

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

Model	Voltage	Kit No.
50-70RZ	120	PA-276347
50-70RZ	240	PA-276348
80/100RZ	120	PA-276349
80/100RZ	240	PA-276350

The engine block heater kit 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).



⚠ 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



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.

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.

⚠ 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 battery charging cables.
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. Remove freeze plug from engine. See Figure 1 (Left Side View – when viewed from generator end) for location. To remove freeze plug, use a freeze plug puller, or puncture center with punch and pry out. Clean hole and remove burrs.

NOTE

Be careful not to damage sealing surface.

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. 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.
5. Apply pipe sealant to hose connector X-582-3 and install into freeze plug adapter. Torque connector to 15 ft. lbs. (20 Nm).
6. 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.
7. 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.
8. 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 2.

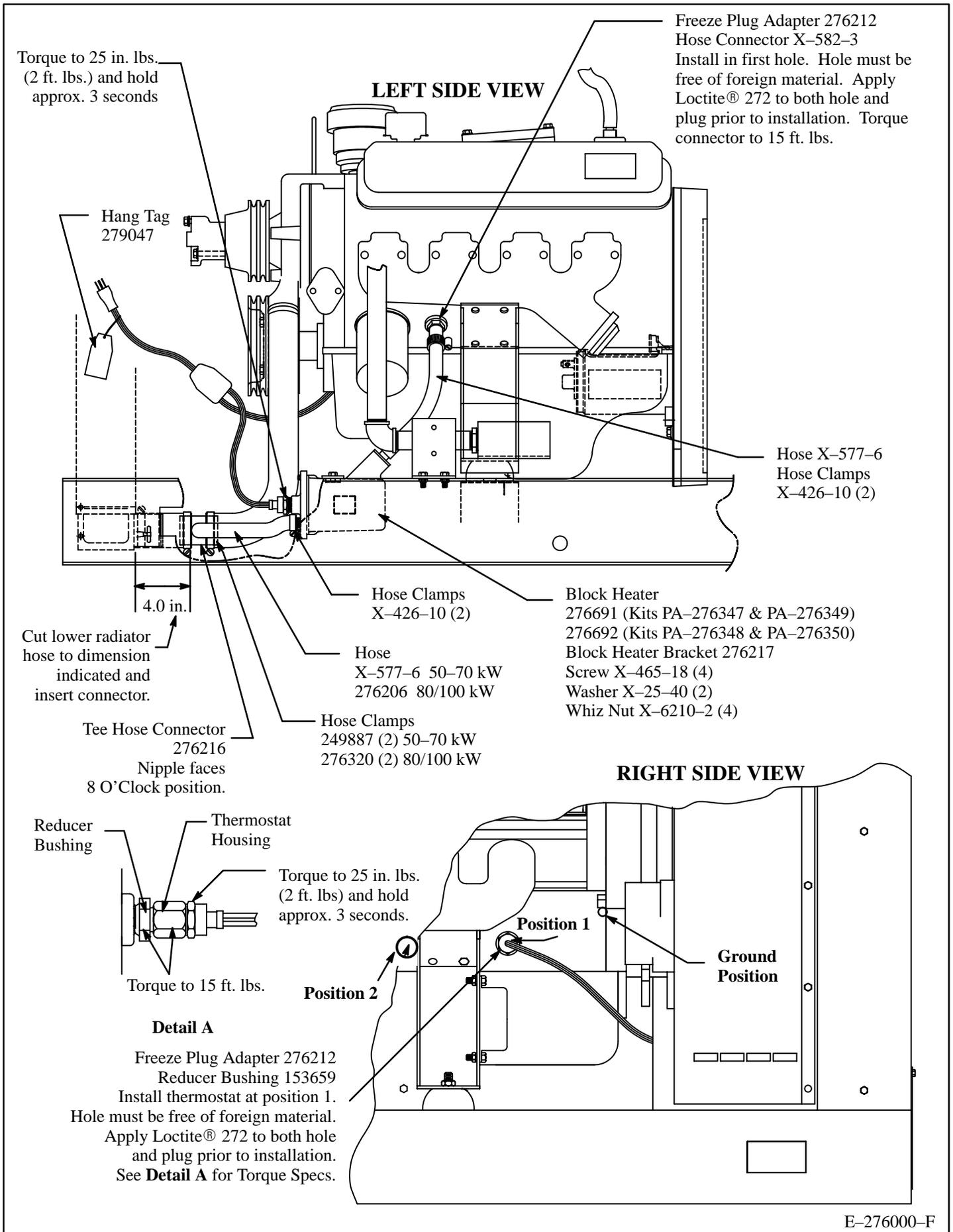


Figure 1. Block Heater Installation

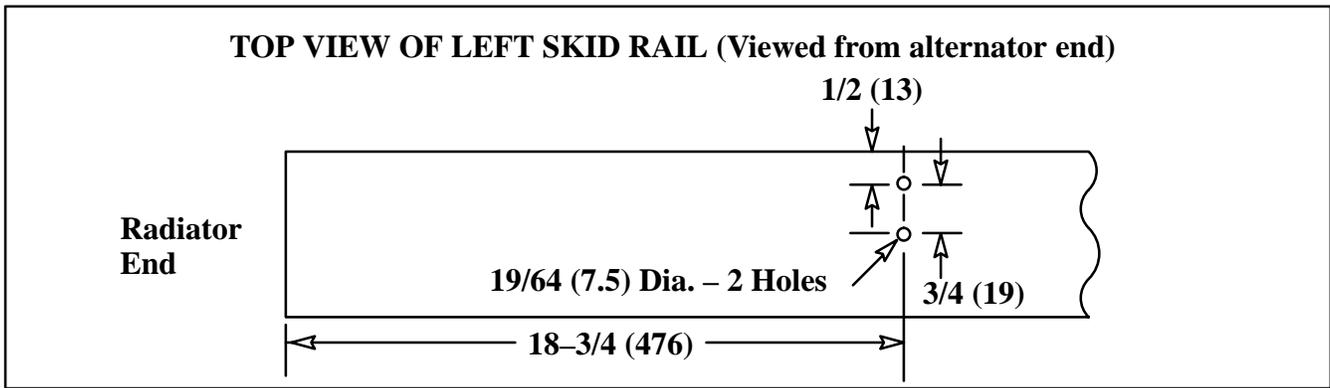


Figure 2. Skid Drilling Instructions

9. Install block heater 276691/276692 to bracket using two screws X-465-18, plain washers X-25-40, and whiz nuts X-6210-2.

NOTE

If unit is equipped with a Low Water Temperature Switch follow Step 10, otherwise proceed to Step 11.

10. If installing block heater kit on a unit with the *Low Water Temperature (L.W.T.) Switch* feature located at position 1 (See Figure 1, Right Side View): Remove the L.W.T. switch and reducer bushing at position 1, leave the freeze plug adapter at position 1. Install freeze plug adapter 276212 and removed reducer bushing at position 2. Install reducer bushing 153659 (supplied in kit) at position 1. Install the thermostat into the reducer bushing at position 1. Relocate L.W.T. switch at position 2. 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.
11. Remove freeze plug from engine. See Position 1, (Figure 1, Right Side View) for location. To remove freeze plug, use a freeze plug puller, or puncture center with punch and pry out. Clean hole and remove burrs.

NOTE

Be careful not to damage sealing surface.

12. 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 1, Back 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. Install reducer bushing 153659, and thermostat. Torque reducer bushing and thermostat housing to 15 ft. lbs.
13. 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.
14. 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.
15. Use cable ties, as necessary, to protect and secure wiring from sharp objects, exhaust system, fuel lines and any moving parts.
16. 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).

17. 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.

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.

18. Check that the controller master switch is in the OFF position. Reconnect battery, negative lead last. Reconnect the battery charger is equipped.

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)

19. 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 air from the system may cause block heater element failure

20. 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			
			PA-276347	PA-276348	PA-276349	PA-276350
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				
4	Nut, Whiz 1/4-20	X-6210-2				
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	Tag, Instruction	279047				
1	Bushing, Reducing	153659				
1*	Lead	SWON-1622-2218				

*Only required if installing kit on a unit with a Low Water Temperature Switch located at position 1, Fig. 1.