

## INSTALLATION INSTRUCTIONS

Original Issue Date: **2/96**  
 Model: **1200 kW**  
 Market: **Industrial**  
 Subject: **Radiator Kit 328282**

Use these instructions to finalize assembly of the radiator kit to the generator set. The generator set is shipped partially disassembled. The partial disassembly may vary from the instructions given. The illustrations and parts list include all radiator kit components. The installation procedure provides instruction only for radiator components requiring final assembly.

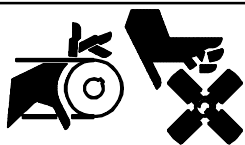


**Accidental starting.**  
**Can cause severe injury or death.**

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



**Rotating parts.**  
**Can cause severe injury or death.**

Do not operate generator set without all guards, screens, and covers 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.

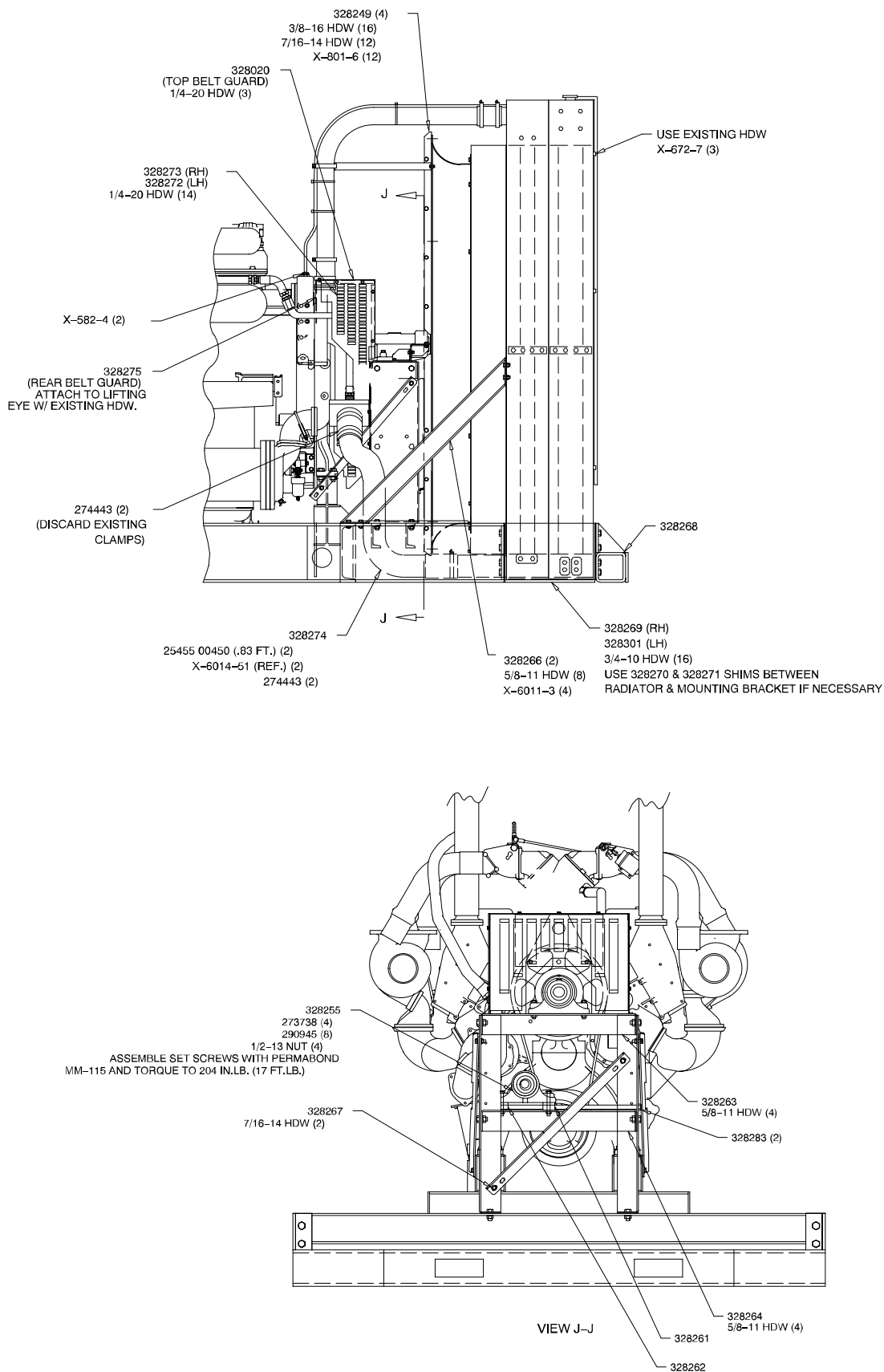
## Installation

1. Move the generator set master switch to the OFF position.
2. Disconnect the generator set engine starting battery(ies), negative (–) lead first.
3. Attach pusher fan (328247) to fan shaft. Do not final tighten. See Figure 2.
4. Secure radiator braces (328266) to the generator set skid using 5/8-11 bolts, nuts, and beveled washers (X-6011-3). Do not final tighten hardware. See Figure 1.

### NOTE

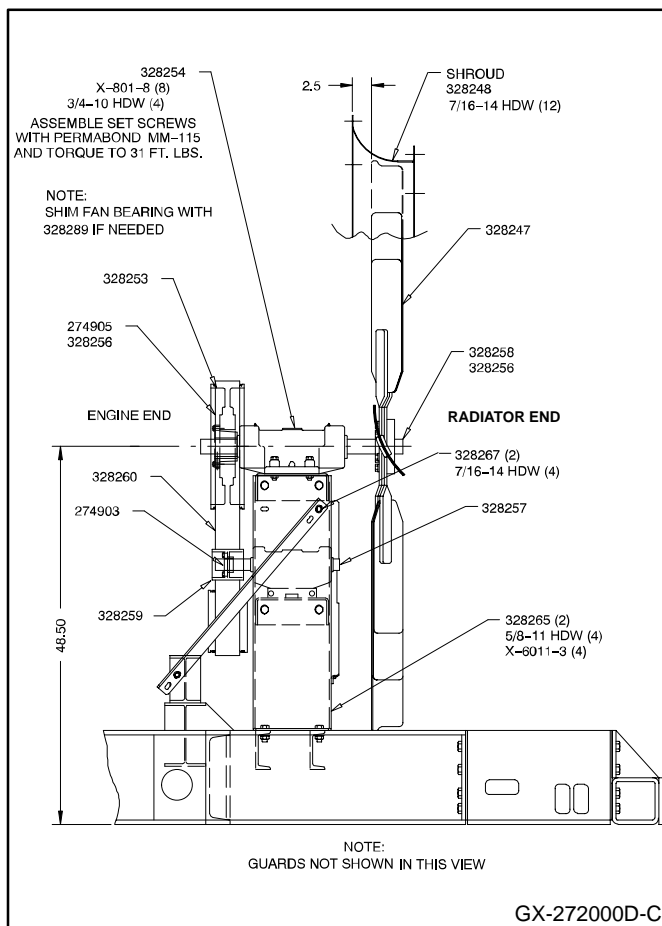
Securely support radiator while performing steps 5 through 11. Never leave radiator standing upright unless it is securely braced or stabilized.

5. Secure radiator guard (328268) to the front of the radiator brackets using 3/4-10 hardware. See Figure 1.
6. Secure the left and right radiator brackets (328301 and 328269) with radiator assembly (A-328282) to the generator set skid using 3/4-10 hardware. See Figure 1. Radiator bracket side access plates may have to be removed.
7. Connect radiator supports (328266) to radiator using four 5/18-11 bolts, 5/8-in. split lock washers, and 5/8-11 nuts. See Figure 3. Do not final tighten hardware.
8. Use shims (328270 and 328271) between radiator and mounting brackets as necessary to vertically align radiator assembly.
9. Set fan engagement in shroud. See Figure 2.
10. Check fan clearance in shroud. Shim fan bearing as needed.
11. Final tighten radiator brace hardware when radiator is vertically aligned.



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**Figure 1. Radiator Kit Installation  
(Right View)**



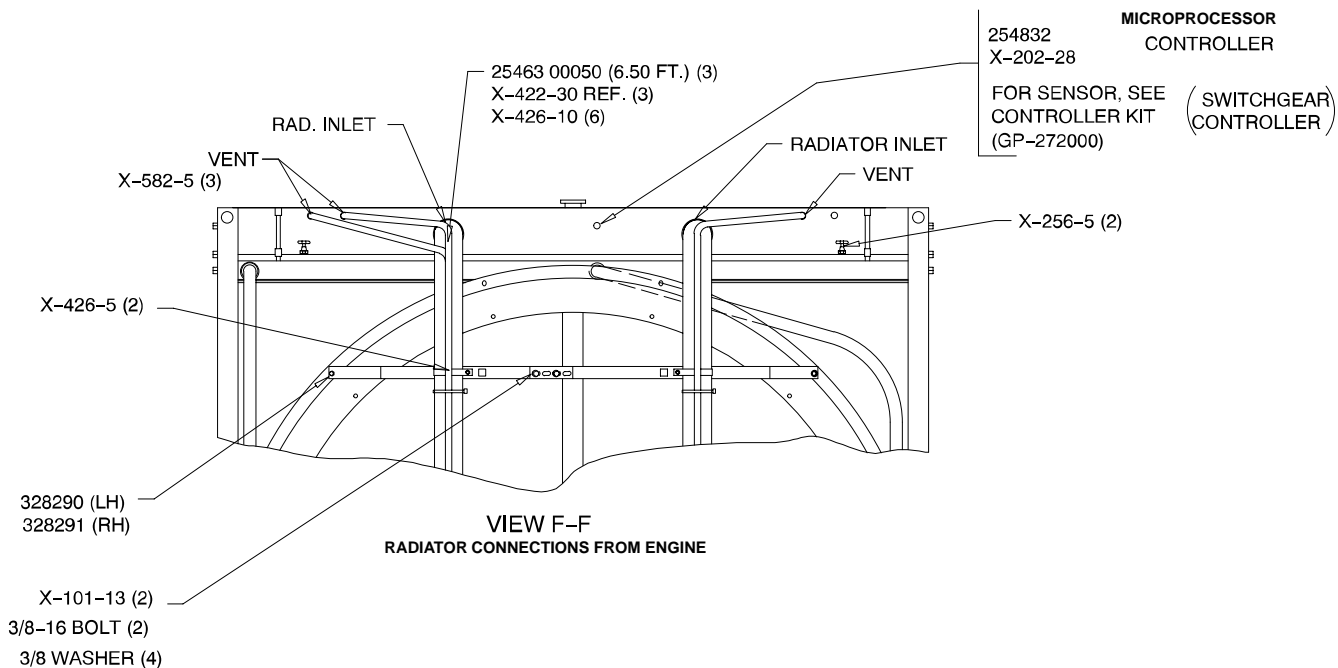
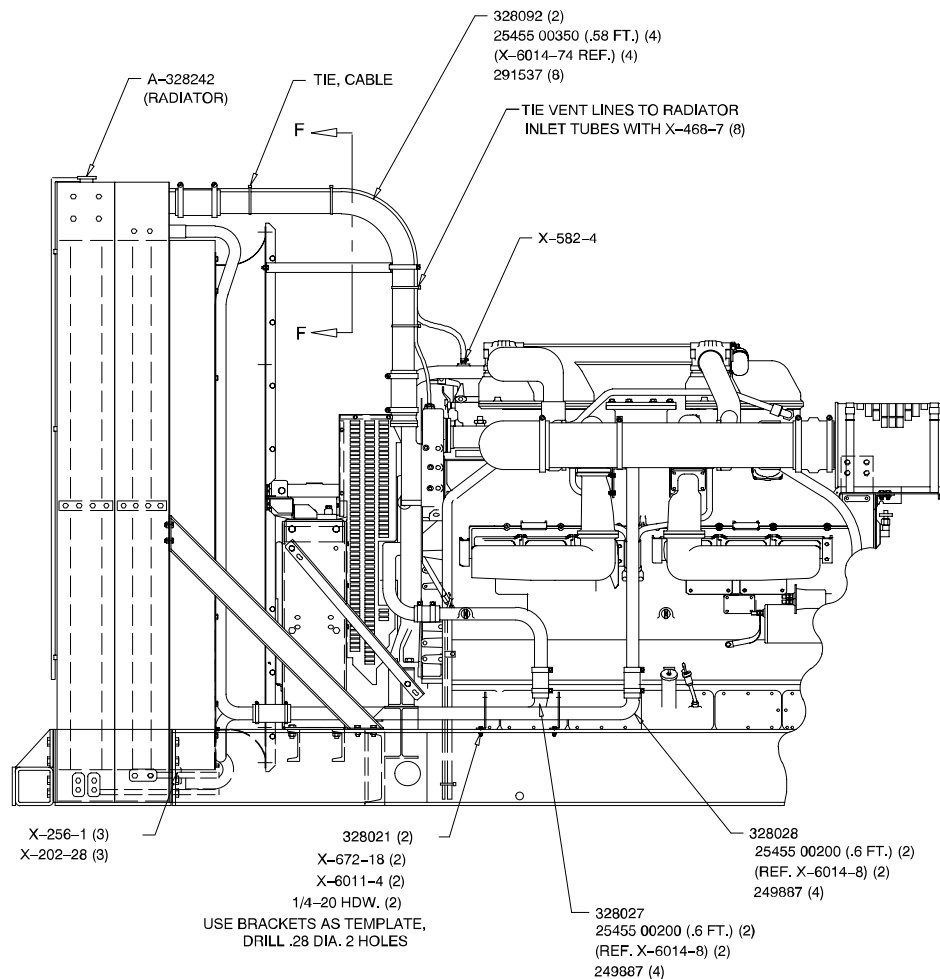
**Figure 2. Radiator Kit Installation  
(Right View Fan Assembly Without Guards)**

12. Final tighten fan to fan shaft. Apply PermaBond MM-115 to 3 hub screws and torque to 28 ft. lbs. (38.0 Nm)

**NOTE**

The generator set may be exposed to stresses during the transporting and handling process. Check the alignment of the radiator and its supports and tightness of mounting hardware prior to generator set operation.

13. Install flat fan guard (328249) onto fan shroud. See Figure 1.
14. Attach one end of lower radiator hose (X-6014-51) to radiator outlet and the other end to radiator outlet pipe (328274) using two hose clamps (274443).
15. Attach radiator outlet pipe (328274) to engine using two hose clamps (274443) as shown in Figure 1.
16. Install radiator hose (X-6014-74) onto radiator inlet pipe using two hose clamps (291537). Repeat procedure for second radiator inlet pipe. See Figure 3.
17. Attach the three vent lines secured to the inlet hoses to the upper radiator inlet area as shown in Figure 3.
18. Install opposite end of inlet hoses onto engine outlets with four hose clamps (291537).
19. Attach the three vent lines secured to the inlet hoses to the engine as shown in Figure 3.
20. Connect left and right upper radiator hose braces (328290 and 328291) to the radiator using two 5/16-18 bolts, 5/16-in. plain washers, and 5/16-18 lock nuts. See Figure 3.
21. Connect hose braces together using two 3/8-16 bolts, four 3/8 in. washers, and two lock nuts (X-101-13). See Figure 3.
22. Secure upper radiator pipes to upper radiator braces with two hose clamps (X-426-5).
23. Install radiator hose (X-6014-8) onto each end of intercooler supply pipe and attach to lower radiator and engine using four hose clamps (249887). See Figure 3.
24. Install radiator hose (X-6014-8) onto each end of intercooler return pipe (328027 and 328028). Connect hose to lower radiator and engine using four hose clamps (249887). See Figure 3.
25. Attach wiring harness connector to radiator level switch at top of radiator. Secure wiring harness with cable ties (X-468-7).



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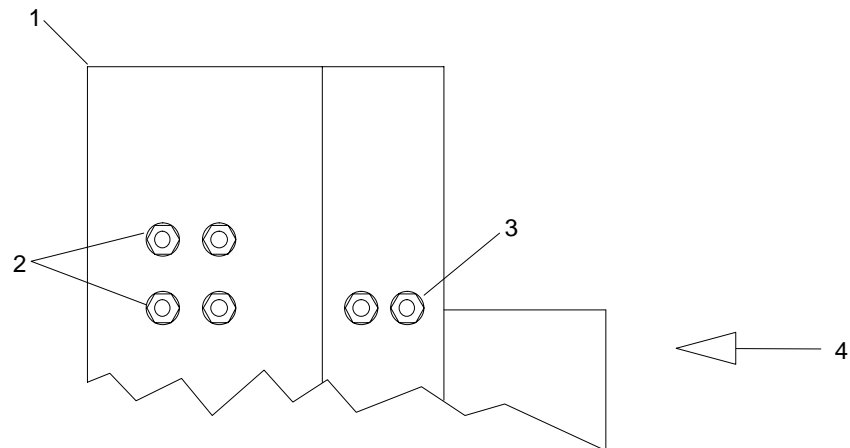
**Figure 3. Radiator Kit Installation  
(Left View)**

26. **Generator sets equipped with Young radiators:**  
Loosen the radiator assembly's expansion joints nuts to permit differential thermal expansion of the radiator tank. The 12 expansion-joint nuts are

tightened for shipment but must be loosened one full turn before placing the generator set in service (see Figure 5).

There is a total of 12 expansion joint nuts (6 on each side of the radiator).  
Loosen each nut one full turn.

**NOTE:** This procedure is required only on generator sets using a Young radiator.



TP-5326

- 1. Top front of radiator
- 2. Expansion joint nuts for front tank, left side

- 3. Expansion joint nuts for rear tank, left side
- 4. Air flow

**Figure 4. Expansion Joint Nuts, Top Left Side of Radiator (Typical)**

## Radiator Scheduled Maintenance

This section covers radiator scheduled maintenance. Refer to the generator set operation manual and engine operation manual for periodic service regarding the generator set cooling system.

Lubricate the fan shaft and idler shaft bearing regularly to avoid bearing damage. Lubricate the bearings every 200 hours of operation in ambient temperatures less than 85°F (29°C). Lubricate the bearings every 100 hours of operation in ambient temperatures greater than 85°F (29°C) or if the generator set is run in a dusty or humid environment. Lubricate the bearings at the specified interval according to the following procedure.

### NOTE

Lubricate the radiator fan shaft and idler shaft bearings whenever the engine oil is changed.

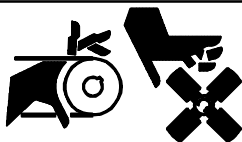


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## Lubrication Procedure

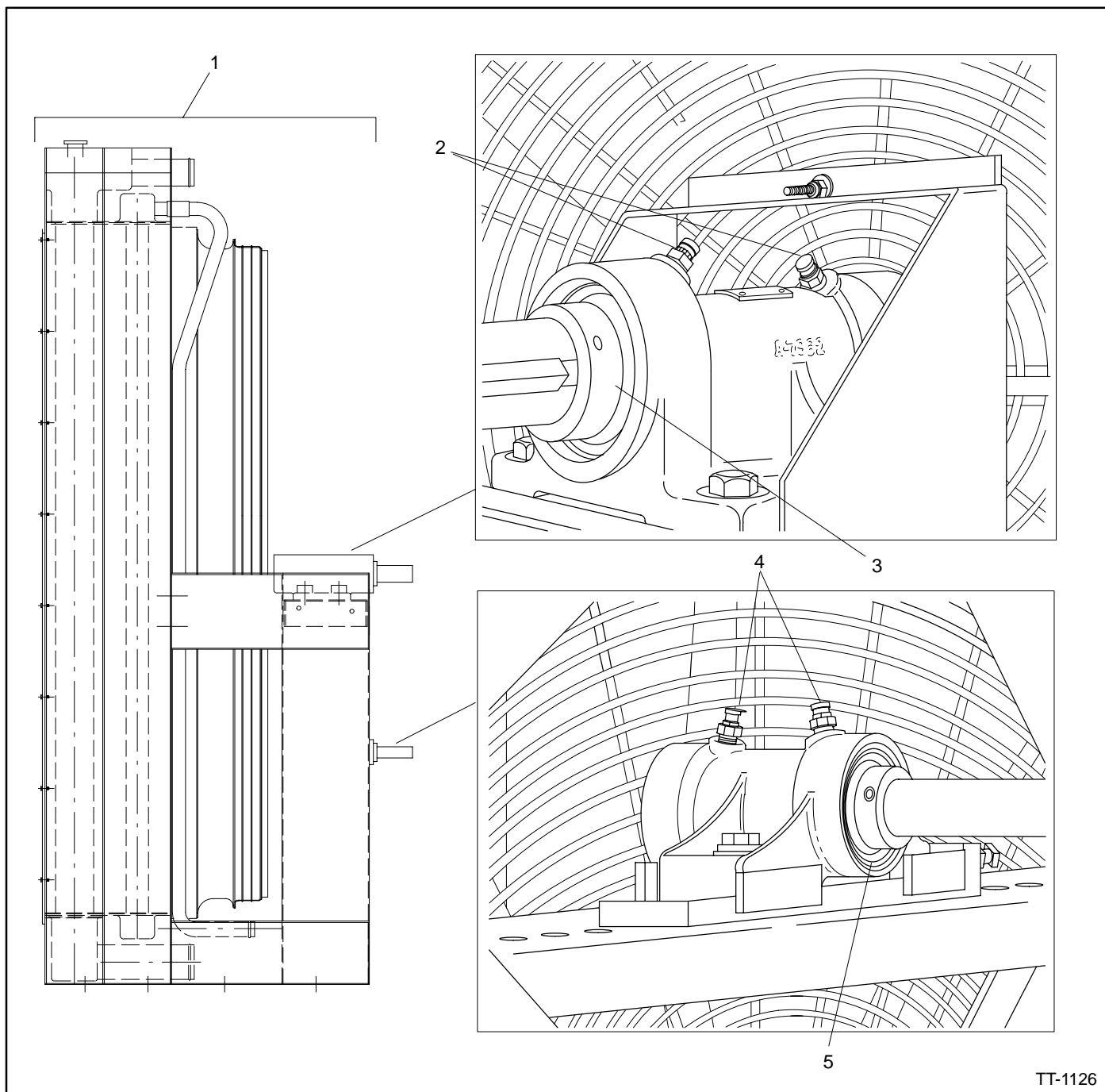
Lubricate the fan shaft and idler shaft bearings with a lithium-complex base, multi-purpose grease with anti-rust, anti-foam, extreme pressure additives and a minimum dropping point of 400°F (204°C). Use Mobil Mobilith AW2 NLG1, Grade 2 or equivalent.

1. Move generator master switch to the OFF position. Allow generator set to cool.
2. Disconnect the generator set engine starting battery(ies), negative (–) lead first.
3. Remove belt guards to expose fan shaft and idler shaft bearings.
4. Inject grease into the two bearings on the fan shaft block and the two bearings on the idler shaft block using a grease gun filled with specified grease. See Figure 5. Inject grease until a 0.125-0.250 in. (3-6 mm) grease column shows at the bearing pressure relief port.

### NOTE

Pressure relief ports on the fan shaft and idler shaft bearings prevent overlubrication.

5. Remove excess grease from bearing relief ports with a rag.
6. Inspect fan drive belt for damage or wear; replace belt if it is damaged or worn. Check fan belt tension using a serpentine belt tension gauge and adjust tension if necessary. Correct tension for a new belt is 500 lbs. (227 kg) and for a used belt is 250-300 lbs. (113-136 kg).
7. Reinstall belt guards using original hardware.
8. Reconnect the generator set engine-starting battery(ies), negative (–) lead last.
9. Move generator master switch to RUN position to start generator set.
10. Listen for noise (squeal) from fan belt, indicating a slipping belt. Stop the generator set. Disconnect engine starting battery(ies) if the fan belt is slipping. Increase belt tension to eliminate slippage.
11. Reconnect the generator set engine-starting battery(ies), negative (–) lead last.



**Figure 5. Radiator Fan Bearings and Pressure Relief Ports (typical)**

## Radiator Kit

Parts List		
Kit: 328282		
Qty.	Description	Part Number
1	Assembly, radiator	A-328282
2	Nut, lock 3/8-16	X-101-16
4	Bushing, reducer 3/8 x 1/2	X-202-28
3	Valve, drain 3/8 NPT	X-256-1
2	Valve, drain 1/2 NPT	X-256-5
3	Hose	X-422-30
6	Clamp, hose	X-426-10
2	Clamp, hose 4.875/3.62	X-426-5
8	Tie, cable	X-468-7
3	Connector, hose	X-582-4
3	Connector, hose	X-582-5
2	Clamp, insulated	X-672-18
3	Clamp, insulated	X-672-7
12	Washer, hardened	X-801-6
8	Washer, hardened	X-801-8
8	Washer, beveled	X-6011-3
2	Washer, beveled	X-6011-4
2	Hose, radiator	X-6014-8
2	Hose, radiator	X-6014-51
4	Hose, radiator	X-6014-74
4	Hose 2" x 8"	X-6014-8
8	Clamp, hose	249887
1	Sensor, low fluid	254832
4	Screw, special	274738
1	Tube, inlet	274265
1	Gasket, inlet	274300
4	Clamp, hose	274443
1	Bushing, idler	274903
1	Bushing, pulley	274905
2	Decal, warning	279748
8	Washer, hardened	290945
8	Clamp, hose	291537
1	Guard, belt top	328020
2	Bracket, tube mounting	328021
1	Tube, intercooler return	328027

Parts List (continued)		
Kit: 328282		
Qty.	Description	Part Number
1	Tube, intercooler return	328028
2	Tube, radiator upper	328092
1	Fan, pusher	328247
1	Shroud, fan	328248
4	Guard, flat fan	328249
1	Pulley	328253
1	Block, pillow	328254
1	Block, pillow	328255
2	Key	328256
1	Shaft, idler	328257
1	Shaft, fan	328258
1	Pulley, idler	328259
1	Belt, poly v	328260
1	Block, idler screw	328261
1	Block, idler screw	328262
1	Support, fan bearing	328263
1	Support, idler bearing	328264
2	Support, fan bearing	328265
2	Brace, radiator	328266
3	Brace, fan	328267
1	Guard, radiator	328268
1	Bracket, radiator	328269
4	Shim, radiator	328270
4	Shim, radiator	328271
1	Guard, belt	328272
1	Guard, belt	328273
1	Tube, lower radiator	328274
1	Guard, belt	328275
2	Bolt, adjusting	328283
4	Shim, fan and support	328289
1	Brace, radiator hose	328290
1	Brace, radiator hose	328291
1	Bracket, radiator	328301
4	Support, fan guard	328708