
INSTALLATION INSTRUCTIONS

Original Issue Date: **4/97**

Model: **20-60ROZJ**

Market: **Industrial**

Subject: **Engine Block Heater Kits PA-336180 and PA-336181**

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



Accidental starting.
Can cause severe injury or death.

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

Disabling generator set. Accidental starting can cause severe injury or death. Turn generator set 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 the generator set or connected equipment. The generator set can be started by an 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 set and allow it to cool. Then loosen pressure cap to relieve pressure.

Checking coolant level. Hot coolant can cause severe injury or death. Allow engine to cool. Release pressure from cooling system before opening pressure cap. To release pressure, cover the pressure cap with a thick cloth; then slowly turn it counterclockwise to the first stop. Remove cap after pressure has been completely released and the engine has cooled. Check coolant level at tank if generator set is equipped with a coolant recovery tank.

NOTE

Pay special attention to the coolant level. After draining the coolant, allow time for complete refill of the engine water jacket. Check coolant level as prescribed in the Prestart Checklist of the Operation Manual.

NOTE

Do not turn on block heater before filling cooling system. Run engine until warm and refill radiator to purge air from the system before energizing block heater. If heater element is not immersed in water block heater will fail.

Installation

1. Place the generator set master switch in the OFF position.
2. Disconnect generator set engine starting battery, negative (–) lead first. Disconnect power to battery charger, if equipped.

NOTE

Drain valve is located on radiator bottom and/or on side of engine crankcase.

3. Allow engine and radiator to cool. Drain the coolant into a suitable container. Dispose of all waste materials (engine oil, fuel, coolant, etc.) in an environmentally safe manner. Contact local authorities for procedures.

NOTE

Apply pipe sealant to male threads of all components before installing the component.

4. Secure block heater (326228 or 326229) and block heater mounting bracket (326219) to generator set skid with screws (X-6238-3) and nuts (X-6210-9). See Figure 1.
5. Remove pipe plug for thermostat installation. See Figure 1.
6. Apply pipe sealant to threads of thermostat housing and install where pipe plug was removed in step 5. Torque thermostat housing to 15 ft. lbs. (20 Nm).
7. Install thermostat into thermostat housing. Torque thermostat to 25 in. lbs. (3 Nm) and hold for 3 seconds.
8. Route thermostat wiring along radiator hose. Secure thermostat wiring to radiator hose with cable ties (X-468-4).
9. Remove pipe plug from rear of the engine for outlet hose connection. See Figure 1.
10. Apply pipe sealant to threads of reducer bushing (X-202-1) and install in engine where pipe plug was removed.
11. Apply pipe sealant to the threads of the 90° elbow connector (X-391-34) and install in reducer bushing.
12. Connect hose (X-312-35) to 90° elbow connector. Secure hose to connector with hose clamp (X-426-10). Place hose clamp 0.25 in. (6 mm) from hose end and tighten.
13. Connect opposite end of hose to block heater outlet. Secure hose to block heater outlet with hose clamp (X-426-10). Place hose clamp 0.25 in. (6 mm) from hose end and tighten.
14. Remove existing drain valve from engine. See Figure 1 for location.
15. Apply pipe sealant to threads of pipe nipple (X-220-6) and install in engine where drain valve was removed.
16. Apply pipe sealant to exposed threads of pipe nipple and thread pipe tee (A-110) onto pipe nipple.
17. Apply pipe sealant to threads of drain valve removed in step 14 and install in end of pipe tee. See Figure 1.
18. Apply pipe sealant to threads of hose connector and install in pipe tee. See Figure 1.

19. Connect hose (X-312-35) to hose connector. Secure hose to connector with hose clamp (X-426-10). Place hose clamp 0.25 in. (6 mm) from hose end and tighten.
20. Connect opposite end of hose installed in step 19 to block heater inlet. Route hose under engine as shown in Figure 1. Secure hose to block heater inlet with hose clamp (X-426-10). Place hose clamp 0.25 in. (6 mm) from hose end and tighten.
21. Secure hang tag (279047) to power cord. See Figure 1.
22. Coil excess thermostat wiring at block heater and secure to block heater hose using cable ties (X-468-1).
23. Close all coolant drain valves on radiator and/or engine block.
24. Fill cooling system with fresh coolant consisting of a mixture of 50% ethylene glycol and 50% clean, softened water. This mixture provides the necessary freeze protection and inhibits corrosion.

NOTE

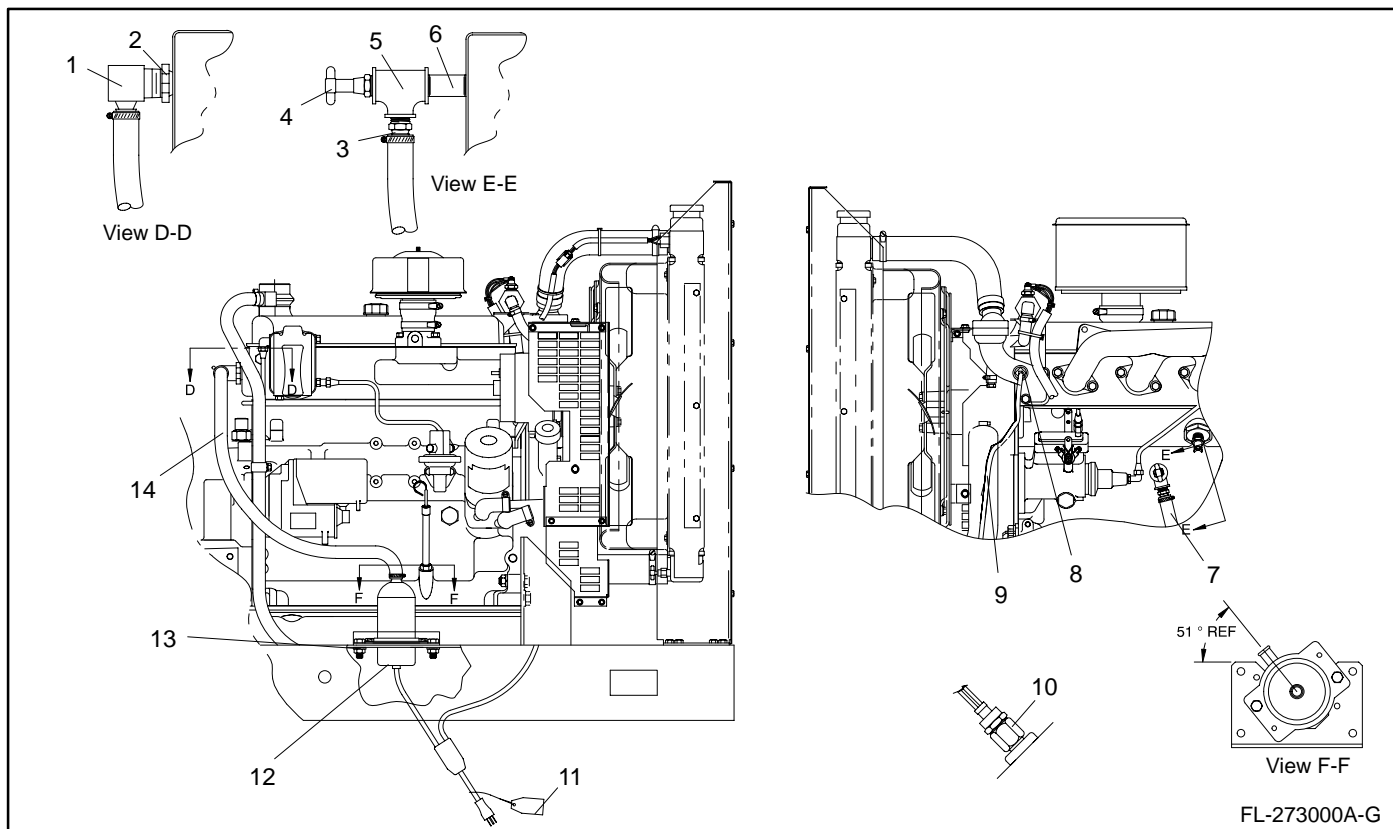
Coolant mixtures exceeding 50% ethylene glycol may cause the block heater heating element to fail.

25. Check that the generator master switch is in the OFF position.
26. Reconnect the generator set engine starting battery, negative (–) lead last. Reconnect power to battery charger, if equipped.
27. Connect block heater to main power source.
28. Test run generator set for a few minutes to check for coolant leaks and to purge air from system. Stop generator set. After engine and radiator have cooled correct any leakage.

NOTE

Failure to purge trapped air may cause block heater element to fail.

29. Recheck coolant level after allowing engine and radiator to cool. After draining the cooling system, allow some time for all air cavities to refill in the system. Add coolant as necessary.



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| 1. 90° elbow connector (X-391-34) | 9. Cable tie |
| 2. Reducer bushing (X-202-1) | 10. Thermostat housing |
| 3. Hose connector (X-582-22) | 11. Hang tag (279047) |
| 4. Existing drain valve | 12. Block heater (326228 or 326229) |
| 5. Pipe tee (A-110) | 13. Block heater mounting bracket (326219), screws (X-6238-3), and nuts (X-6210-9) |
| 6. Pipe nipple (X-220-6) | 14. Hose (X-312-35) and hose clamps (X-426-10) |
| 7. Hose (X-312-51) and hose clamp (X-426-10) | |
| 8. Thermostat | |

Figure 1. Block Heater Installation

Block Heater Kit

Parts List				
Kits: PA-336180, PA-336181			Unique Parts	
Qty.	Description	Common Parts	PA-336180	PA-336181
2	Washer, plain	X-25-40		
1	Bushing, reducer 3/4 x 1	X-202-1		
1	Nipple, pipe 1/4 x 1 1/2	X-220-6		
1	Hose	X-312-35		
1	Hose	X-312-51		
1	Connector, 90° elbow	X-391-34		
4	Clamp, hose	X-426-10		
2	Screw, h.c.	X-465-16		
2	Tie, cable 7 in.	X-468-1		
2	Tie, cable 14 in.	X-468-4		
1	Connector, hose	X-582-22		
2	Nut, whiz	X-6210-2		
2	Nut, spiralock	X-6210-9		
2	Screw, 3/8-16 x 0.875	X-6238-3		
1	Tag, hang	279047		
1	Bracket, block heater mounting	326219		
1	Heater, block		326228	326229