
INSTALLATION INSTRUCTIONS

Original Issue Date: **8/93**

Model: **200 kW**

Market: **Industrial**

Subject: **Engine Block Heater Kits (Tank-Type) PA-279922, PA-279922-SD, PA-279923, PA-279923-SD**

Nominal kW	Voltage	Kit No.
200 kW	90-240	PA-279922 PA-279922-SD
200 kW	380-480	PA-279923 PA-279923-SD

The engine block heater kit heats engine coolant, making starting easier and warmup quicker. The thermostat automatically turns 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 (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.

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 the male threads of all components before installing them.

4. Remove cover plate from turbocharger aftercooler housing as noted on Figure 2, and install flange (274386) with gasket (274393).
5. Apply pipe sealant to male threads and thread reducer bushing (153659) into elbow (SA-472). Apply pipe sealant to male threads of elbow and install in flange (274386). Elbow and reducer bushing must face downward.
6. Install heater mounting bracket (274986) and heater (279814 or 279815) using hardware noted on Figure 2.
7. Install heater control box (279873 or 279874). Use wiring diagrams shown in Figure 3 to determine electrical connections to heater control box and heater.
8. Assemble and connect coolant piping components to heater as shown on Figure 2. Install hose clamps as instructed.
9. Remove existing pipe plug and install thermostat (279921) at location noted on Figure 2. Secure thermostat wire to fan guard as noted.
10. Use additional cable ties to protect and secure wiring from sharp objects, exhaust system, and moving parts.
11. Close drain valves on radiator and/or engine block. Verify new drain valve (X-256-5) is closed.

12. 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. See Figure 1 for cooling system capacities.

NOTE

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

Nominal kW	Standard Radiator U.S. Gal (L)	Remote Radiator U.S. Gal (L)		City-Water Cooled Radiator U.S. Gal (L)
		60 Hz	50 Hz	
200	16.75 (63.3)	16.5 (62.8)	21.5 (81.8)	7.5 (27.8)
NOTE: Radiator capacities shown are subject to change without notice. Check generator spec sheet for current capacities. Remote radiator systems require additional coolant because of the longer hose run.				

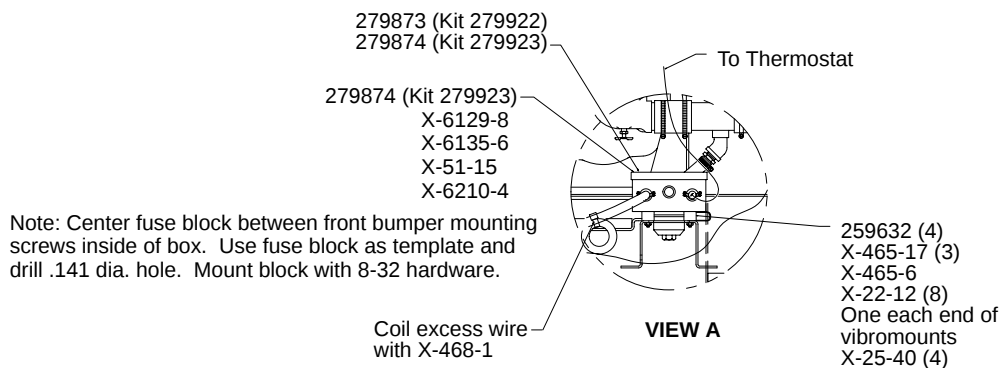
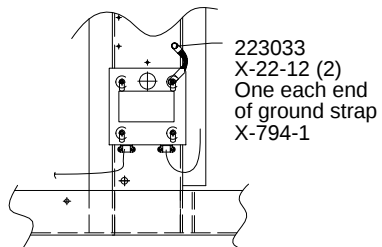
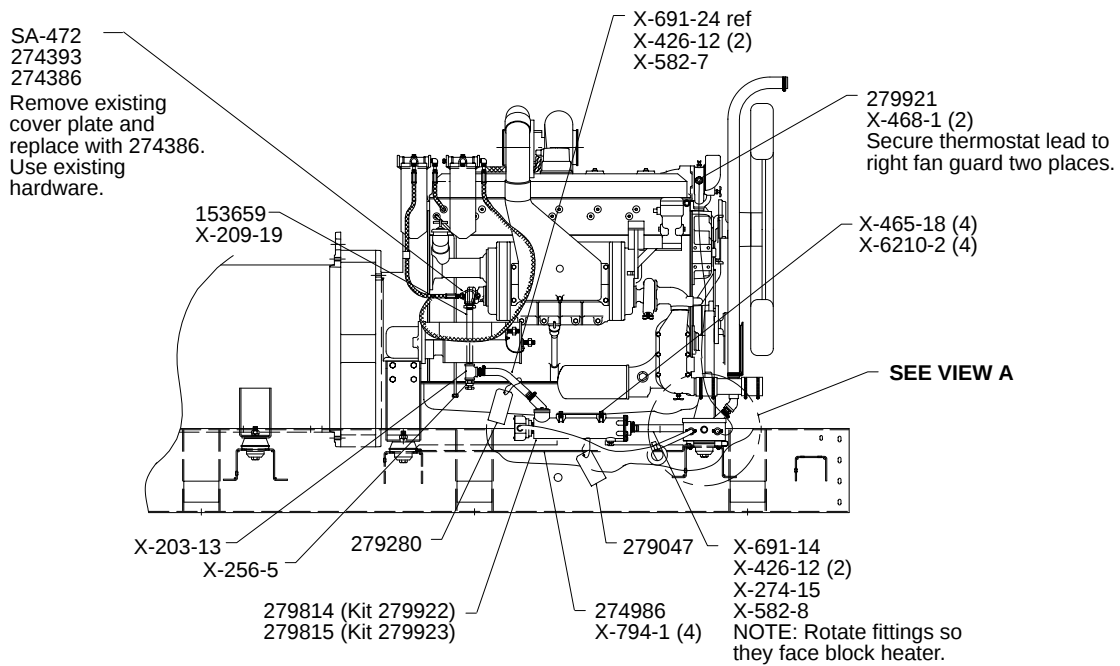
Figure 1. Radiator Coolant Capacities

13. Check that the generator set master switch is in the OFF position.
14. Reconnect the generator set engine starting battery, negative (–) lead last.
15. 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.

16. 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.
17. Tie hang tag (279047) as noted on Figure 2.
18. Connect block heater electrical plug to correct voltage outlet.
19. Verify that the heater cycles correctly.



ER-272000-G

Figure 2. Block Heater Kit Installation

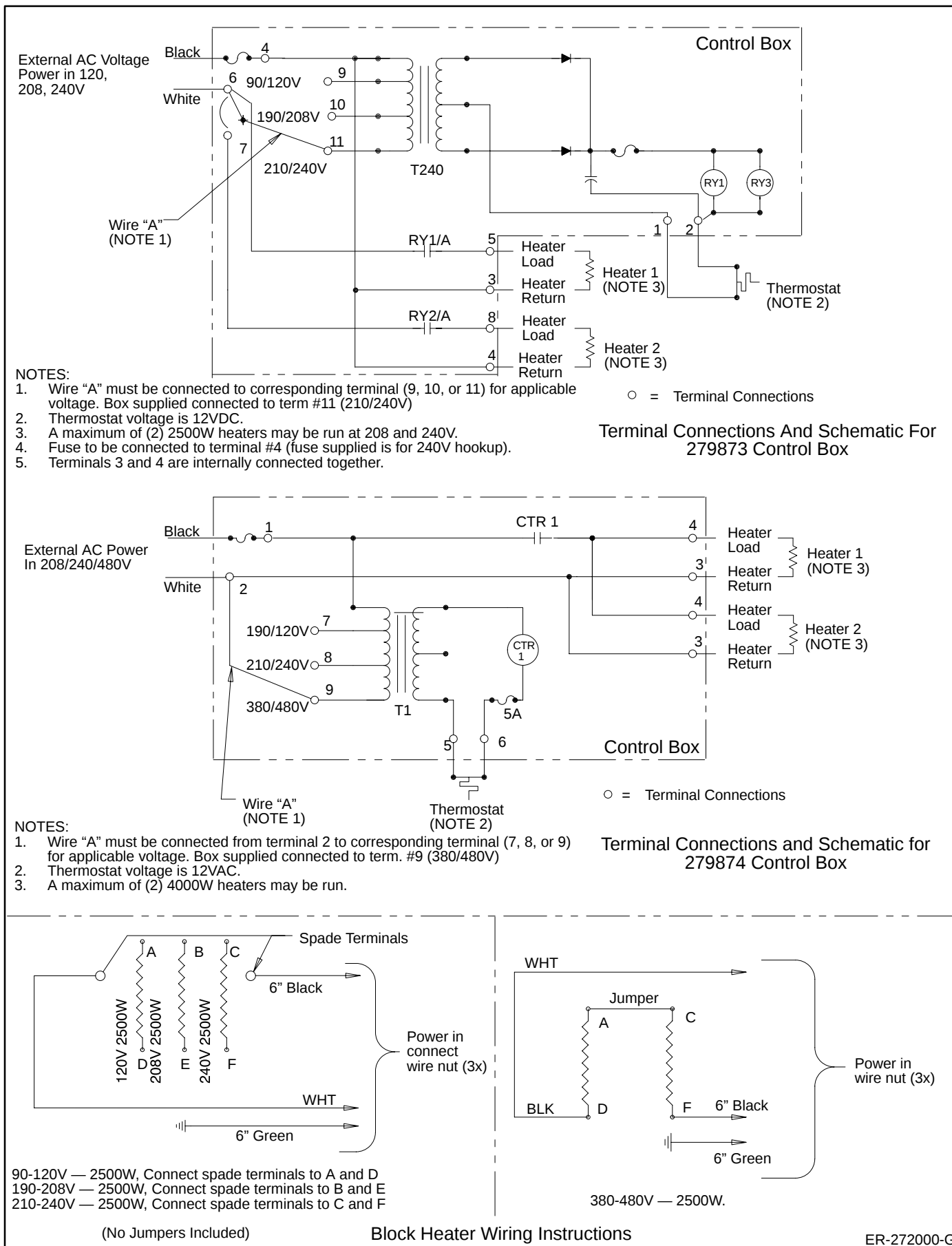


Figure 3. Block Heater Wiring Diagrams

Engine Block Heater Kits

Parts List				
Kits: PA-279922, PA-279922-SD, PA-279923, PA-279923-SD				
Qty.	Description	Common Parts	PA-279922 PA-279922-SD	PA-279923 PA-279923-SD
10	Washer, shakeproof	X-22-12		
4	Washer, plain	X-25-40		
1	Tee, pipe 1/2	X-203-13		
1	Pipe	X-209-19		
1	Valve, drain	X-256-5		
1	Elbow, pipe 45 degree	X-274-15		
4	Clamp, hose 1.25 max.	X-426-12		
3	Screw, H.C. 1/4-20 x 3/8	X-465-17		
1	Screw, H.C. 1/4-20 x 1/2	X-465-6		
4	Screw, hex 1/4-20 x 7/8 gr 5	X-465-18		
3	Tie, cable	X-468-1		
1	Connector, hose	X-582-7		
1	Connector, hose	X-582-8		
1	Hose, 3/4 ID x 12 in. (305 mm)	X-691-14		
1	Hose, 3/4 ID x 9 in. (229 mm)	X-691-24		
5	Screw, drill hex.	X-794-1		
1	Bushing, reducer 3/4 x	153659		
1	Strap, ground 3/8 x 5	223033		
4	Bumper	259632		
1	Flange	274386		
1	Gasket, water outlet	274393		
1	Bracket, mounting	274986		
1	Tag, hang	279047		
1	Heater, block		279814	279815
1	Box, block heater		279873	279874
1	Thermostat, block heater	279921		
1	Elbow	SA-472		