

Engine Block Heater Service Kits (Tank Type In-Block Thermostat) 50-100RZ (LSG-875 Ford-Powered) Standby Generator Sets

Model	Voltage	Kit No.
50-70RZ	120	276354
50-70RZ	240	276355
80-100RZ	120	276356
80-100RZ	240	276357

NOTE

The Block heater will fail if not immersed in coolant. Always unplug the block heater(s) before draining coolant and fill the engine block with coolant prior to plugging in the block heater(s). The block heater element MUST be immersed in engine coolant before being energized. Air must be purged from the system before energizing the block heater or the block heater element may fail.

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

These kits detail removal of the immersion type block heater and replaces it with a tank type (in-block thermostat) block heater kit.

⚠ WARNING

	
Hazardous voltage.	Moving rotor.
Can cause severe injury or death.	

Do not operate generator set without all guards and electrical enclosures in place.

Hazardous voltage can cause severe injury or death. Engine block heater can cause electrical shock. Remove engine block heater plug from electrical outlet before working on block heater electrical connections.



⚠ WARNING

Accidental starting.

Can cause severe injury or death.

Disconnect battery cables before working on generator set (negative lead first and reconnect it last).

Accidental starting can cause severe injury or death. 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.

⚠ WARNING



**Hot coolant and steam.
Can cause severe injury or death.**

Before removing pressure cap stop generator, allow to cool and loosen pressure cap to relieve pressure.

Hot coolant can cause severe injury or death.
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.

INSTALLATION

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

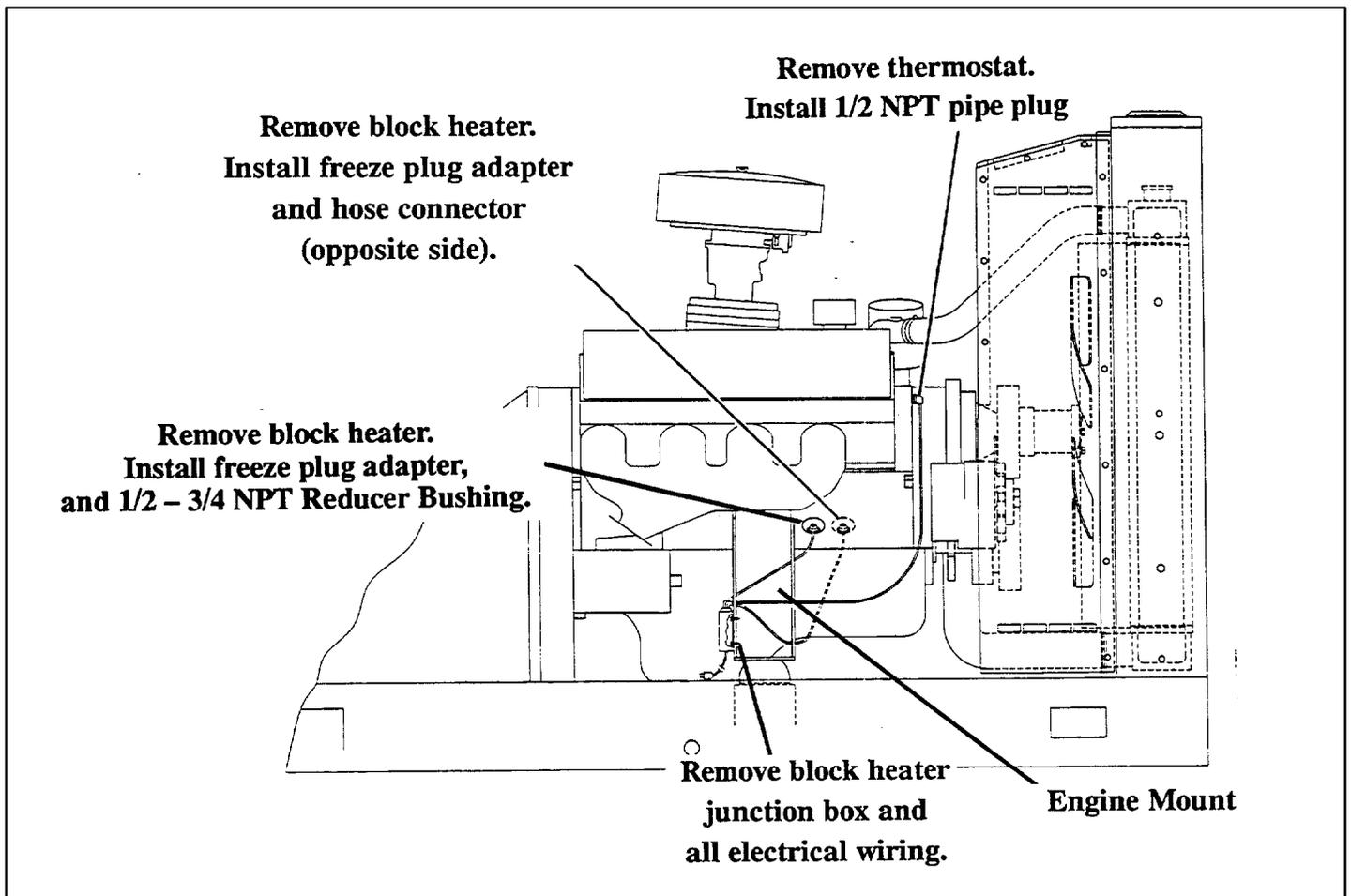


Figure 1. Block Heater Kit Removal (Immersion Type)

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.

- 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. Clean threads on engine block where the thermostat was removed, and apply pipe sealant to 1/2 NPT pipe plug X-75-28 and install into engine block.
- 3c. Remove block heaters from engine block. These items will not be reused.

NOTE

If the unit is equipped with a Low Water Temperature Switch located at position 1, (Figure 2), Skip Step 4 and proceed to Step 5. If the unit is not equipped with a Low Water Temperature Switch located at position 1, follow Step 4 and proceed to Step 6.

4. With components clean and dry, apply Loctite® threadlocker 272 (red) or equivalent to freeze plug adapter 276212 and hole. Install freeze plug adapter using hardwood dowel and hammer at position 1 (see Figure 2, Right Side View). 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 reducer bushing 153659 and install into freeze plug adapter on right side of engine (as viewed from generator end). Torque reducer bushing to 15 ft. lbs. (20 Nm). Install thermostat into reducer bushing.

5. If installing block heater service kit on a unit with the *Low Water Temperature (L.W.T.) Switch* feature located at position 1 (Figure 2): Remove the L.W.T. switch and reducer bushing but leave the freeze plug adapter in place. Install reducer bushing 153659 and the new thermostat at position 1 (see Figure 2, Right Side View for torque specifications.)

With components clean and dry, apply Loctite® threadlocker 272 (red) or equivalent to freeze plug adapter 276212 (supplied in kit) and hole at position 2 (Figure 2.) Install freeze plug adapter using hardwood dowel and hammer at position 2 (Figure 2.) 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 the reducer bushing (which was removed from position 1), and install into freeze plug adapter at position 2 (see Figure 2) and torque to 15 ft. lbs. Relocate L.W.T. switch at position 2 and torque to 15 ft. lbs. Pull lead 35A back through harness and connect to L.W.T. switch. Remove lead N from harness disconnecting at ground position. Add new lead SWON-1622-2218 to L.W.T. switch and connect the other end to the ground position (route lead away from sharp edges.)

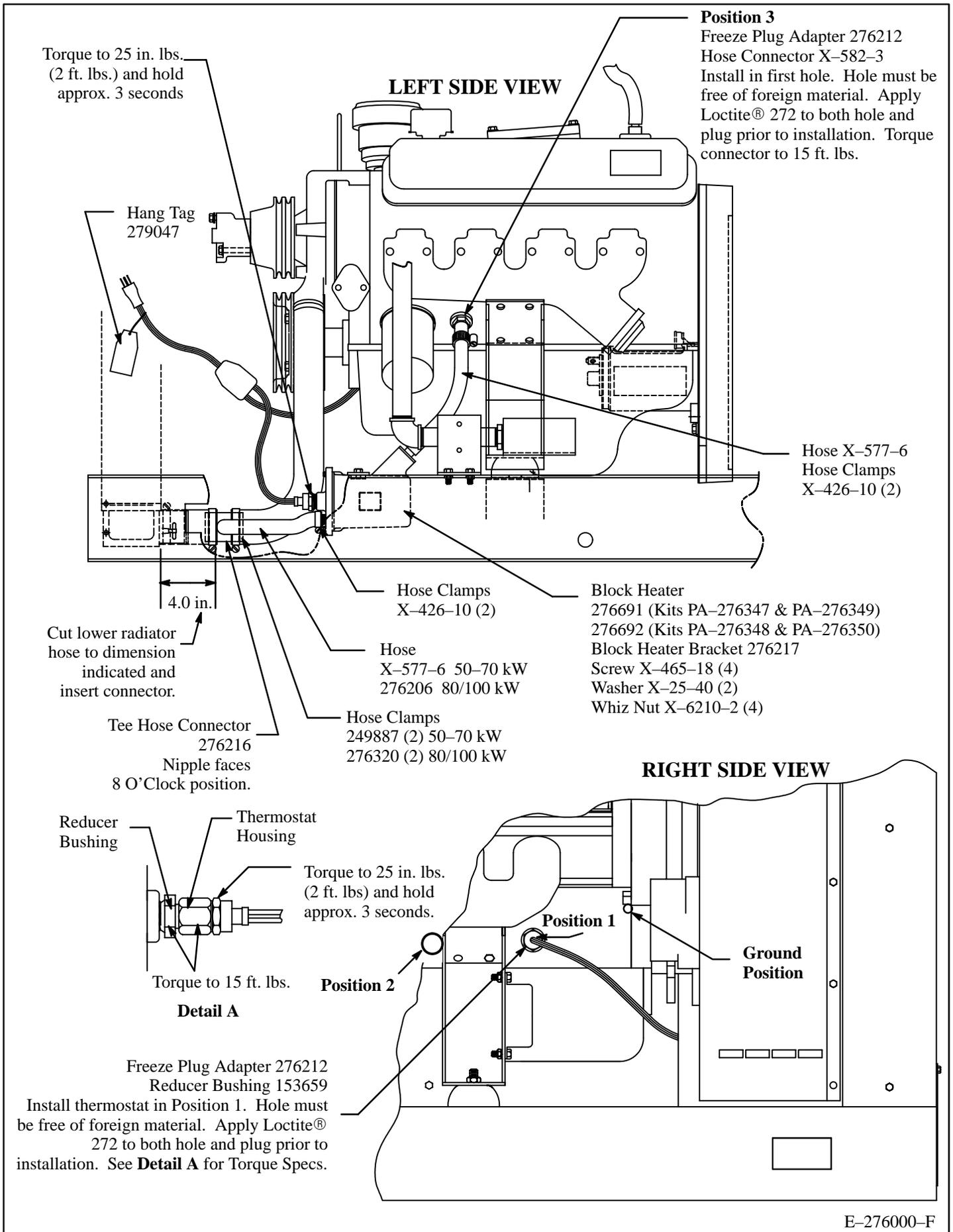


Figure 2. Block Heater Installation (Tank Type)

6. With components clean and dry, apply Loctite® threadlocker 272 (red) or equivalent to freeze plug adapter 276212 and hole at position 3 (see Figure 2, Left Side View). Install freeze plug adapter 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 hose connector X-582-3 and install into freeze plug adapter on left side of engine. See Figure 2. Torque hose connector to 15 ft. lbs. (20 Nm).

7. Locate lower radiator hose and mark hose at 4 in. (102 mm) and 5 in. (127 mm) from radiator outlet. Cut at these marks to remove 1 in. (25 mm) from hose.
8. Place two large hose clamps 249887/276320 on cut radiator hose (one on each end). Install tee hose connector 276216 with nipple pointing to the 8 o'clock position (as viewed from the generator end). Locate hose clamps 1/4 in. (6 mm) from end of hose and tighten.
9. Attach block heater bracket 276217 to skid using two screws X-465-18 and whiz nuts X-6210-2.

NOTE

Early generator sets may not have pre-drilled holes in skid. Use bracket as a template and drill two 19/64 in. dia. holes. Locate holes

18-3/4 in. (476 mm) from end of skid and 1/2 in. (13 mm) from edge of skid. Center-to-center dimension is 3/4 in. (19 mm). See Figure 3.

10. Install block heater 276691/276692 to bracket using two screws X-465-18, plain washers X-25-40, and whiz nuts X-6210-2.
11. Place hose clamps X-426-10 over each end of hose 276206/X-577-6. connect one end to tee hose connector and the other end to the block heater inlet. Locate hose clamps 1/4 in. (6 mm) from end of hose and tighten.
12. Place hose clamps X-426-10 over each end of rubber hose X-577-6. Connect rubber hose to block heater outlet and hose connector in engine block. Locate hose clamps 1/4 in. (6 mm) from end of hose and tighten.
13. Use cable ties, as necessary, to protect and secure wiring from sharp objects, exhaust system, fuel lines, and any moving parts.
14. Close petcock valves on radiator and/or engine block. Open air bleed valve located in the water manifold at the front right side of the engine (as viewed from the generator end).
15. 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 protection. See Table 1 for coolant capacities. Close air bleed valve.

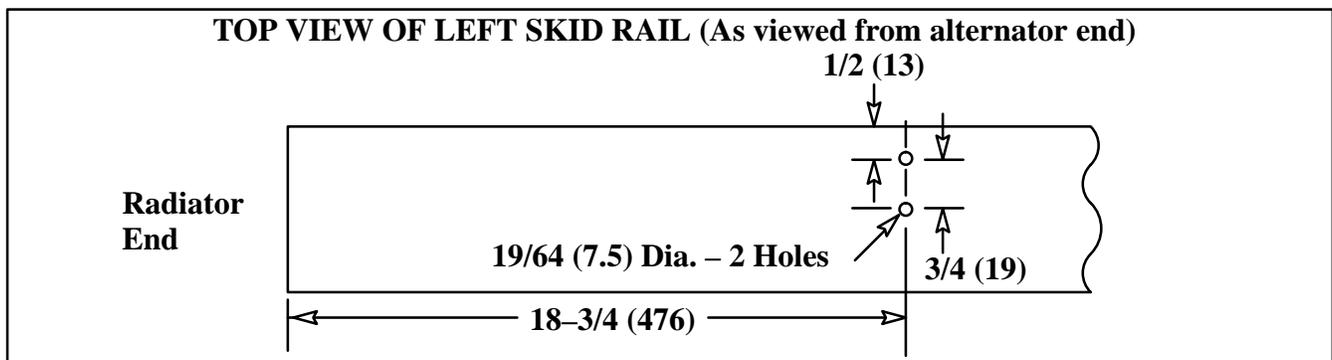


Figure 3. Skid Drilling Instructions

NOTE

Coolant mixtures exceeding 50% ethylene glycol may cause block heater element failure. Failure to bleed all air from the engine may cause block heater element failure.

Model	Standard Radiator	Remote Radiator	City-Water Cooled
50-80RZ	7.3 (27.6)	9 (34)	6.6 (25)
100RZ	8.2 (31.0)	9 (34)	6.6 (25)

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

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

16. Check that the controller master switch is in the OFF position. Reconnect battery, negative lead last. Reconnect battery charger leads if present.

17. Test run the generator set for a few minutes to check for leaks and to purge all air from the system.

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. Failure to purge all air from the system may cause block heater element failure.

18. Connect block heater electrical plug to proper voltage outlet. Tie hang tag 279047 to electrical cord coming from the block heater.

Parts Listing

Qty.	Description	Common Parts	Kit Numbers			
			276354	276355	276356	276357
2	Washer, 9/32 x 5/8 x 1/16 plain	X-25-40				
4	Clamp, 1 in. hose	X-426-10				
4	Screw, 1/4-20 x 7/8, Gr. 5	X-465-18				
2	Hose, 5/8 ID x 11		X-577-6	X-577-6		
1	Hose, 5/8 ID x 11				X-577-6	X-577-6
1	Connector, hose	X-582-3				
1 *	Plug, 1/2 NPT pipe	X-75-28				
2	Clamp, 2.56 in. hose		249887	249887		
1	Hose, molded				276206	276206
1	Heater, block		276691	276692	276691	276692
2	Adapter, freeze plug	276212				
1	Connector, tee hose	276216				
1	Bracket, block heater	276217				
2	Clamp, 2.69 in. hose				276320	276320
1	Reducer Bushing	153659				
1 **	Lead	SWON-1622-2218				
4	Whiz Nuts 1/4-20	X-6210-2				
1	Tag, Hang	279047				

* Item used only if Step 3 applies.

** Item used only if installing kit on a unit with a Low Water Temperature Switch Located at Position 1, Figure 2.