Installation Instructions
800-2000A Frame Sizes
Power Break with Micro-VersaTrip®
Interchangeable trip units

Power Break Accessories

For Field Installation in 800-2000A Breakers

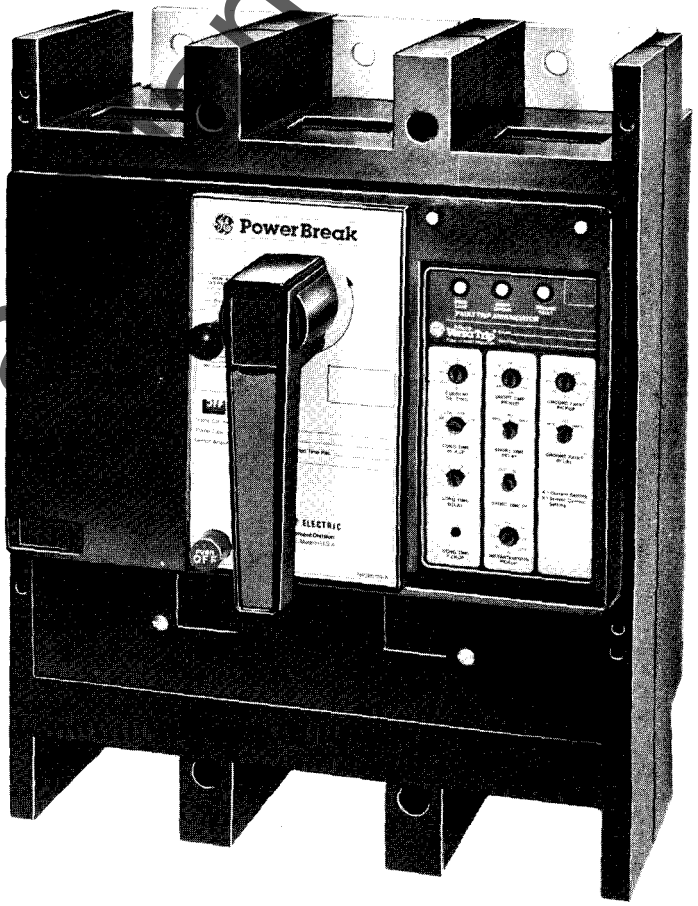


Fig. 1. Manual Circuit Breaker

Introduction
These instructions cover the field installation of internally mounted electrical accessories. They are UL Listed for use in all 800-2000A Power Break frames with Micro-VersaTrip® trip units. These accessories may also be installed in Power Break 800-1600A with MangeTrip™, but the UL Listing is voided.

Circuit Breaker Cover Removal
Warning: When installing accessories, the breaker must be completely de-energized and disconnected from the electrical circuit. This is mandatory because breaker must be "ON" during certain stages of installation and testing.

Caution: Do not turn breaker up-side-down. Loose parts may become lost.

1. Cover Removal-Manual Breaker (Fig. 1).
A. Press the OFF button on the circuit breaker.
B. Remove four cover mounting screws.
C. Remove the breaker cover.

Tools Required
Screwdrivers (1/4 and 3/8) inch tip widths).
Needle-nose pliers.
Round file (1/4 inch).
Torque-driver (suggested).

Test Equipment
Volt meter.
Continuity tester.
Variable transformer (see p. 5 for size).

Note:
All breakers are equipped with mechanical interlocks that automatically trip the breaker when the cover is removed with the breaker closed.

Contents

GENERAL ELECTRIC

2. Electrically Operated Breaker

a. Outer Cover Removal.—See Fig. 2 or 3.

1. Press the OFF button on the circuit breaker.
2. Disconnect all external leads from the terminal board.
3. Remove four outer cover mounting screws (Fig. 2 & 3).
4. Remove outer cover.

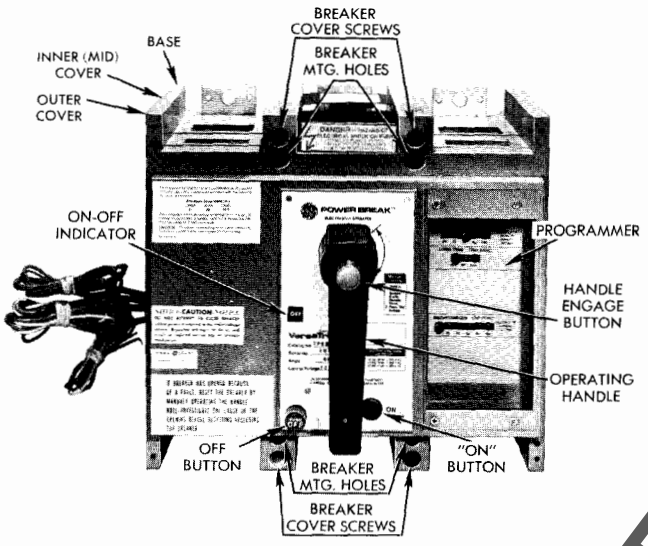


Fig. 2. *800A Frame Electrical Breaker*

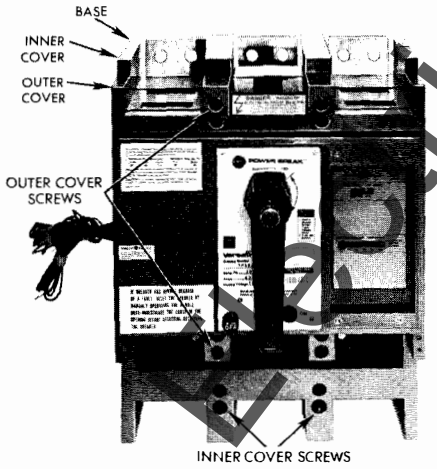


Fig. 3. *1600-2000A Frame Electrical Breaker*

b. Inner Cover Removal

1. 1600-2000A Frames only—Remove two inner cover mounting screws. (See Fig. 3).
2. Loosen captive inner cover lock screw as shown in Fig. 4.
3. Remove inner cover.

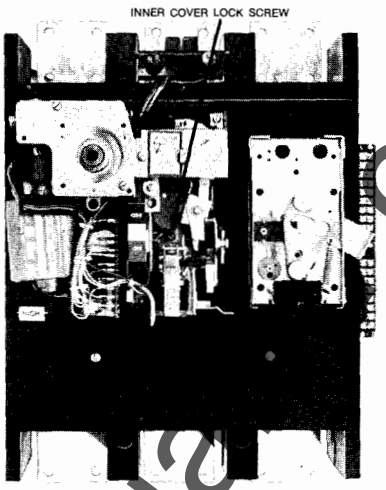


Fig. 4. *Inner Cover Lock Screw*

SHUNT TRIP DEVICE FOR 800-2000A FRAMES

GENERAL DESCRIPTION

The shunt trip provides the capability of electrically tripping the breaker from a remote location. A cut-off switch is supplied as part of the shunt trip to automatically remove power from its coil when the circuit breaker is tripped.

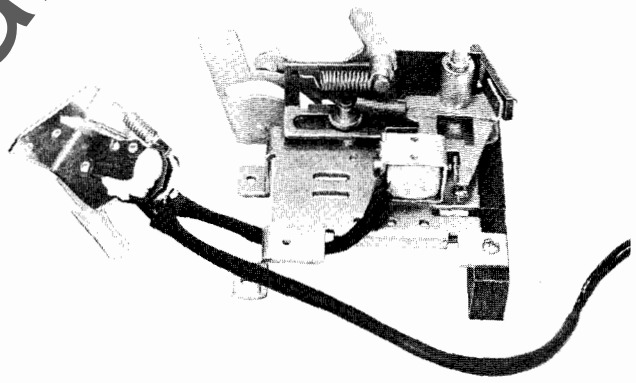


Fig. 5. *Shunt trip and cut-off switch. Coil is shown assembled to mounting plate, which is provided with circuit breaker.*

ELECTRICAL DATA

Shunt Trip Cat. No.	Voltage Rating	Max. Inrush Current-Amperes
TPST12S	120V ac 240V ac	2.25 4.50
TPST13S	480V ac 600Vac	1.64 2.05
TPST7S	12V dc	4.00
TPST8S	24V dc	2.18
TPST9S	48V dc	1.09
TPST10S	125V dc	1.00
TPST11S	250V dc	0.21

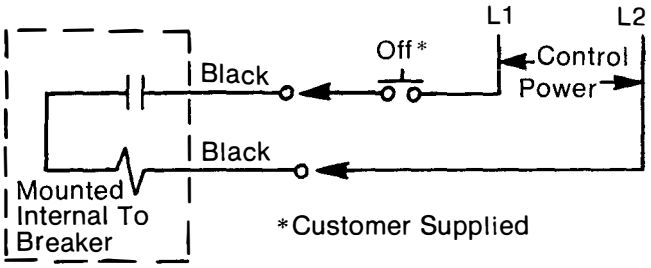


Fig. 6. Wiring Diagram

MOUNTING PLATE REMOVAL

The mounting plate is used as the anchor position for the shunt trip, blown-fuse trip and undervoltage release accessories. It is supplied with the circuit breaker whether or not any accessories have been installed.

1. Remove three (3) mounting plate retaining screws and isolation barrier, See Fig. 7.
2. Lift out accessory mounting plate and remove molded drive crank. (Fig. 11).
3. If tap changer is supplied, unscrew the two screws from phenolic block before removing mounting plate.

INSTALLATION

1. Assemble coil to mounting plate as shown in Fig. 7. If the mounting plate is also to be equipped with a blown-fuse trip device, mount the shunt trip as shown in Fig. 8.

NOTE: *Shunt trip coils rated 12V dc or 24V dc must be mounted in a position nearest the latch. These coil ratings may not develop enough force to drive both the latch and blown-fuse trip device.*

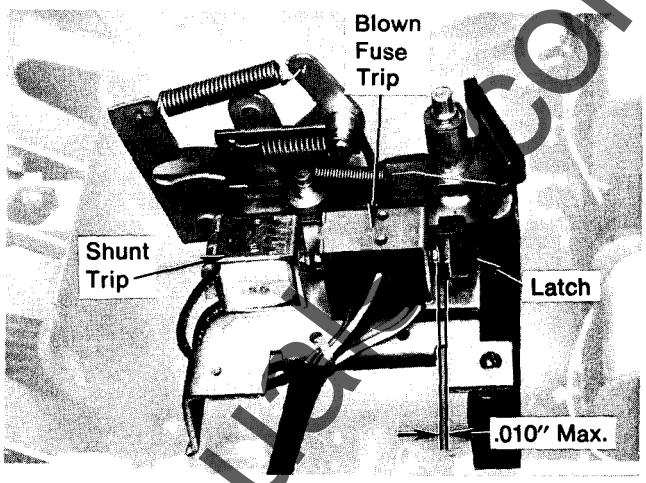


Fig. 8.

2. When supplied with a blown-fuse trip device, the shunt trip plunger stop-nut is placed in contact with the plunger of the blown fuse trip device.
3. Mount cut-off switch by first depressing the switch actuator. Align tapped holes in switch bracket with holes in arm stop (left pole) and secure with No. 8 x 9/16 screws and lock washer. (Tighten to 23 inch pounds Fig. 9).
4. Remove knockouts as required in side of base. Each knockout will accommodate up to three bundles of wires (Fig. 7). Remove all sharp edges with a file.
5. Clean all debris from inside of breaker.

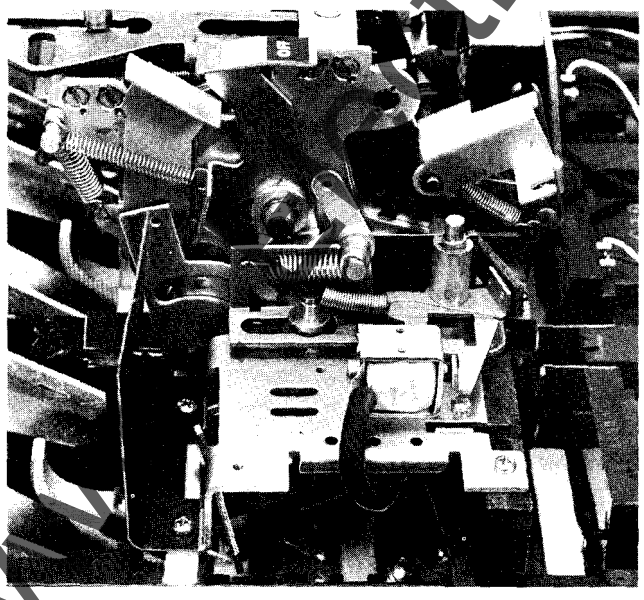


Fig. 7.

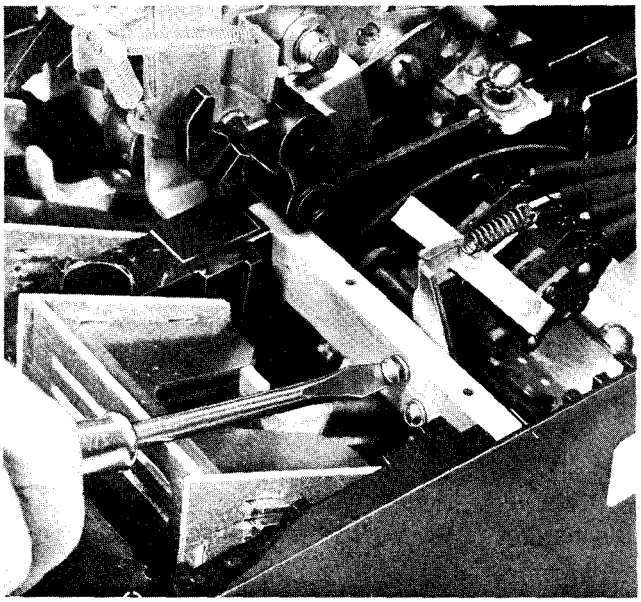


Fig. 9.

NOTE: *If shunt trip is being used to replace a defective coil, the cause of the initial failure should be first determined. If necessary consult factory for further guidance.*

MOUNTING PLATE REINSTALLATION

1. Replace molded drive crank onto mechanism drive pin engaging roll pins into slot in drive crank. (See Fig. 10).

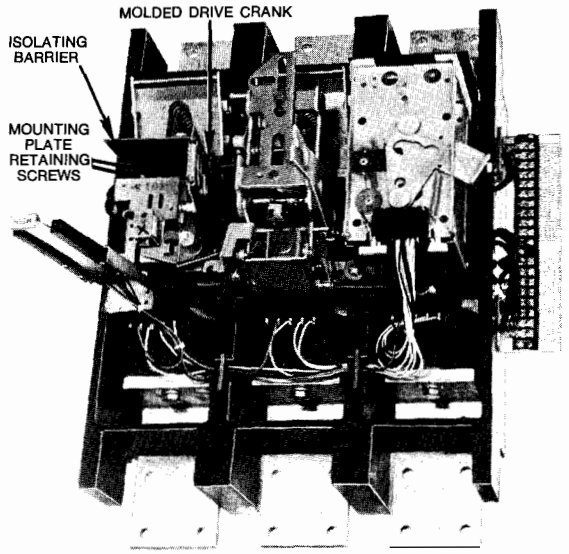


Fig. 10

2. Place mounting plate in position so that its two (2) operating studs engage the molded drive crank, see Fig. 10. Be sure isolating barrier is between mounting plate and crossbar.
3. Fasten three (3) retaining screws, see Fig. 11 and torque to 20 inch-pounds (2 small screws) and 75 inch-pounds (large screws with tubing).
4. Attach wire-ties to leads and secure to mounting plate as shown in Fig. 11.
5. Insert leads into knockout in base sidewall making sure one wire tie is on the inside of the base and the other is on the outside. See Fig. 11.
6. Apply descriptive label to front of circuit breaker cover.

COVER REASSEMBLY

Manual Circuit Breakers

1. Verify that all connections are secure and breaker is free of debris.
2. Verify that breaker is "OFF"

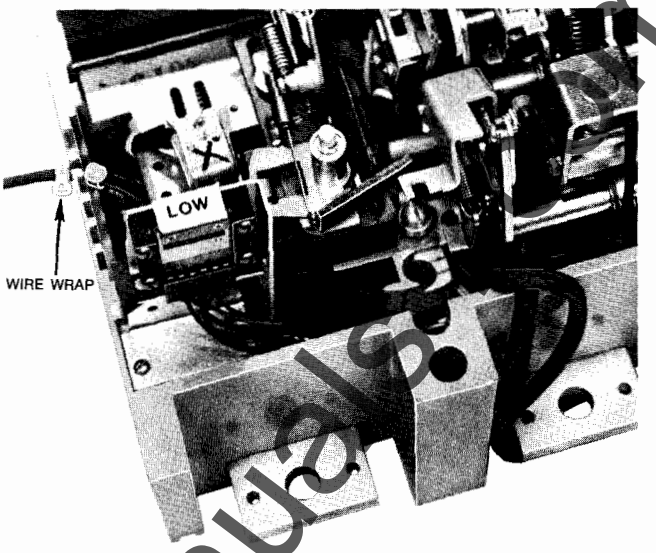


Fig. 11.

3. Position manual handle at the home position (6 o'clock) on the cover. Align cover mounting screw holes with breaker base and install four cover screws. Secure with 50 to 60 inch-pounds torque.

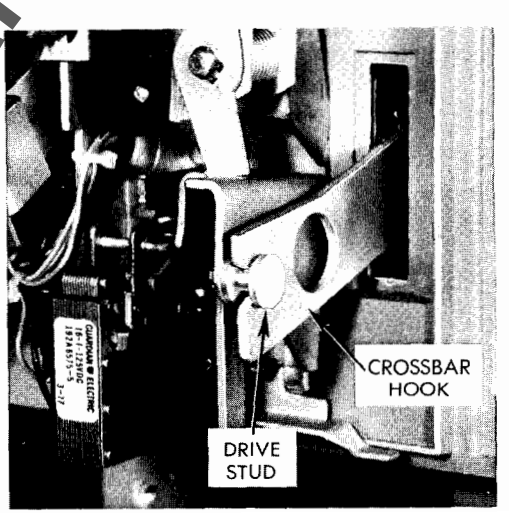


Fig. 12.

Electrical Circuit Breakers

1. Inner Cover Installation
   a. Verify that all connections are secure and breaker is free of debris.
   b. Slide the Inner Cover Assembly onto the breaker base. Ensure that the crossbar hook engages the drive stud as shown in Fig. 12.
   c. Tighten inner cover lock screw to 10-in.-lbs. max., See Fig. 4.
   d. 1600A-2000A Frames only—Replace two (2) inner cover mounting screws, See Fig. 2. Tighten to 50-60 inch-pounds torque.

2. Outer Cover Installation

a. Position handle at the home position (6 o'clock) on the outer cover. Align outer cover mounting screw holes with those of the inner cover and install four cover mounting screws, see Figs. 1 and 2. Secure with 50 to 60 inch pounds torque.

NOTE: *Ensure control terminal board properly engages cover retaining slots.*

b. Connect control and power wiring per instructions provided with circuit breaker.

UNDERVOLTAGE RELEASE DEVICE

GENERAL DESCRIPTION

The undervoltage release device (UVR) is used to open the circuit breaker when the supply voltage drops to 35-60 percent of its rated value.

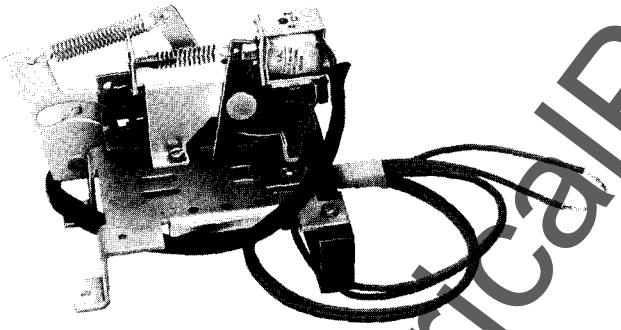


Fig. 13. *Undervoltage release accessory shown assembled to mounting plate*

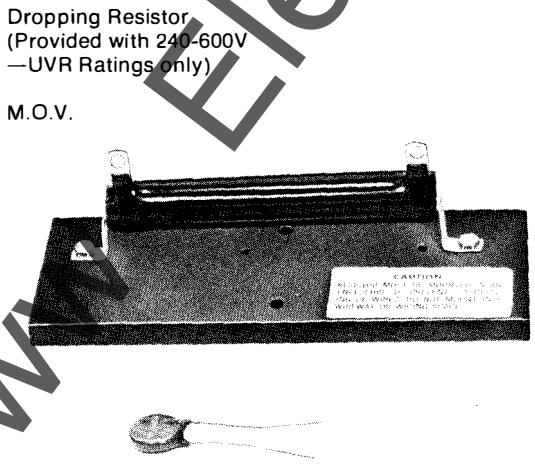


Fig. 14.

ELECTRICAL DATA

Cat. No.	Voltage Rating	Continuous Current (Ma)	Dropping Resistor (Ohmite Type 270)
TPUV1S	120V ac	25	none
TPUV2S	240V ac	25	5000Ω, 25watt
TPUV2S	480V ac	25	15,000Ω, 50watt
TPUV6S	600V ac	25	20,000Ω, 50watt
TPUV7S	12V dc	211	none
TPUV8S	24V dc	104	none
TPUV9S	48V dc	54	none
TPUV10S	125V dc	24	none
TPUV11S	250V dc	24	5000Ω, 25watt

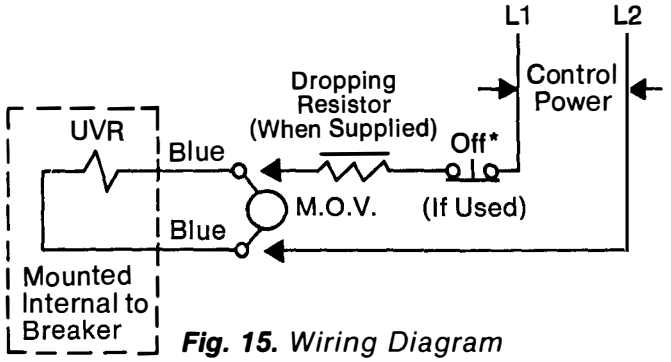


Fig. 15. *Wiring Diagram*

INSTALLATION

1. Disassemble the circuit breaker cover(s) as outlined on pages 1 and 2.
2. Installation of the UVR is accomplished on the accessory mounting plate, which is factory installed in the left pole of the breaker.
3. Remove the slide reset lever spring from the mounting plate as shown in Fig. 16. Care should be exercised not to nick or damage the spring in any way, since it will be needed for reassembly.

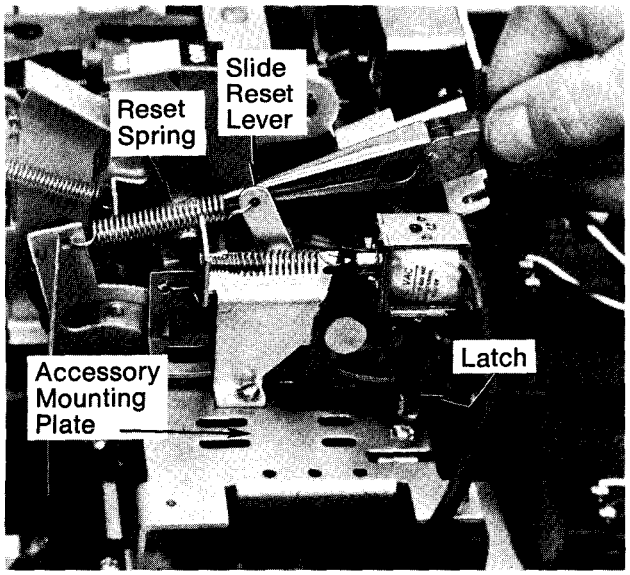


Fig. 16.

4. Push the latch and slide reset lever forward to provide mounting clearance for the undervoltage release assembly.
5. Position the UVR assembly mounting bracket so that its retaining hole engages the latch pivot post as shown in Fig. 17.
6. Line up the UVR bracket's mounting hole with the tapped hole in the accessory mounting plate. Install screw and lockwasher (Fig. 18). Tighten to 9-11 inch pounds.
7. Replace slide reset lever spring (Fig. 16).
8. Remove knockouts as required in side of base. Each knockout will accommodate up to three bundles of wires (Fig. 11). Remove all sharp edges with a file.

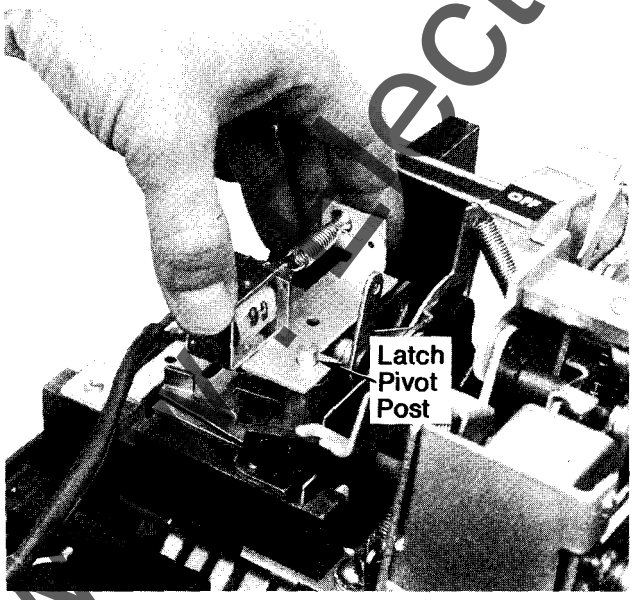


Fig. 17.

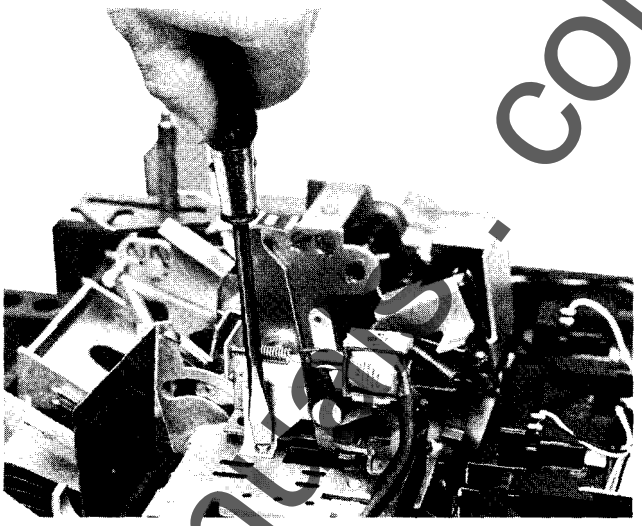


Fig. 18.

9. Clean all debris from inside of breaker.
10. Use the tie wraps provided to secure leads to mounting plate and to secure the wire bundle to inside and outside of the breaker base as shown in Fig. 11.
11. Reassemble the breaker as outlined in instructions on pages 4 and 5.
12. Mount the dropping resistor (when supplied) and M.O.V. (Fig. 14). Wire as shown in Fig. 15.
13. Functional Check.
    a) Apply rated voltage to the UVR coil.
    b) Turn the circuit breaker "on."
    c) Reduce control voltage. The circuit breaker should trip when the voltage drops to 35-60 percent of its rated value.
14. Apply the undervoltage release descriptive label to the left side of the breaker near the lead exit area.

BLOWN-FUSE TRIP DEVICE

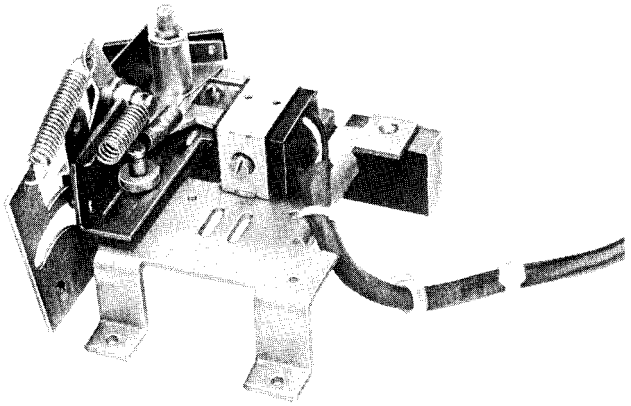


Fig. 19.

GENERAL DESCRIPTION AND APPLICATION

The blown-fuse trip device (three-coil shunt trip) is intended for use in applications where breakers and fuses are used in series. This accessory prevents single-phasing conditions by monitoring the fuses and automatically tripping the circuit breaker when a fuse blows. It does not protect from single-phasing of the power source.

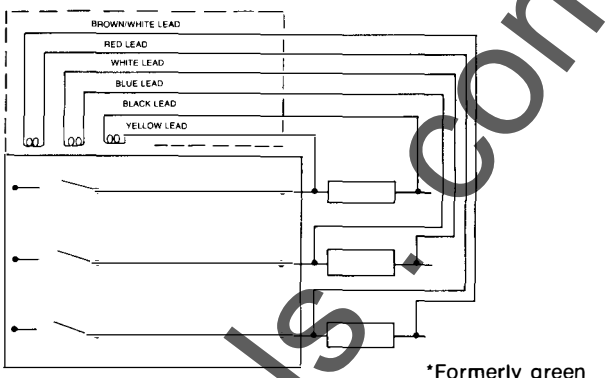
Each coil of the blown-fuse trip device is wired across a fuse so that the voltage across an open fuse is fed back to the accessory coil. When the coil is energized, the solenoid core releases the spring biased latch, allowing the slide to rotate the breaker latch, tripping the breaker. The fuse must be replaced and the breaker reset before it can be reclosed.

If the breaker is closed on an open fuse, the blown-fuse trip device will automatically open the circuit breaker.

INSTALLATION

Installation of the blown-fuse trip device is similar to the shunt trip installation.

1. Complete steps 1-3 under "Mounting Plate Removal" on page 3.
2. Complete steps 1 and 2 under "Installation" on page 3.
3. Perform installation checks listed below:
   a. Replace the breaker cover. Close the breaker contacts.
   b. To check electrical operation, apply 120 volts to one coil of the blown-fuse trip device for not more than one second. The breaker must trip. Repeat the test for each coil.



3-POLE THREE-PHASE APPLICATION
Blown-fuse Trip Device

***Fig. 20:** Wiring Diagram*

4. Attach six (6) lead wires across each of the three fuses as shown in Fig. 20.
5. Apply the descriptive label to the front of the breaker cover.

COVER REASSEMBLY

Be sure cover (or covers) have been properly re-assembled. Refer to instructions on pages four and five.

AUXILIARY SWITCH

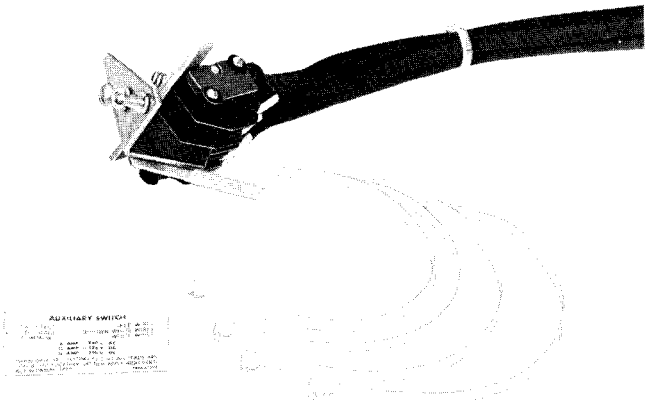


***Fig. 21.** Auxiliary switch*

ELECTRICAL DATA

TABLE 1
AUXILIARY SWITCH KITS

Auxiliary Switch Catalog Number	Number of Switch Elements	Maximum Ampere Rating Switch Elements
TPAS2AB*	1-12	6A at 240VAC .25A at 250VDC .50A at 125VDC

*Suffix numbers 1 through 12 designate number of switch elements.

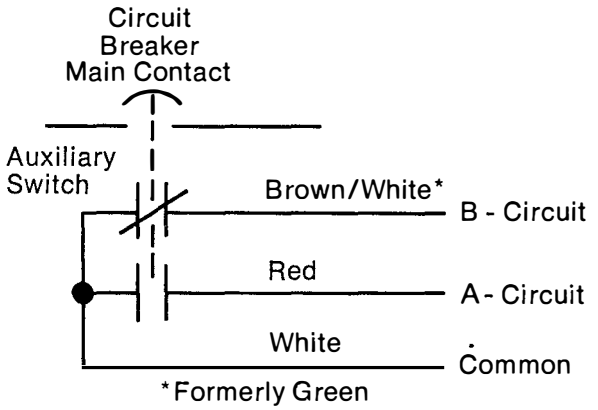


Fig. 22. *Wiring Diagram*

DESCRIPTION

The auxiliary switch is used for remote indication of breaker main contact position—OPEN or CLOSED. No distinction is made between an open or tripped mode. A maximum of 12 switches can be installed per breaker. Each is a single-pole, double-throw (AB-type) and rated as shown in Table 1. Two switch positions must be devoted to each shunt trip accessory (if used) per breaker.

INSTALLATION

1. Refer to "Cover(s) Removal" instructions on page one and remove cover (manual breaker) or covers (electrically operated breaker).
2. Installation location. Both left and right circuit breaker poles can accept up to six auxiliary switches. If the left pole contains a shunt trip, two of the six auxiliary switch positions must be used for the cut-out switches; therefore only four auxiliary switches may be used in the left pole.
3. If auxiliary switches are to be installed in the right pole, remove interchangeable solid state trip unit by depressing lock release lever while lifting up on trip unit. Remove trip unit mounting plate. See Fig. 23.

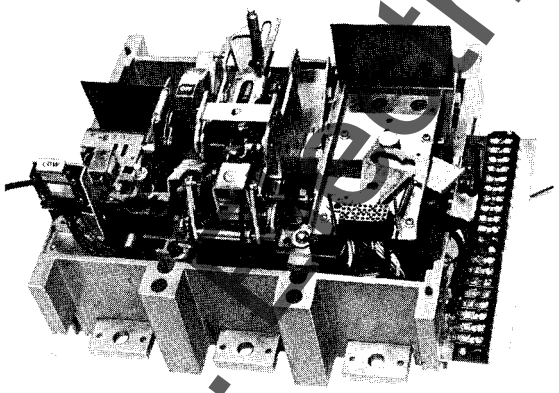


Fig. 23.

4. Position the auxiliary switch asembly so that the tapped mounting holes on its bracket line up with the through holes in the arm stop (Fig. 24).
5. Secure auxiliary switch assembly to arm stop with two #8 x 9/16 screws and lock washers (Fig. 25). Tighten to 23 inch pounds.
6. Remove knockouts as required in side of base. Each knockout will accommodate up to three bundles of wire (Fig. 12). Remove all sharp edges with a file.
7. Clean all debris from inside of breaker.

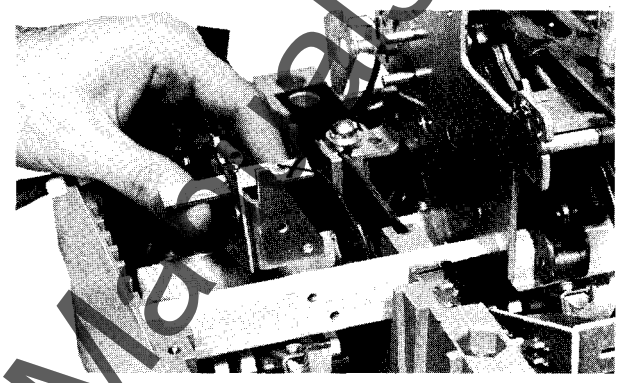


Fig. 24.

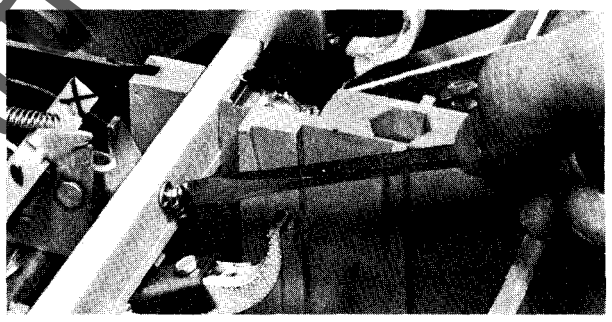


Fig. 25.

8. Use the wraps provided to secure leads as shown in Fig. 11.
9. Replace solid state trip unit and its mounting plate.
10. Replace cover(s) by following "Cover Reassembly" instruction on page 4.
11. Functional Check
    a) With the breaker open ("OFF") use a continuity tester to verify continuity between the white and brown/white leads. An open circuit should exist between the red and white leads.
    b) With the circuit breaker closed ("ON") the auxiliary switch contacts should change sense.
12. Apply the auxiliary switch description label on the front of the breaker cover.

GEH-4649 6/81 PS-E

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GENERAL ELECTRIC