

INSTALLATION INSTRUCTIONS

Original Issue Date: 8/04

Model: 230-450 kW Generator Sets with DDC/MTU Series 60 Engines

Market: Industrial Generator Sets

Subject: Fan Service Kit GM22971

Introduction

This kit provides replacement parts for servicing the cooling system fan. See Figure 1.

Read the entire installation procedure and compare the kit parts with the parts list in this publication before beginning installation. Perform the steps in the order shown.

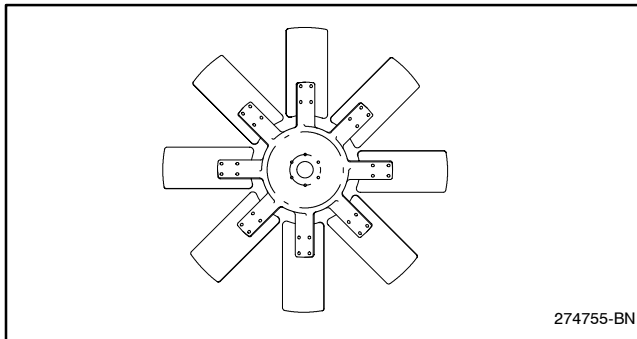
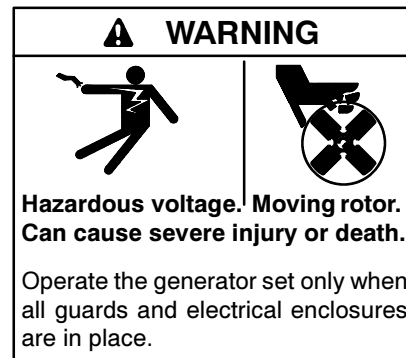


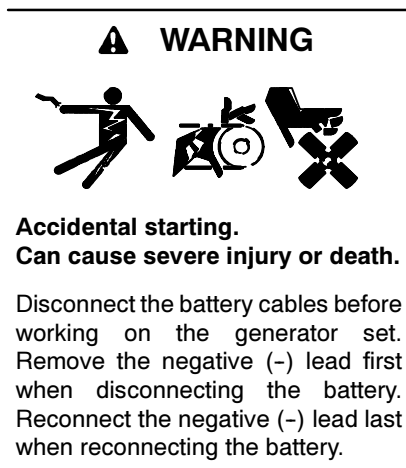
Figure 1 Fan

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or connected equipment, disable the generator set as follows: (1) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.



Safety Precautions

Observe the following safety precautions when installing the kit.



Installation Procedure

1. **Remove the generator set from service.**
 - 1.1 Place the generator set master switch in the OFF/RESET position.
 - 1.2 Disconnect the power to the battery charger, if equipped.
 - 1.3 Disconnect the generator set engine starting battery(ies), negative (-) lead first.

2. Remove the existing components.

- 2.1 Remove the belt guard assembly.
- 2.2 Remove the eight bolts securing the fan guard to the radiator shroud.
- 2.3 Rotate the fan guard 90° clockwise to remove the guard from the unit.
- 2.4 Remove the six bolts securing the cooling fan and fan spacer to the fan drive pulley.
- 2.5 Remove the radiator fan from the unit. Retain the fan mounting bolts and fan-to-engine spacer for reuse on the new fan.
- 2.6 Remove the existing steel washers (black) from the fan mounting bolts and discard.

3. Install the new fan components.

- 3.1 Place the six spacers (X-400-75) on the existing fan mounting bolts.
- 3.2 Install the new fan (GM21337) and fan-to-engine spacer using the existing fan bolts with spacers. Position the fan hub with the concave side toward the front of the generator set. Torque the fan mounting bolts to 44 Nm (32 ft. lb.).
- 3.3 Verify that the fan is centered in the shroud opening and that the fan will not contact the shroud. Fan tip to fan shroud clearance must be at least 20 mm (0.78 in.) for each fan blade. Adjust the fan shroud as necessary. See Figure 2.
- 3.4 Install the fan guard to the radiator shroud using the existing eight bolts and position the eight plain washers (X-25-75) between the fan guard and shroud grommet. See Figure 3.
- 3.5 Check the fan tip to fan guard clearance on at least five blade locations. See Figure 3 for recommended locations. Fan tip to fan guard distance should be measured between the 4th and 5th bars inward from the fan guard outer edge. The minimum distance must be at least 35 mm (1.38 in.) for each fan blade. The fan blades should be evenly spaced around the fan guard circumference.
- 3.6 Install the belt guard assembly.

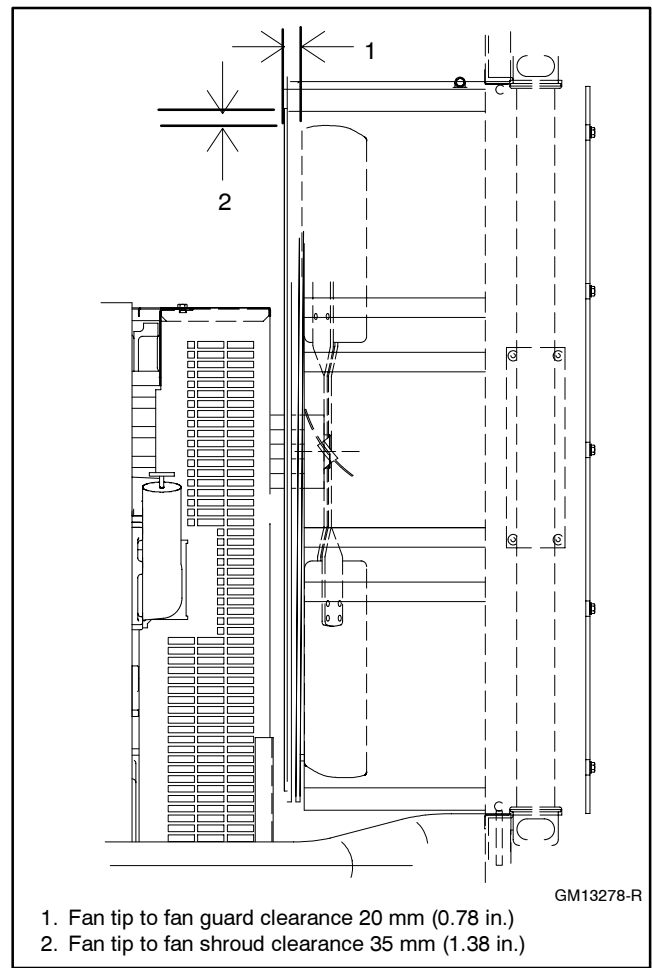


Figure 2 Fan Clearances

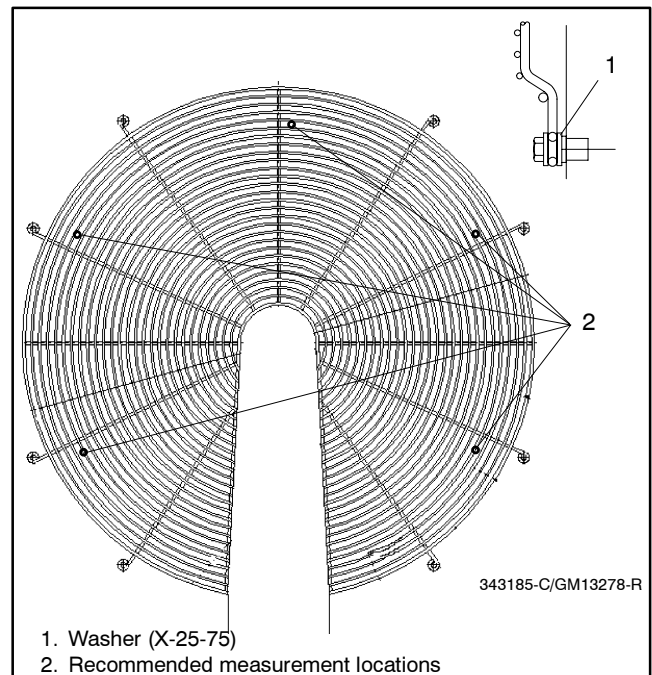


Figure 3 Fan Guard Clearance

4. Place the generator set into service.

- 4.1 Place the generator set master switch in the OFF/RESET position.
- 4.2 Reconnect the generator set engine starting battery(ies), negative (-) lead last.
- 4.3 Reconnect the power to the battery charger, if equipped.
- 4.4 Move the generator set master switch to RUN to start generator set.
- 4.5 Confirm that fan blades have adequate clearance.

Immediately shut down generator set if there is fan blade contact. Repair/replace any damaged parts as necessary.

After confirming that there is no contact, move the generator set master switch to OFF/RESET to stop the generator set.

- 4.6 Move the generator set master switch to AUTO for startup by remote transfer switch or remote start/stop switch.

Parts List

Fan Service Kit

| Kit: GM22971 | | |
|--------------|-------------|-------------|
| Qty. | Description | Part Number |
| 1 | Fan | GM21337 |
| 8 | Washer | X-25-75 |
| 6 | Spacer | X-400-75 |