INSTALLATION INSTRUCTIONS

Original Issue Date: **1/94**
Model: **180-300 kW**
Market: **Industrial**
Subject: **Load Bus Bar Kits PA-222970 and PA-222970-SD**

Introduction

The load bus bar kit, used in conjunction with bus lug kit, allows the generator set to be connected to the external load. Use one of the following terminal lug kits; selection will depend on cable size and number of cables to be connected to the bus bars.

Lug Kit	Cable Size	Cables per Lug
PA-274696 & PA-274696-SD	350MCM-06	2
PA-274698 & PA-274698-SD	600MCM-02	2
PA-274699 & PA-274699-SD	750MCM-3/0	3
PA-274700 & PA-274700-SD	600MCM-02	4

Figure 1 Terminal Lug Kits

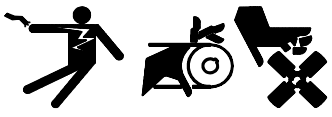
Read the entire installation procedure and compare the kit parts with the parts list on the page 2 before beginning installation. Perform the steps in the order shown.

See Figure 2 for the installed kit illustration.

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 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.

⚠ WARNING

Hazardous voltage. Moving rotor.
Can cause severe injury or death.
Operate the generator set only when all guards and electrical enclosures are in place.

Grounding electrical equipment. Hazardous voltage can cause severe injury or death. Electrocution is possible whenever electricity is present. Open the main circuit breakers of all power sources before servicing the equipment. Configure the installation to electrically ground the generator set, transfer switch, and related equipment and electrical circuits to comply with applicable codes and standards. Never contact electrical leads or appliances when standing in water or on wet ground because these conditions increase the risk of electrocution.

Note: All electrical connections should be made by a certified electrician or competent electrical technician.

Installation Procedure

Note: Before beginning installation, decide whether terminal lugs are to be mounted in upper or lower positions (based on junction box entry point for output cables as specified in plans).

1. Place the generator set master switch in the OFF position.

2. Disconnect the power to the battery charger, if equipped.

3. Disconnect the generator set engine starting battery(ies), negative (–) lead first.

4. Install lower support bracket (274661) to junction box base with five 1/4-14 x 0.750 in. drill screws (X-794-2) as shown in Figure 2.

5. Install two main bus supports (274659) to insulating channels (336009) with four 5/16-18 x 1.750 in. hex screws (X-125-25), 0.344 x 0.687 x 0.065 in. plain washers (X-25-85), and 5/16-18 whiz nuts (6210-7).

6. Install four load bus assemblies (GM12553) on main bus supports using 16, 5/16-18 x 1.750 in. hex screws (X-125-25), 5/16-18 whiz nuts (6210-7), and 32, 0.344 x 0.687 x 0.065 in. plain washers (X-25-85).

7. With surface clean and dry, apply identification tabs (201620-83—L1, 201620-84—L2, 201620-94—L0, and 201620-95—L3) to insulating channels (336009) at the locations shown in Figure 2.

8. Assemble upper support bracket (274660) to load bus bars with eight 5/16-18 x 1.250 in. hex screws (X-125-24), 5/16-18 whiz nuts (X-6210-7), and 16, 0.344 x 0.687 x 0.065 in. plain washers (X-25-85).

9. Install two support brackets (336008) to junction box with two 10-16 x 0.375 in. self-threading screws (X-67-107).

10. Install load bus/bracket assembly into junction box. Secure upper support bracket (274660) to support brackets (336008) with two 1/4-20 x 0.750 in. hex screws (X-465-16), 0.281 x 0.625 x 0.065 in. plain washers (X-25-40), and 1/4-20 whiz nuts (X-6210-2).

11. Using existing hardware, attach cable (336011) to terminal L0 (neutral) on stator shell. Attach other cable end to bus bar (L0); secure with one 3/8-16 x 1.250 in. hex screw (X-6238-5), 3/8-16 hex nut (X-83-7), and two 0.391 x 0.875 x 0.062 in. plain washers (X-25-18).

12. Connect generator leads to load bar assemblies according to application (see Figure 3) with eight 3/8-16 x 1.250 in. hex screws (X-6238-5), 3/8-16 hex nuts (X-83-7), and 16, 0.391 x 0.875 x 0.062 in. plain washers (X-25-18).

13. Bundle generator leads and secure with cable ties as required.

14. Install lug kit according to instructions provided with kit.

15. Install lug insulator (336010) to left side cover (as viewed from generator end) with four pop rivets (X-781-11) and 0.191 x 0.500 x 0.034 in. plain washers (X-25-92).

    Note: Position rivet so that head is outside the junction box as shown in Figure 2, Detail B.

16. Replace junction box access panels.

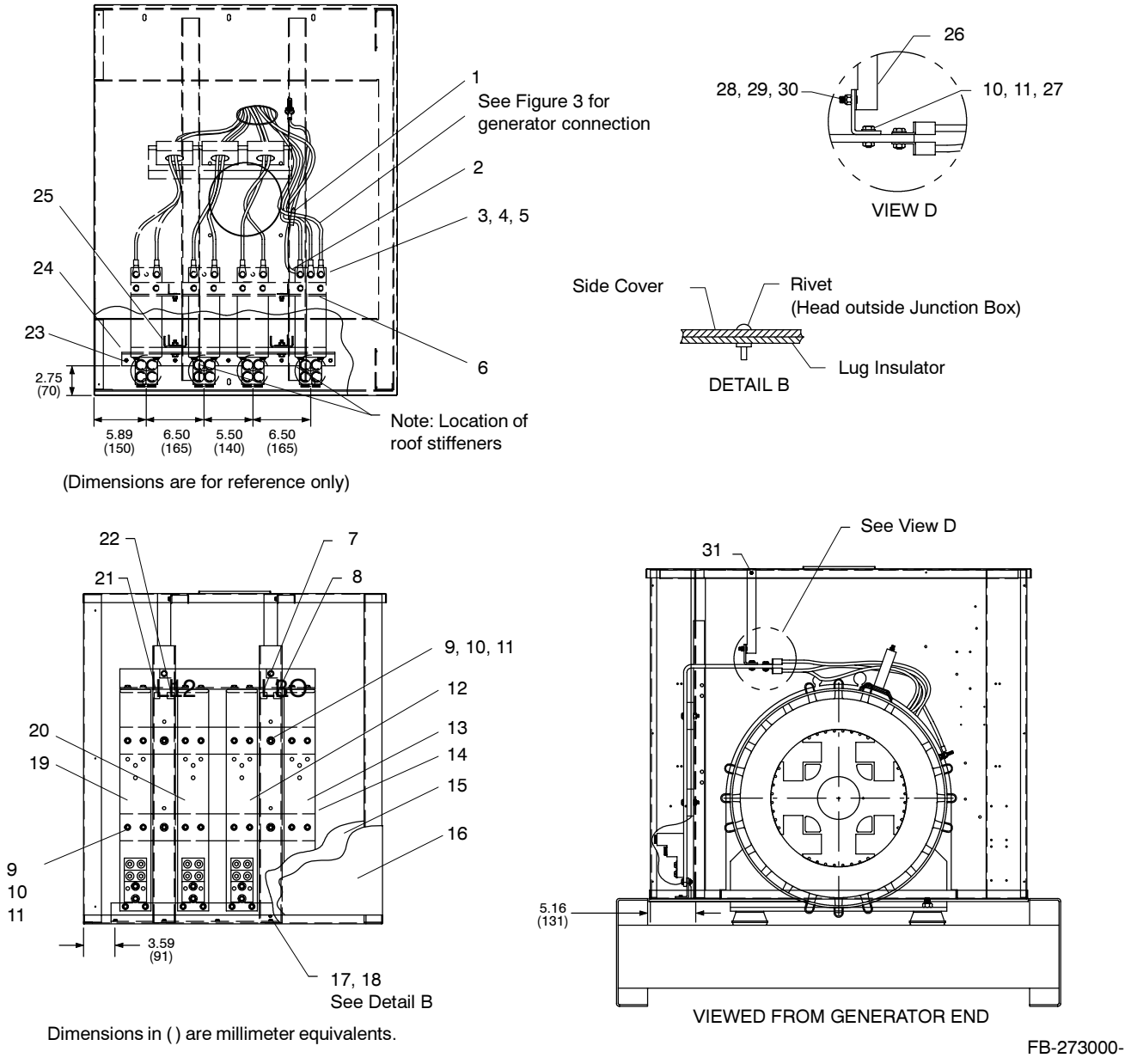
17. Check that the generator set master switch is in the OFF position.

18. Reconnect the generator set engine starting battery, negative (–) lead last.

19. Reconnect power to the battery charger, if equipped.

Parts List

Kits: PA-222970 and PA-222970-SD		
Qty.	**Description**	**Part No.**
4	Bus assembly	GM12553
8	Screw, 5/16-18 x 1.250 in. hex	X-125-24
28	Screw, 5/16-18 x 1.750 in. hex	X-125-25
18	Washer, 0.391 x 0.875 x 0.062 in. plain	X-25-18
2	Washer, 0.281 x 0.625 x 0.065 in. plain	X-25-40
68	Washer, 0.344 x 0.687 x 0.065 in. plain	X-25-85
4	Washer, 0.191 x 0.500 x 0.034 in. plain	X-25-92
2	Screw, 1/4-20 x 0.750 in. hex	X-465-16
2	Nut, 1/4-20 whiz	X-6210-2
36	Nut, 5/16-18 whiz	X-6210-7
9	Screw, 3/8-16 x 1.250 in. hex	X-6238-5
2	Screw, 10-16 x 0.375 in. self-threading	X-67-107
4	Rivet, pop	X-781-11
5	Screw, 1/4-14 x 0.750 in. drill	X-794-2
9	Nut, 3/8-16 hex	X-83-7
1	Tab, identification	201620-83
1	Tab, identification	201620-84
1	Tab, identification	201620-94
1	Tab, identification	201620-95
2	Support, main bus	274659
1	Bracket, upper support	274660
1	Bracket, lower support	274661
2	Bracket, support	336008
2	Channel, insulating	336009
1	Insulator, lug	336010
1	Cable	336011



1. Cable tie
2. Cable (336011)
3. Hex screw (X-6238-5) qty. 9
4. Plain washer (X-25-18) qty. 18
5. Hex nut (X-83-7) qty. 9
6. Upper support bracket (274660)
7. Identification tab (L3) (201620-95)
8. Identification tab (L0) (201620-94)
9. Hex screw (X-125-25) qty. 28
10. Whiz nut (X-6210-7) qty. 36
11. Plain washer (X-25-85) qty. 68
12. Bus assembly—L3 (GM12553)
13. Bus assembly—L0 (GM12553)
14. Main bus support (274659) qty. 2
15. Lug insulator (336010)
16. Side cover
17. Pop rivet (X-781-11) qty. 4
18. Plain washer (X-25-92) qty. 4
19. Bus assembly (L1) (GM12553)
20. Bus assembly (L2) (GM12553)
21. Identification tab—L1 (201620-83)
22. Identification tab—L2 (201620-84)
23. Drill screw (X-794-2) qty. 5
24. Lower support bracket (274661)
25. Insulating channel (336009) qty. 2
26. Support bracket (336008) qty. 2
27. Hex screw (X-125-24) qty. 8
28. Hex screw (X-465-16) qty. 8
29. Plain washer (X-25-40) qty. 2
30. Whiz nut (X-6210-2) qty. 2
31. Self-threading screw (X-67-107) qty. 2

Figure 2 Load Bus Kit Installation

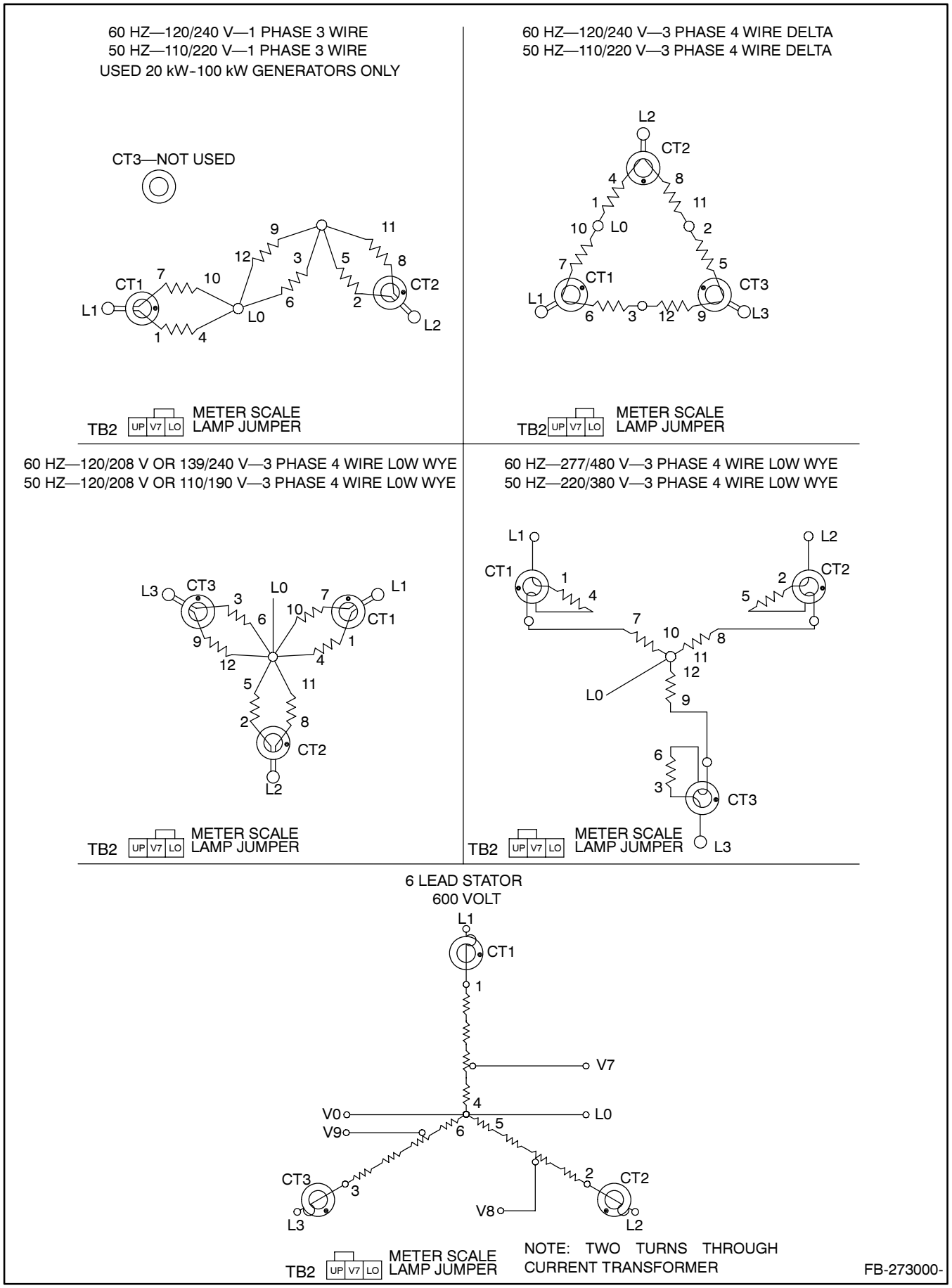


Figure 3 Generator Connections