep it as short and straight as possible. Keep tubing away from hot engine parts using tie wraps (Item #30). Use additional ties to make sure hoses are not in contact with critical engine components.
- 25. Reinstall engine block drain plugs
- 26. 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.

Part Number	Description				
5000-1763	Cap, Expansion Tank				
4000-1857	Pressure Cap, 16# SS				
5000-1150	Thermostat				
4500-1381	Gasket, Thermostat Housing				
4500-1622	Gasket, Rubber Thermostat				
4500-1082	O-Ring, Buna-N				
4500-2005	Gasket, 4" (end cover)				
4400-1044	Zinc Anode, 3/8"NPT, 1-1/4" Long				