

INSTALLATION INSTRUCTIONS

Original Issue Date: 6/16

Model: 24RCL

Market: Residential/Light Commercial

Subject: Block Heater Retrofit Kits GM101015-KP1 and GM101015-KP2

Introduction

The engine block heater kit heats engine coolant, making starting easier and warmup quicker. The thermostat, built into the base of the block heater, automatically turns on at 27°C (80°F) and off at 38°C (100°F).

These retrofit kits are designed for model 24RCL generator sets that are not equipped with shutoff valves at the coolant ports.

Kit No.	Volts	Amps	Watts
GM101015-KP1	120	4.2	500
GM101015-KP2	240	2.1	500

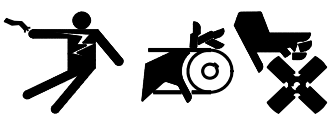
Figure 1 Kit Selection

Read the entire installation procedure before beginning the installation. Perform the steps in the order shown.

Safety Precautions

Observe the following safety precautions while installing the kit.

⚠ WARNING




Accidental starting.
Can cause severe injury or death.

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or equipment connected to the set, disable the generator set as follows: (1) Press the generator set off/reset button to shut down the generator set. (2) Disconnect the power to the battery charger, if equipped. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent the starting of the generator set by the remote start/stop switch.

⚠ DANGER




Hazardous voltage.
Will cause severe injury or death.

Disconnect all power sources before opening the enclosure.

Engine block heater. Hazardous voltage can cause severe injury or death. The engine block heater can cause electrical shock. Remove the engine block heater plug from the electrical outlet before working on the block heater electrical connections.

⚠ WARNING



Hot coolant and steam.
Can cause severe injury or death.

Before removing the pressure cap, stop the generator set and allow it to cool. Then loosen the pressure cap to relieve pressure.

Note: Allow the engine to cool. Release pressure from the cooling system before removing the pressure cap. To release pressure, cover the pressure cap with a thick cloth and then slowly turn the cap counterclockwise to the first stop. Remove the cap after pressure has been completely released and the engine has cooled. Check the coolant level at the tank if the generator set has a coolant recovery tank.

Note: Air pockets often form in the engine water jacket when the coolant system is refilled. Check the coolant level in the coolant recovery tank after each generator set operation and add coolant as necessary until the level stabilizes. Check the coolant at the interval specified in the service schedule.

Note: Block heater damage. The block heater will fail if the energized heater element is not immersed in coolant. Fill the cooling system before turning on the block heater. Run the engine until it is warm, and refill the system to purge the air from the system before energizing the block heater.

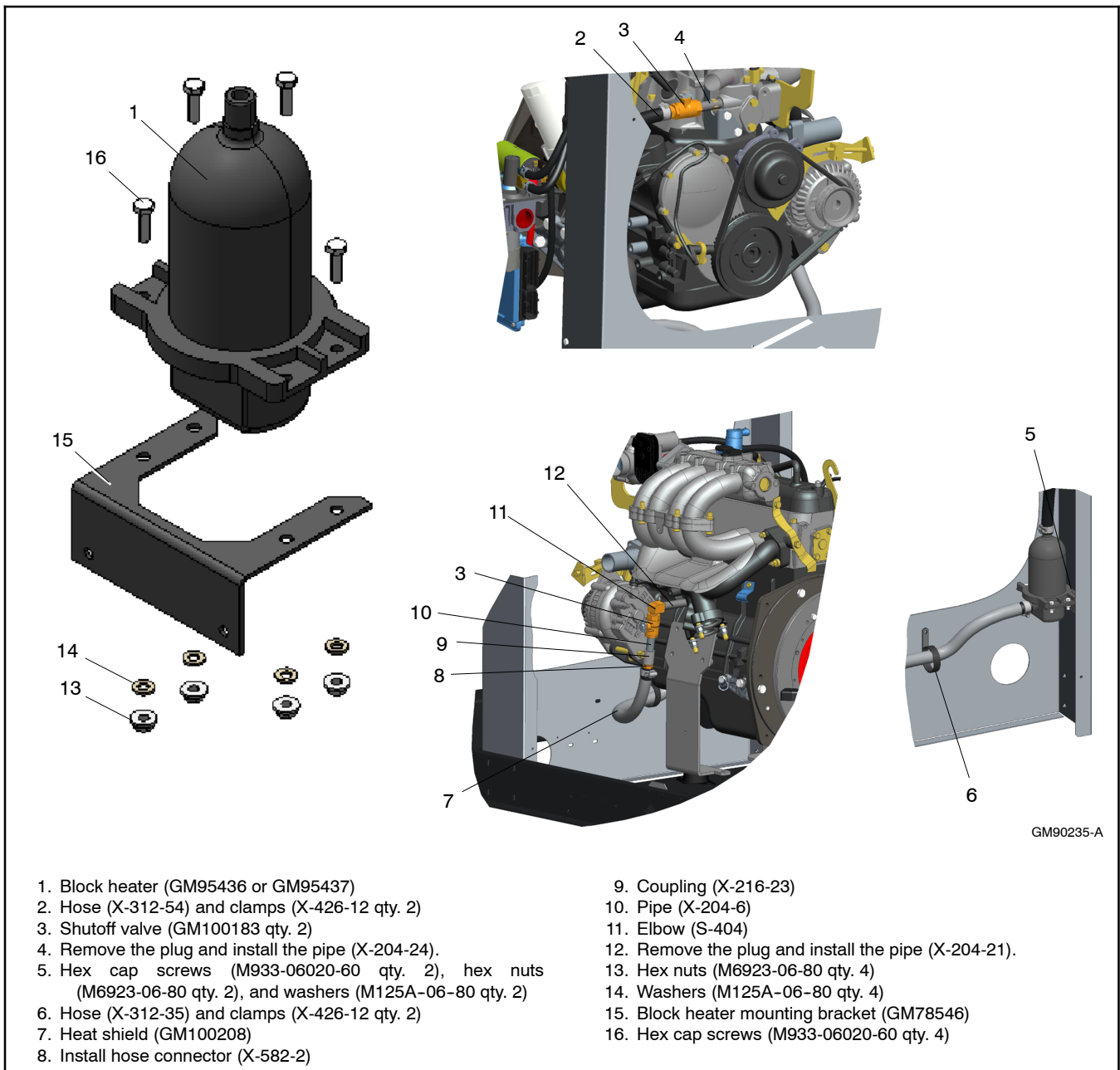


Figure 2 Block Heater Kit (GM101015-KP1/-KP2)

Installation Procedure

1.1 Remove the generator set from service.

1. Press the OFF button on the generator set controller.
2. Disconnect the utility power to the generator set.
3. Disconnect the generator set engine starting battery, negative (-) lead first.

1.2 Install the block heater.

1. When the engine and radiator are cool, drain the coolant into a container.
2. Open the door of generator set enclosure and take off the door seal.
3. Remove the roof screws. See Figure 3.

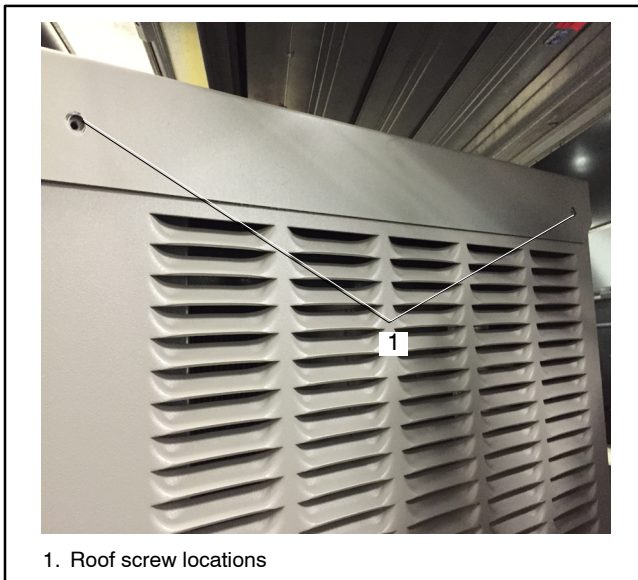


Figure 3 Location of roof screws

4. Remove the two inside right panel screws. See Figure 4 and Figure 5.



Figure 4 Location of right panel inner screws

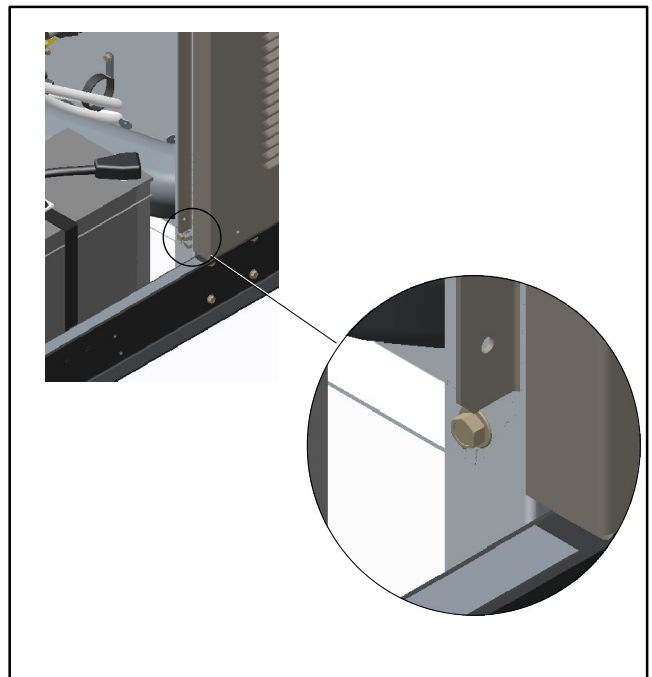


Figure 5 Location of right panel inner screws

- Remove one right panel screw under the front cross member. See Figure 6.

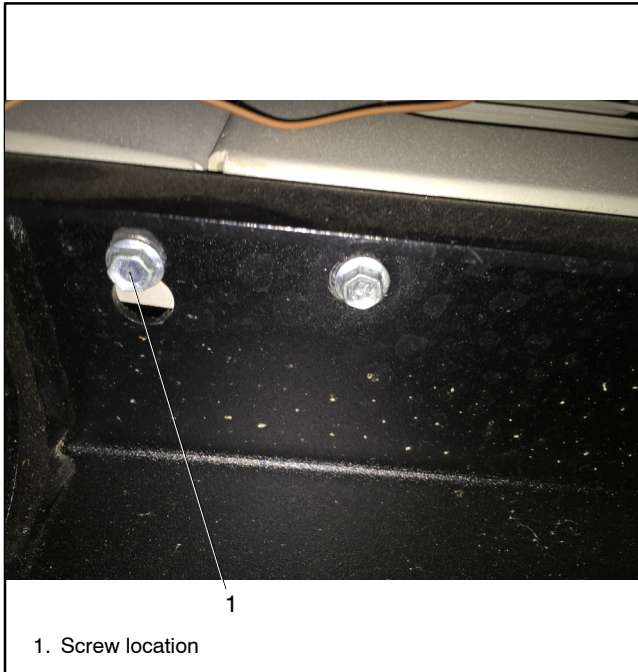


Figure 6 Location of screws

- Lift the roof panel enough to remove the right panel.

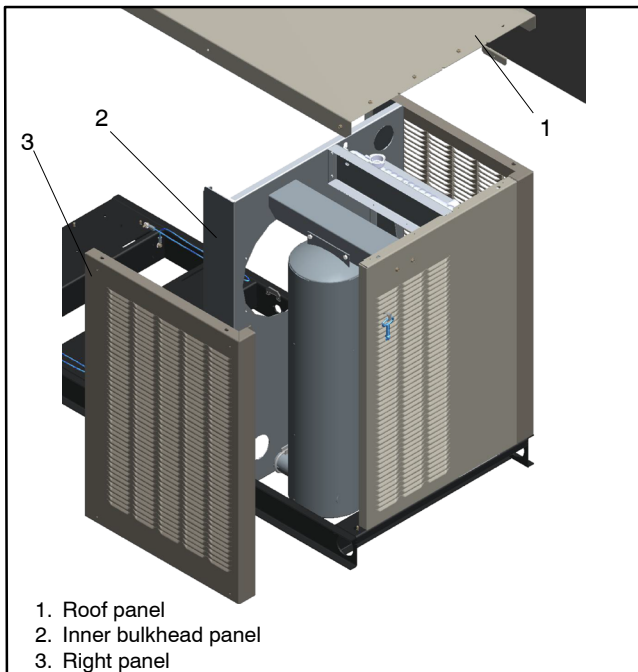


Figure 7 Remove Right Panel

- Drill 2 holes of 6 mm (0.25 in.) diameter, 127–152 mm (5–6 in.) above skid rail and 102 mm (4 in.) horizontally apart on inner bulkhead panel to install the block heater bracket. See Figure 8.

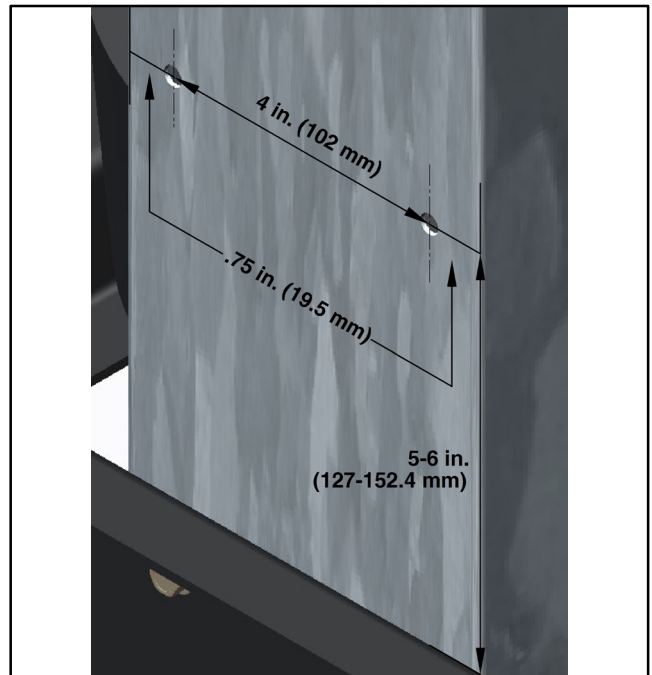


Figure 8 Location of block heater bracket holes

- Install block heater on mounting bracket (GM78546) using screws (M933-06020-60 qty. 4), washers (M125A-60-80 qty. 4), and nuts (M6923-06-80 qty. 4). See Figure 2.
- Secure the block heater mounting bracket (with block heater attached) on inner bulkhead panel using screws (M933-06020-60 qty. 2), washers (M125A-06-80 qty. 2), and nuts (M6923-06-80 qty. 2). See Figure 9.



Figure 9 Location of Block Heater (Side view)

Note: Remaining coolant in the block will come out from the plug location, so be ready with a container and rags to collect the excess coolant.

10. Remove and discard the two plugs on engine using M8 allen wrench. See Figure 10 and Figure 11.

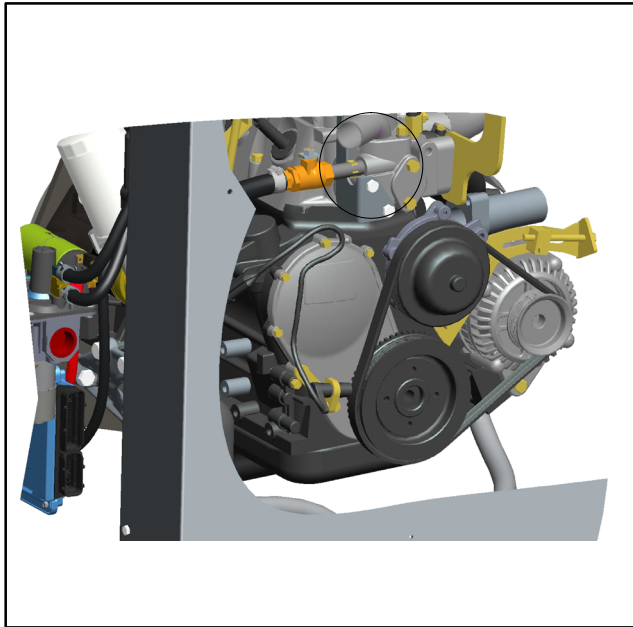


Figure 10 Location of upper plug

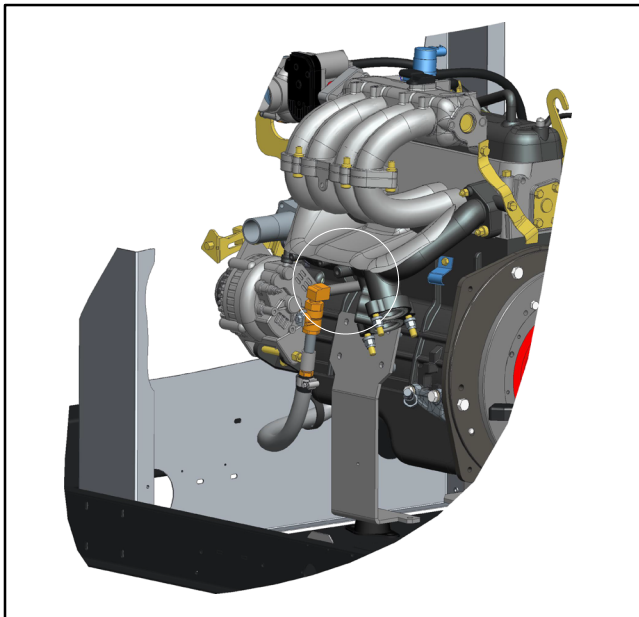


Figure 11 Location of lower plug

11. Apply pipe sealant to the threads of pipe (X-204-21) and install street elbow (S-404) on the pipe. Thread the two parts into the lower port and tighten them in such manner that the elbow outlet is at a 45° angle pointed towards the front of the engine. See Figure 12.
12. Install valve GM100183 onto elbow S-404.

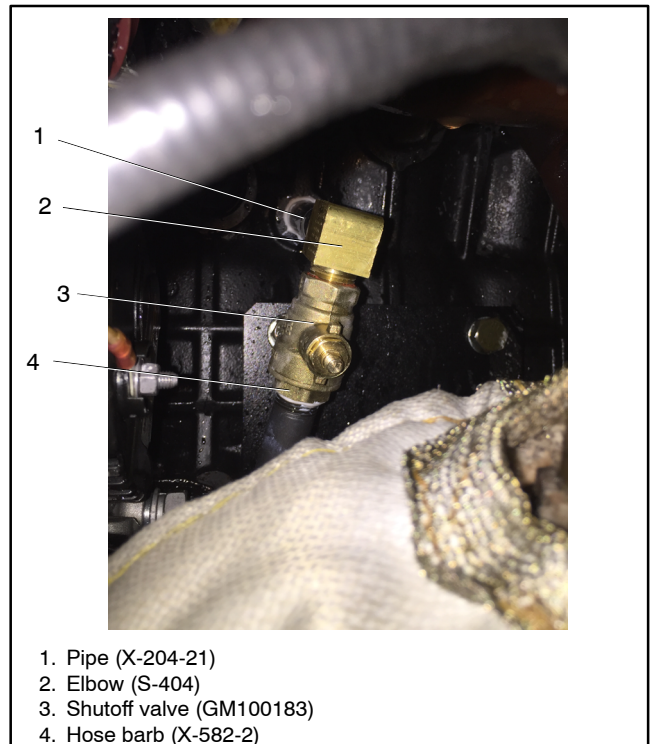


Figure 12 Elbow and Valve Installation

13. Apply pipe sealant to the threads of pipe (X-204-6) and the hose barb (X-582-2) and assemble pipe, hose barb and coupling (X-216-23).
14. Thread the assembly onto the open end of the shutoff valve (GM100183) on the engine.
15. Connect the 349 mm (13.75 in.) hose (X-312-54) to the block heater outlet. Secure the hose to the outlet using a hose clamp (X-426-12).
16. Connect the other end of the hose to the hose connector on the top of the engine. Secure using a hose clamp (X-426-12).
17. Apply pipe sealant to pipe (X-204-24) and the hose barb (X-582-2). Assemble pipe, hose barb and shutoff valve (GM100183). Install the assembly into top port of engine. See Figure 13.

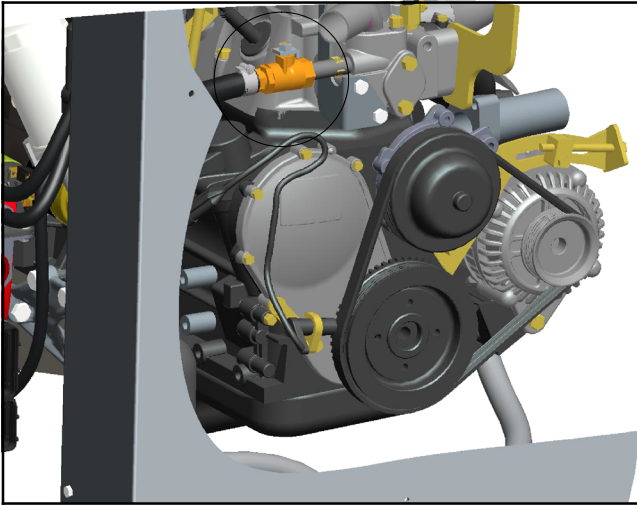


Figure 13 Location of Valve

18. Install the heat shield (GM100208) over the 28 in. (711 mm) lower hose (X-312-35).
19. Connect the lower hose to the block heater inlet and secure with clamp (X-426-12).
20. Connect the other end of the lower hose to the barb fitting installed on the lower side of the engine and secure using hose clamp (X-426-12). Route the hose in front of the engine.
21. Secure the hangtag (279047) to the power cord keeping the tag away from the exhaust pipe.

Note: Do not plug the heater into the power outlet until the radiator is filled with coolant.

22. Open the two block heater shutoff valves.
23. Fill the radiator with coolant.

Note: Use a coolant solution of 50% ethylene glycol to provide freezing protection to -37°C (-34°F) and overheating protection to 129°C (265°F). A coolant solution with less than 50% ethylene glycol can cause engine or component damage. Do not use alcohol or methanol antifreeze or mix them with the specified coolant.

Note: Do not add coolant to a hot engine. Wait until the engine has cooled. Adding coolant to a hot engine can cause the cylinder block or cylinder head to crack.

1.3 Restore the generator set to service.

1. Reconnect the generator set engine starting battery, negative (-) lead last.
2. Reconnect the utility power to the generator set.
3. Press the RUN button on the generator set controller. The generator set will start.
4. Test run the generator set for a few minutes to check for coolant leaks and to purge air from the system.

Note: Purge trapped air to prevent block heater element failure. See the below instructions to purge the air from the system.

- a. Operate the engine with the radiator's pressure cap removed until the thermostat opens and the radiator upper hose becomes hot.
 - b. Stop the engine and allow it to cool.
 - c. Add coolant to the radiator to just below the overflow tube on the filler neck.
 - d. Replace the radiator's pressure cap.
5. Stop the generator set. After allowing the engine to cool, correct any leakage.
 6. Recheck the coolant level. Add coolant as necessary.
 7. Connect the block heater electrical plug to the power outlet.

Parts List

24RCL Block Heater Retrofit Kits

Kits: GM101015-KP1 and GM101015-KP2				
Qty.	Description	Common Parts	Unique Parts	
			GM101015-KP1	GM101015-KP2
1	Block heater		GM95436	GM95437
1	Tag, hang	279047		
2	Valve, shutoff (3/8-18NPT)	GM100183		
1	Shield, heat	GM100208		
1	Bracket, block heater mtg.	GM78546		
6	Washer, plain (12 mm OD x 6.4 mm ID)	M125A-06-80		
6	Nut, hex (6 mm)	M6923-06-80		
6	Screw, hex cap (M6 x 20 mm)	M933-06020-60		
1	Elbow, street (90° x 3/8 in. NPTF)	S-404		
1	Pipe, nipple (3/8 in. NPT x 2 in.)	X-204-6		
1	Pipe, nipple (3/8 in. NPT x 4.5 in.)	X-204-21		
1	Pipe, nipple (3/8 in. NPT x 2.5 in.)	X-204-24		
1	Coupling, pipe (3/8 in. NPSC)	X-216-23		
1	Hose (0.63 in. ID x 13.75 in.)	X-312-54		
1	Hose (0.63 in. ID x 28 in.)	X-312-35		
4	Clamp, hose (0.69/1.25 in.)	X-426-12		
2	Connector, hose	X-582-2		

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