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MFH-5456

On-Engine Block & Manifold Freshwater
Cooling Kit for Mercury Remanufacturing
357 Engines 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 Mercury Remanufacturing engines. The system is front mounted at the level of the thermostat housing. This kit is intended for serpentine belt installations.

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. The phone number is 1-800-334-4591.

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 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.

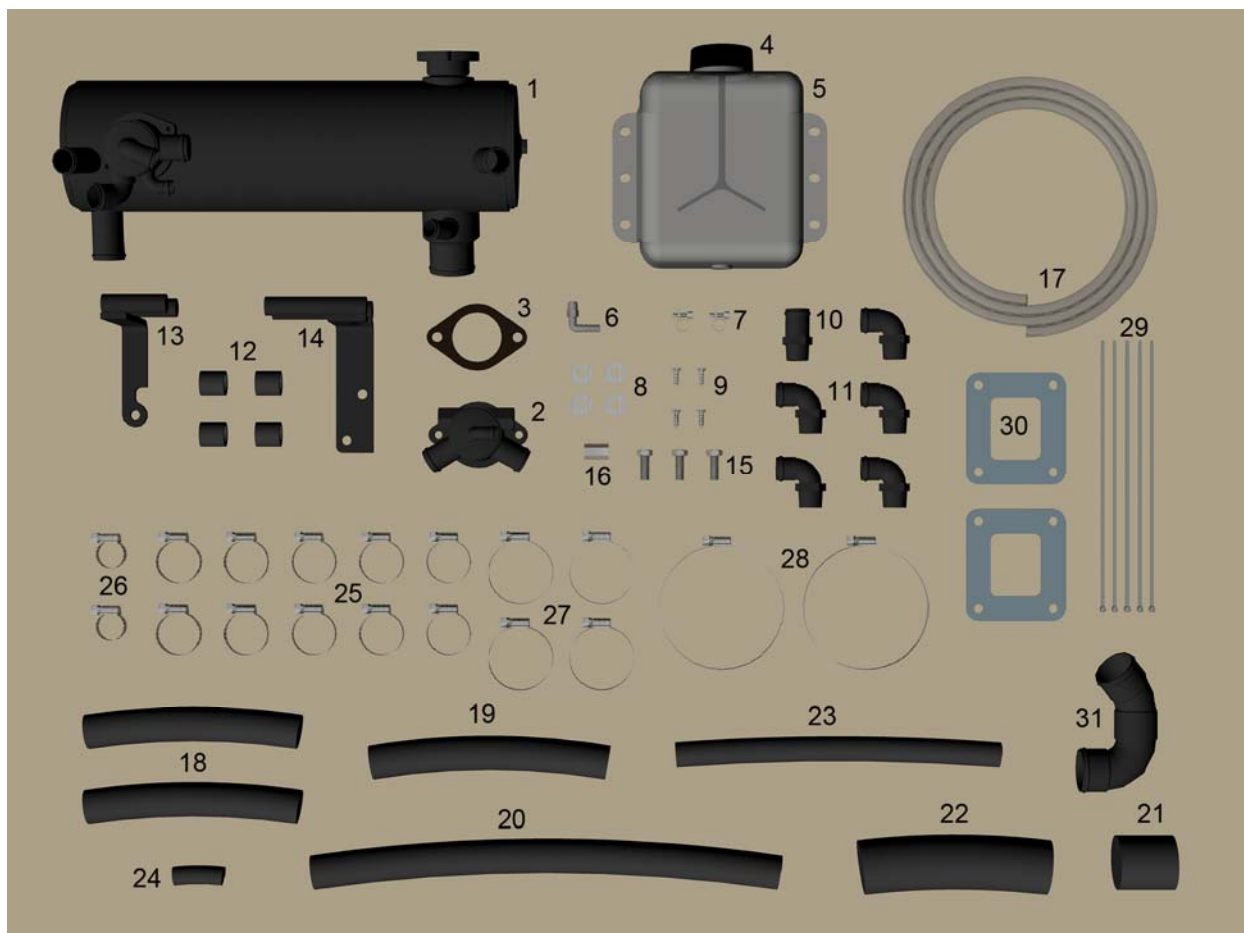
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The installer must make sure that the overall installation is safe and in accordance with Coast Guard and industry standards.

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
Hose Cutter or Knife
Gasket scraper
RTV silicone gasket sealer
Antifreeze solution (See flush and fill instructions)

Items Included in kit:

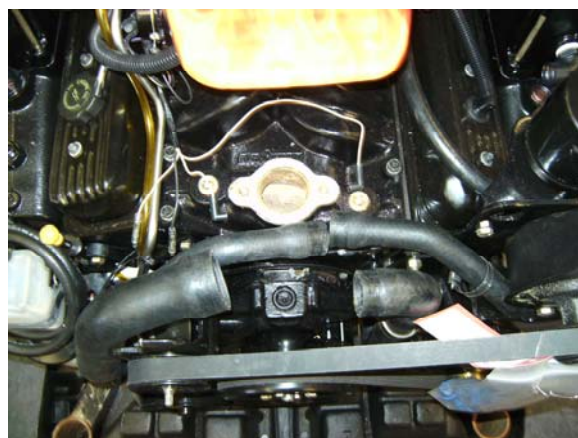
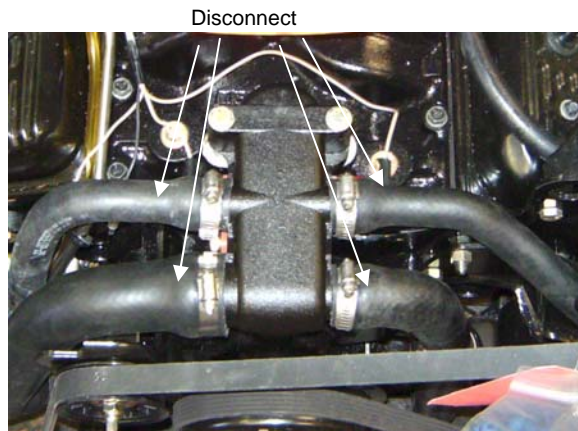


Item	Qty	Part Number	Description
1	1	M5456-5146	Heat Exchanger
2	1	5000-3168	Water Outlet Assembly
3	1	4500-1381	Gasket, Thermostat Housing
4	1	5000-1763	Cap, Expansion Tank
5	1	5001-1327	Expansion Tank
6	1	5000-1343	1/8" NPT x 5/16" Hose Barb Elbow
7	2	5200-1344	Mini-Clamp
8	4	4300-2802	5/16" Flat Washer
9	4	4300-2801	#12 Screw x 3/4"
10	1	5000-1980	Fitting Exhaust Straight
11	5	5000-1979	Fitting Exhaust Elbow
12	4	5115-2124	Isolators (3/4" Hose x 1")
13	1	5000-3165	Bracket, Starboard
14	1	5000-3164	Bracket, Port
15	3	4300-1730	3/8-16 x 1" Bolt
16	1	5000-2668	Plug Removal Tool

Item	Qty	Part Number	Description
17	1	5102-2125	5/16" PVC Hose x 48"
18	2	5127-2126	1" Hose x 8 1/2"
19	1	5126-2126	1" Hose x 9 1/2"
20	1	5128-2126	1" Hose x 18 3/4"
21	1	5108-2129	1 3/4" Hose x 2 1/4"
22	1	5109-2129	1 3/4" Hose x 7 1/2"
23	1	5116-2124	3/4" Hose x 13"
24	1	5101-2138	1/2" Hose x 2"
25	10	5200-1144	#16 Hose Clamp
26	2	5200-2903	#6 Hose Clamp
27	4	5200-2905	#36 Hose Clamp
28	2	5200-2914	#88 Hose Clamp
29	5	5000-1154	Tie Wraps
30	2	4500-1824	Gasket, Blind Exhaust Elbow
31	1	5000-3170	1 3/4" Elbow Assembly

Installation Steps

1. Disconnect both cables from the battery.
2. Drain water from the block by removing plugs from both lower sides of engine.
3. Disconnect 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, gasket and bolts. Scrape intake manifold gasket surface clean.



6. Flush 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. Remove plugs directly in front of mounting studs for exhaust elbows. (1/2" breaker bar and penetrating oil may be needed on engines that have been run previously, plug removal tool (Item #16) is supplied for hex type plugs) Remove the plugs in the exhaust elbows (or spacers).



8. Remove exhaust elbows. (If your engine has spacers, remove both spacers and exhaust elbows.) Scrape gasket surfaces clean ensuring nothing falls into ports.





9. Replace elbows in the bottom of exhaust manifolds (port & starboard), with 90° elbow assembly (Item #11). Use sealer. Be sure to thread in 90° elbow assembly completely. Reattach existing hoses to 90° elbows.



10. Thread 90° elbow assembly (Item #11) using sealer, into openings on top of exhaust manifolds (port & starboard) insuring they point toward thermostat opening. Be sure to thread in 90° elbow assembly completely.



11. Install manifold gaskets (blind), (Item #30), and reinstall exhaust elbows (and spacers) tightening evenly using torque wrench to 30-35 ft lbs. A good seal here is critical and we recommend you have a pressure test done prior to starting the engine.



12. Thread straight fitting (Item #10) into exhaust elbow on starboard side. (If your engine has spacers, install the straight fitting into spacer. If your spacers don't have the threads to install the fitting, install the fittings in the elbows.) Thread 90° elbow fitting (Item #11) into exhaust elbow on port side.

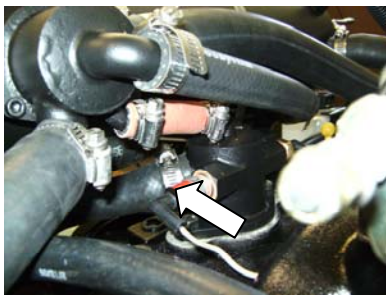




13. Install the water outlet gasket (Item #3). Use RTV silicone sealer on both sides of the gasket. (The thermostat will no longer be located in the intake manifold. It is included in the heat exchanger.)

14. Install water outlet assembly (Item #2) on the intake manifold. Use 3/8"-16 x 1" bolts (Item #15).

15. Install temperature sending units into water outlet assembly. (Don't use thread tape, 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.



16. Connect existing hoses from lower exhaust manifolds to water outlet assembly, using hoses clamps saved in step #3.

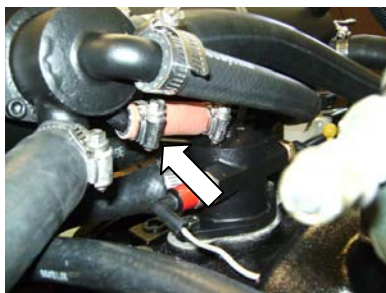


17. Install starboard bracket (Item #13) to front starboard head using 3/8"-16 x 1" bolt (Item #15). Install isolators (Item #12) onto bracket rails.

18. Install port bracket (Item #14) using existing studs and nuts of power steering pump bracket. Install isolators (Item #12) onto bracket rails.



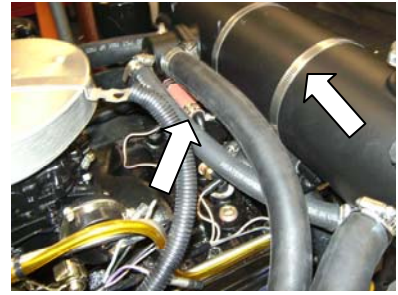
19. Install 3/4" ID x 13" by-pass hose (Item #23) from 3/4" fitting on heat exchanger to 3/4" fitting on thermostat housing, using two #16 hose clamps (Item #25).



20. Install 1/2" ID x 2" hose (Item #24) to 1/2" manifold by-pass inlet fitting on thermostat housing of heat exchanger. Loosely install two #6 hose clamps (Item #26).

21. Install heat exchanger (Item #1), by first setting heat exchanger on bracket. While connecting 1/2" hose from heat exchanger to 1/2" fitting on the water outlet assembly.

22. Install #88 hose clamps (Item #28) around heat exchanger and bracket. Tighten hose clamps on 1/2" hose.



23. Connect 1-3/4" x 2 1/4" hose (Item #21) from the water pump to the 1-3/4" elbow assembly (Item #31) using #36 hose clamps (Item #27). Connect 1-3/4" x 7 1/2" hose (Item #22) from the 1-3/4" elbow assembly to the 1-3/4" fitting on the bottom of the heat exchanger, using #36 hose clamps (Item #27). Hose may need to be trimmed to fit.



24. Connect the raw water inlet hose to the raw water inlet fitting on bottom of the heat exchanger, using hose clamps saved in Step #3.



25. Install 1" ID x 8-1/2" hose (Item #18) between the 90° elbow fitting on top of the port exhaust manifold and the elbow on bottom of the thermostat housing. Secure with #16 hose clamps (Item #25).

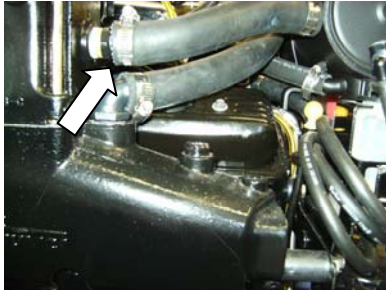


26. Install 1" ID x 18-3/4" hose (Item #20) between the 90° elbow fitting on top of the starboard exhaust manifold and the fitting on side of the thermostat housing. Secure with #16 hose clamps (Item #25).





27. Install 1" ID x 9-1/2" hose (Item #19) between the 90° elbow fitting on the port exhaust riser/elbow and the fitting near end of heat exchanger. Secure with #16 hose clamps (Item #25).



28. Install 1" ID x 8-1/2" hose (Item #18) between the straight fitting on the starboard exhaust riser/elbow and the fitting near end of heat exchanger. Secure with #16 hose clamps (Item #25).



29. Install the 1/8" NPT elbow (Item #6) to the bottom of the expansion tank (Item #5). No thread tape or sealer is needed.

30. Install the expansion tank on vertical surface next to engine using supplied screws and washers (Items #8 & #9). Keep as close to heat exchanger as is practical with top of tank level with top of heat exchanger.

31. Route the clear 5/16" hose (Item #17) between the heat exchanger filler neck and the expansion tank elbow. Secure in place with mini-clamps (Item #7).

32. Use tie wraps (Item #29) to make sure that hoses or other parts are not in contact with critical engine components such as belts and fuel lines.

33. Reinstall plugs in bottom of engine block.

34. 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, water outlet assembly
4500-1622	Gasket, rubber, thermostat
4500-1082	O-Ring, Buna-N
4500-1815	Gasket, 5" (end cover)
4400-1044	Zinc Anode, 3/8NPT, 1-1/4" Long