
INSTALLATION INSTRUCTIONS

Original Issue Date: **8/93**

Model: **450-800 kW**

Market: **Industrial**

Subject: **Engine Block Heater Kits (Tank-Type) PA-279928, PA-279928-SD, PA-279929, PA-279929-SD**

Model	Voltage	Kit No.
450-600 kW	190-480	PA-279928 and PA-279928-SD
750/800 kW	190	PA-279929 and PA-279929-SD

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 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 any equipment connected to generator set. 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 set and allow it to cool. Then 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 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 the coolant has been drained, some time is required before complete refill of the engine water jacket takes place.

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. Block heater failure occurs if heater element is not immersed in water.

Installation

1. Move generator master switch to OFF position. Disconnect battery of generator set, negative (–) lead first.
2. When engine and radiator have cooled sufficiently, drain the coolant into a suitable container. Dispose of all waste materials, (engine oil, fuel, coolant, etc.) in an environmentally safe and proper manner. Contact your local authority for correct procedures and location.

NOTE

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

NOTE

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

3. Install heater mounting bracket (279481 or 274977) and heater (279816), using hardware as noted on Figure 1.
4. Install heater box (279874). Use wiring diagrams in Figure 2 to determine electrical connections to heater box and heater.
5. Remove pipe plug from upper left side of engine block and install connector (X-582-8). See Figure 1.
6. Assemble and connect coolant piping components to heater as shown on Figure 1. Install hose clamps and cable ties as instructed.
7. Remove pipe plug from radiator lower pipe and install elbow (X-274-2) and connector (X-582-8) as noted on Figure 1.
8. Remove existing pipe plug and install reducer bushing (153659) and thermostat (279813). See Figure 1.
9. Use cable ties as necessary to protect and secure wiring from sharp objects, exhaust system and moving parts.
10. Close drain valves on radiator and/or engine block.

11. Fill cooling system to proper level with fresh coolant consisting of a mixture of 50% ethylene glycol and 50% clean, softened water. This mixture will provide the necessary freeze protection as well as inhibit corrosion. See Table 1 for cooling system capacities.

NOTE

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

Model	Standard Radiator	Remote Radiator		City-Water Cooled	
		60 Hz	50 Hz	60 Hz	50 Hz
450 kW	34.75 (132)	31.75 (120)	31.75 (170)	32.55 (123)	32.55 (123)
500 kW	33.75 (128)	33.75 (128)	41.25 (156)	—	—
600 kW	33.75 (128)	33.75 (128)	41.25 (156)	32.85 (142)	32.85 (142)
750 kW	43.50 (165)	43.50 (165)	43.50 (166)	32.85 (142)	32.85 (142)
800 kW	43.50 (165)	43.50 (165)	57.00 (216)	32.85 (142)	32.85 (142)

NOTE: Capacities shown are subject to change without notice.

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

12. With the generator master switch is in the OFF position reconnect the generator set battery, negative (–) lead last.
13. Test run generator set for a few minutes and check for coolant leaks. After engine and radiator have cooled correct any leakage.
14. After allowing engine and radiator to cool, recheck coolant level. After a cooling system has been drained, it normally takes some time before all air cavities in the system refill. Add coolant as necessary.
15. Tie hang tags (279047 and 279280) as noted on Figure 1.
16. Connect block heater electrical plug to proper voltage outlet.

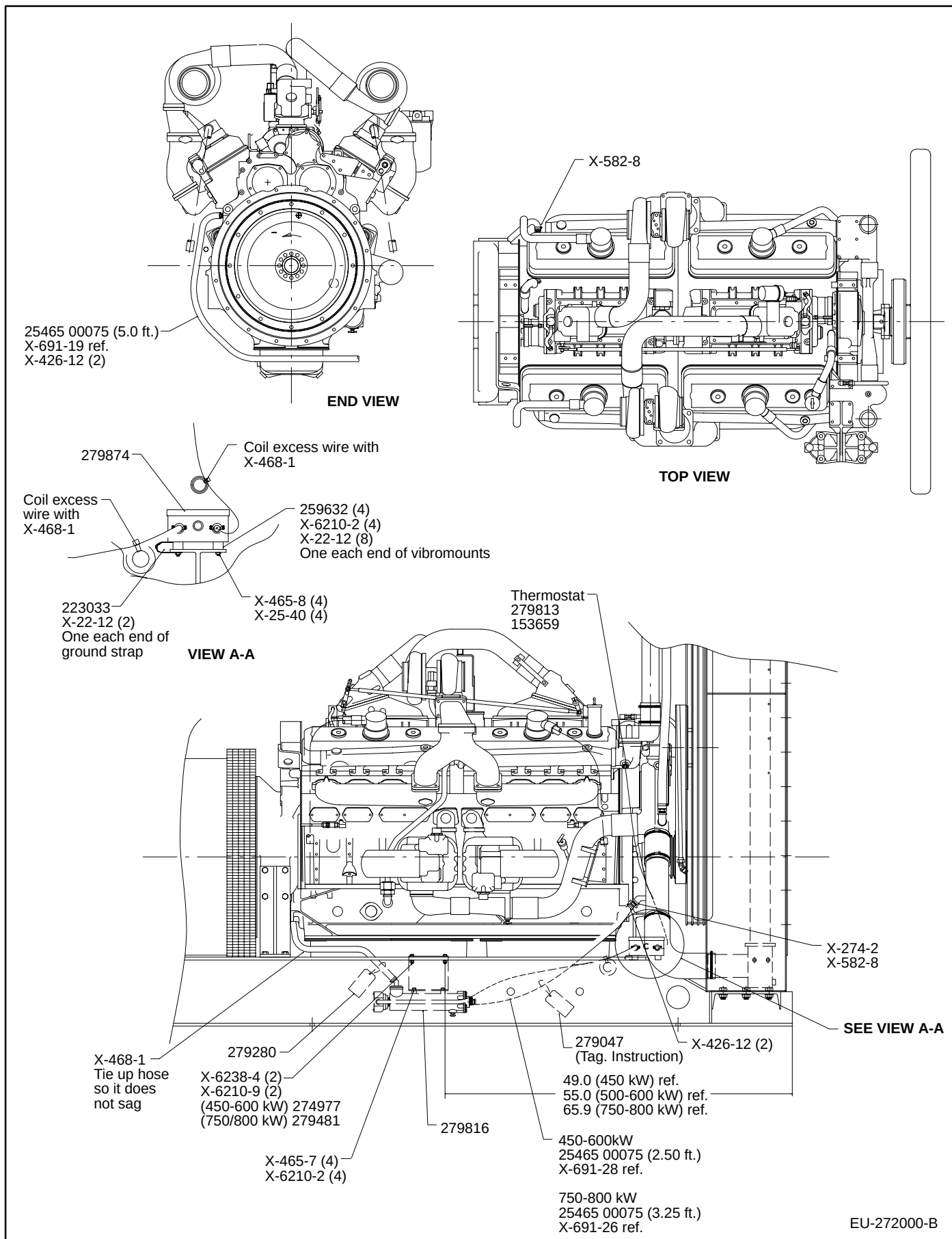
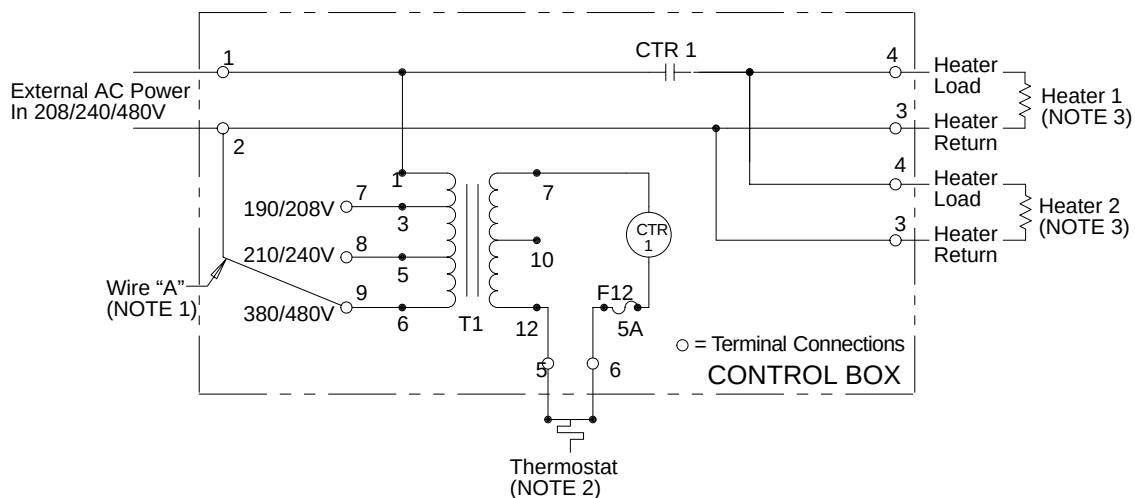


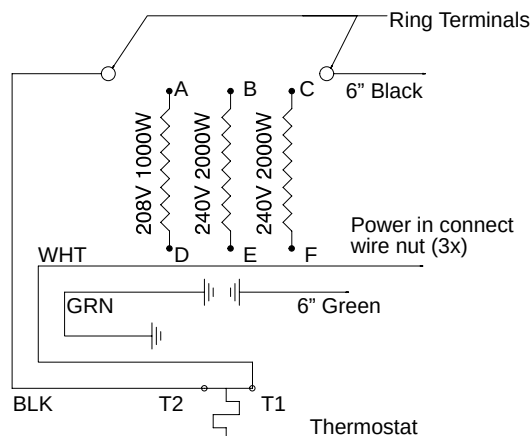
Figure 1. Block Heater Kit Installation.



NOTES:

1. Wire "A" must be connected from terminal 2 to corresponding terminal (7, 8, or 9) for applicable voltage. Box supplied connected to term. #9 (380/480V)
2. Thermostat voltage is 24VAC.
3. A maximum of (2) 4000W heaters may be run.

**TERMINAL CONNECTIONS FOR
BLOCK HEATER CONTROL BOX**



- 190-208V — 4000W, Jumper A, B and C,
Jumper D, E and F
Connect ring terminals to C and F
- 210-240V — 4000W, Jumper B and C
Jumper E and F
Connect ring terminals to C and F
- 380-480V — 4000W, Jumper B and C
Connect ring terminals to E and F
(4 JUMPERS PROVIDED)

BLOCK HEATER WIRING INSTRUCTIONS

EU-272000-B

Figure 2. Block Heater Wiring Diagrams.

Parts List

Parts List				
			Kit Numbers	
Qty.	Description	Common Parts	PA-279928 PA-279928-SD	PA-279929 PA-279929-SD
10	Washer, lock shakeproof	X-22-12		
1	Bushing, reducer	153659		
4	Washer, plain 1/4	X-25-40		
4	Clamp, hose 1/2 x 1 1/4	X-426-12		
3	Screw, H.C. 1/4-20 x 1	X-465-7		
4	Screw, hex 1/4-20 x 1 1/4	X-465-8		
2	Connector, hose	X-582-8		
1	Elbow, pipe	X-274-2		
1	Bracket, mounting		274977	279481
2	Screw, 3/8-16 x 1 1/4	X-6238-4		
2	Nut, whiz 3/8-16	X-6210-9		
1	Heater, block	279816		
1	Tag, hang	279047		
1	Tag, hang	279280		
3	Tie, cable	X-468-1		
1	Hose, 3/4 ID x 60"	X-691-19		
1	Hose, 3/4 ID x 30"		X-691-28	
1	Hose, 3/4 ID x 39"			X-691-26
1	Box, heater connection	279874		
4	Nut, whiz 1/4-20	X-6210-2		
4	Bumper	259632		
1	Strap, ground	223033		
1	Thermostat	279813		