



2004

Fresh Water

Cooling Installation

Instructions -

V-Drive

Kit RK147050A



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FWC KIT INSTALLATION INSTRUCTIONS - RK147050A

INSTALLATION NOTES AND RECOMMENDATIONS

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REFERENCES:

L510013 Marine Illustrated Parts Manual Model MP5.0/5.7L MY 2002 - 2004

L510010-04 Owner's Operation and Maintenance Manual

NOTE: Use pipe sealant with Teflon on all fittings being installed during these procedures. Loctite™ 565, PST Pipe Sealant, Part No. 56541 or equivalent is recommended.



WARNING

Do not remove cooling system filler cap when the engine is hot. Allow the engine to cool and then remove the pressure cap slowly, allowing the pressure to vent. Hot coolant, under pressure, may discharge violently and cause severe burns.

V-DRIVE INSTALLATION

Installation of the fresh water cooling system on V-drive applications will require relocation of both the low pressure fuel pump and the FCC, and servicing of the high pressure and return fuel lines. To complete the installation procedure you will require a fuel gauge equipped with a pressure release valve, an approved container to vent gasoline into, and the proper tools for releasing the fuel lines from the fuel rails. Provisions should be made to recover any fuel spilled. Observe all safety warnings and cautions when working on the fuel system.



WARNING

Fire and Explosion Hazard - Gasoline is extremely flammable and highly explosive, and, if ignited, can cause serious bodily injury or death. Careful inspection of the entire fuel system including, but not limited to, fuel tanks, fuel lines, fuel filters and all fittings is mandatory, especially after periods of storage. Replace any component that shows signs of leakage, corrosion, deterioration, swelling, hardening or softening.



WARNING

Extreme caution must be exercised when servicing the fuel system and/or replacing fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Be sure the ignition key is off and do not smoke, or allow open flame in the area while servicing. Wipe up any spilled fuel immediately.



WARNING

Visually inspect unit for fuel leaks before operating the engine. If fuel leaks are present, DO NOT operate the engine, repair immediately.



WARNING

Make sure that there are no fuel leaks before closing the engine hatch.

FIGURE 1-1 5.7L, SERPENTINE, V-DRIVE - R/W

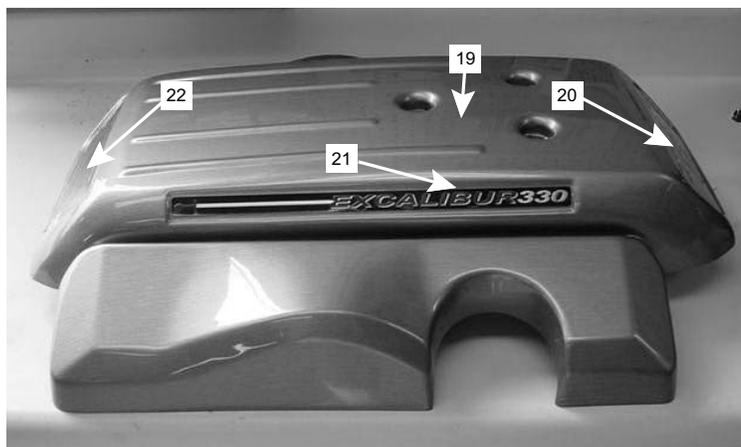
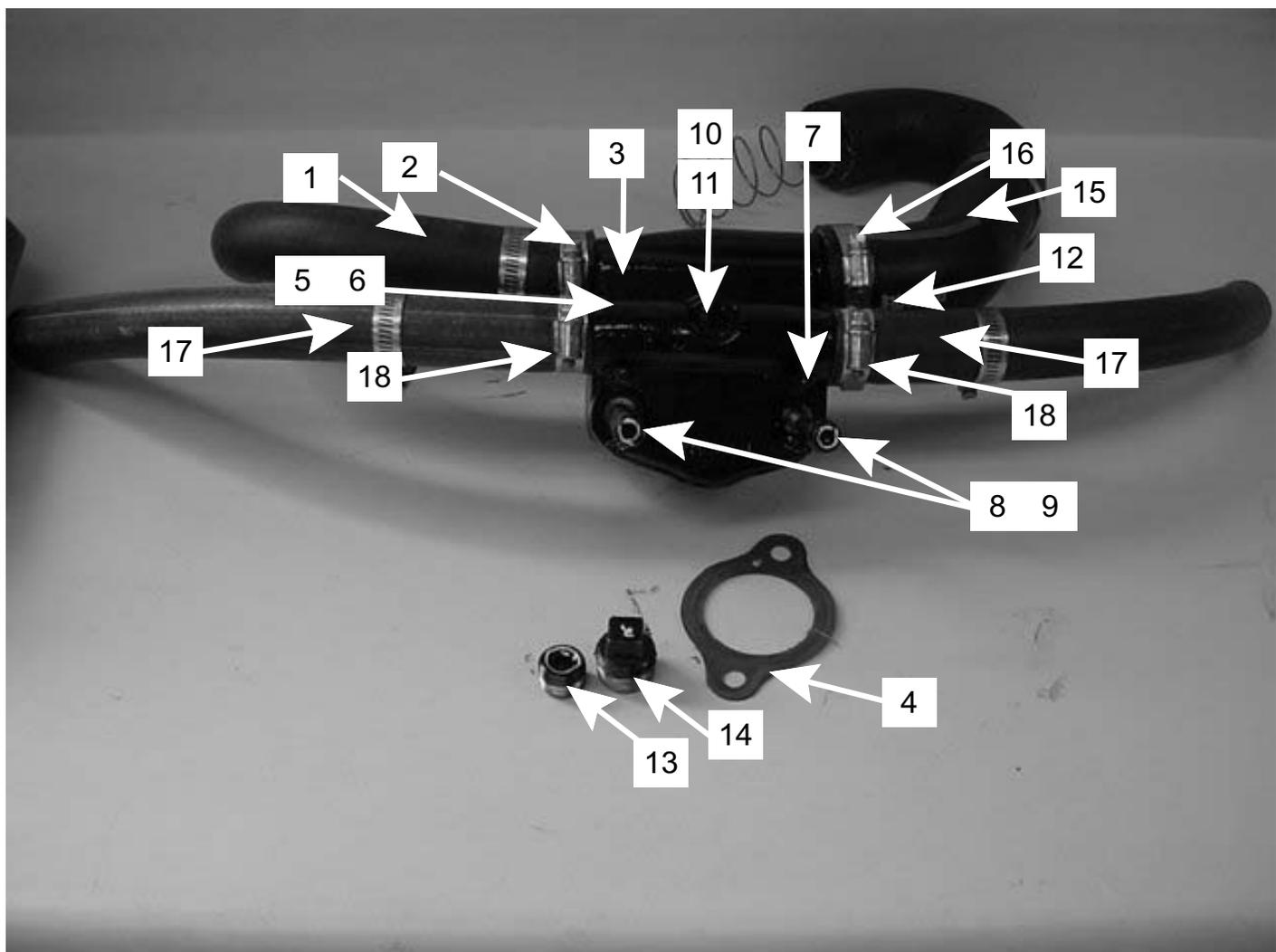
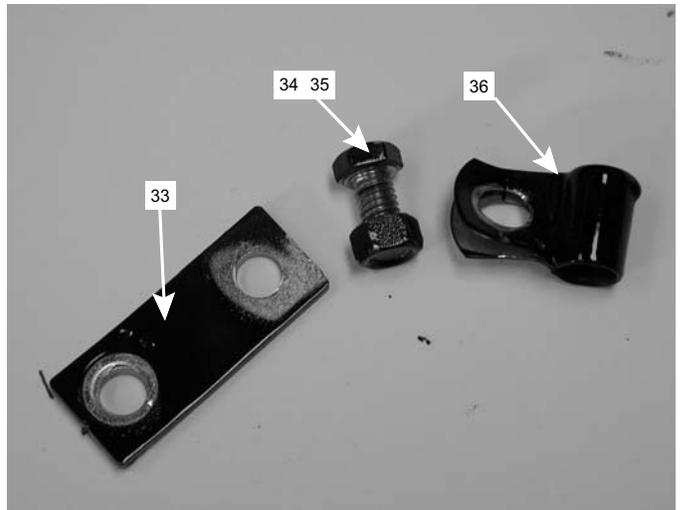
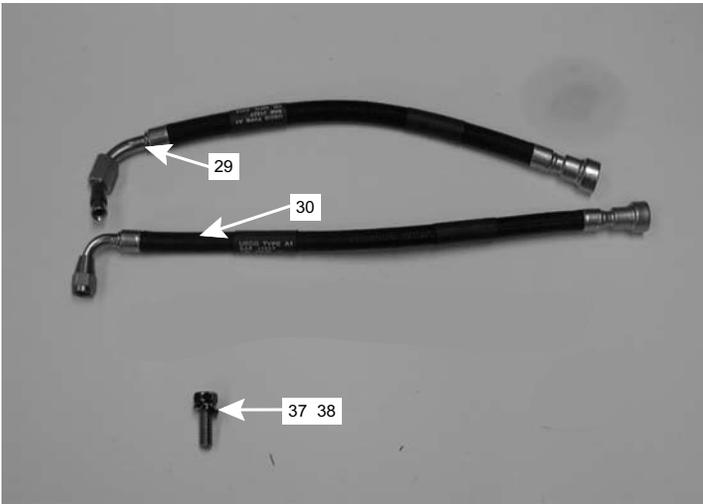
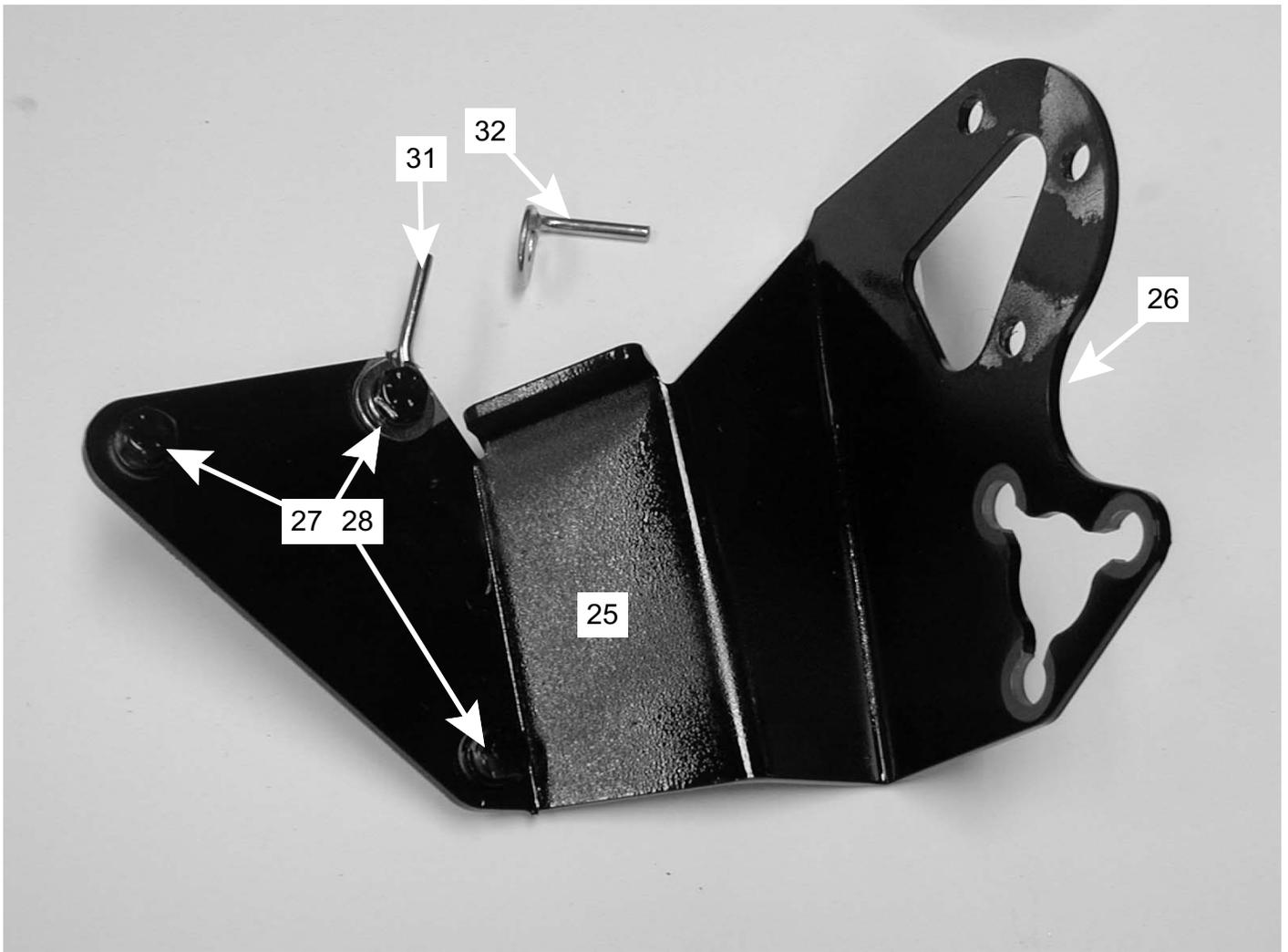


FIGURE 1-1 (cont.) 5.7L, SERPENTINE, V-DRIVE - R/W



PARTS DELETED - 5.7L, SERPENTINE, V-DRIVE - R/W

FIGURE 1-1

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	R045160	Hose , r/w pump to tstat housing	1
2	RS3858	Clamp , 1 1/4"	2
3	R025031	Housing , tstat, lower	1
4	RM0121	Gasket , tstat housing, lower	1
5	R026002	Thermostat , 160° F	1
6	RM0258	Gasket , tstat housing, upper	1
7	R025033	Housing , tstat, upper	1
8	98333080	Bolt , tstat housing	2
9	RS2179	Lock Washer , tstat housing	2
10	98223035	Bolt , tstat housing	1
11	93920000	Lock Washer , tstat housing	1
12	R020002	Sender , water temperature	1
13	TBD	Plug , intake, (water temp sender)	1
14	TBD	Plug , bypass, circulating pump	1
15	R045048	Hose , r/w supply to engine	1
16	RS3852	Clamp , 1 3/4"	2
17	R045107	Hose , r/w dump	2
18	RS3851	Clamp , 1"	4
19	R060060	Hood	1
20	R143141	Decal , hood, "PCM Excalibur"	1
21	R143142	Decal , hood, "Excalibur"	2
22	R143143	Decal , hood, spec	1
23(NS)	R143158	Decal , hood, "3 Star" emission	1
24	R128001C	Cover , hose clamp tip (black)	8
25	R090204	Bracket , FCC/LPFP	1
26	R143114	Decal , "WARNING" FCC/LPFP Brkt	1
27	RS0304	Bolt , brkt, FCC/LPFP	3
28	RS2180	Lock Washer , brkt, FCC/LPFP	3
29	RA085090B	Fuel Line , HP supply to rail	1
30	RA085091B	Fuel Line , HP return from rail	1

PARTS DELETED - 5.7L, SERPENTINE, V-DRIVE - R/W

FIGURE 1-1

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
31	R096144A	Bracket , plug wire clip	1
32	R096144	Bracket , plug wire clip	1
33	R090233	Bracket , dipstick tube clip	1
34	RS0302	Bolt , dipstick tube clip, retaining	1
35	RS1028	Nut , dipstick tube clip, retaining	1
36	R127015	Clamp , dipstick tube	1
37	RS0304	Bolt , bell housing attaching	1
38	RS2180	Lock Washer , bell housing attaching	1

FIGURE 1-2 5.7L, SERPENTINE, V-DRIVE - F/W

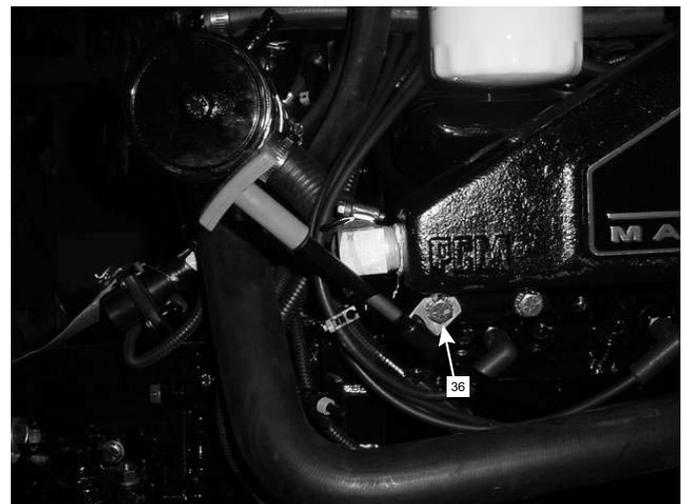
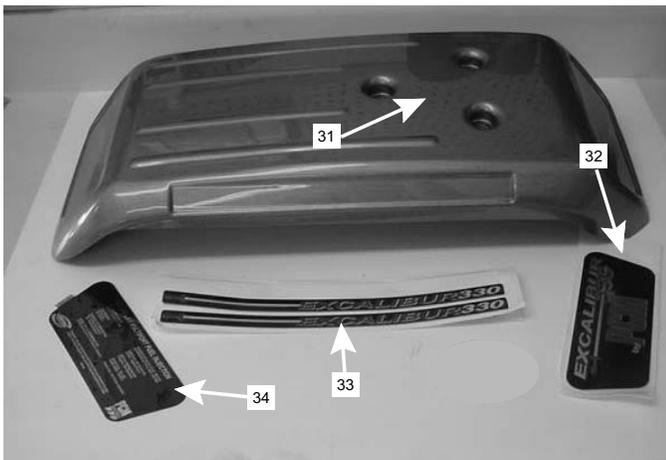
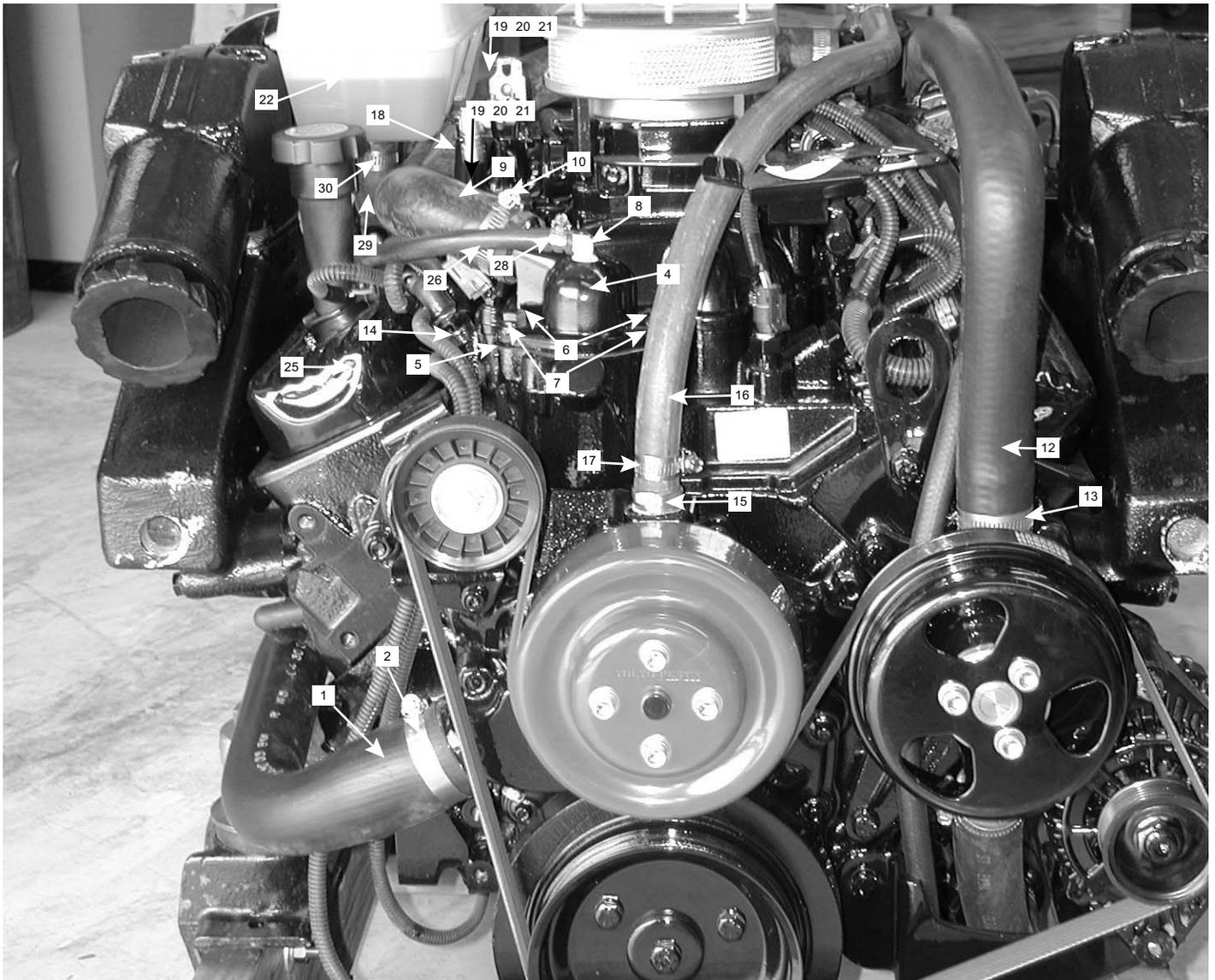
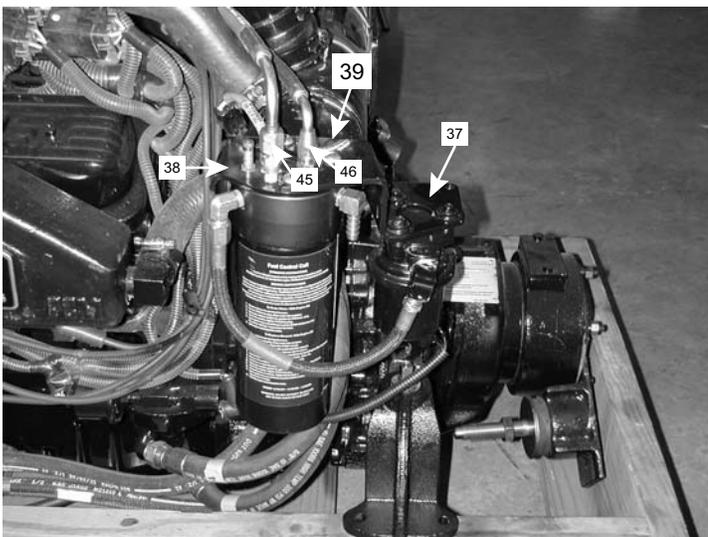
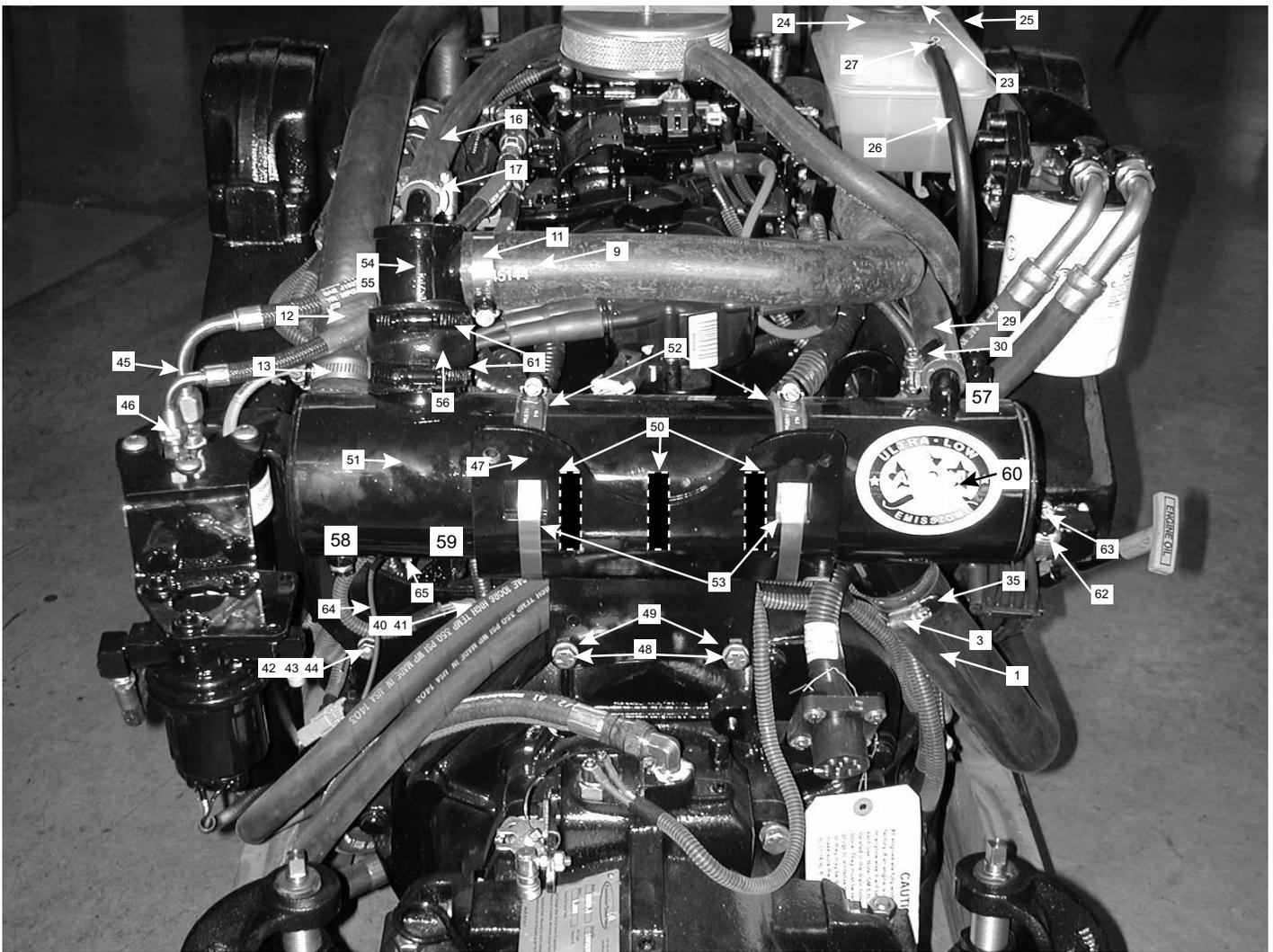


FIGURE 1-2 (cont.) 5.7L, SERPENTINE, V-DRIVE - F/W



PARTS ADDED - 5.7L, SERPENTINE, V-DRIVE -F/W

FIGURE 1-2

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	R045146	Hose , f/w supply, circ. pump to H.E.	1
2	RS3852	Clamp , 1 3/4"	1
3	RS3868	Clamp , 1 1/2"	1
4	R025015A	Housing , water neck outlet	1
5	RM0121	Gasket , water neck outlet	1
6	RS6531	Bolt , water neck outlet	2
7	93200000	Lock Washer , water neck outlet	2
8	R024055	Elbow , 1/8 NPT X 1/4 vent hose	1
9	R045144	Hose , f/w return, H.E. to water neck	1
10	RS3858	Clamp , 1 1/4"	1
11	RS3868	Clamp , 1 1/2"	1
12	R045163	Hose , r/w supply, r/w pump to H.E.	1
13	RS3858	Clamp , 1 1/4"	2
14	R020003	Sender , water temperature	1
15	R024217	Fitting , circ. pump, bypass	1
16	R045086	Hose , bypass, 5/8" X 31"	1
17	RS3864	Clamp , 5/8"	2
18	R090295	Bracket , degas bottle	1
19	98223016	Bolt , brkt, degas bottle	2
20	RS2672	Lock Washer , brkt, degas bottle	2
21	RS7068	Flat Washer , brkt, degas bottle	2
22	R146001	Degas Bottle	1
23	R034045	Cap , degas bottle	1
24	R143166	Decal , bottle, top, "Open Slowly"	1
25	R143153	Decal , bottle, side, "Engine Coolant Fill"	1
26	R045132	Hose , coolant vent, 1/4" X 30"	1
27	R127087	Clamp , Oetiker	1
28	RS3870	Clamp , 1/4"	1
29	R045164	Hose , f/w fill	1
30	RS3854	Clamp , 3/4"	2
31	R060061B	Hood	1
32	R143141	Decal , hood, "PCM Excalibur"	1
33	R143142	Decal , hood, "Excalibur"	2
34	R143143	Decal , hood, spec	1

PARTS ADDED - 5.7L, SERPENTINE, V-DRIVE -F/W

FIGURE 1-2

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
35	R128001C	Cover , hose clamp tip (black)	20
36	R127015	Clamp , Dipstick tube	1
37	R090299	Bracket , low pressure fuel pump	1
38	R090296	Bracket , FCC	1
39(NS)	R143114	Decal , "WARNING" FCC brkt	1
40	RS0305	Bolt , brkt, FCC	1
41	RS2180	Lock Washer , brkt, FCC	1
42	RS0283	Bolt , brkt, FCC	1
43	RS2158	Lock Washer , brkt, FCC	1
44	RS1027	Nut , brkt, FCC	1
45	RA085090B	Fuel Line , high pressure supply to rail	1
46	RA085091B	Fuel Line , HP return from rail	1
47	R090266	Bracket , heat exchanger	1
48	RS0304	Bolt , brkt, heat exchanger	2
49	RS2180	Lock Washer , brkt, heat exchanger	2
50	R094040	Isolator , rubber, adhesive	1
51	RA147050	Heat Exchanger	1
52	R094041	Isolator , rubber	2
53	RS3857	Clamp , 4"	2
54	R025039	Thermostat Housing	1
55	R026007	Thermostat , 170° F	1
56	R045162	Hose , tstat housing to H.E., 2 1/2"	1
57(NS)	R143155	Decal , "Protective Anode"	1
58(NS)	R143156	Decal , "Raw Water Drain"	1
59(NS)	R143157	Decal , "Fresh Water Drain"	1
60	R143158	Decal , "3 Star" emission	1
61	RS3860	Clamp , 2 1/2"	2
62	R045151	Hose , r/w dump, 1"	2
63	RS3851	Clamp , 1"	4
64	R101013	Wire , H.E. ground	1
65	RS1078	Nut , w/lock washer, H.E. grd. stud	1

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE

FWC KIT INSTALLATION - V-DRIVE

1. Disconnect the negative battery terminal cable.
2. Remove the hood (Figure 1-1, item 19) from the engine. The hood is not required to complete the installation. Save the hood retention nuts for installation of the new hood later in this procedure.
3. Remove the thermostat housing, water temperature sender, and associated hoses.

NOTE: The complete thermostat housing with hoses, temp sender, and thermostat can be removed as an assembly. (Figure 1-1, items 1-18)

- a. Disconnect the wire connected to the water temperature sender (Figure 1-1, item 12), located in the lower thermostat housing.
- b. Loosen the hose clamps of the raw water dump hoses at each exhaust manifold connection, the raw water pump hose at the raw water pump, and the raw water supply to engine hose at the circulating pump. Refer to Figure 1-3.

IMPORTANT: Some V-drive applications route the output of the raw water pump to the V-drive gear instead of going to the t-stat housing. Do not disconnect the hose at the raw water pump. Instead disconnect the raw water supply hose at the thermostat and continue with this procedure.

- c. Remove the two bolts and lock washers (Figure 1-4) attaching the thermostat housing assembly to the intake manifold.
 - d. Remove, from the engine, the thermostat assembly, all hoses and clamps. Clean thermostat gasket from the intake manifold. None of these parts are required to complete the installation. Refer to Figure 1-5.
4. Remove and discard the plug located top, center of the circulating pump. Refer to Figure 1-4.
 5. Remove and discard the plug located right, front of the intake manifold. Refer to Figure 1-4.

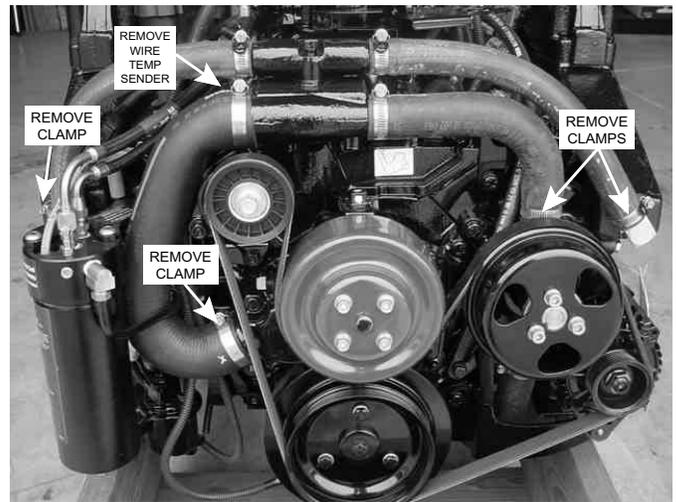


Figure 1-3 Disconnect Points - Steps 3a, 3b.

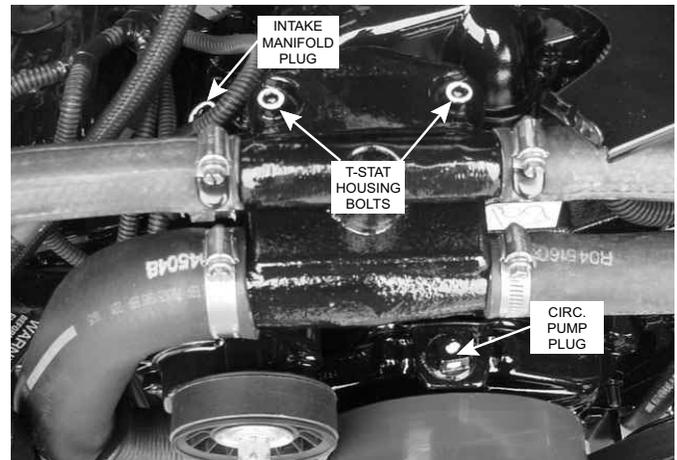


Figure 1-4 Disconnect Points - Steps 3c, 4, 5.



Figure 1-5 Parts removed - Steps 3-5.

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE

NOTE: Use pipe sealant with Teflon on all fittings being installed during these procedures. Loctite™ 565, PST Pipe Sealant, Part No. 56541 or equivalent is recommended.

6. From the kit, install the Bypass Fitting (Figure 1-2, item 15) into the circulating pump, where the plug was removed.
7. From the kit, install the Water Temperature Sender (Figure 1-2, item 14) into the intake manifold, where the plug was removed, and reconnect the temperature sending wire to the sensor. This is the wire disconnected in step 3a.
8. Remove 90° hose fittings from the (engine) front of each exhaust manifold and the plug fitting from the rear of each exhaust manifold.

Install the hose fittings in the (engine) rear of each exhaust manifold, with the hose barb facing inboard. Install the plugs in the front of each exhaust manifold.

9. From the kit, install the Degas Bottle Bracket using (2) Bolts (*metric), (2) Lock washers, and (2) Flat washers (Figure 1-2, items 18-21). The bracket is installed to the existing bracket on the (engine) starboard side of the intake manifold.
10. From the kit, install the Water Neck Outlet using (2) Bolts, (2) Lock washers, and Gasket (Figure 1-2, items 4-7), provided.
11. From the kit, install the Vent Hose Fitting (Figure 1-2, item 8) into the Water Neck Outlet. The hose barb should be positioned to starboard, approximately parallel with the Water Neck Outlet.
12. From the kit, install the Fresh Water Supply Hose (Figure 1-2, item 1) to the circulating pump using 1-3/4" Hose Clamp (Figure 1-2, item 2). The F/W Supply Hose will route to the rear of the engine along the lower starboard side, below the exhaust manifold.

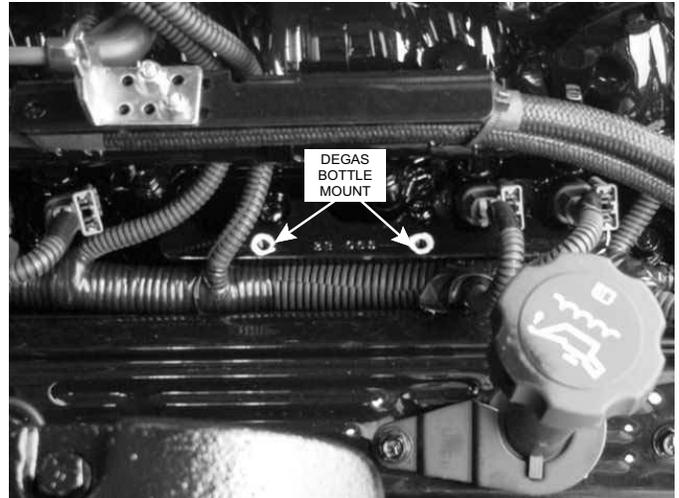


Figure 1-6 Degas Bottle Bracket Mounting Location

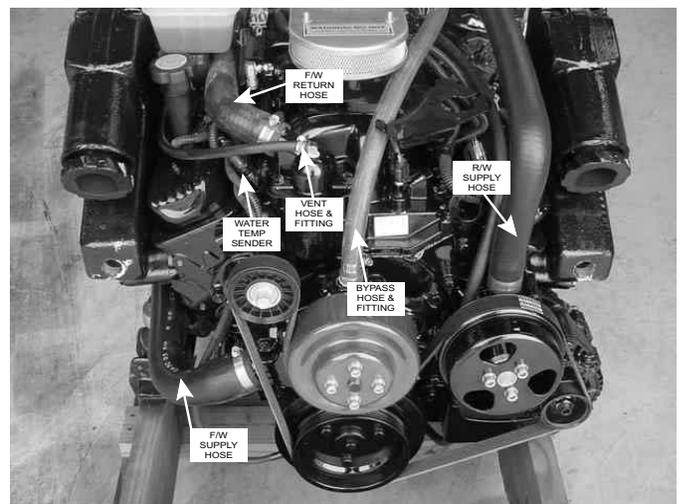


Figure 1-7 Hose and Fitting Locations

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE

13. From the kit, install the Fresh Water Return Hose (Figure 1-2, item 9) to the Water Neck Outlet using 1-1/4" Hose Clamp (Figure 1-2, item 10). The F/W Return Hose will route to the rear of the engine along the top, starboard side of the engine, inside of the oil fill, and outside of the Degas Bottle Bracket installed in step 12. The open end of the hose will point to the port side of the engine.
14. From the kit, install the Bypass Hose, 5/8" X 31", (Figure 1-2, item 16), onto the Bypass Fitting on the circulating pump, using 5/8" Hose Clamp (Figure 1-2, item 17). This hose will route up and to the rear of the engine on the port side of the throttle body.
15. From the kit, install the Raw Water Supply Hose, (Figure 1-2, item 12) 90° end, to the raw water pump using 1-1/4" Hose Clamp (Figure 1-2, item 13). This hose will route to the rear of the engine along the top port side of the intake manifold.

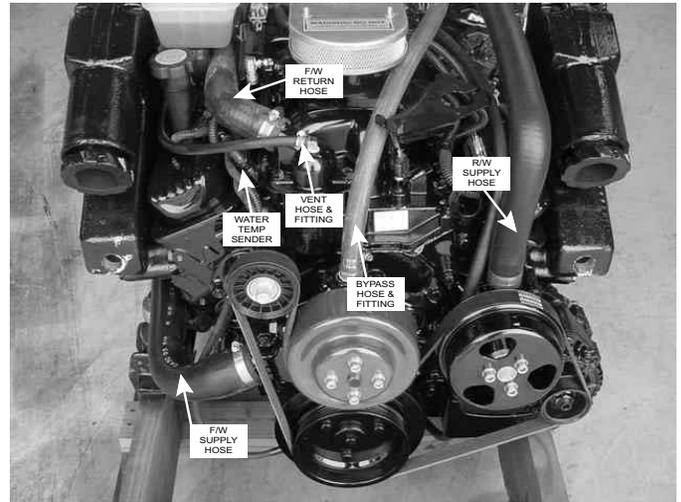


Figure 1-8 Hose and Fitting Locations

IMPORTANT: If your V-drive application routes the output of the raw water pump directly to the V-drive gear unit; you will not use the Raw Water Supply Hose supplied in the kit.

16. From the kit, obtain the Degas Bottle, Degas Bottle Cap, "Open Slowly" Decal, "Engine Coolant Fill" Decal, Coolant Vent Hose (1/4" X 30"), Fresh Water Fill Hose, 1/4" Oetiker Hose Clamp, 1/4" Hose Clamp, and 3/4" Hose Clamp (Figure 1-2, items 23-30).
 - a. The cap end of the degas bottle is the front of the degas bottle. On the upper starboard, forward, outside corner of the degas bottle, above the "MIN"/"MAX" marks, affix the "Engine Coolant Fill" Decal here. Affix the "Open Slowly" decal just behind the cap.
 - b. Attach the Coolant Vent Hose to the top nipple fitting on the degas bottle using the 1/4" Oetiker Hose Clamp.

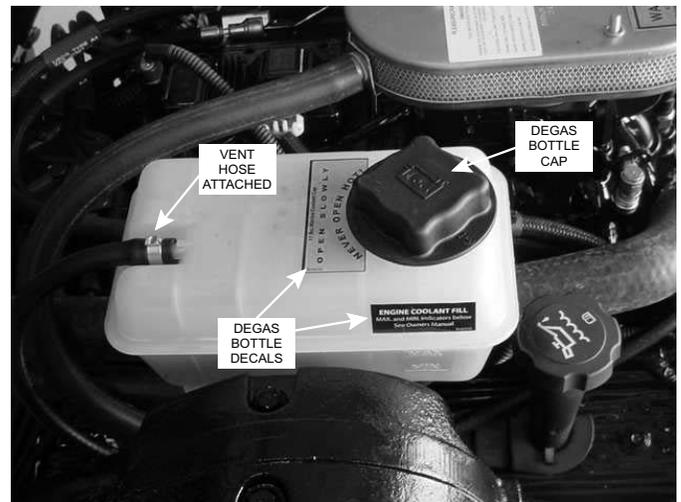


Figure 1-9 Degas Bottle Assembly

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE

- c. Attach the Fresh Water Fill Hose to the bottom hose outlet of the degas bottle.
- d. Install the Degas Bottle Cap on the Degas Bottle. With the cap towards the front of the engine, route the Coolant Vent Hose down and under the Degas bottle so the end of the hose is toward the front of the engine. Route the vent hose inside of the oil fill and attach it to the Vent Hose Fitting on the Water neck Outlet using 1/4" Hose Clamp. (Figure 1-2, item 28) Seat the Degas Bottle on the Degas Bottle Bracket.

17. Remove and save the stud bolt in the upper center position of the bell housing. This will release a ground wire and the main engine harness 10-pin connector bracket. Relocate the 10-pin connector bracket to the lower bolt that attaches the top mount starter block off plate. Refer to Figure 1-10.

18. Remove the starboard plug wire retaining clip bracket. Discard the plug wire bracket, the dipstick tube bracket, dipstick tube retaining clamp, and the dipstick tube retaining clamp mounting bolt and nut. Use the mounting bolt and lock washer to attach the ground wire (step 17) to the lower inboard hole on the starboard head. Be sure to remove the paint from around the mounting hole so that a good ground is achieved. Reinstall the stud bolt (step 17) back into the upper center hole of the bell housing. Refer to Figure 1-10.

19. From the kit, install the new dipstick tube retaining clamp (Figure 1-2, item 36) onto the dipstick tube. Gently rotate the dipstick tube outboard. Remove the engine's rear most exhaust manifold retaining bolt. Position the dipstick tube clip mounting hole so the exhaust manifold bolt will pass through the clip and into the exhaust manifold mounting hole. Tighten the exhaust manifold bolt securely. Refer to Figure 1-11.

20. Disconnect electrical connections to the FCC and LPFP fuel pumps.

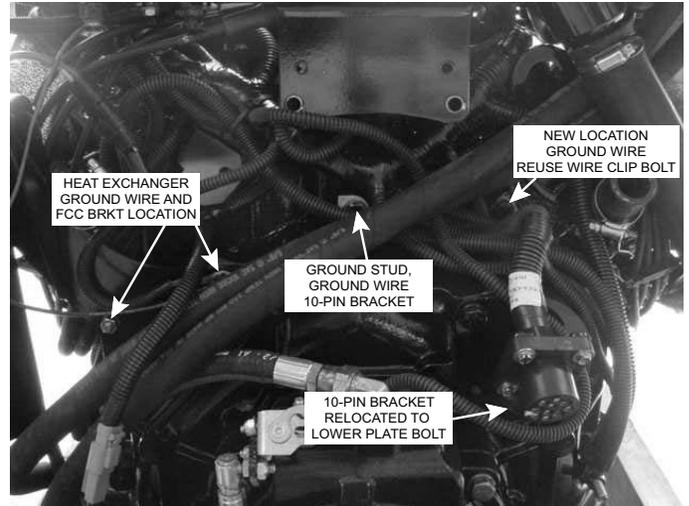


Figure 1-10 FWC V-Drive Contact Points - Rear



Figure 1-11 FWC V-Drive - Dipstick Tube Relocated

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE



WARNING

Extreme caution must be exercised when servicing the fuel system and/or replacing fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Be sure the ignition key is off and do not smoke or allow open flame in the area while servicing. Wipe up any spilled fuel immediately.

21. At the schrader valve located on the fuel rail, use the appropriate tool and approved container to bleed fuel pressure from the fuel lines. Release the fuel line retaining clips from both the high pressure and return fuel lines, at the fuel rail. Using the appropriate tool, release both lines from the fuel rail. Fuel lines will contain some residual fuel, take appropriate measures to minimize fuel spillage. Remove both the HP supply and HP return fuel lines from the FCC and discard. Refer Figure 1-12.
22. Disconnect the fuel tank return line from the FCC. Keep line elevated and use appropriate measures to minimize fuel leakage.
23. Disconnect the fuel tank supply line from the LPFP. Keep line elevated and use appropriate measures to minimize fuel leakage.
24. Remove (3) bolts and (3) lock washers securing the FCC/LPFP bracket to the port head of the engine. Remove bracket with FCC and LPFP attached and set aside.

NOTE: The bracket, bracket attaching bolts and washers, and spark plug wire clip bracket will not be reused. The FCC, FCC attaching hardware, and fuel fittings will be reused in later steps, as will the LPFP with its associated hardware.

IMPORTANT: The FCC and LPFP will contain fuel, make sure they are temporarily stored in an upright position so fuel will not spill from them.



WARNING

Extreme caution must be exercised when servicing the fuel system and/or replacing fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Be sure the ignition key is off and do not smoke or allow open flame in the area while servicing. Wipe up any spilled fuel immediately.

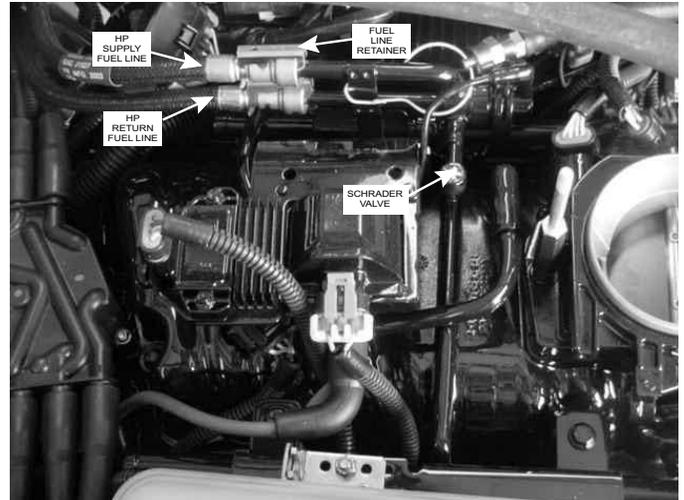


Figure 1-12 FWC Service Points - Fuel Lines - Top

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE



WARNING

Extreme caution must be exercised when servicing the fuel system and/or replacing fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Be sure the ignition key is off and do not smoke or allow open flame in the area while servicing. Wipe up any spilled fuel immediately.

25. Remove the upper engine port side bell housing bolt and lock washer. There will be a ground wire attached at this point. Discard the bolt and lock washer. Refer to Figure 1-13.
26. From the kit, locate the FCC Bracket, FCC brkt. mounting bolt and lock washer, FCC brkt. mounting bolt, lock washer, and nut, H.E. Ground wire. (Figure 1-2, items 38, 40-44, 66) Attach the FCC Bracket to the bell housing starting with the outboard mounting hole using the bolt, lock washer, and nut (do not tighten). Rotate the FCC bracket inboard to align the bracket's slot with the bell housing's mounting hole where the ground wire was attached. To ensure a good ground, make sure the paint is cleaned from around both sides of the FCC bracket mounting slot and the bell housing mounting hole. Using the bolt and lock washer, attach the H.E. ground wire, engine ground wire and FCC bracket to the bell housing. Tighten FCC Bracket mounting bolts.

NOTE: Engine harness will be routed behind (engine side) the FCC Bracket, the Remote Oil Lines are routed in front (gear side) of the FCC Bracket.

27. From the kit, cut the rubber isolator with adhesive into thirds. Affix the isolator onto the Heat Exchanger Bracket in the center and inboard of each of the mounting clamp holes.
28. From the kit, mount the Heat Exchanger Bracket to the bell housing using (2) bolts and (2) lock washers. (Figure 1-2, items 49-51)

NOTE: The Remote Oil Lines will route behind (engine side) the H.E. Bracket.

29. From the kit, obtain the Heat Exchanger, Thermostat housing, Thermostat, Thermostat Housing to Heat Exchanger Hose, and (2) 2-1/2" Hose Clamps. (Figure 1-2, items 53-58,63) Install the Thermostat into the Heat Exchanger with the spring portion of the Thermostat facing up. Place the Tstat Housing to H.E. Hose over the H.E. fitting with the (2) hose clamps in place but not tight. (Continued on next page.)

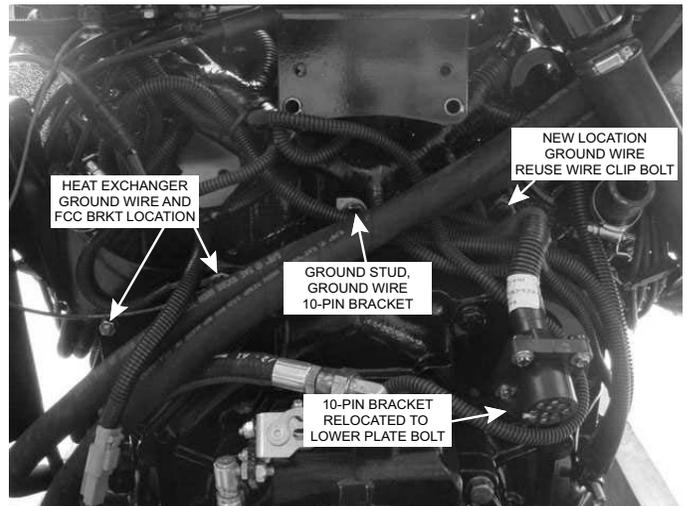


Figure 1-13 FCC Bracket and Ground Locations

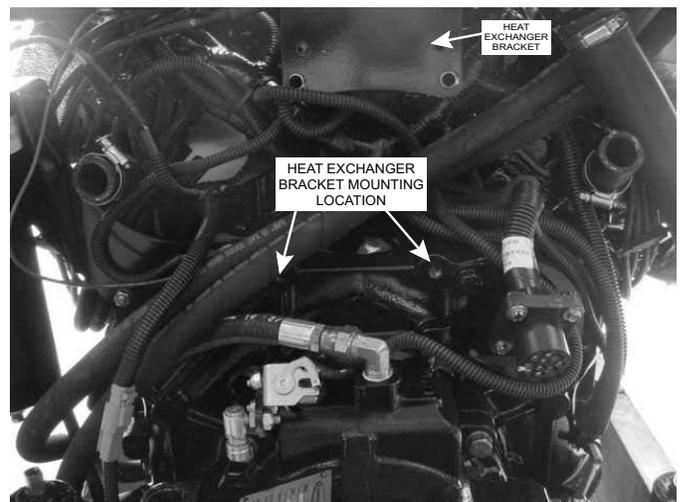


Figure 1-14 Heat Exchanger Bracket Location

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE

29. (cont.) Seat the Thermostat Housing into the hose, making sure that it contacts the thermostat and fits into the collar of the H.E. fitting. The Tstat Housing Bypass fitting should be facing the front of the engine. Tighten the (2) hose clamps securing the upper hose section to the Tstat Housing and the lower hose section to the H.E.

Mount the Heat Exchanger assembly to the H.E. Bracket using (2) 4" Hose Clamps (Figure 1-2, item 55). Do not fully tighten the clamps, at this time.

30. From the kit, install the (2) Raw Water Dump Hoses, using (4) 1" Hose Clamps, (Figure 1-2, items 64-65) to the H.E. 1" outboard fittings and to the 90° fittings installed in rear ports of the exhaust manifolds.

NOTE: The starboard r/w dump hose may need to be trimmed slightly, at the H.E. side, to prevent it from rubbing on the corner of the starboard head.

31. Connect the Fresh Water Supply Hose (from the circ. pump) to the H.E. lower starboard fitting using 1-1/2" Hose Clamp (Figure 1-2, item 3).
32. Connect the Fresh Water Fill Hose (from the Degas Bottle) to the H.E. upper starboard 3/4" fitting using 3/4" Hose Clamp (Figure 1-2, item 30).
33. Connect the Fresh Water Return Hose (from the Water neck Outlet) to the H.E. thermostat housing 1-1/2" fitting using 1-1/2" Hose Clamp (Figure 1-2, item 11).
34. Connect the Bypass Hose (from circ. pump) to the H.E. thermostat housing 5/8" fitting using the 5/8" Hose Clamp (Figure 1-2, item 17).
35. Connect the Raw Water Supply Hose (from the raw water pump) to the H.E. 1-1/4" fitting, upper port side of the H.E., using 1-1/4" Hose Clamp (Figure 1-2, item 13).

IMPORTANT: If your V-drive application routes the output of the raw water pump directly to the V-drive gear unit; you will not use the Raw Water Supply Hose supplied in the kit. You will need to obtain from the boat builder/or fabricate a hose of sufficient length to come from the output of the V-drive gear to the raw water input of the Heat Exchanger. The hose should be 1-1/4" i.d. to fit properly to the H.E.

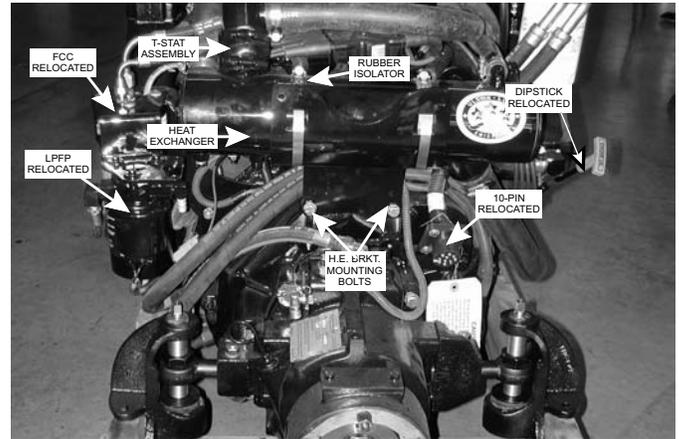


Figure 1-15 FWC Assembly Locations - Rear of Engine

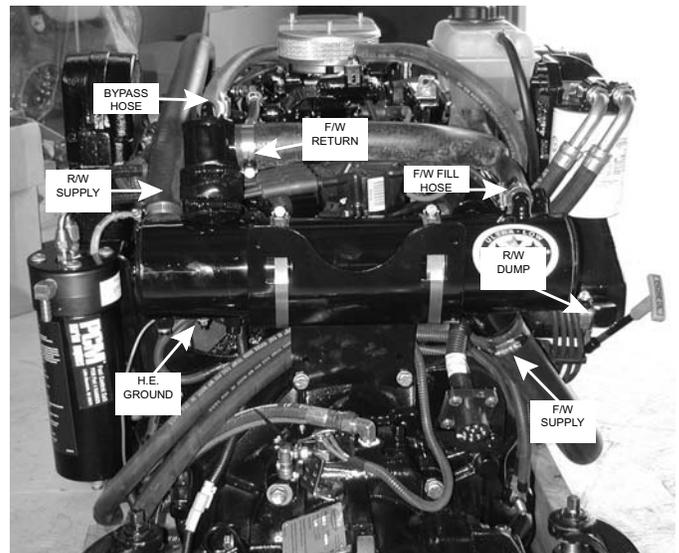


Figure 1-16 Hose Connections - Rear of Engine

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE

36. From the kit, use the Nut w/lock washer (Figure 1-2, item 67) to secure the ground wire to the H.E. ground stud.
37. From the kit, affix decals (Figure 1-2, items 59-62, Figure 1-2 also shows approximate location of the decals) to the Heat Exchanger.



WARNING

Extreme caution must be exercised when servicing the fuel system and/or replacing fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Be sure the ignition key is off and do not smoke or allow open flame in the area while servicing. Wipe up any spilled fuel immediately.

38. Disconnect the Low Pressure Fuel Pump fuel line from the FCC. Remove the (3) FCC attaching bolts, keeping the FCC in an upright position, to avoid spilling any fuel, install the FCC onto the new FCC Bracket (installed in step 26), using the FCC attaching bolts. The FCC should orientate into the new bracket so the electrical harness comes through the bracket at the point nearest the engine.
39. From the kit, install the new HP supply to rail, fuel line (Figure 1-2, item 46), to the FCC. From the kit, install the new HP return from rail, fuel line (Figure 1-2, item 47), to the FCC.

NOTE: The Heat Exchanger may need to be moved slightly to the starboard side of the engine to allow clearance for the FCC.

40. Reconnect the fuel tank return fuel line to the FCC. (disconnected in step 22)
41. Ensure that the H.E. r/w and f/w drains are facing straight down. From the kit, install a rubber isolator (Figure 1-2, item 54) under each of the H.E. mounting clamps, then tighten clamps securing the H.E. to the H.E. Mounting Bracket.

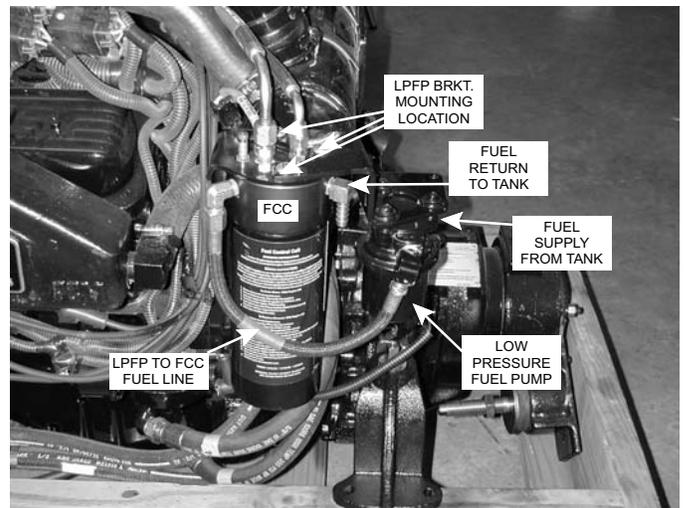


Figure 1-17 FCC/LPFP Mounting

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE



WARNING

Extreme caution must be exercised when servicing the fuel system and/or replacing fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Be sure the ignition key is off and do not smoke or allow open flame in the area while servicing. Wipe up any spilled fuel immediately.

42. From the kit, obtain the LPFP Bracket, and LPFP output fuel fitting (Figure 1-2, items 37, 45). Retaining all attaching hardware, remove the LPFP from the bracket, and install the LPFP onto the new LPFP Bracket. The output fitting of the LPFP will face port (see Figure 1-18).
43. Loosen, do not remove, the three (3) FCC attaching bolts. With the LPFP attached to the LPFP Bracket, slide the bracket slots onto the FCC attaching bolts. Tighten the bolts securely.
44. Connect the Low Pressure Fuel Pump to FCC fuel line to the FCC input connector.
45. Reconnect the fuel tank supply fuel line to the LPFP.
46. Route the fuel lines connected to the top of the FCC under the Bypass Hose and the Raw Water Supply Hose. Connect the HP Supply to Rail fuel line (fuel line nearest to the electrical harness on the FCC) to the upper fitting on the fuel rail. Connect the HP Return from Rail fuel line to the lower fitting of the fuel rail. Secure both fuel lines with the fuel line retaining clips removed in step 21.
47. Reconnect the FCC harness to its engine harness connector. Route the engine harness connector up and over the port side R/W Dump Hose connected to the H.E.

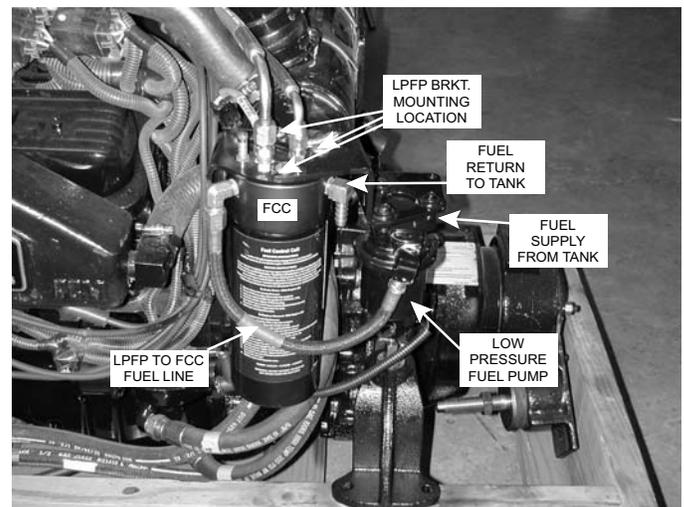


Figure 1-18 FCC/LPFP Mounting

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE



WARNING

Extreme caution must be exercised when servicing the fuel system and/or replacing fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Be sure the ignition key is off and do not smoke or allow open flame in the area while servicing. Wipe up any spilled fuel immediately.

48. Reconnect the LPFP harness to its engine harness connector. Route the engine side of the harness under the engine oil and transmission fluid hoses.
49. From the kit, affix FCC "Warning" decal on the top of the FCC Bracket. (Figure 1-2, item 39)
50. Remove the engine block drain plugs and drain any remaining water from the engine block. Reinstall block drain plugs.
51. Make sure that all drain plugs are properly installed.

FILLING FRESH-WATER COOLING SYSTEM

A new extended life engine coolant known as DEX-COOL™ is recommended for use in your engine. It is imperative to note the following about DEX-COOL™ engine coolant:

- IT IS PINK IN COLOR TO DISTINGUISH IT FROM CONVENTIONAL COOLANT.
- THE SERVICE CHANGE INTERVAL ON ENGINES BUILT WITH DEX-COOL™ IS 5 YEARS.
- TO MAINTAIN FULL CORROSION PROTECTION DURABILITY, DEX-COOL™ MUST NOT BE MIXED WITH CONVENTIONAL (CONTAINING SILICATE) ENGINE COOLANTS.
- DEX-COOL™ IS AN ETHYLENE GLYCOL BASED PRODUCT, THEREFORE, BOIL AND FREEZE PROTECTION ARE MEASURED IN THE SAME FASHION AS CONVENTIONAL COOLANTS.

TO FULLY REALIZE ITS MANY ADVANTAGES, DEX-COOL™ MUST NEVER BE MIXED WITH CONVENTIONAL COOLANTS.

DEX-COOL™ can become contaminated by inadvertently topping-off with conventional coolant, adding conventional coolant to the system or even if fill/drain containers are shared between coolants. If contamination occurs, the cooling system must be immediately drained and flushed, and refilled with DEX-COOL™. No short-term damage will occur, however, the service interval will be reduced from 5 years to 2 years.

The fresh-water cooling side of the cooling system must be filled with a 50/50 mixture of DEX-COOL™ (or equivalent, which meets GM6277M) extended life antifreeze and water solution.

IMPORTANT: More than 50% antifreeze solution can contribute to an overheating condition.

52. Reconnect negative terminal of the battery.
53. Remove the pressure cap from the Degas Bottle.
54. Prepare 5 gallons of DEX-COOL™ 50/50 solution. Fill the system with antifreeze solution until the system is filled. Degas Bottle will be full to the top of the bottle.
55. Prime the fuel system. Turn the ignition key to the ON position for 5 seconds, turn the key OFF for 10 seconds, and repeat 1-3 times.



WARNING

Make sure that there are no fuel leaks before closing the engine hatch.



WARNING

Visually inspect unit for fuel leaks before operating the engine. If fuel leaks are present, DO NOT operate the engine, repair immediately.

56. Start the engine and operate at idle speed (800-1000 RPM) to purge any air from the system. When the coolant level remains constant, install the pressure cap on the Degas Bottle.

FWC KIT INSTALLATION INSTRUCTIONS - V-DRIVE

57. Continue to run the engine until it reaches normal operating temperature. Check for fuel leaks, oil leaks, fresh water coolant leaks, and raw water leaks at all fittings and connections. Correct all leaks, as required.



WARNING

Do not remove cooling system filler cap when the engine is hot. Allow the engine to cool and then remove the pressure cap slowly, allowing the pressure to vent. Hot coolant, under pressure, may discharge violently and cause severe burns.

NOTICE: It is not necessary to remove pressure cap to check coolant levels. Check Degas Bottle daily and keep filled to the 'MAX' level indicated on the bottle.

58. Continue to run the engine at normal operating temperature. Check the Degas Bottle for the proper level and add coolant if necessary.
59. From the kit, install the Hose Clamp Covers, (Figure 1-2, item 35), on all hose clamp ends.
60. From the kit, affix decals to the new hood (Figure 1-2, items 31-34) and attach the hood to the engine with the retention nuts removed in step 2.



WARNING

Make sure that there are no fuel leaks before closing the engine hatch.

Installation of the Fresh Water Cooling Kit on a V-Drive application is complete.

