

**ORCA
MARINE COOLING SYSTEMS
BELLINGHAM, WA 98226**

**VOLVO 8.1L
2000-2001 REAR MOUNT
SYSTEM**

**INSTALLATION INSTRUCTIONS
10/15/2003**

**400222
HALF**

1. Disconnect the battery before working on engine. Drain the system according to your owner's manual. Remove the hoses at the thermostat housing. Pull the 1" raw water hose back thru the engine to the rear. Remove the thermostat housing and clean the surface. Place the new #5-A continuity gasket on the engine boss and then the 3-hole thermostat housing with the plugged holes facing to the rear. Set the new 160 degree thermostat with the 3/16 hole in place and then the #5 fiber gasket. The custom fill neck will set on top with the tee facing to the rear. Secure with the 10 x 55 mm hcs and lock washers.

HEATER: Install the 3/8" x 5/8" brass 90 hose elbow in the outermost hole of the 3-hole thermostat housing. This is the pressure feed to the heater inlet. Install the other 3/8" x 5/8" 90 brass hose elbow in the 1-3/4" tube connecting the heat exchanger to the circulating pump. This is the suction side from the heater.

2. The starboard exhaust manifold has a 3/4" NPTM brass plug in the rear and a 3/4" NPTM x 1" hose barb in the front. Remove the 3/4" x 1" hose barb and switch the plug to the front. Now install the new 3/4" NPTM x 1" 45 brass/copper hose elbow in the rear. Angle it upward and between the engine and the exhaust tube. The port exhaust manifold should already have the 3/4" NPTM x 1" brass hose barb at the rear.

3. Remove the grounding stud from the starboard rear of the engine. Reattach the grounding wire with the new 10 mm x 30 hcs and lock washer.

4. Remove the 10 mm hcs from the top, rear of the circuit breaker bracket. Use the new 10 mm x 35 mm hcs and lock washer to install the stb steel bracket. Repeat with the port steel bracket. Set the heat exchanger on the brackets with the cushion tapes and lightly secure with the #88 ss clamps and sleeves. The expansion tank on the heat exchanger should be vertical and the 1-1/2" od hose barb horizontal.

5. Thread in the 1/4" x 3/8" brass hose 90 elbow so it is facing the same direction as the elbow on the 1" x 1" x 1" 90 copper tee. Attach one end of the 3/8" x 48" non-wire hose with the size 4 ss clamp. Set the tee in place behind the heat exchanger and thread the 3/8" hose between the exhaust tube and under the spark plug wires.

6. Attach the 90 degree end of one of the #71225 hoses to the leg of the copper tee facing starboard. Measure, cut and fit the other end to the 1" 45 degree copper/brass elbow in the end of the stb exhaust manifold. Attach the 90 degree end of the other #71225 hose to the 1" hose barb on the rear of the port exhaust manifold. Measure, cut and fit the other end to the copper tee. Make

sure the tee is offset to port behind the heat exchanger so the clamp does not interfere with the electrical connector.

400222

10/15/2003

7. Bring up the 1" raw water hose from the oil cooler and fit it to the inlet on the bottom of the heat exchanger. Use about 9" of the leftover hose to connect the 1" x 1" x 1" 90 copper tee to the heat exchanger.

8. Attach the 1-1/2" x 20" 90 DAYCO hose to the custom fill neck with the new #24 ss clamp. Measure, cut and connect the #70618 1-1/2" hose to fit snugly around the intake plenum and back to the expansion tank on the heat exchanger. Use the 1-1/2" x 3" copper connector and the #24 ss clamps.

9. Use the two #70540 1-3/4" hoses and the 1-3/4" x 22" copper tube to connect the water pump to the heat exchanger. The rear hose will fit between the engine and the exhaust tube. Measure, cut and fit the end of the 3/8" x 48" non-wire hose to the barb on the bottom of the fuel vaporizer container. Clamp snugly with the size 4 ss clamp.

10. Check to make sure no hoses are in contact with any moving parts. Use the HD black cable ties to secure if needed. Fill system with a maximum 50/50 mix of antifreeze and distilled water. Proper liquid level when engine is at operating temperature is about 3/4" below the fill neck.

CAUTION: LIQUID LEVEL IN THE COOLING SYSTEM MUST ALWAYS BE HIGHER THAN THE TOP OF THE HOSE GOING FROM THE FILL NECK TO THE HEAT EXCHANGER. ADJUST THE LIQUID LEVEL AFTER THE ENGINE REACHES OPERATING TEMPERATURE.

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PARTS LIST
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HALF SYSTEM

Bag #1:

1	3 - HCS, plated 10 x 30mm 400223	8	4 - Clamp, ss #32 006846
2	2 - HCS, plated 10 x 55mm 400224	9	6 - Clamp, ss #24 006845
3	5 - Lock washer, plated 10mm 400225	10	7 - Clamp, ss #16 006105
4	1 - Elbow, brass 90 3/8H x 1/4M 300276	11	2 - Clamp, ss #08 006101
5	4 - Plug, brass 3/8 300809	12	2 - Clamp, ss #04 021875
6	1 - Elbow, brass 45 1H x 3/4M 300750	13	2 - Elbow, brass 90 5/8H x 3/8M 001079
7	2 - Clamp, ss #88 w/sleeve 300788		

Bag #2:

14	2 - Connector, cpr 1-1/2 x 4 300892	17	1 - Gasket, fiber #5 300479
15	1 - Thermostat, 160 w/hole 400422	18	1 - Gasket, continuity #5-A 300233
16	4 - Cable tie, nylon black HD 300955	19	2 - Cushion tape, foam 1-1/2 x 4 300496

Bag #3:

20	1 - Fill neck, custom 500993	22	1 - Tee, cpr 1 x 1 x 1 90 w/1/4NPT 500994
21	1 - T-stat housing, alum 3-hole 400040		

Bag #4:

23	1 - Bracket, stl rear port 400228	24	1 - Bracket, stl rear stb 400229
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Tube:

- 25 1 - Wtr tube, cpr 1-3/4OD x 19. Hose bead one end, 3/8 NPTF per dwg,
45 elbow with hose bead other end 400609

Hose:

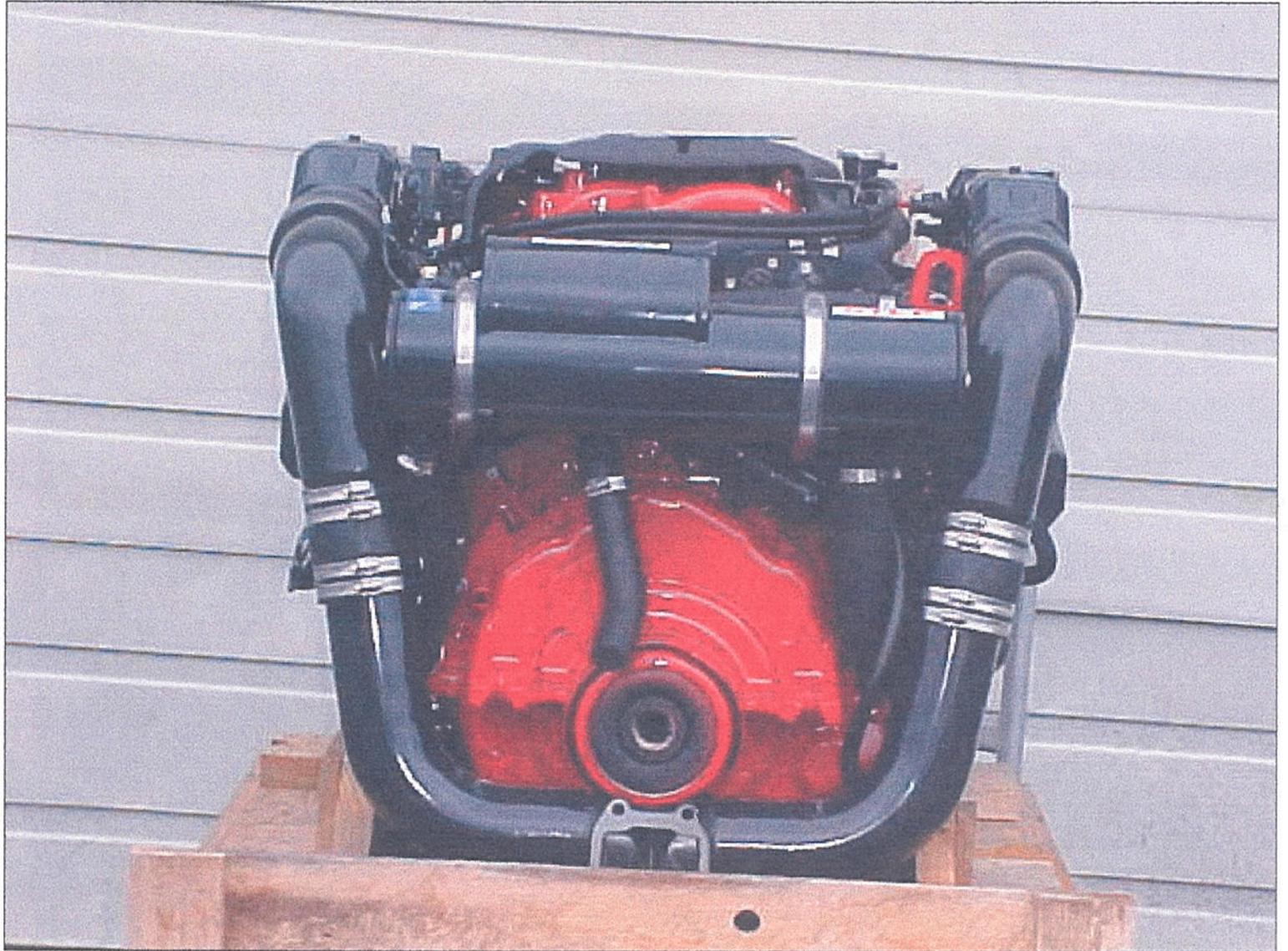
- | | |
|--|--|
| <ul style="list-style-type: none"> 26 1 - Heater, 3/8 x 48
400231 27 2 - Formed, 90 1
300772 | <ul style="list-style-type: none"> 28 1 - Formed, 90 1-1/2 Long
400317 29 2 - Formed, 90 1-3/4
300248 30 1- Formed, 90 1-1/2
400234 |
|--|--|

Loose packed:

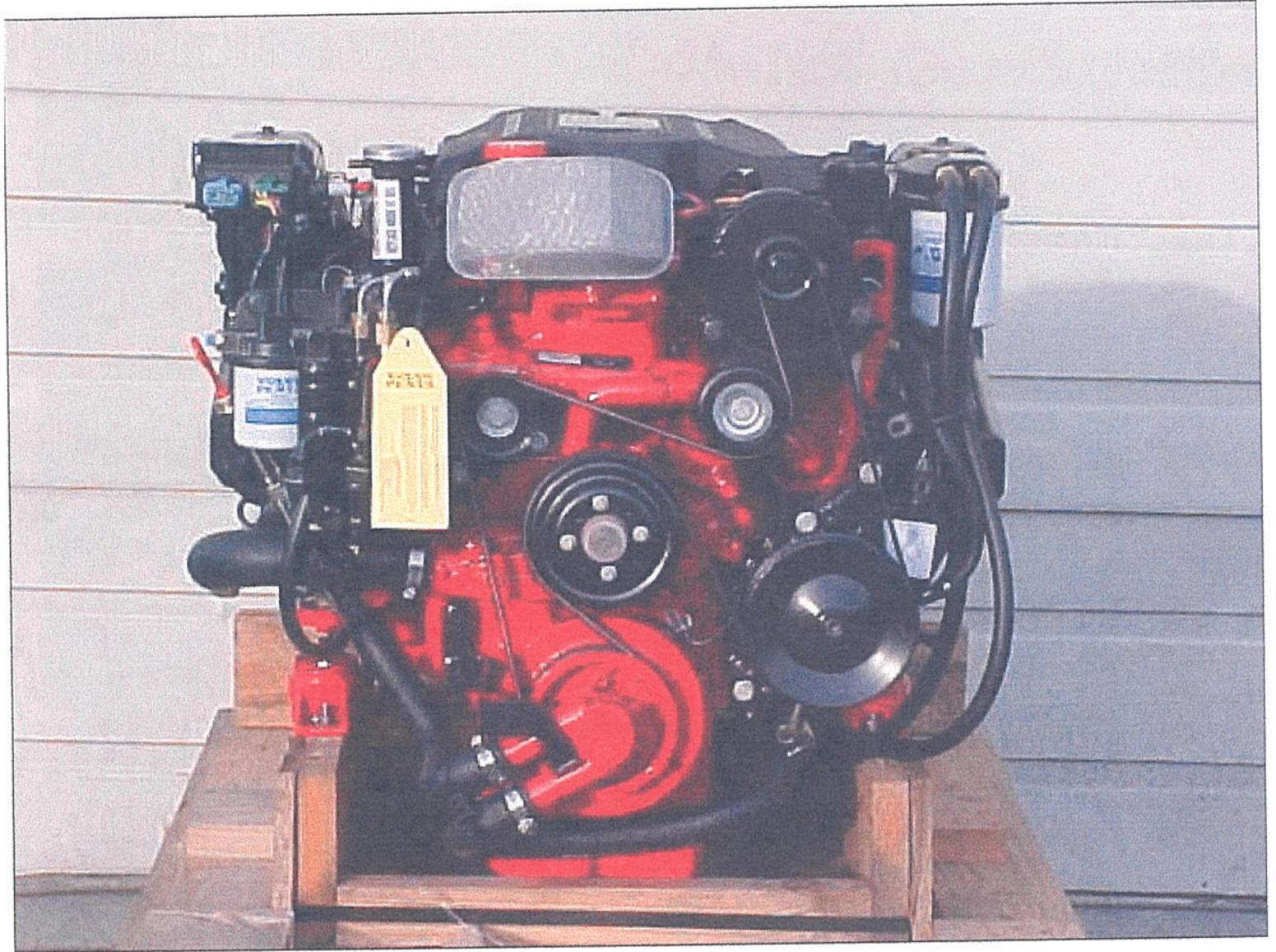
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|---|--|
| <ul style="list-style-type: none"> 31 1 - Recovery bottle
300671 | <ul style="list-style-type: none"> 32 Installation instructions and
warranty card |
|---|--|

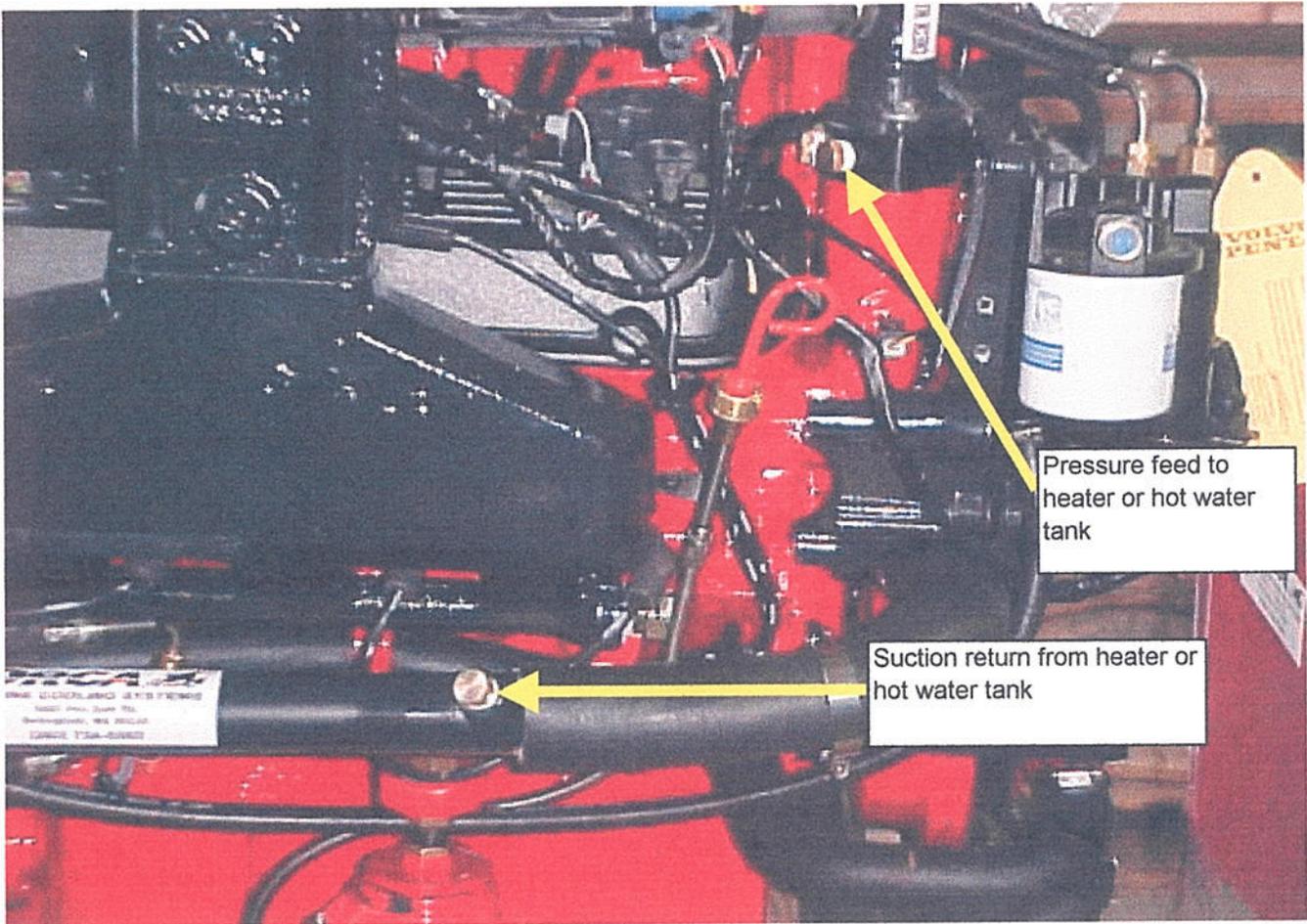
PROUDLY PACKED AND SHIPPED BY

8.1 L VOLVO - 2000

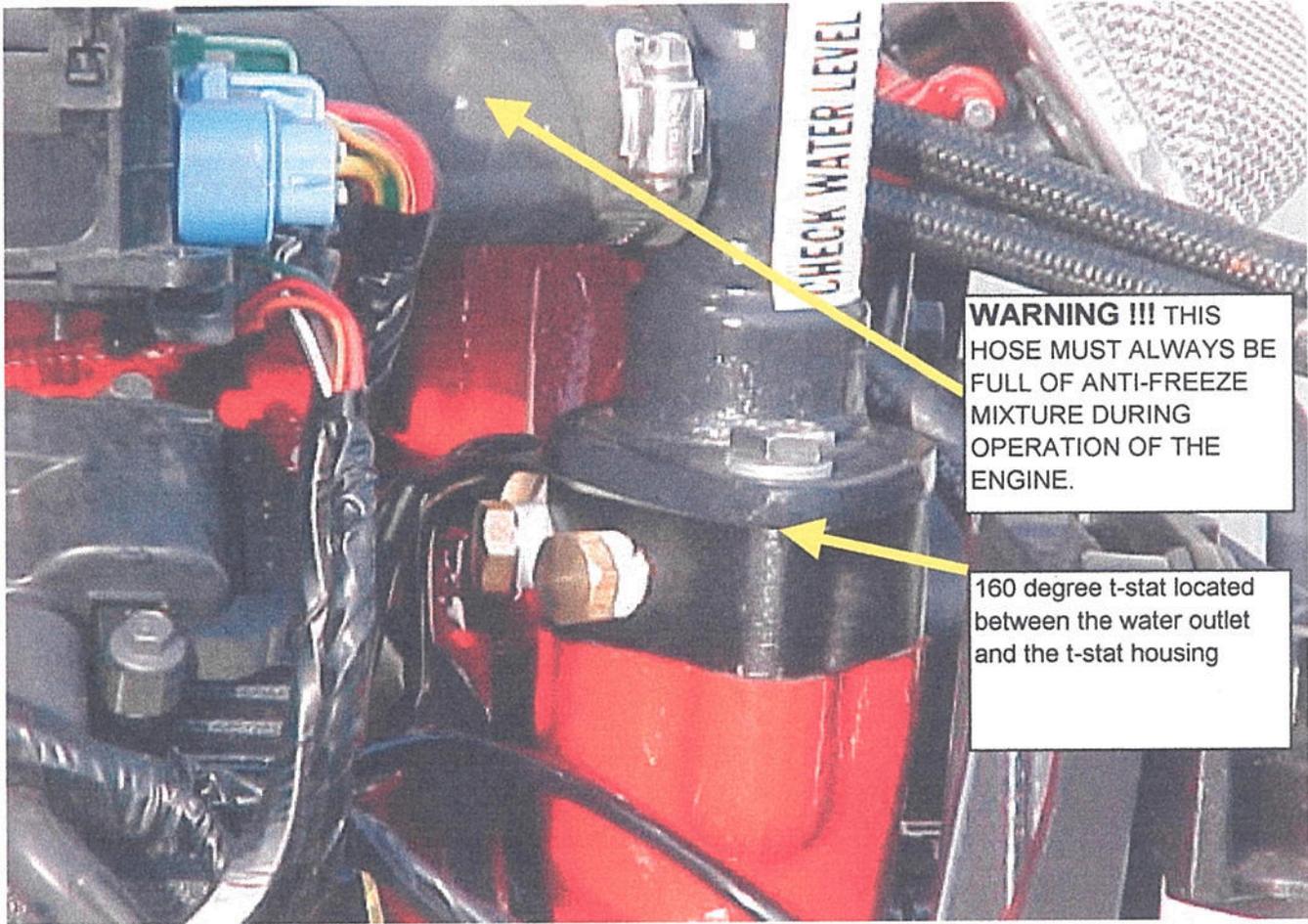


8.1 L VOLVO



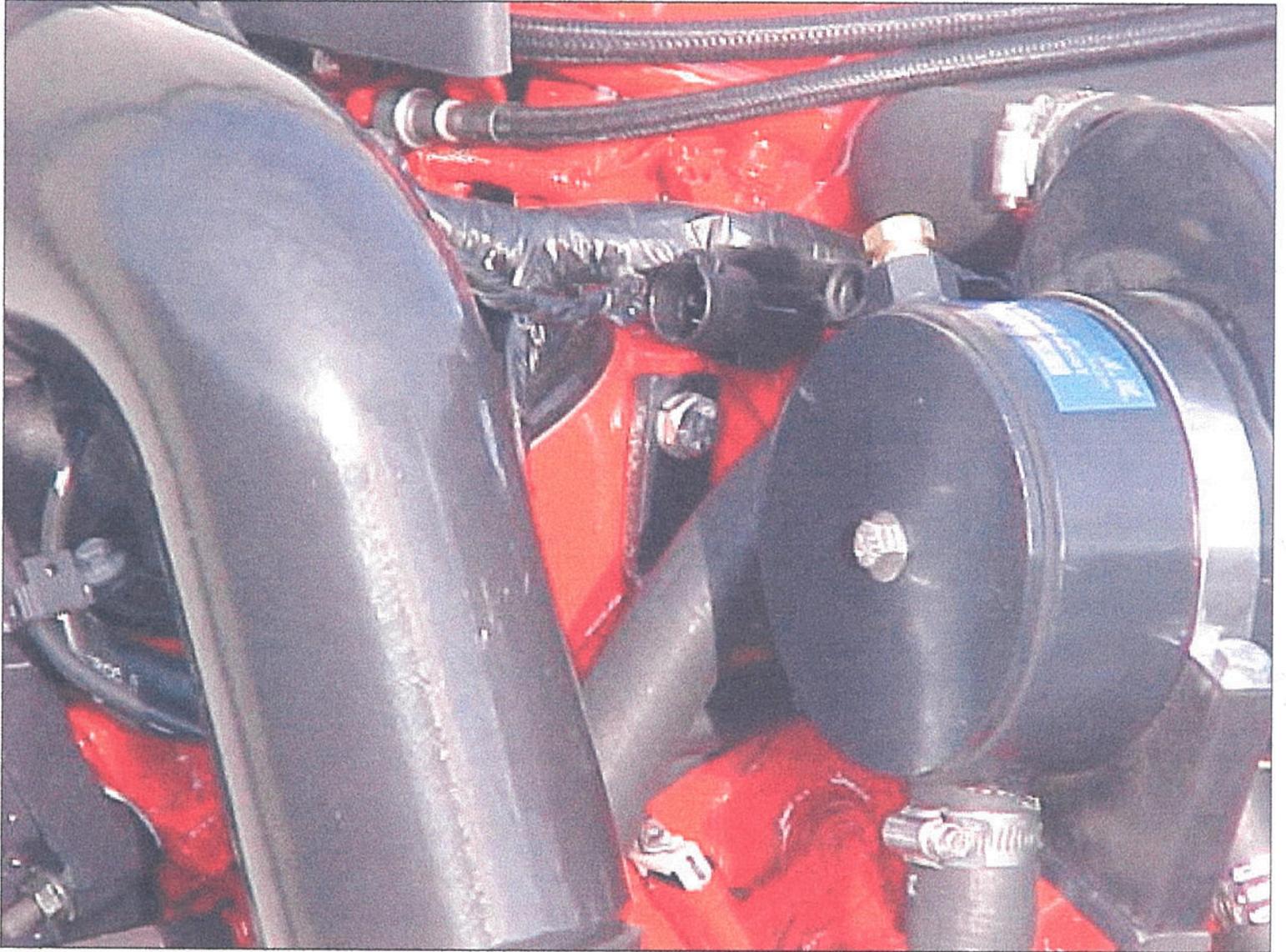


8.1 L Volvo heater fittings

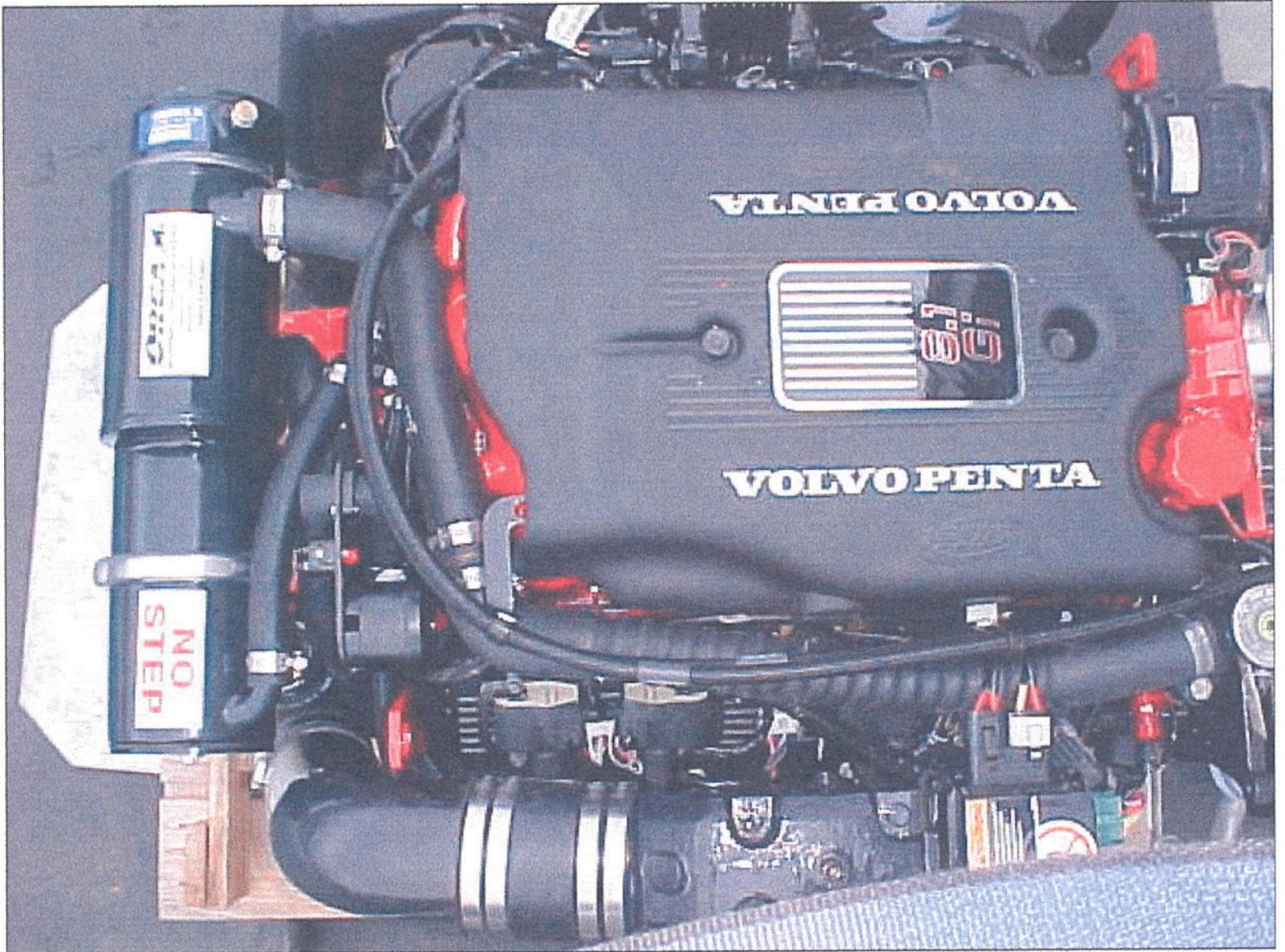


T-STAT HOUSING 8.1 L VOLVO

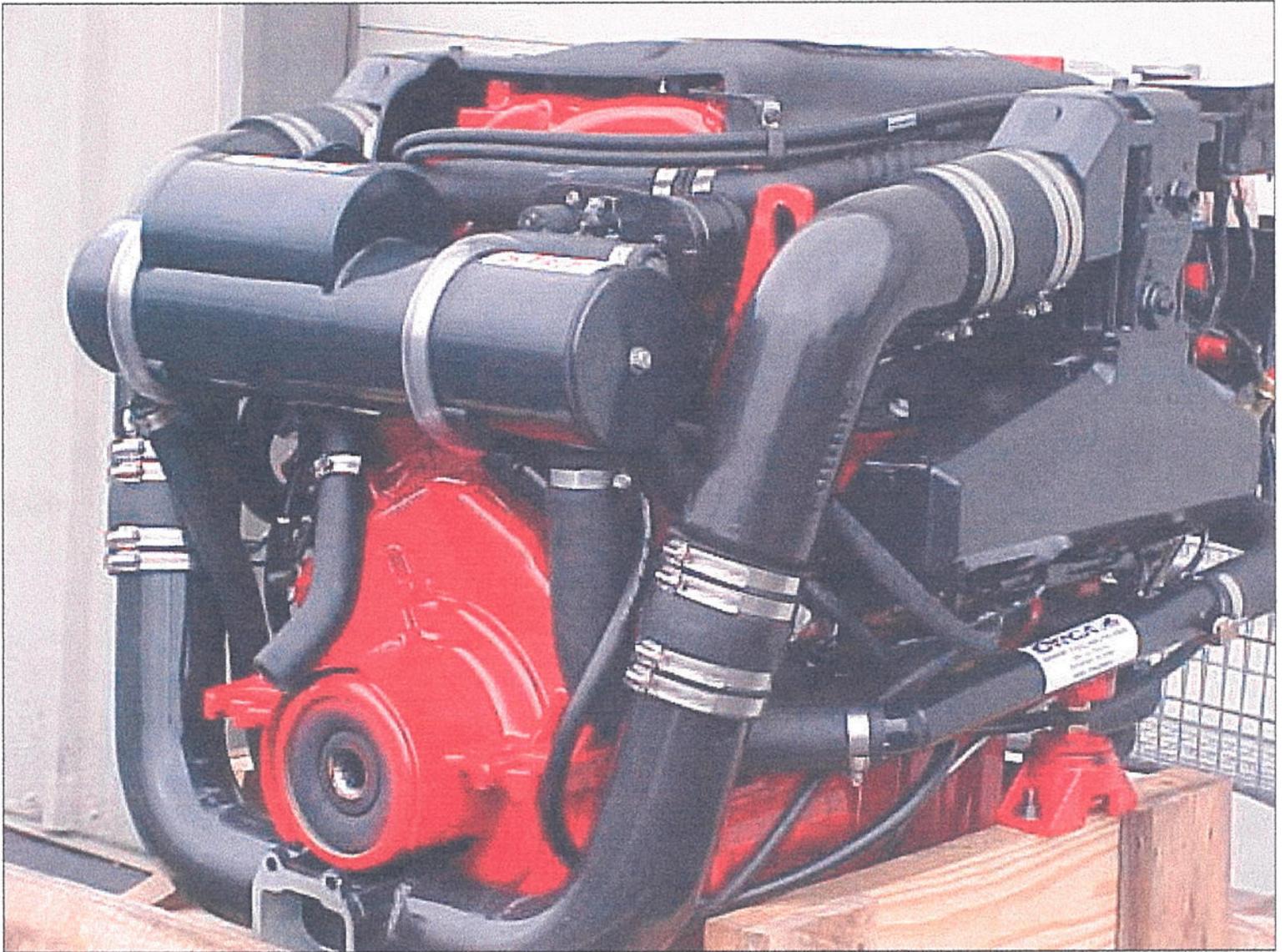
2000 8.1L VOLVO



8.1 L VOLVO



8.1 L VOLVO



8.1 L VOLVO - 2000

