

## INSTALLATION INSTRUCTIONS

Original Issue Date: 3/94

Model: 20-300 kW Generator Sets

Market: Industrial, Residential, and Marine

Subject: Run Relay Kits PA-273743, PA-274744, GM75749-KP9, and GM75749-KP10

### Introduction

The run relay kit may control air intake and/or radiator louvers and is energized only when the generator set is running. Alarms, lights, and other signaling devices can also be connected to the 3PDT, form C relay. See Figure 1.

Check the electrical requirements of the customer-provided accessories prior to run relay kit installation. Do not exceed the following relay contact ratings.

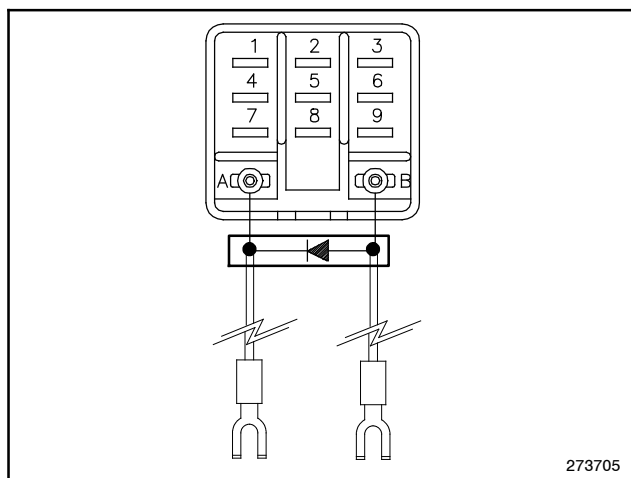


Figure 1 Run Relay

### Relay Contact Rating

Max. Switching Current/Voltage:

- 10 amps at 28 VDC
- 10 amps at 120 VAC
- 6 2/3 amps at 250 VAC

Min. Switching Current: 10 milliamps

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.

Always observe applicable local and national electrical codes.

### Safety Precautions

Observe the following safety precautions while installing the kit.

#### ⚠ WARNING



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

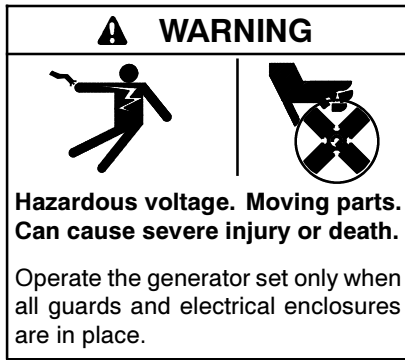
Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

**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.

(Decision-Maker® 3+ and 550 Controllers)

**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.

(Decision-Maker® 3000 and 6000 Controllers)



**Grounding electrical equipment. Hazardous voltage can cause severe injury or death.** Electrocutation is possible whenever electricity is present. Ensure you comply with all applicable codes and standards. Electrically ground the generator set and related equipment and electrical circuits. Turn off the main circuit breakers of all power sources before servicing the equipment. Never contact electrical leads or appliances when standing in water or on wet ground because these conditions increase the risk of electrocution.

**Short circuits. Hazardous voltage/current can cause severe injury or death.** Short circuits can cause bodily injury and/or equipment damage. Do not contact electrical connections with tools or jewelry while making adjustments or repairs. Remove all jewelry before servicing the equipment.

## Installation Procedure

### 1. Remove the generator set from service.

- 1.1 Place the generator set master switch to the OFF position (Decision-Maker® 3+ and 550 controllers).

OR

Press the generator set master control OFF/RESET button (Decision-Maker® 3000 and 6000 controllers).

- 1.2 Disconnect the power to the battery charger, if equipped.
- 1.3 Disconnect the generator set engine starting battery(ies), negative (-) lead first.

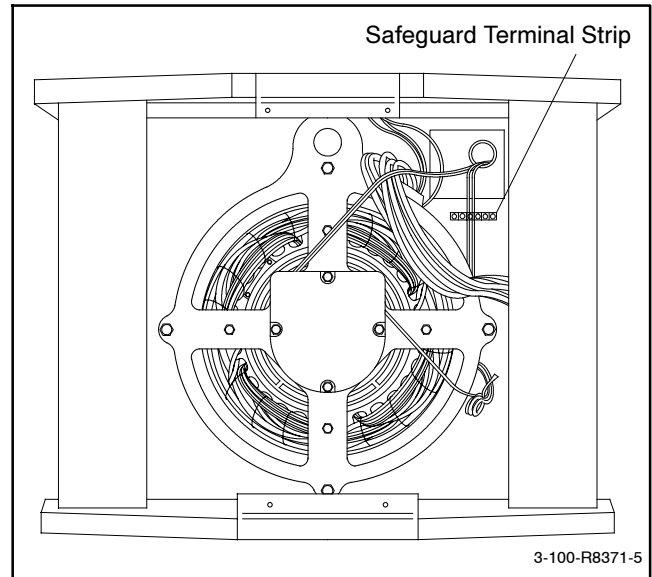
### 2. Determine which procedure to use based on kit number.

Use the table below to determine which procedure is required.

Kit Part No.	Voltage	Go to Step
PA-273743	12	3
PA-273744	24	
GM75749-KP9	12	4
GM75749-KP10	24	

### 3. Mounting run relay kits PA-273743 and PA-273744.

- 3.1 Remove the junction box panels and screws to access the safeguard circuit breaker terminal strip. See Figure 2.

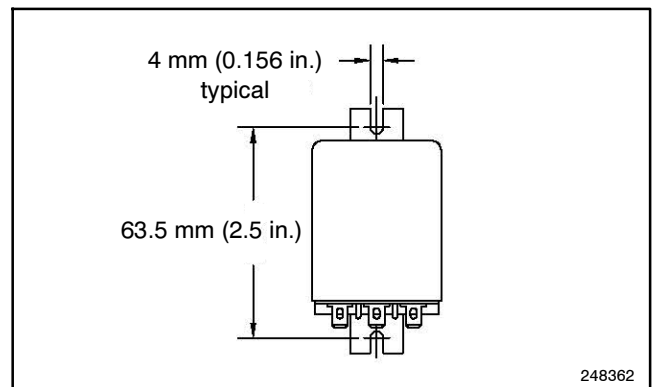


**Figure 2** Location of Safeguard Terminal Strip (Typical 20–300 kW Shown)

- 3.2 Select a location in the junction box to install the run relay where the relay leads will still connect to the safeguard terminal strip. Position the relay with the electrical connections pointing downward.

**Note:** If the relay kit is mounted in a location remote from the generator set. Do not mount the run relay kit more than 61.5 m (200 ft.) from the generator set.

- 3.3 Mark positions for drilling two holes 63.5 mm (2.5 in.) apart center to center. See Figure 3.

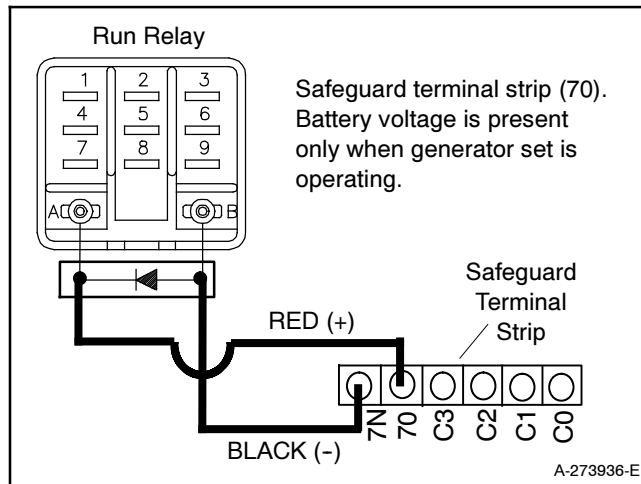


**Figure 3** Run Relay Mounting Details and Position

- 3.4 Drill two 4.0 mm (0.156 in.) holes. Remove burrs from the drilled holes and cleanup all metal chips in the junction box.
- 3.5 Position the relay with the electrical connections pointing downward and mount the relay assembly (273705 or 273706) to the junction box using two screws (X-49-26), two washers (X-25-9), and two nuts (X-6210-3).

- 3.6 Connect the wiring harness (GM75854) to the relay assembly and connect the red wire of the run relay to terminal 70 (+) and the black lead to terminal 7N (-) of the safeguard terminal strip. See Figure 4.

**Note:** Do not reverse the leads to the safeguard terminal strip because this will damage the diode and/or blow the controller fuse.



**Figure 4** Electrical Connections for Run Relay Kit

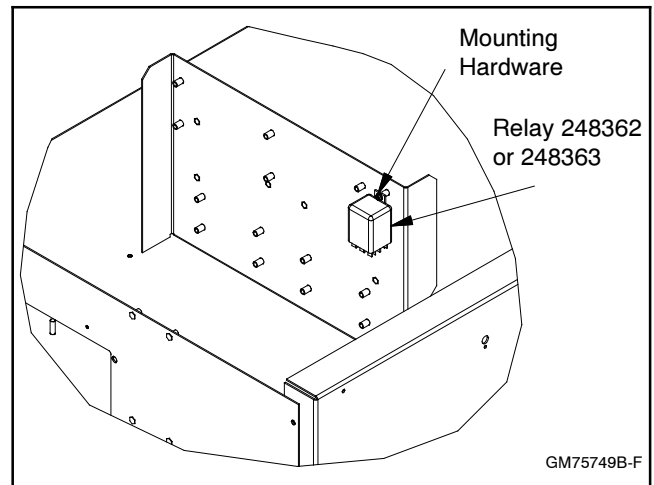
- 3.7 Use cable ties (not supplied) as needed to secure wiring.
- 3.8 Go to step 5.

#### 4. Mounting run relay kits GM75749-KP9 and GM75749-KP10.

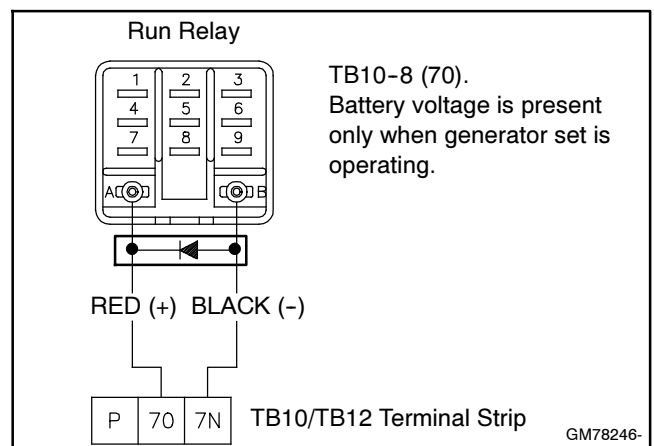
- 4.1 Remove the junction box top cover and screws.
- 4.2 Position the relay with the electrical connections pointing downward and mount the relay (248362 or 248363) to the junction box bracket using two screws (M7985A-04010-20) and two lock washers (X-22-7). See Figure 5.

- 4.3 Connect the red wire of the run relay to terminal 70 (+) and the black lead to terminal 7N (-) of terminal block TB10 or TB12. See Figure 6.

**Note:** Do not reverse the leads because this will damage the diode and/or blow the controller fuse.



**Figure 5** Mounting Relay to Bracket (Typical 20-300 kW Shown)



**Figure 6** Electrical Connections for Run Relay Kit

- 4.4 Use cable ties (not supplied) as needed to secure wiring.
- 4.5 Go to step 5.

5. Connecting User-Supplied Equipment

An adequate electrical supply is required to connect the customer-provided devices to the run relay for necessary operation. Check the electrical requirements of the customer-provided accessories prior to installation to determine the wire size and circuit protection required. Refer to the relay specifications in the introduction of this document. The customer-provided accessories should comply with applicable local and national electrical codes. Refer to Figure 7 for the relay internal normally-open (NO), normally-closed (NC), and common (C) connections.

Do not use terminals 42A or N on the controller connection kit terminal strip to supply voltage to customer-provided accessories. Customer-provided DC accessories require separate leads connected directly to the battery for the voltage supply. Attach customer-supplied 12/24-volt DC accessories to the battery positive (+) connection at the starter solenoid and to the battery negative (-) connection at the engine ground. 120 VAC accessories require a customer-supplied voltage source.

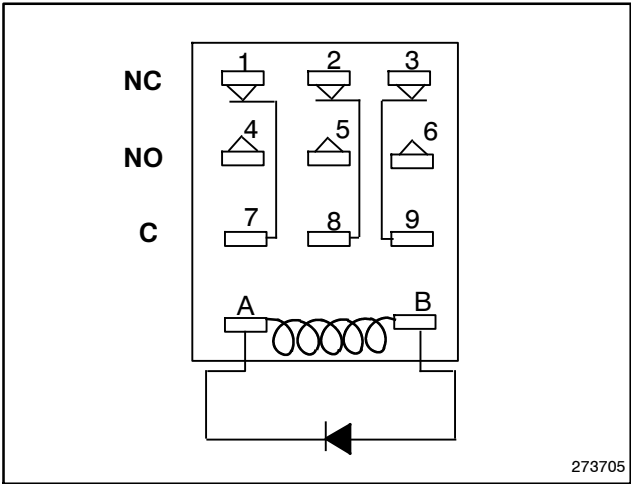


Figure 7 Relay Schematic

6. Restore power to the generator set.

- 6.1 Replace junction box panels if previously removed.
- 6.2 Check that the generator set master switch is in the OFF position (Decision-Maker® 3+ and 550 controllers).
- 6.3 Reconnect the generator set engine starting battery, negative (-) lead last.
- 6.4 Reconnect power to the battery charger, if equipped.

Parts List

Run Relay Kits

Kit: PA-273743		
Qty.	Description	Part Number
2	Washer, flat	X-25-9
2	Screw, machine	X-49-26
2	Nut, whiz	X-6210-3
1	Relay assembly, 12 V	273705
Kit: PA-273744		
Qty.	Description	Part Number
2	Washer, flat	X-25-9
2	Screw, machine	X-49-26
2	Nut, whiz	X-6210-3
1	Relay assembly, 24 V	273706
Kit: GM75749-KP9		
Qty.	Description	Part Number
1	Relay, 12 V	248362
2	Screw, machine M4-0.7 x 10 mm	M7985A-04010-20
2	Washer, lock	X-22-7
1	Harness, wiring	GM75854
Kit: GM75749-KP10		
Qty.	Description	Part Number
1	Relay, 24 V	248363
2	Screw, machine M4-0.7 x 10 mm	M7985A-04010-20
2	Washer, lock	X-22-7
1	Harness, wiring	GM75854

Availability is subject to change without notice. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Kohler® generator set distributor for availability.