

INSTALLATION INSTRUCTIONS

Original Issue Date: 10/93

Model: 20-150 kW

Market: Industrial

Subject: **Safeguard Circuit Breaker Kits Without Current Transformers
(Used with Controllers with Meters)**

Introduction

The safeguard circuit breaker kit protects the generator set in the event of an overload or short circuit. It is different than conventional circuit breakers in that it has a trip curve matched to the generator characteristics. When an overload or short circuit occurs, the safeguard circuit breaker opens the battery supply voltage to the voltage regulator.

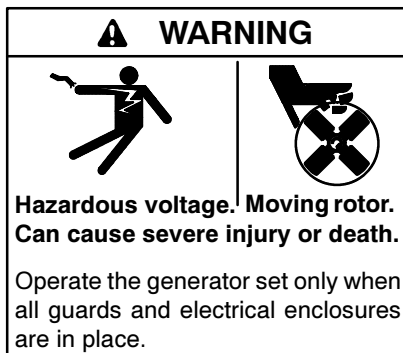
PA-255127	PA-255127-SD
PA-255128	PA-255128-SD
PA-255129	PA-255129-SD
PA-255130	PA-255130-SD
PA-255131	PA-255131-SD

Note: These kits do not include current transformers. However, generator sets equipped with the basic relay controller without meters will require installation and connection of current transformers. If your generator set is not equipped with current transformers, they are available as a separate accessory kit.

Note: Contact your local authorized distributor/dealer for availability and selection of safeguard circuit breakers should the unit require voltage reconnection.

Safety Precautions

Observe the following safety precautions while installing the kit.



Disconnecting the electrical load. Hazardous voltage can cause severe injury or death. Disconnect the generator set from the load by opening the line circuit breaker or by disconnecting the generator set output leads from the transfer switch and heavily taping the ends of the leads. High voltage transferred to the load during testing may cause personal injury and equipment damage. Do not use the safeguard circuit breaker in place of the line circuit breaker. The safeguard circuit breaker does not disconnect the generator set from the load.

⚠ 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.

Mounting and Connection

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. Remove right-side panel of junction box by removing six screws.
5. Locate and remove safeguard circuit breaker knockout. See Figure 1 for location. To remove, place wood block behind plate and strike with hammer. Remove burrs.

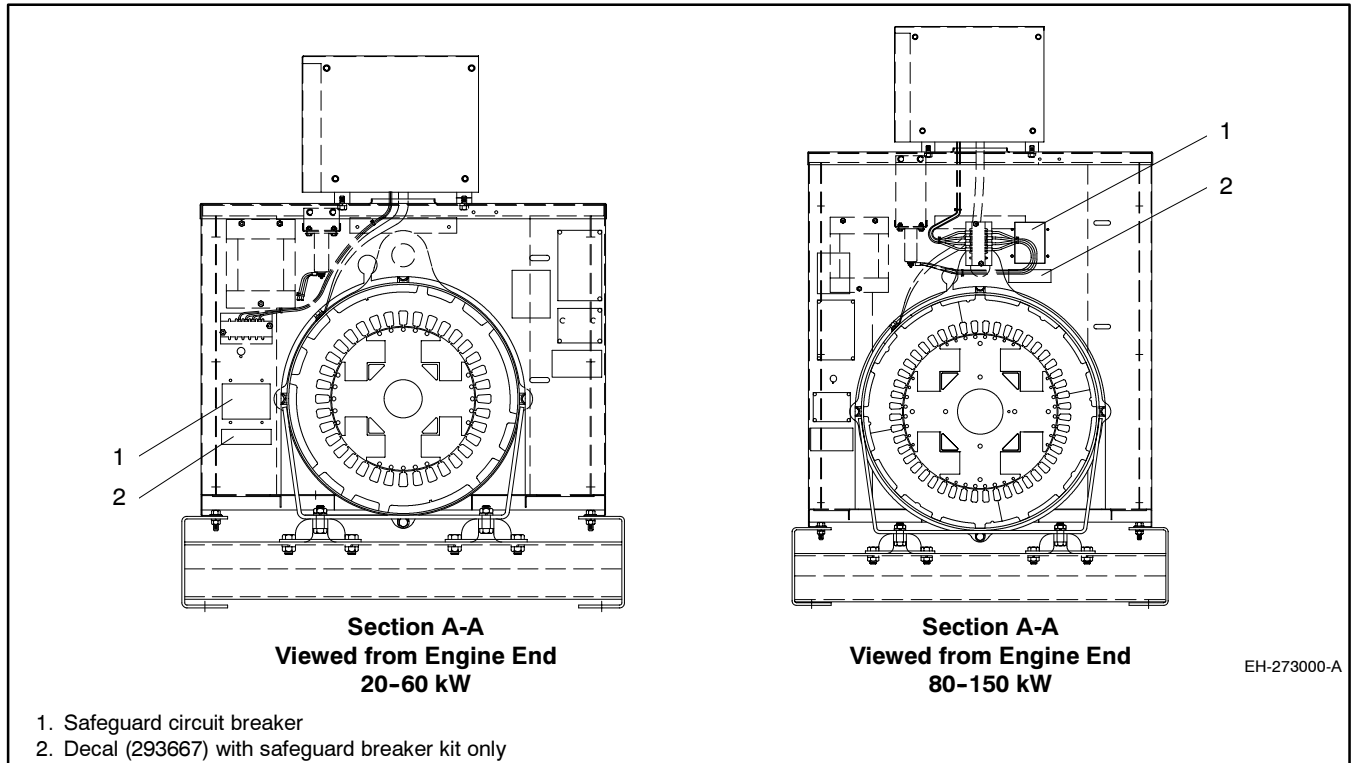


Figure 1 Safeguard Circuit Breaker Locations

6. Mount breaker to junction box with four screws and flat washers. ON/OFF markings must be right side up.

Note: If the generator set is equipped with current transformers (controllers with meters), use the following for installation of the safeguard circuit breaker kit. If current transformers are purchased as a separate accessory, follow the instructions included with the current transformer kit.

7. Attach terminals (X-283-3) to each lead of current transformers.
8. Place generator output leads through current transformers (1 turn) as shown in Figure 3.

Note: Place all current transformers with dot or HI markings toward the generator set (see Figure 2).

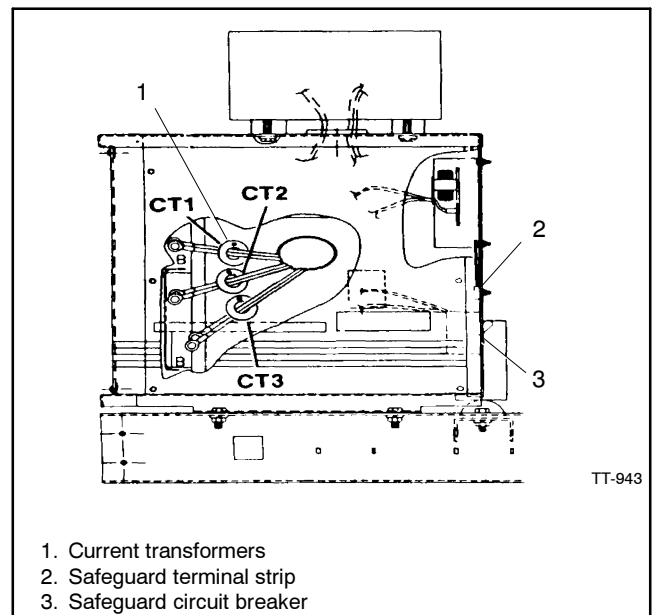
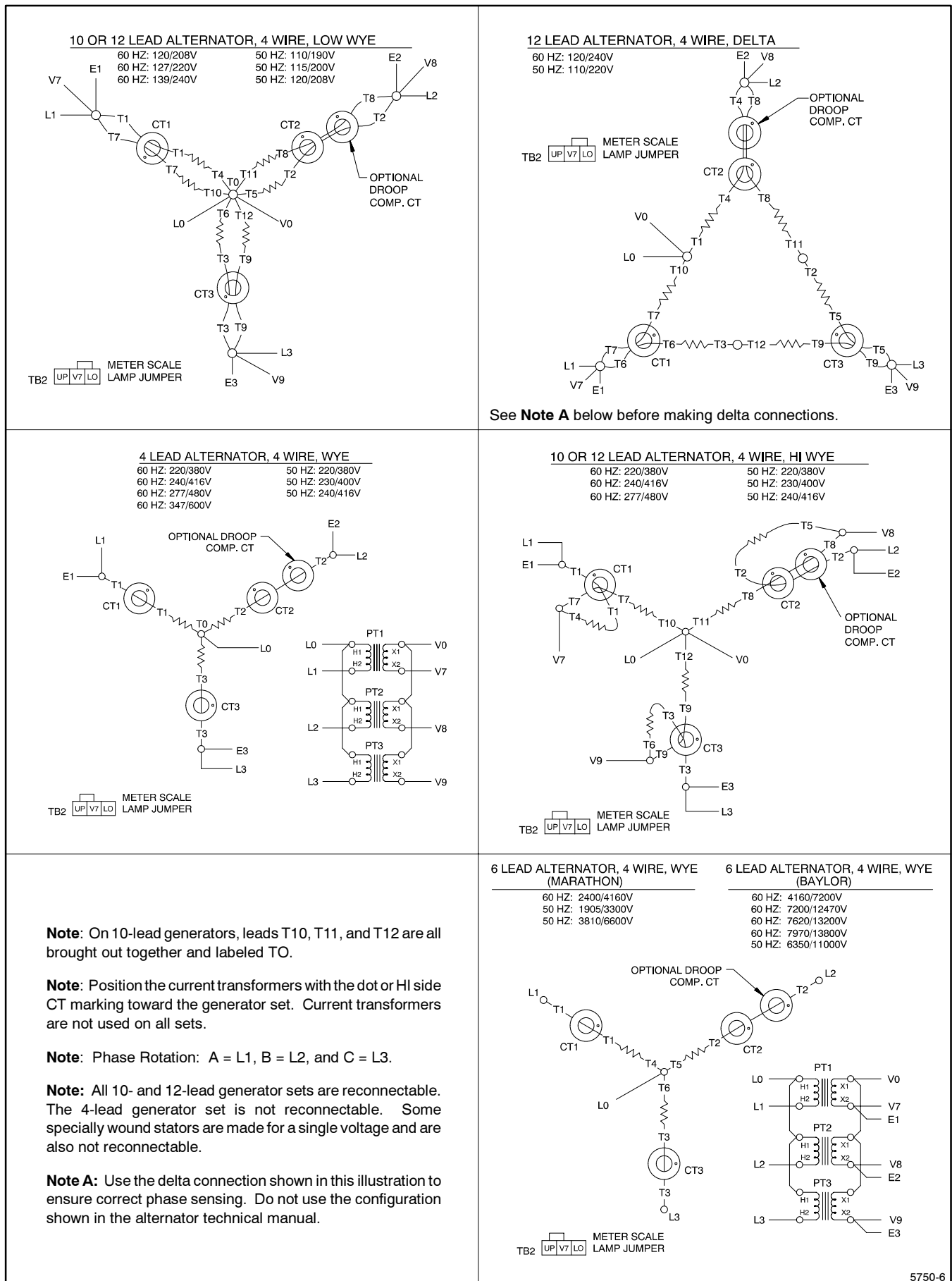


Figure 2 Safeguard Circuit Breaker Kit Installation



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Figure 3 Current Transformer Connections

9. Loosen upper screws on safeguard terminal strip with leads marked C0, C1, C2, and C3. Place jumper strip under terminals and tighten screws.
10. Connect safeguard circuit breaker as follows. See Figure 4 for wiring diagram.

Note: Safeguard terminal strip may have wires connected in a different sequence than shown in Figure 3. Leads connected to top terminals have identification marked. Make connections based on terminal identification (not position).

- a. Connect black leads of current transformers to C0 on terminal strip.

Note: Due to screw length, it may be necessary to place one CT lead on upper screw of terminal strip.

- b. Disconnect white lead of CT1 from terminal strip and connect to lower relay on first pole of breaker. Connect jumper lead from upper relay terminal on first pole of breaker to C1 on terminal strip.
- c. Disconnect white lead of CT2 from terminal strip and connect to lower relay terminal of second pole of breaker. Connect jumper lead from upper relay terminal on second pole of breaker to C2 on terminal strip.
- d. Disconnect white lead of CT3 from terminal strip and connect to lower relay terminal on third pole of breaker. Connect jumper lead from upper terminal on third pole of breaker to C3 on terminal strip.
- e. Disconnect 1B from terminal strip and connect to load terminal on third pole of breaker. Connect jumper lead from line terminal on third pole of breaker to terminal 70 on terminal strip.

11. Replace right-side panel of junction box using six screws.
12. Check the surface of the junction box directly beneath the safeguard circuit breaker. With surface clean and dry, apply safeguard circuit breaker decal (kits with decal only).

13. Check that the generator set master switch is in the OFF position.
14. Reconnect the generator set engine starting battery, negative (-) lead last.
15. Reconnect power to the battery charger, if equipped.

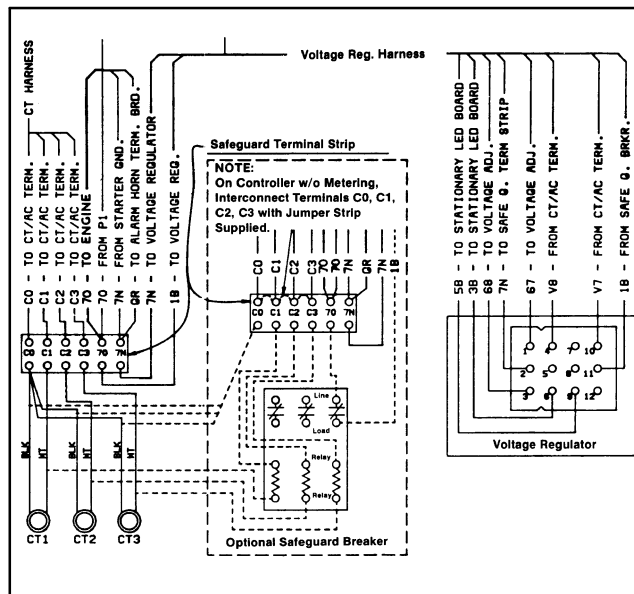


Figure 4 Wiring Diagram

Parts List

Kit: PA-255127, PA-255127-SD, PA-255128, PA-255128-SD, PA-255129, PA-255129-SD, PA-255130, PA-255131, and PA-255131-SD

Qty.	Description	Part Number
4	Washer, 0.156 x 0.375 x 0.049 in. plain	X-25-9
4	Screw, 6-32 x 0.375 in. RHM	X-49-2
1	Lead	LW-1604-2214
3	Decal, safeguard	293667
1	Breaker, circuit (Kits PA-255127 and PA-255127-SD)	X-796-1
1	Breaker, circuit (Kits PA-255128 and PA-255128-SD)	X-796-4
1	Breaker, circuit (Kits PA-255129 and PA-255129-SD)	X-796-6
1	Breaker, circuit (Kits PA-255130 and PA-255130-SD)	X-796-2
1	Breaker, circuit (Kits PA-255131 and PA-255131-SD)	X-796-3