

INSTALLATION INSTRUCTIONS

**Block Heater Kits (Tank Type)
Kits PA-258472 (115 Volt, 2250 Watt)
& PA-258473 (230 Volt, 2500 Watt)
For 200-350kW (Cummins Powered)
Standby Generator Sets**

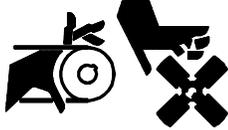
The block heater kit heats the engine coolant, which makes starting easier and warm-up quicker while reducing energy costs. The thermostat will automatically turn off the heater when the coolant temperature reaches 120° F (49° C).

NOTE

The block heater will fail if the heating element is not immersed in coolant. Always disconnect power to the block heater before draining coolant. Fill the engine block with coolant prior to reconnecting power to block heater. 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 heater element may fail.

⚠ WARNING	
	
Hazardous voltage.	Moving rotor.
Can cause severe injury or death.	
Do not operate generator set without all guards and electrical enclosures in place.	

Exposed moving parts can cause severe injury or death. Keep hands, feet, hair, and clothing away from belts and pulleys when unit is running. Replace guards, covers, and screens before operating generator set.

⚠ 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 generator master switch in OFF position. Disconnect battery cables, negative lead first. Disconnect battery charger leads (if equipped).
2. With engine sufficiently cooled, drain the coolant from the radiator and engine block into a suitable container. Dispose of used engine coolant in an environmentally safe manner. **DO NOT POUR USED COOLANT ON THE GROUND, DOWN SEWERS, OR INTO STREAMS OR OTHER BODIES OF WATER.**

NOTE

Engine coolant petcock valves are located on bottom of radiator and engine block.

3. If mounting holes are not present in the skid rail, use the block heater bracket (258820) as a template to drill two 0.437-inch (11 mm) diameter holes. Locate the center of the front hole 39.50 inches (1 m) from the front of the generator skid (see Figure 1, View A-A).

NOTE

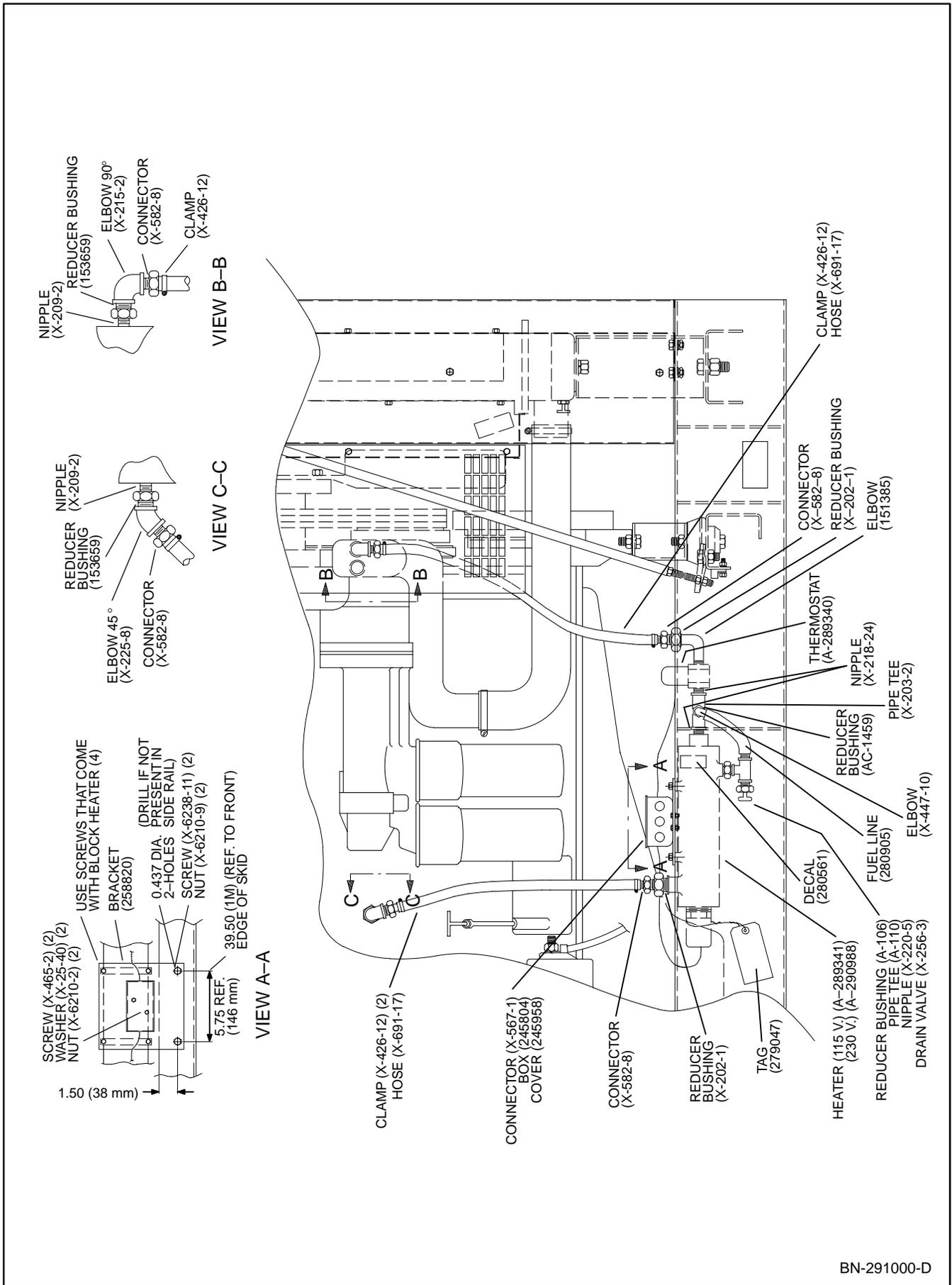
Observe all appropriate safety procedures for use of power tools when drilling holes. Remove all burrs and metal chips from the work area before continuing installation procedure.

4. Install block heater bracket (258820) on skid rail with two 3/8-16 x 1.00-in. hex screws (X-6238-11) and whiz nuts (X-6210-9) See Figure 1.
5. Install conduit junction box (245804) on mounting bracket with two 1/4-20 x 0.625-in. hex screws (X-465-2), plain washers (X-25-40) and whiz nuts (X-6210-2).
6. Assemble drain valve (X-256-3) to one end of pipe tee (A-110) and install reducer bushing (A-106) in other end. Install pipe nipple (X-220-5) to middle position of pipe tee. Remove drain plug from block heater (A-289341—115 volt, A-290988—230 volt) and install pipe tee assembly in heater. Tighten all connections (drain valve should be facing toward outlet when tight).

NOTE

Apply thread sealant to all threaded connections to prevent leakage.

7. With surface clean and dry apply water drain decal (280561) to heater above drain valve.
8. Assemble 1-in. NPT x 1.50-in. pipe nipple (X-218-24) to each end of pipe tee (X-203-2). Install reducer bushing (AC-1459) in middle position of pipe tee. Install 90° oil connection elbow (X-447-10) in reducer bushing. Install assembly in intake of block heater. Tighten all connections.
9. Connect fuel line (280905) to reducer bushing in drain valve pipe tee and 90° elbow.
10. Install block heater assembly on mounting bracket (use screws provided with block heater).
11. Install thermostat (A-289340) on pipe nipple (thermostat leads should be facing junction box).
12. Install hose connector (X-582-8) and reducer bushing (X-202-1) on 90° elbow (151385). Install elbow assembly in thermostat outlet. Tighten all connections (hose connector should be facing up when tight).
13. Remove pipe plug from coolant pipe (see Figure 1, View B-B). Install pipe nipple (X-209-2), reducer bushing (153659), 90° elbow (X-215-2) and hose connector (X-582-8) as shown. Tighten all connections.
14. Slide one hose clamp (X-426-12) over each end of hose (X-691-17) and slide hose over hose connectors. Locate the hose clamps 1/4 inch (6 mm) from hose ends and tighten clamps.
15. Install hose connector (X-582-8) in reducer bushing (X-202-1) and install in block heater outlet.
16. Remove pipe plug from engine block (see Figure 1, View C-C). Install pipe nipple (X-209-2), reducer bushing (153659), 45° elbow (X-225-8) and hose connector (X-582-8) as shown. Tighten all connections.
17. Slide one hose clamp (X-426-12) over each end of hose (X-691-17) and then slide over hose connectors. Locate clamps 1/4 inch (6 mm) from hose ends and tighten clamps.
18. Install instruction tag (279047) on block heater outlet.



BN-291000-D

Figure 1. Block Heater Kit Installation

ELECTRICAL CONNECTIONS

1. Open power source circuit breaker.
2. Remove one knock-out from each end of the conduit junction box and install conduit connectors (X-567-1).
3. Route leads from block heater and thermostat through connectors. Strip approximately 3/8-inch (9 mm) of insulation from one wire from thermostat and one wire from block heater. Connect these wires with wire nut (202054). Tighten connector clamps.
4. Install conduit junction box cover (245958).

REFILL COOLING SYSTEM

1. Verify that all drain valves on engine and radiator are closed.
2. 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. Ensure that all air is bled from the cooling system before energizing the block heater.

NOTE

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

3. Check that generator master switch is OFF. Reconnect battery cables, negative lead last. Reconnect battery charger (if equipped).
4. Test run generator for a few minutes to check for leaks. Stop generator set and allow to cool. Check coolant level to insure that all air is purged from the system. Add coolant as necessary to fill 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 air cavities takes place. Failure to purge all air from the coolant system may cause damage to the block heater element.

Parts List

Kits: PA-258472 & PA-258473		
Qty.	Description	Part Number
1	Bushing, reducer, 1/4 to 1/8 in. NPT	A-106
1	Tee, pipe	A-110
1	Thermostat	A-289340
1	Heater, block, 115 volt (Kit PA-258472)	A-289341
1	Heater, block, 230 volt (Kit PA-258473)	A-290988
1	Bushing, reducer, 1 to 1/8 in. NPT	AC-1459
2	Bushing, reducer, 1 to 3/4 in. NPT	X-202-1
1	Tee, pipe, black iron, 1 x 1 x 1 in.	X-203-2
2	Nipple, pipe, black iron, 1/2 in. NPT x 1.19 in.	X-209-2
1	Elbow, pipe, black iron, 3/4 in. NPT	X-215-2
2	Nipple, pipe, black iron, 1 in. NPT x 1.50 in.	X-218-24
1	Nipple, pipe, black iron, 1/4 in. NPT x 0.88 in.	X-220-5
1	Elbow, pipe, 45°, 3/4 in. NPT	X-225-8
2	Washer, plain, 0.281 x 0.625 x 0.065 in.	X-25-40
1	Valve, drain, 1/4 in. NPT	X-256-3
4	Clamp, hose, 0.69 to 1.25 in. x 0.56 in.	X-426-12
1	Elbow, oil line connection, 90°, 7/16-20 x 1/8 in.	X-447-10
2	Screw, hex, GR5, 1/4-20 x 0.625 in.	X-465-2
2	Connector, non-metallic conduit	X-567-1
4	Connector, hose	X-582-8
2	Nut, whiz, 1/4-20	X-6210-2
2	Nut, whiz, 3/8-16	X-6210-9
2	Screw, hex, GR5, 3/8-16 x 1.00 in.	X-6238-11
2	Hose, 0.75 in. ID x 25.0 in.	X-691-17
1	Elbow	151385
2	Bushing, reducer	153659
1	Nut, wire	202054
1	Box, conduit junction	245804
1	Cover, conduit box	245958
1	Bracket, block heater	258820
1	Tag, instruction	279047
1	Decal, water drain	280561
1	Line, fuel	280905