
807639A3 FRONT MOUNTED CLOSED COOLING KIT

For All MCM (Sterndrive) and MIE (Inboard) 454 and 502 CID (7.4 L and 8.2L) Engines with Front Mounted, Vertical Engine Oil Cooler, Except 454 Magnum MPI Tournament Ski

NOTICE to INSTALLER

After Completing Installation, These Instructions Should Be Placed with the Product for the Owner's Future Use.

NOTICE to INSTALLER

Some MCM 7.4LX EFI engines were factory equipped with 5/8 inch (16 mm) ID hose and fittings from the back of the intake manifold to the engine water circulating pump.

ALL MCM 7.4LX EFI and MIE 7.4L EFI engines being equipped with this closed cooling kit require a 3/8 inch (10 mm) ID hose and fittings from the back of the intake manifold to the engine water circulating pump, with the following exception:

You do not need to change the 5/8 inch (16 mm) fittings if a hot water heater kit is installed or is being installed. The larger size is required for an adequate supply and return of water to the heater.

Order the following additional kit when required:

Quicksilver Part Number: 32-62987A3

Description: Intake Heat Return Hose Kit -
3/8 Inch (10 mm)

Table Of Contents

Parts List	3
Torque Specifications	4
Lubricants / Sealants / Adhesives	4
Removal	5
Installation	6
Thermostat Housing	6
Thermostat Hoses, Water Pump Hose and Heat Exchanger Bracket	8
Heat Exchanger and Heat Exchanger Hoses	9
Coolant Recovery System	12
Filling Closed Cooling	13
Maintenance And Repair	15
Water Flow Diagrams	16
Engines with Port Mounted Fluid Cooler, and Starboard Mounted Fuel Cooler (If Equipped)	16
Engines with Port Mounted "Cool Fuel" System	17

NOTE: The terms *PORT (Left)* and *STARBOARD (Right)* in the following instructions are in reference to the engine only, as viewed from the rear of the engine (Transmission End) looking forward (Water Pump End).

Parts List

Part Number	Description	Qty.
807400	Heat Exchanger (HE)	1
860092	HE Bracket	1
18431	HE Bracket Pads	2
10-47462	Screw 7/16 - 14 x 1-1/4 in. (32 mm) Long	1
10-91903	Screw 7/16 - 14 x 1-3/4 in. (45 mm) Long	1
12-31263	1 in. (25 mm) O.D. Washers (HE Brkt.)	4
861188A2	Thermostat Housing (T. Hsg.) Assembly	1
10-98794	Stainless Steel Screws 3/8-16 x 1 in. (25 mm) Long	2
807075F1	Thermostat Cover	1
10-29198	Screw with Lockwasher	2
25-807134--1	Thermostat Seal	1
27-53045--1	T. Hsg. Gasket	1
22-818390	Bleeder Valve	1
99155--1	Thermostat	1
32-807137	Port T. Hsg.-to-HE Hose - (EXCEPT 7.4LX EFI and 7.4L MPI)	1
32-807271	Stbd. T. Hsg.-to-HE Hose - (EXCEPT 7.4LX EFI and 7.4L MPI)	1
32-807691	Port T. Hsg.-to-HE Hose - (7.4LX EFI and 7.4L MPI)	1
32-807692	Stbd. T. Hsg.-to-HE Hose - (7.4LX EFI and 7.4L MPI)	1
32-807141	HE-to-Port Exh. Manifold Hose - MIE	1
32-807141--1	HE-to-Port Exh. Manifold Hose - MCM	1
32-861306	HE-to-Stbd. Exh. Manifold Hose	1
32-807406	Engine Oil Cooler-to-Heat Exchanger Hose	1
32-805138	Engine Water Circulating Pump-to-HE Hose	1
32-99520	HE By-Pass Hose	1
54-815504212	Hose Clamp, #012, 14/32 mm	2
54-815504216	Hose Clamp, #016, 17/38 mm	6
54-815504222	Hose Clamp, #022, 26/50 mm	4
54-815504232	Hose Clamp, #032, 40/63 mm	2
54-815504388	Hose Clamp, #088, 108/152 mm	2
71587A1	Coolant Recovery System	1
37-12797--1	Coolant Decal	1
10-47461	Screw 5/16 - 14 x 1 in. (mm) Long	1
23-90520--1	Spacer (Stbd. HE Brkt.)	2

Torque Specifications

Description	lb-in.	lb-ft	Nm
Thermostat Housing Screws		30	41
Heat Exchanger Bracket Screws		28	38
End Cover Screws	Hand tighten then 1 to 1-1/2 turns.		

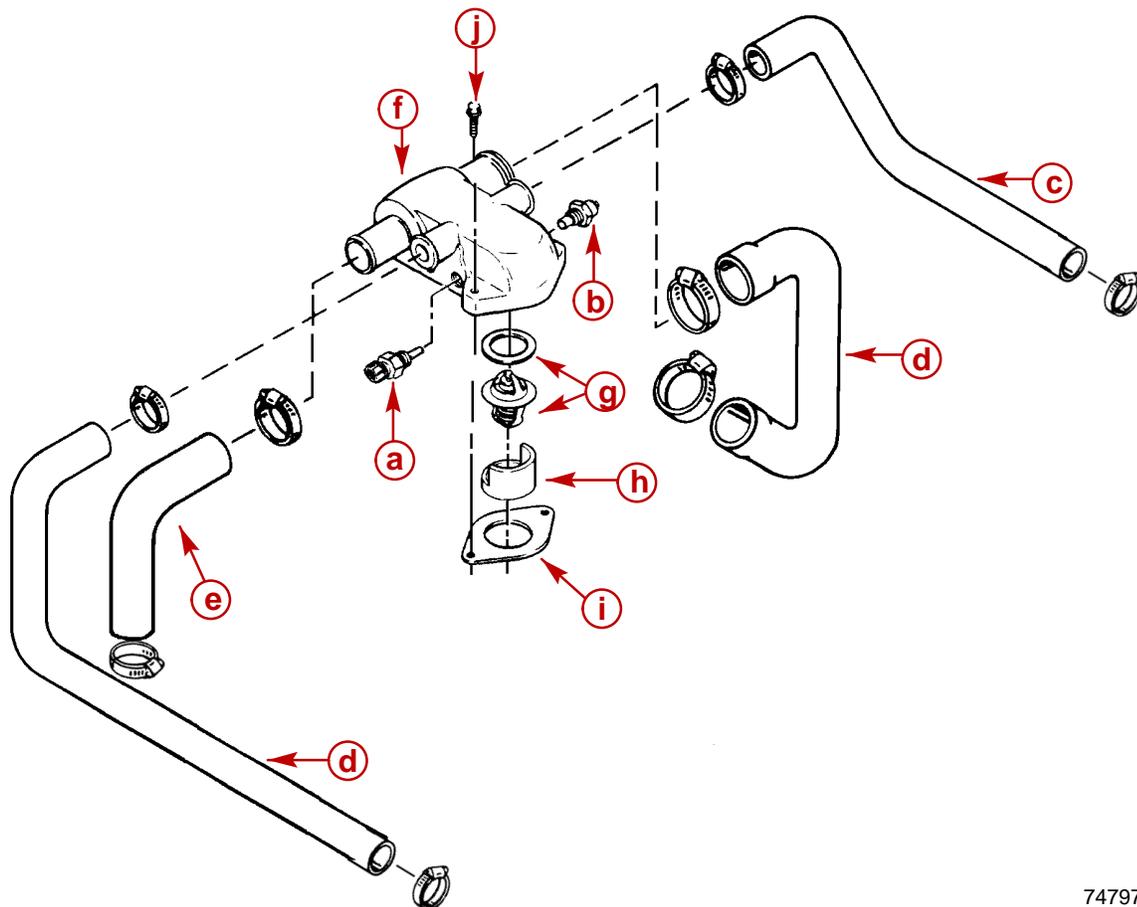
Lubricants / Sealants / Adhesives

Description	Part Number
Quicksilver Liquid Neoprene	92-25711--2
Quicksilver Perfect Seal	92-34227--1

Removal

⚠ CAUTION

If installing closed cooling system on an engine that is already installed in a boat, disconnect BOTH battery cables from battery before proceeding with installation, to prevent possible injury or damage to equipment should wires be accidentally shorted.



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- | | |
|--|---|
| a - ECT Sender (On EFI Engines) Or Audio Warning Switch (On Carbureted Engines) | e - Thermostat Housing To Engine Oil Cooler Hose |
| b - Engine Temperature Gauge Sender | f - Thermostat Housing |
| c - Thermostat Housing To Exhaust Manifold Hoses (Port And Starboard) | g - Thermostat And Seal |
| d - Engine Water Circulating Pump To Thermostat Housing | h - Sleeve |
| | i - Gasket |
| | j - Mounting Screw (2) |

1. Disconnect battery cables from battery.
2. Refer to *Mercury MerCruiser Operation, Maintenance and Warranty Manual* and drain the seawater cooling system as outlined.
3. **DISCONNECT** the following:
 - a. Coolant temperature sender (CTS) and audio warning switch wire connectors at thermostat housing.

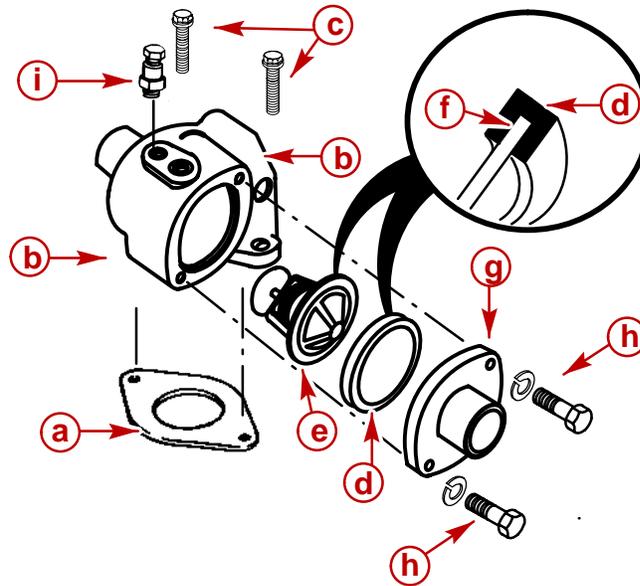
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- b. Hot water heater hose connection, if equipped, at thermostat housing.
 4. **REMOVE** and discard the following hoses or components:
 - a. Port and starboard thermostat housing-to-exhaust manifold seawater hoses.
 - b. Engine water circulating pump-to-thermostat housing seawater hose.
 - c. Thermostat housing-to-engine oil cooler seawater hose.
 - d. Thermostat housing, seal, thermostat and gasket.
 5. **REMOVE AND RETAIN** the following, depending upon engine configuration:
 - a. Engine temperature gauge sender.
 - b. Audio warning switch or Engine coolant temperature (ECT) sender.
 - c. Nut and washer on J-Clip, retaining starboard thermostat housing-to-exhaust manifold seawater hose.

Installation

Thermostat Housing

1. Clean gasket surface on intake manifold and new thermostat housing.
IMPORTANT: Ensure continuity rivets on gasket are clean.
2. Place gasket on manifold.
IMPORTANT: Mounting holes in thermostat housing are slotted to allow alignment on various engine intake manifolds. In all cases, the thermostat housing should be installed pointing straight toward front (water pump end) of engine.
3. Install thermostat housing. Torque thermostat housing screws to 30 lb-ft. (41 Nm).
4. Apply Quicksilver Perfect Seal to threads of Engine coolant temperature (ECT) sender (on EFI engines), or Audio Warning Switch (on carbureted engines), and install in port, threaded hole of thermostat housing.
5. Apply Quicksilver Perfect Seal to threads of engine temperature gauge sender and install in front, starboard threaded hole of thermostat housing. Apply Quicksilver Liquid Neoprene to connection.
6. Apply Quicksilver Perfect Seal to threads of 3/8 in. hex-head pipe plug. Install in top of thermostat housing.
NOTE: If a hot water heater is used in this application, install the hot water heater hose connector in place of the 3/8 in. hex plug.
7. Install quad-ring seal around outer diameter of thermostat.
8. Install thermostat with seal. Position as shown.
9. Install thermostat cover. Tighten screws evenly.

10. Install bleeder valve in top of housing.

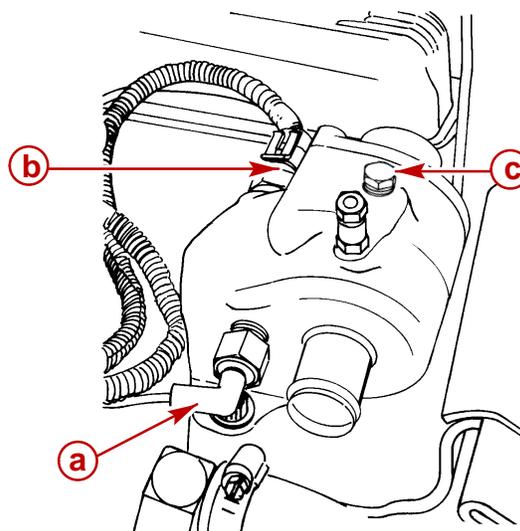


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|-----------------------------------|---|
| a - Gasket | f - Outer Diameter Of Thermostat |
| b - Thermostat Housing | g - Thermostat Cover |
| c - Stainless Steel Screws | h - Screws With Lockwashers |
| d - Quad-Ring Seal | i - Bleeder Valve |
| e - Thermostat | |

11. Connect wiring to Engine coolant temperature (ECT) sender (Two wire connector on EFI engines), or Audio warning switch (TAN/BUE wire on carbureted engines).

12. Connect TAN wire lead to engine temperature gauge sender.



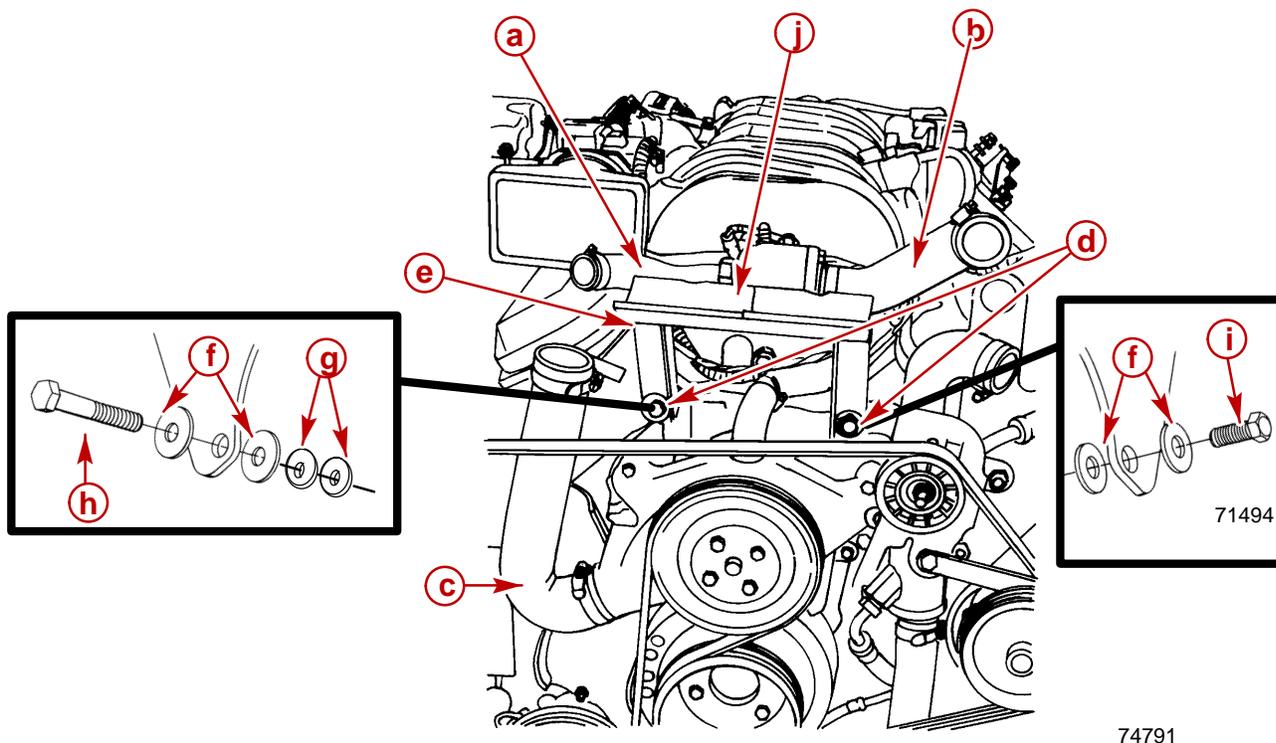
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|---|
| a - ECT Sender (On MPI and EFI Engines) ,or Audio Warning Switch (On Carbureted Engines) |
| b - Engine Temperature Gauge Sender |
| c - 3/8 in. Hex Plug |

Thermostat Hoses, Water Pump Hose and Heat Exchanger Bracket

NOTE: During initial installation of hoses, do not tighten hose clamps. Position clamps to allow access for tightening, **AFTER** installation and alignment of the heat exchanger, in the following section.

1. Install starboard thermostat housing-to-heat exchanger hose.
2. Install port thermostat housing-to-heat exchanger hose.
3. Install engine water circulating pump-to-heat exchanger hose.
4. Remove and discard existing screw retaining upper alternator bracket and fuel line clip.
5. Install heat exchanger bracket as follows:
 - a. Place one of the four large diameter washers on the screw 7/16 - 14 x 1-3/4 in. (45 mm) long and insert through starboard hole in heat exchanger bracket. Install a second washer and the spacer on shoulder of screw.
 - b. Place one of the four large diameter washers on the screw 7/16 - 14 x 1-1/4 in. (32 mm) long and insert through port hole in heat exchanger bracket. Install a second washer on screw.
 - c. Install bracket on engine.
 - d. Torque heat exchanger bracket screws to 28 lb-ft. (38 Nm).
 - e. Install foam pads on heat exchanger bracket top surface.

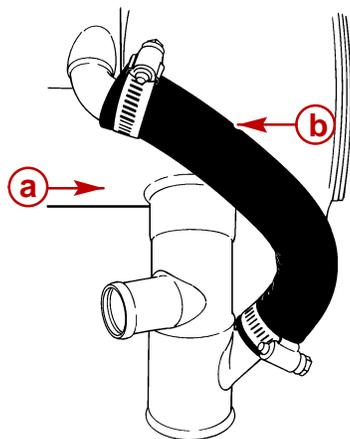


Typical MIE (Inboard) Engine Shown, All Similar

- | | |
|---|---|
| a - Stbd Thermostat Housing-To-Heat Exchanger Hose | e - Heat Exchanger Bracket |
| b - Port Thermostat Housing-To-Heat Exchanger Hose | f - Large Diameter Washer |
| c - Engine Water Circ. Pump-To-Heat Exchanger Hose | g - Spacers |
| d - Heat Exchanger Bracket Screws | h - 7/16-14x1-3/4 in. (44 mm) Long Screw |
| | i - 7/16-14x1 in. (25 mm) Long Screw |
| | j - Foam Pads (2) |

Heat Exchanger and Heat Exchanger Hoses

1. Install by-pass hose on back, starboard-side of heat exchanger as shown. Tighten hose clamps securely.



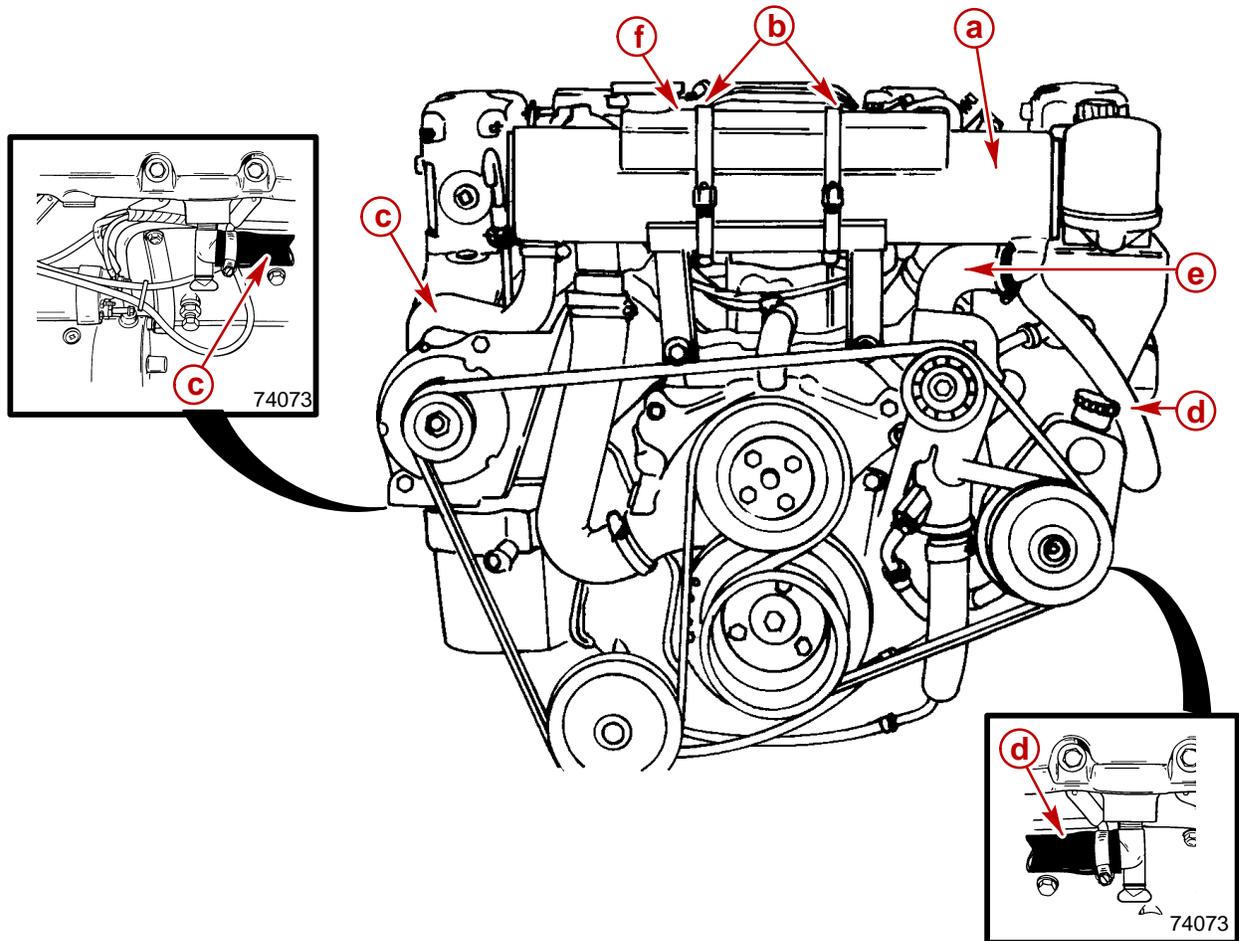
- a** - Heat Exchanger
b - By-Pass Hose

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2. Install engine oil cooler-to-heat exchanger hose on oil cooler. Temporarily do not tighten hose clamps.
 3. Lower heat exchanger onto bracket and simultaneously attach ends of previously installed hoses.
 4. Be certain all hose ends are aligned and fully seated on heat exchanger fittings.
 5. Tighten **ALL** hose clamps that were fitted during kit installation, including those temporarily installed loosely.
 6. Install large hose clamps around heat exchanger bracket and heat exchanger. Tighten securely.
 7. Install starboard heat exchanger-to-exhaust manifold hose. Attach to fuel filter bracket using J-clip, washer and nut retained previously.
 8. Install port heat exchanger-to-exhaust manifold hose.

NOTE: *On MCM engines the port heat exchanger-to-exhaust manifold hose (32-807141--1) must be routed aft of the power steering pump and bracket, and then down to exhaust manifold.*

9. Place coolant identification (Blue color) decal on top of heat exchanger for reference.

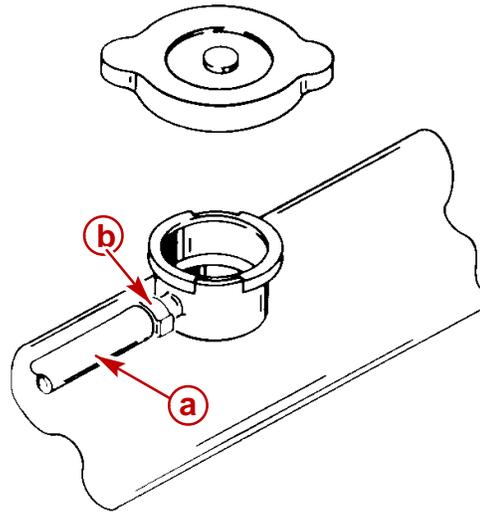


MIE (Inboard) Engine Shown, All Similar

- a** - Heat Exchanger
- b** - Large Hose Clamps
- c** - Starboard Heat Exchanger-To-Exhaust Manifold Hose
- d** - MIE Port Heat Exchanger-To-Exhaust Manifold Hose (MCM Similar)
- e** - Oil Cooler-To-Heat Exchanger Hose
- f** - Coolant Identification Decal

Coolant Recovery System

1. Connect plastic tubing (from kit) to bayonet fitting on heat exchanger. Secure with tubing clamp provided.

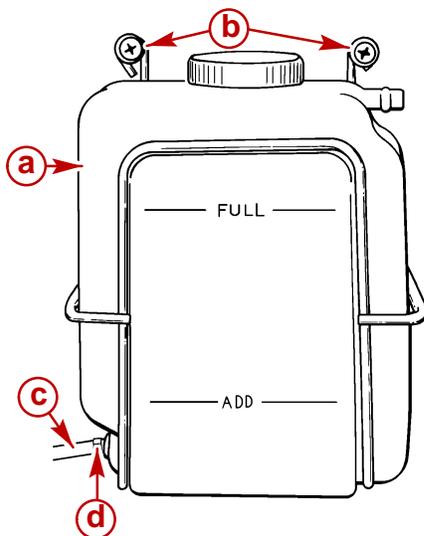


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- a** - Plastic Tubing
- b** - Tubing Clamp

2. Select a mounting location for coolant recovery bottle and mounting bracket that meets all of the following:
 - Within limits of clear plastic tubing.
 - Above with heat exchanger fill neck.
 - Accessible for observing coolant level and filling.
3. Mount coolant recovery bottle and mounting bracket in desired location, using two 3/4 in. long screws and flat washers.
4. Route plastic tubing to recovery bottle. Ensure tubing is positioned away from any moving parts. Cut plastic tubing, as required, and connect to bottom connection on recovery bottle and secure with tubing clamp provided.

5. Fasten plastic tubing to boat, as necessary, with 2 hose clips and 1/2 in. long screws.



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- a** - Recovery Bottle and Mounting Bracket
- b** - Screws And Flat Washers
- c** - Plastic Tubing
- d** - Tubing Clamp

CAUTION

Avoid engine overheating and subsequent damage to engine. The coolant recovery system will not operate properly without proper sealing. Plastic tubing **MUST** seal completely at connections.

Filling Closed Cooling

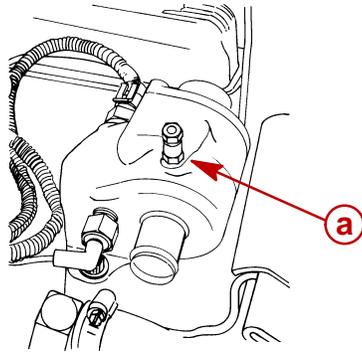
CAUTION

Alcohol or Methanol base antifreeze or plain water are not recommended for use in coolant section of Closed Cooling System at any time.

It is recommended that coolant section of Closed Cooling System be filled with a 50/50 mixture of Extended Life Coolant and pure, soft water. This coolant **MUST BE** used regardless of whether freezing temperatures are expected to provide adequate corrosion protection. In areas where Extended Life Coolant is not available and the possibility of freezing **DOES NOT** exist, it is permissible to use a solution of rust inhibitor and pure, soft water (mixed to manufacturer's recommendations).

NOTE: Coolant section capacity is approximately 18 U.S. Quarts (17 L).

1. Open bleeder valve on thermostat housing.



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a - Hex Head Bleeder Valve

2. Fill with coolant mixture through heat exchanger fill neck until coolant appears at bleeder valve opening.
3. Close bleeder valve securely.
4. Continue filling until coolant level is into filler neck and begins to flow into coolant recovery bottle plastic tubing.

⚠ CAUTION

Avoid seawater pickup pump impeller damage. DO NOT operate engine without water being supplied to seawater pickup pump.

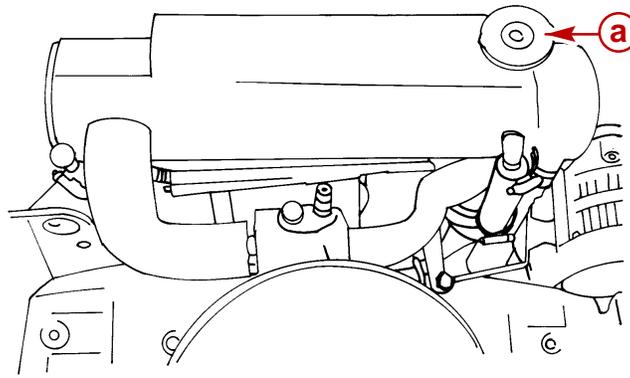
⚠ CAUTION

Front of engine should be higher than rear to purge trapped air out of the system during initial filling. This will minimize the possibility of air being trapped in the closed cooling section which can cause engine to overheat.

IMPORTANT: Coolant flows rapidly. Higher idle speeds increase dispersion of trapped air into system making it more difficult to purge trapped air. Operate at idle during filling and air purging when specified.

5. Start engine and run at IDLE.
6. Add coolant solution to heat exchanger, as required, to maintain coolant level at filler neck.
7. After engine has reached normal operating temperature thermostat is fully open and coolant level remains constant, fill heat exchanger until coolant level is into filler neck and begins to flow into coolant recovery bottle plastic tubing.
8. Remove cap from coolant recovery reservoir and fill to FULL mark with coolant solution.
9. Reinstall cap.
10. Lift recovery bottle and plastic tubing *above* heat exchanger filler neck. Allow coolant to flow down through tubing to purge air through filler neck fitting.

11. Install pressure cap on heat exchanger.



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a - Pressure Cap

12. With engine still running, check hose connections, fittings and gaskets for leaks. Also observe engine temperature gauge to make sure that engine operating temperature is normal. If gauge indicates excessive temperature, stop engine immediately and examine for cause.

⚠ WARNING

Allow engine to cool down before removing pressure cap. Sudden loss of pressure could cause hot coolant to boil and discharge violently. After engine has cooled, turn cap 1/4-turn to allow any pressure to escape slowly, then push down and remove cap.

13. Recheck coolant level after first boat test and add coolant, if necessary.

14. Maintain coolant level in coolant recovery reservoir between ADD and FULL marks with engine at normal operating temperature.

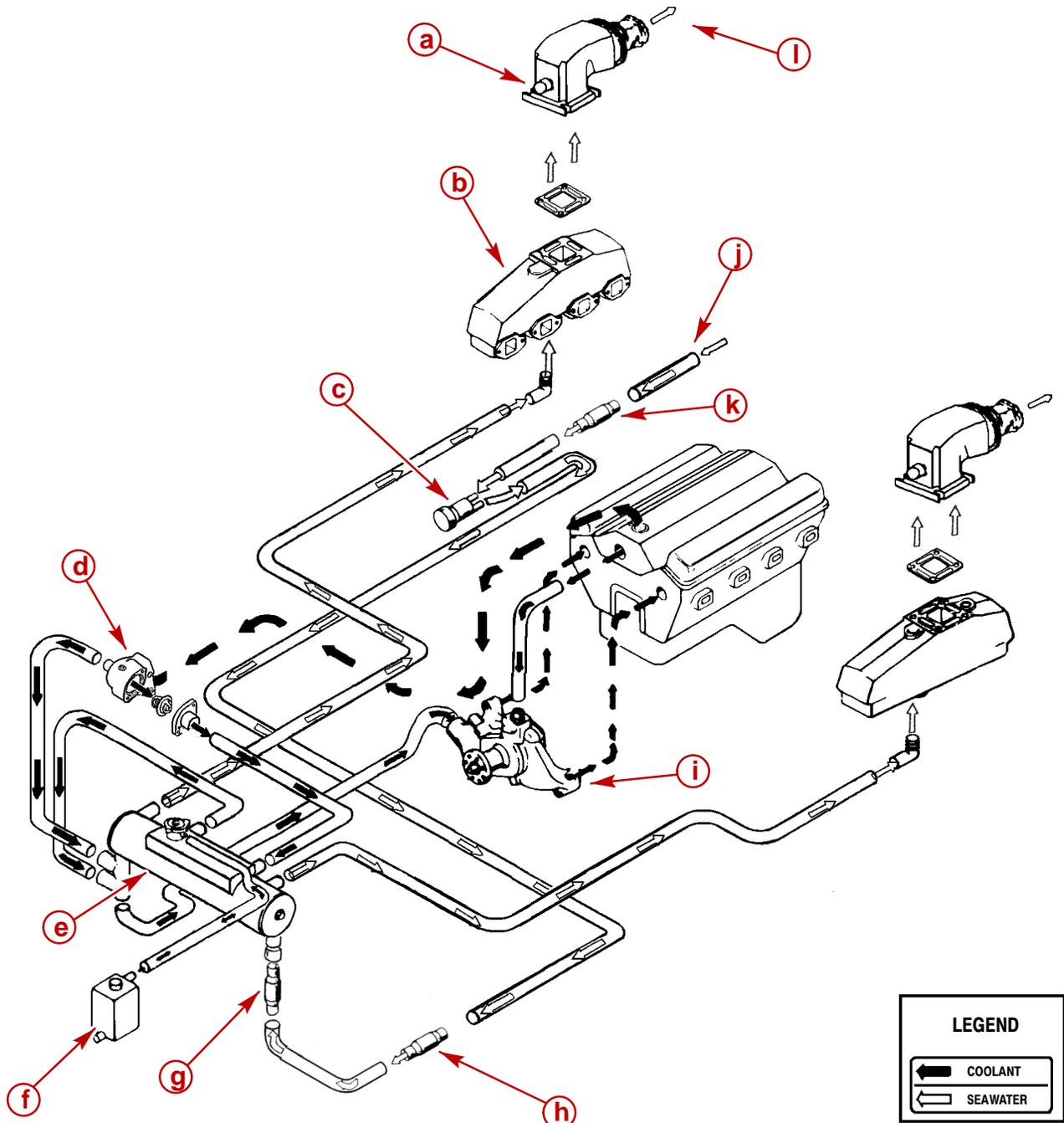
Coolant section of the closed cooling system should be kept filled year around with recommended coolant solution. DO NOT drain coolant from fresh water section for storage, as this will promote rusting of internal surfaces. If engine will be exposed to freezing temperatures, make sure that coolant section is filled with Extended Life Coolant and water solution, mixed to manufacturer's recommended proportion, to protect engine to lowest temperature to which it will be exposed.

Maintenance And Repair

Refer to the appropriate Mercury MerCruiser Engine Service Manual for instructions.

Water Flow Diagrams

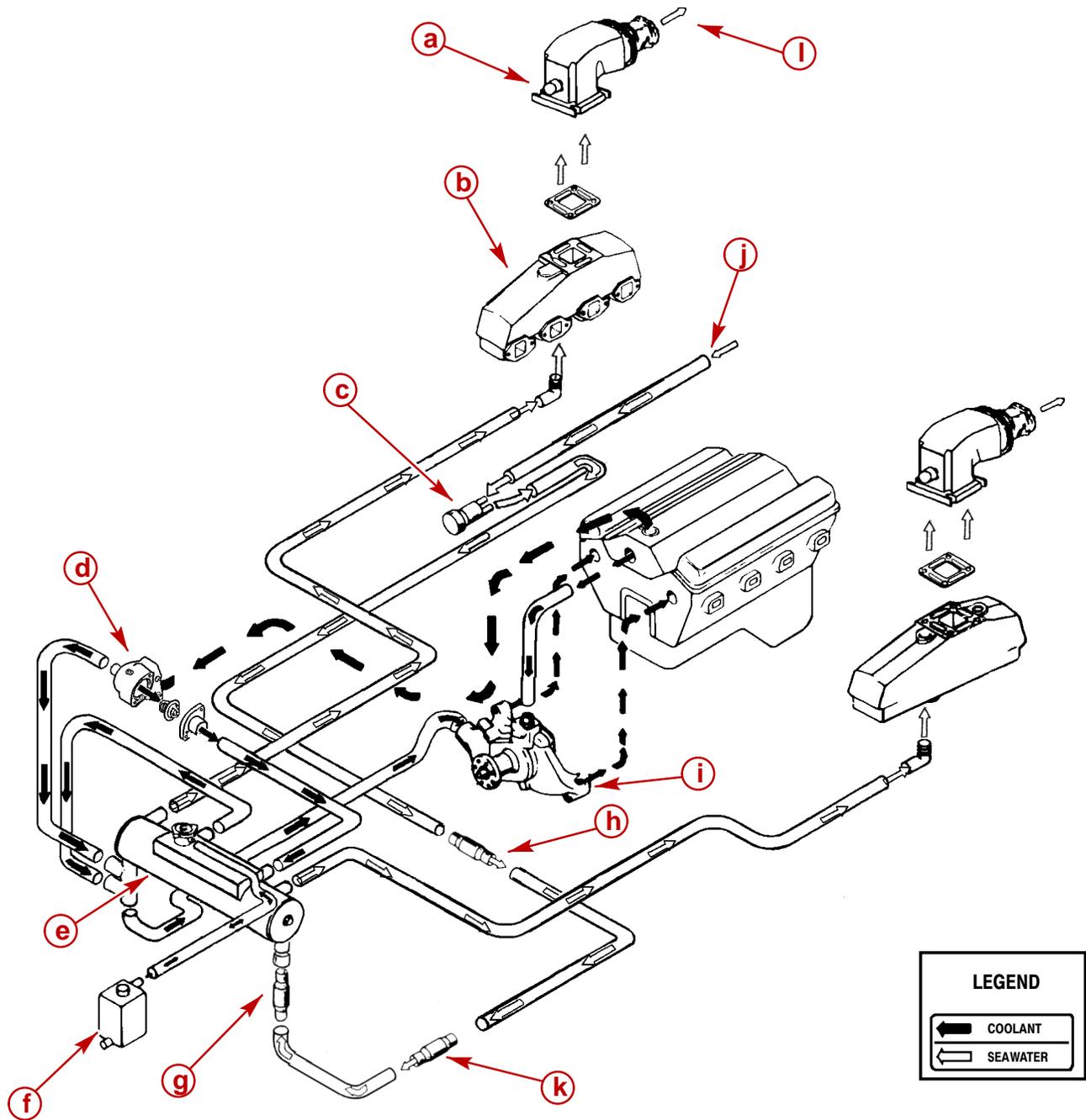
Engines with Port Mounted Fluid Cooler, and Starboard Mounted Fuel Cooler (If Equipped)



- a** - Exhaust Elbow
- b** - Exhaust Manifold
- c** - Seawater Pump
- d** - Thermostat Housing
- e** - Heat Exchanger
- f** - Coolant Recovery Bottle
- g** - Engine Oil Cooler

- h** - Transmission Cooler (MIE) or Power Steering Cooler (MCM) 74745
- i** - Circulating Pump
- j** - Seawater Inlet
- k** - Fuel Cooler (If Equipped)
- l** - Overboard

Engines with Port Mounted "Cool Fuel" System



- a** - Exhaust Elbow
- b** - Exhaust Manifold
- c** - Seawater Pump
- d** - Thermostat Housing
- e** - Heat Exchanger
- f** - Coolant Recovery Bottle
- g** - Engine Oil Cooler

- h** - Transmission Cooler (MIE) or Power75176 Steering Cooler (MCM)
- i** - Circulating Pump
- j** - Seawater Inlet
- k** - Fuel Cooler (If Equipped)
- l** - Overboard

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