



### Engine Block Heater Service Kits (Tank Type) 30RZ/33RZ/45RZ (CSG-649 Ford-Powered) Standby Generator Sets

Model	Voltage	Kit No.
All Models	120	276233
All Models	240	276234

This service kit details removal of the immersion type block heater and replaces it with a tank type block heater kit.

The engine block heater kit (tank type) heats engine coolant, making starting easier and warm-up quicker. The thermostat will automatically turn off when coolant temperature reaches 120° F (49° C).



**Accidental starting can cause death or serious personal injury.** Turn Generator Master Switch to OFF position, disconnect power to battery charger, and remove battery cables (remove negative lead first and reconnect it last) to disable generator set before working on any equipment connected to generator. The generator set can be started by automatic transfer switch or remote start/stop switch unless these precautions are followed.

#### INSTALLATION

1. Place controller master switch to OFF position. Disconnect battery of generator set, negative lead first. Disconnect power from existing block heater.

#### WARNING



#### Hot coolant can cause severe burns.

Allow engine to cool and release pressure from cooling system before opening pressure cap. To release pressure, cover the pressure cap with a thick cloth then turn it slowly counterclockwise to the first stop. After pressure has been completely released and the engine has cooled, remove cap. If generator set is equipped with a coolant recovery tank, check coolant level at tank.

2. With generator set sufficiently cooled, drain the coolant into a suitable container.

Do NOT pollute the environment. Dispose of used coolant and other contaminants in a safe and approved manner.

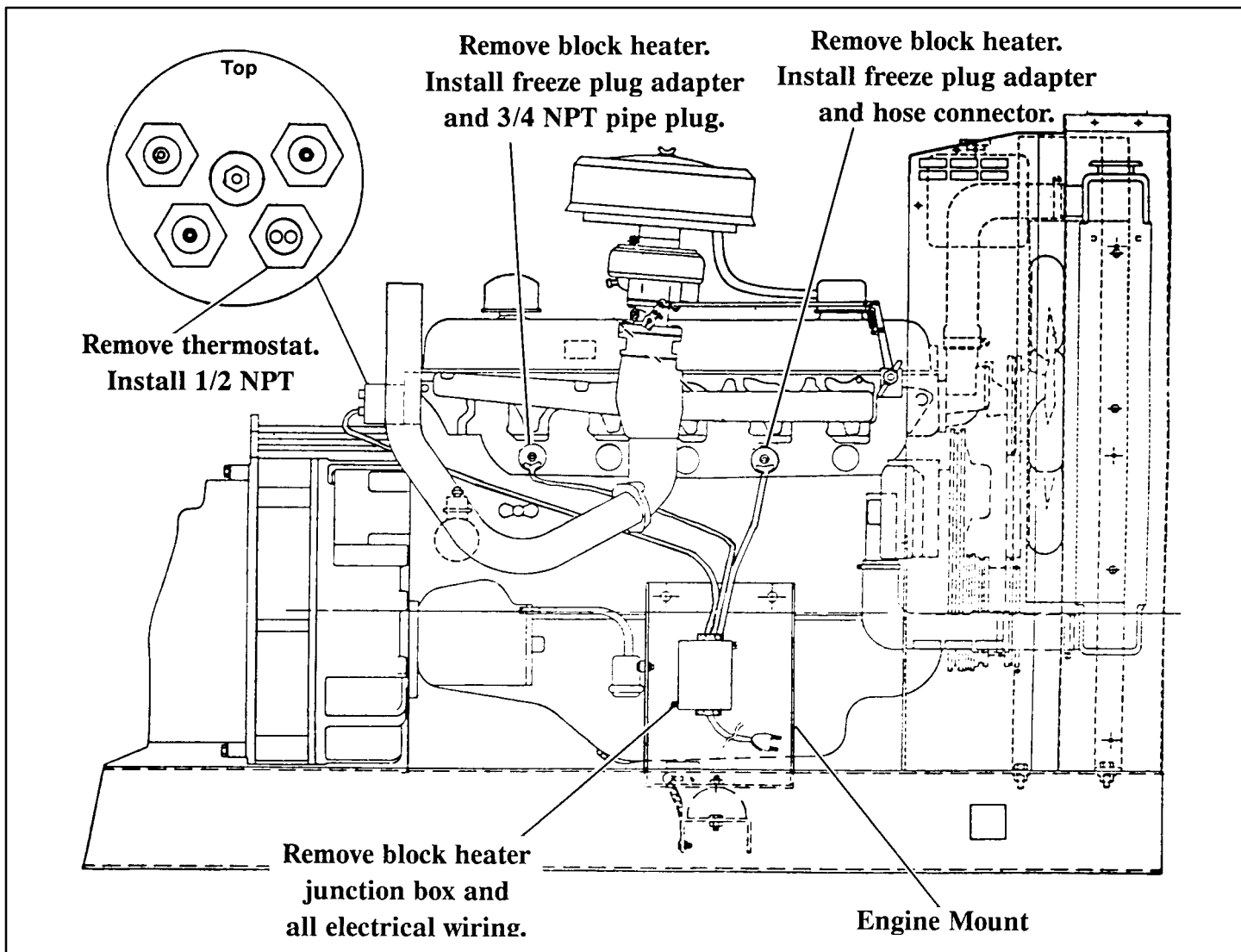
#### NOTE

Petcock valve is located on radiator bottom and/or engine bottom.

3. If an immersion type block heater was previously installed, follow Step 3. Otherwise, proceed to Step 4.

#### NOTE

If Step 3 is not required, reference Parts Listing for components not used.



**Figure 1. Block Heater Kit Removal (Immersion Type)**

3a. Remove electrical connections to block heaters and thermostat. Remove block heater junction box from generator set. These parts will not be reused. See Figure 1.

3b. Remove thermostat. This part will not be reused.

**NOTE**

Leave this hole open at this time.

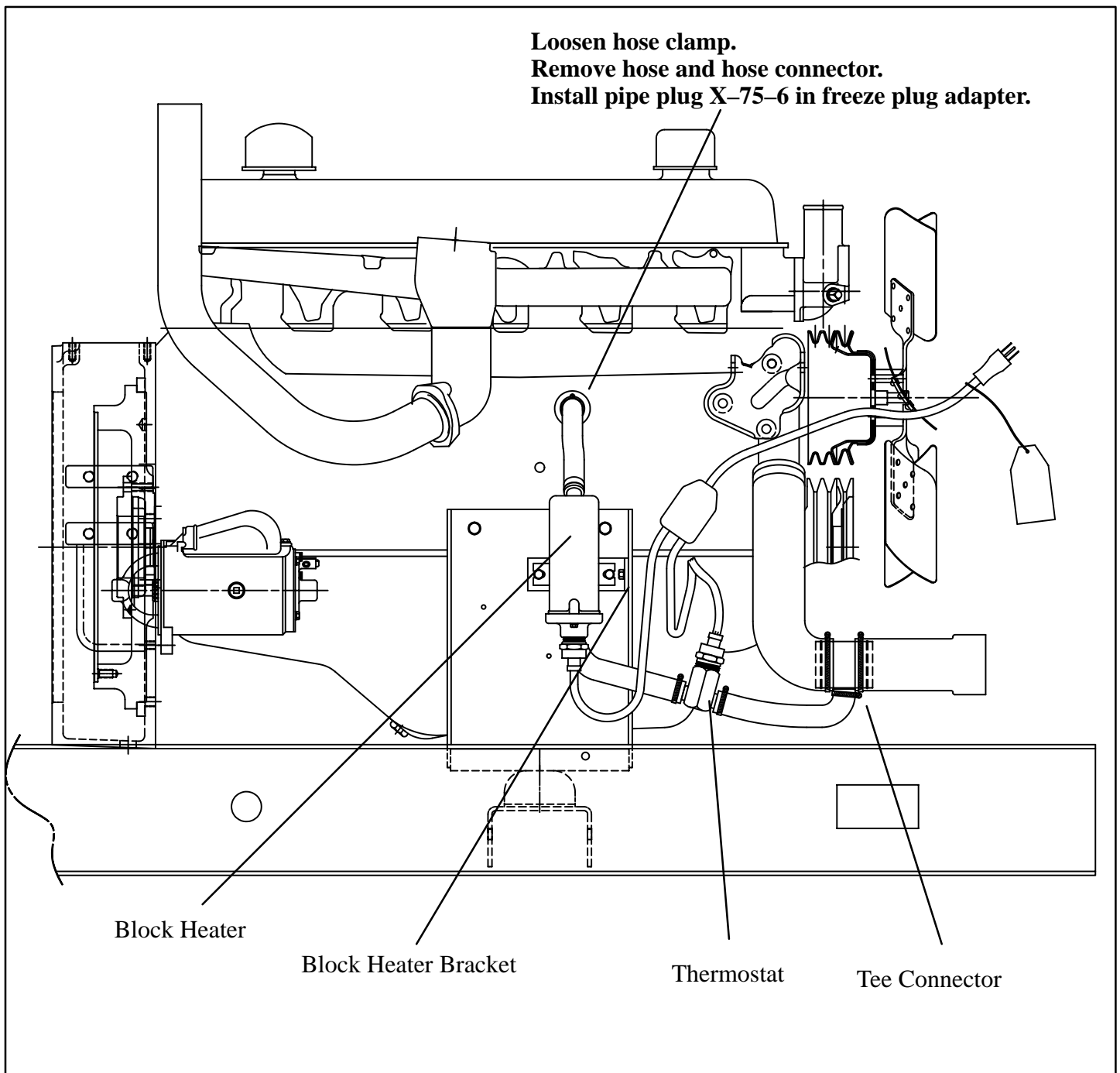
3c. Remove block heaters from engine block. These items will not be reused.

With components clean and dry, apply Loctite® threadlocker 290 (green) or

equivalent to freeze plug 276215 and hole. Install freeze plug adapters using hardwood dowel and hammer. Drive freeze plug adapter into engine block so that it is flush with outside surface of block. Do NOT drive freeze plug adapter beyond that point or it may be forced into the water jacket.

Apply pipe sealant to 3/4 NPT pipe plugs X-75-6 and install into freeze plug adapters. Torque pipe plugs to 15 ft. lbs. (20 Nm).

4. If an early version tank type block heater was installed, follow Step 4. See Figure 2. Otherwise, proceed to Step 5.



**Figure 2. Removal of Early Version Tank Type Block Heater Kit**

**NOTE**

If Step 4 is not required, reference Parts Listing for components not used.

4a. Loosen hose clamp and remove hose from hose connector. Remove hose connector from freeze plug adapter.

4b. Apply pipe sealant to pipe plug X-75-6 and install into freeze plug adapter. Torque pipe plug to 15 ft. lbs. (20 Nm).

4c. Remove remaining block heater components.

5. Locate sensor block at rear of engine (as viewed from generator end). Remove pipe plug (if not already done), see Figure 3 for location.

**NOTE**

Pipe plug will not be reused.

Apply pipe sealant to one end of pipe nipple X-209-18 and install in sensor block.

6. Apply pipe sealant to the other end of pipe nipple and install pipe elbow X-215-1. Rotate pipe elbow to the 4 o'clock position (as viewed from the generator end).
7. Apply pipe sealant to hose connector X-582-1 and install in pipe elbow.
8. Loosen hose clamps on lower radiator hose and remove hose. Place existing hose clamps over each end of lower radiator hose 255172 and install new hose. Locate hose clamps 1/4 in. (6 mm) from end of hose and tighten.

**NOTE**

Original lower radiator hose will not be reused.

Locate lower radiator hose and mark hose at 5 in. (127 mm) and 6 in. (152 mm) from radiator outlet. Cut at these marks to remove 1 in. (25 mm) from hose.

9. Place two large hose clamps X-426-6 on cut radiator hose (one on each end). Install tee connector 276216 with nipple pointing to the 8 o'clock position (as viewed from the radiator end). Locate hose clamps 1/4 in. (6 mm) from end of hose and tighten.
10. Attach block heater bracket 276299 to engine mounting using two screws X-465-18, lock washers X-20-1, and nuts X-81-1.

**NOTE**

Early generator sets may not have pre-drilled holes in engine mount. Use bracket as a

template and drill two 19/64 in. dia. holes. Locate holes 3 in. (76 mm) from top of engine mount. Center-to-center dimension is 1-3/4 in. (44 mm).

11. Install block heater to bracket using two screws X-468-18, plain washers X-25-40, lock washers X-20-1, and nuts X-81-1.
12. Place two hose clamps X-426-10 on each end of hose X-577-5. Connect one end to inlet of block heater 276208 and one end to thermostat. Thermostat can be installed with either end toward radiator. Locate hose clamps 1/4 in. (6 mm) from end of hose and tighten.
13. Place two hose clamps X-426-10 on each end of molded hose 276206. Attach short end to tee connector. Cut long end of molded hose, as necessary, to properly reach thermostat. Attach long end to thermostat. Locate hose clamps 1/4 in. (6 mm) from end of hose and tighten.
14. Place two clamps X-426-10 on rubber hose X-577-46. Connect hose to hose connector and block heater outlet. Locate hose clamps 1/4 in. (6 mm) from end of hose and tighten.
15. Secure hose connected between block heater and engine sensor block using hose clamp X-672-3, split-lock washer X-24-6, and screw X-129-15. Mount bolt in flywheel adapter boss.
16. Use cable ties, as necessary, to protect and secure wiring from sharp objects, exhaust system, and any moving parts.
17. Close petcock valves on radiator and/or engine block.
18. Fill cooling system to proper level with fresh coolant. A solution of 50% ethylene glycol and 50% clean, softened water is recommended to inhibit rust/corrosion and provide freezing

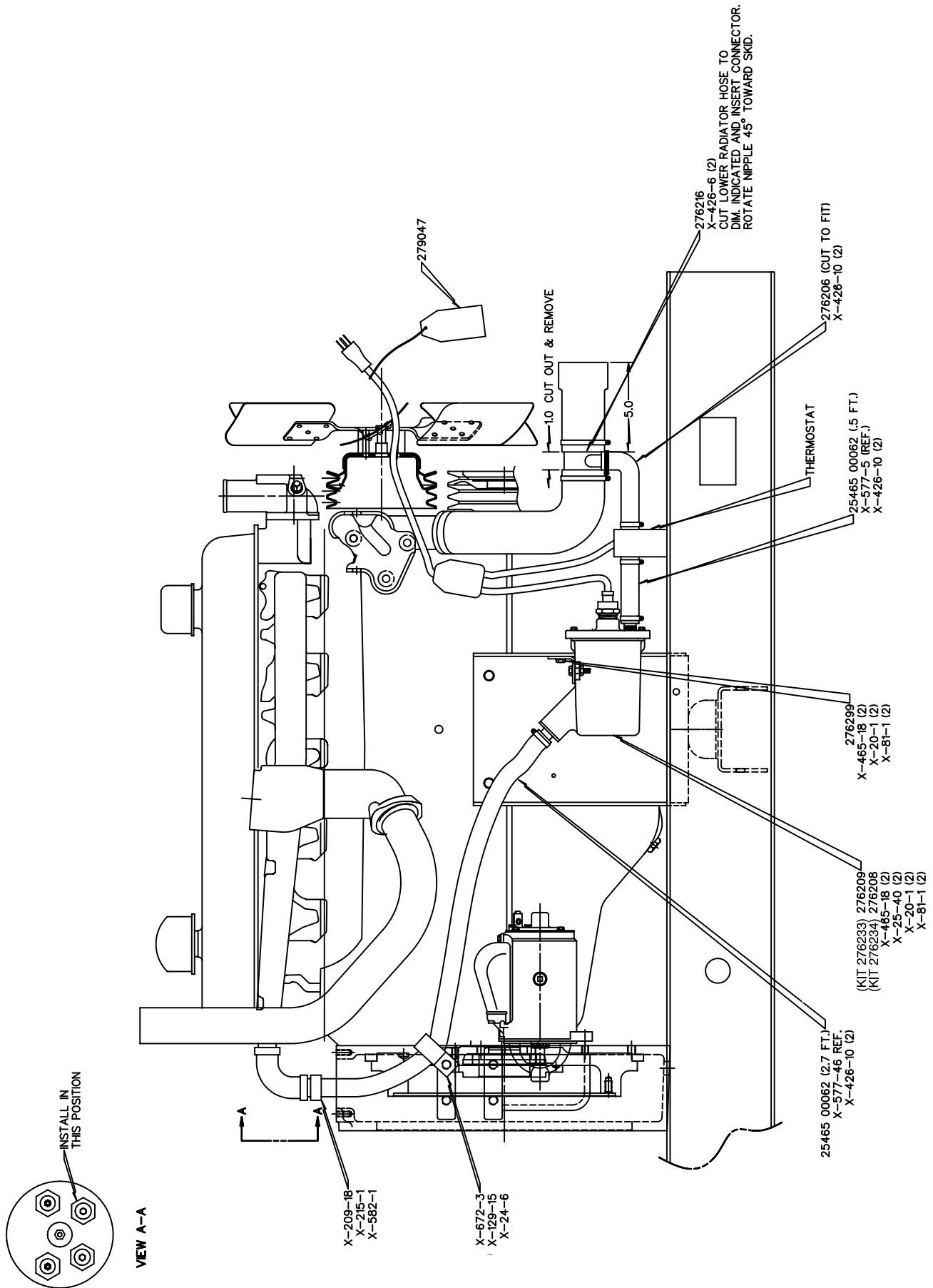


Figure 3. Block Heater Installation

protection. See Table 1 for coolant capacities.

**NOTE**

Coolant mixtures exceeding 50% ethylene glycol may cause block heater element failure.

	<b>Standard</b>	<b>Remote</b>	<b>City–Water</b>
<b>Model</b>	<b>Radiator</b>	<b>Radiator</b>	<b>Cooled</b>
All Models	7.6 (28.8)	3.5 (13.3)	4 (15)

**NOTE:** Capacities shown may vary from model to model and are subject to change.

**Table 1. Coolant Capacities – U.S. Gal. (L)**

19. Check that the controller master switch is in the OFF position. Reconnect battery, negative lead

last.

20. Test run the generator set for a few minutes and check for leaks.

**NOTE**

Special attention should be given when checking for proper coolant level. After a radiator has been drained, it normally requires some time before complete refill of all air cavities takes place.

21. Connect block heater electrical plug to proper voltage outlet.

## Parts Listing

Qty.	Description	Common Parts	Kit Numbers	
			276233	276234
1	Screw, 1/2–13 x 3/4	X–129–15		
4	Washer, 1/4 split lock	X–20–1		
1	Pipe, 1/2 NPTF x 4 in.	X–209–18		
1	Elbow, 1/2 NPT pipe	X–215–1		
1	Washer, 1/2 split–lock washer	X–24–6		
2	Washer, 9/32 x 5/8 x 1/16	X–25–40		
6	Clamp, 1 in. hose	X–426–10		
2	Clamp, 2–1/2 in. hose	X–426–6		
4	Screw, 1/4–20 x 7/8, Gr. 5	X–465–18		
1	Hose, 5/8 in. ID x 32 in.	X–577–46		
1	Hose, 5/8 in. ID x 5–1/2 in.	X–577–5		
1	Connector, hose	X–582–1		
1	Clamp, insulating hose	X–672–3		
1	Plug, 1/2 NPT pipe	X–75–28		
2 *	Plug, 3/4 NPT pipe	X–75–6		
4	Nut, 1/4–20	X–81–1		
1	Hose, radiator	255172		
1	Hose, molded	276206		
1	Heater, block		276209	276208
2	Adapter, freeze plug	276215		
1	Connector, hose	276216		
1	Bracket, heater	276299		

\* Qty. 2 used only if Step 3 applies. Qty. 1 used only if Step 4 applies.