Installation Instructions for Shunt Trip for Cutler-Hammer GMCP Motor Circuit Protectors

⚠ WARNING

DO NOT ATTEMPT TO INSTALL OR PERFORM MAINTENANCE ON EQUIPMENT WHILE IT IS ENERGIZED. DEATH, SEVERE PERSONAL INJURY, OR SUBSTANTIAL PROPERTY DAMAGE CAN RESULT FROM CONTACT WITH ENERGIZED EQUIPMENT. ALWAYS VERIFY THAT NO VOLTAGE IS PRESENT BEFORE PROCEEDING WITH THE TASK, AND ALWAYS FOLLOW GENERALLY ACCEPTED SAFETY PROCEDURES.

CUTLER-HAMMER IS NOT LIABLE FOR THE MISAPPLICATION OR MISINSTALLATION OF ITS PRODUCTS.

The user is cautioned to observe all recommendations, warnings, and cautions relating to the safety of personnel and equipment as well as all general and local health and safety laws, codes, and procedures.

The recommendations and information contained herein are based on Cutler-Hammer experience and judgement, but should not be considered to be all-inclusive or covering every application or circumstance which may arise. If any questions arise, contact Cutler-Hammer for further information or instructions.

1. INTRODUCTION

General Information

The shunt trip (Fig. 1-1) provides remote controlled electrical tripping for the device and consists of an intermittent rated solenoid with a tripping plunger and a cutoff switch mounted in a plug-in module. Shunt trip modules are mounted so that when the solenoid is energized, the plunger presses against the trip bar and trips the device. As the device trips, the accessory operating projection on the molded crossbar presses against the cutoff switch actuator arm to open the cutoff switch, disconnecting power to the solenoid and preventing coil burn out.

Table 1-1 lists application and electrical operating rating data for the shunt trip.

This instruction leaflet (IL) gives detailed procedures for installing the shunt trip.

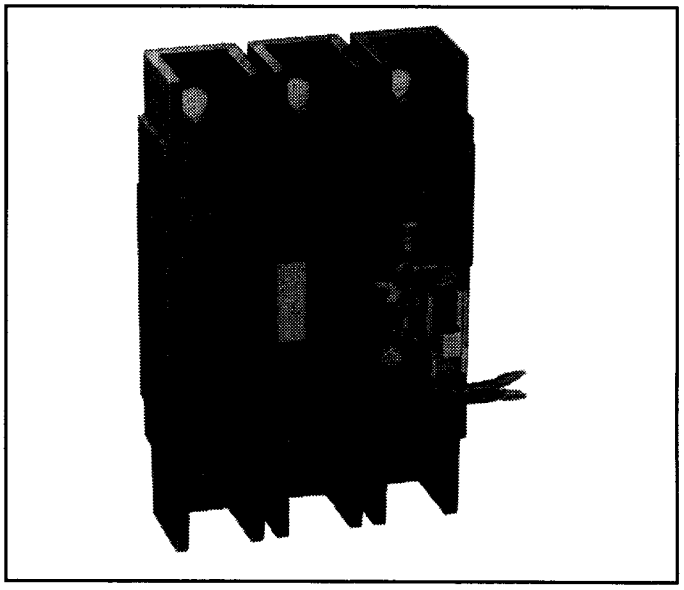

Fig. 1-1 Shunt Trip Installed in GMCP

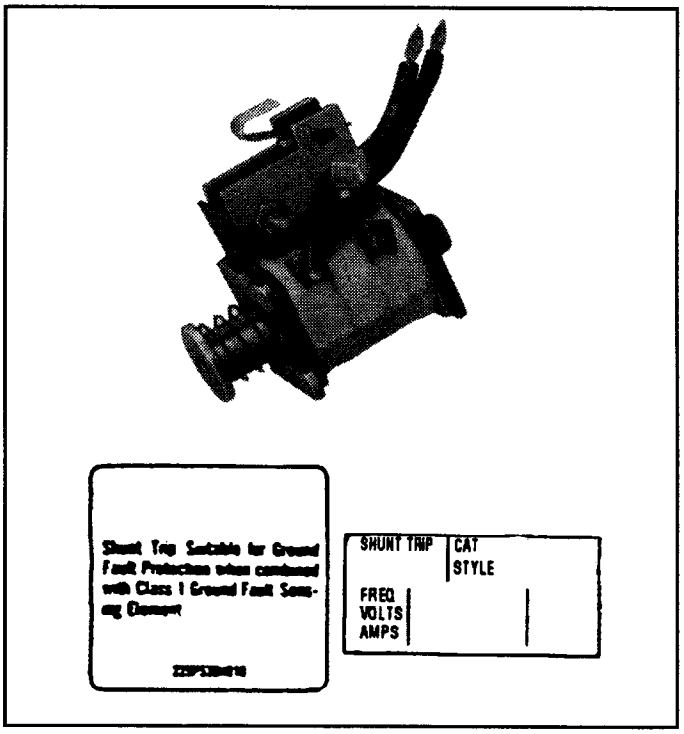

Fig. 2-1 Shunt Trip Kit

2. INSTALLATION

Note: For sealed devices, Underwriters Laboratories, Inc. UL489 requires that internal accessories be installed at the factory. The shunt trip is listed only for factory installation under UL File E7819.

Before attempting to install the shunt trip, check that the style number is correct and the rating of the accessory satisfies job requirements.

The shunt trip, shown in kit form in Fig. 2-1, can be installed in the left-hand accessory mounting cavity. A shunt trip must be installed in the device before the device is mounted in an electrical system. To install the shunt trip, perform the following procedures:

Note: A device that is mounted in an electrical system must be removed to install the accessory. To ensure correct accessory installation, the device must be placed on a horizontal surface.

⚠ WARNING

BEFORE REMOVING A DEVICE INSTALLED IN AN ELECTRICAL SYSTEM, MAKE SURE THE DEVICE IS SWITCHED TO THE *OFF* POSITION AND THERE IS NO VOLTAGE PRESENT WHERE WORK IS TO BE PERFORMED. SPECIAL ATTENTION SHOULD BE PAID TO REVERSE FEED APPLICATIONS TO ENSURE NO VOLTAGE IS PRESENT. THE VOLTAGES IN ENERGIZED EQUIPMENT CAN CAUSE DEATH OR SEVERE PERSONAL INJURY.

2-1. Switch device to the OFF position.

2-2. Disconnect and remove device from installation and terminal connections.

2-3. Remove cover screws and cover.

⚠ CAUTION

DURING INSTALLATION AND MECHANICAL CHECKS OF THE SHUNT TRIP, DO NOT TOUCH THE DEVICE CALIBRATED TRIP MECHANISM. CONTACT WITH THE CALIBRATED TRIP MECHANISM COULD CHANGE TRIP CHARACTERISTICS.

2-4. Locate knockout (Fig. 2-2) provided in left side of cover for accessory wiring. Remove knockout and file rough edges smooth.

2-5. With cover in inverted position (Fig. 2-3), position shunt trip plug-in module as shown and slide into mounting cavity in device cover.

Note: Left-hand mounting cavity will be on the right when inside of cover is facing upwards.

Make sure that leads are properly nested and fit into notch provided in cover.

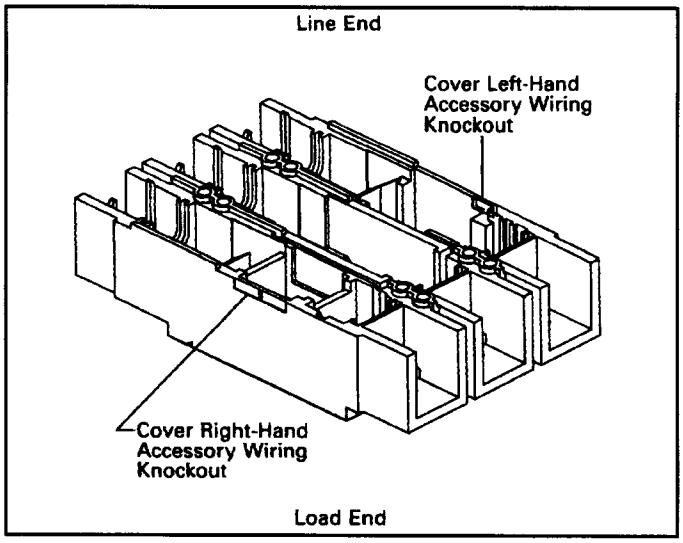

Fig. 2-2 Location of Accessory Wiring Knockout in Cover

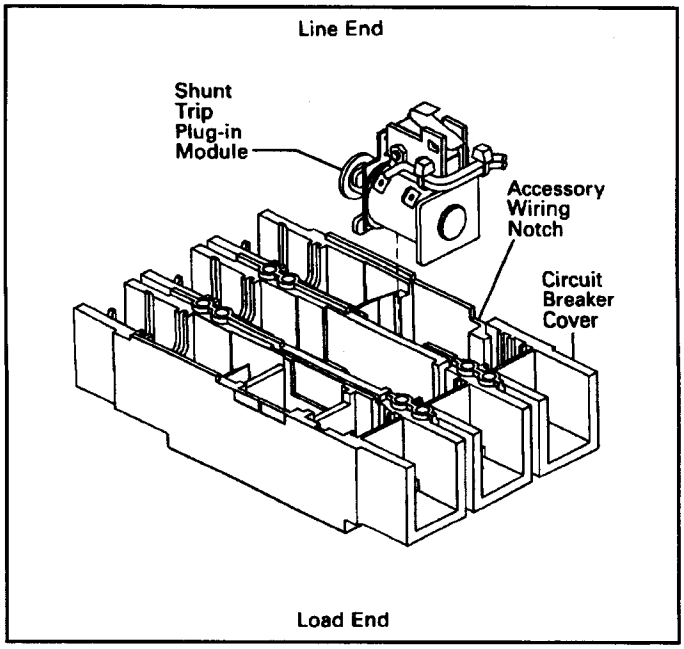

Fig. 2-3 Shunt Trip Installation

WARNING

WHEN INSTALLING THE ACCESSORY, DO NOT PUT FINGERS NEAR MOVING PARTS INSIDE THE DEVICE CASE. SPRINGS CAUSE INTERNAL PARTS TO MOVE QUICKLY AND WITH FORCE. CONTACT WITH MOVING PARTS CAN CAUSE INJURY.

2-6. Install shunt trip lever into slot in left pole trip bar. (See Fig. 2-4) Insert until shoulder of lever rests on trip bar. Lever should be oriented so that it angles toward line side of breaker (See Fig. 2-4 and 2-5).

CAUTION

WHEN INSTALLING THE DEVICE COVER, MAKE SURE OF THE FOLLOWING:

- **ARC EXTINGUISHERS ARE IN THE ARC EXTINGUISHER CAVITIES.**
- **INTERPHASE BARRIERS ARE FULLY INSERTED IN BASE.**
- **CAM ROD GEAR IS POSITIONED AS SHOWN IN FIG. 2-5.**
- **RED ADJUSTING KNOB IN COVER IS POSITIONED TO THE "A" SETTING (SEE FIG. 2-5).**

2-7. With the device handle in the OFF position install cover.

Make sure of the following:

- Push to Trip button assembles correctly into cover. Check function afterwards.
- Cam rod gear does not rotate out of position. (It may be necessary to hold it in position with a small tool while cover is being lowered onto base). Check function afterwards.
- Pigtail leads are not pinched by cover.
- Install cover screws.

2-8. Place labels supplied with kit on device. (See Fig. 2-6.)

2-9. Test shunt trip. Connect ohmmeter across pigtail leads or terminal block connections. Check continuity as follows:

a. Device handle OFF - no continuity.

b. Device handle ON - less than 9000 ohms.

2-10. Where practical and after taking all necessary precautions, apply shunt trip rated voltage to shunt trip. Test operation of shunt trip as follows:

a. With device closed, push shunt trip test button. Device must trip. Shunt trip must not buzz.

b. With device open, push shunt trip test button. Shunt trip must not operate.

2-11. Install device.

2-12. Connect shunt trip as required (see Fig. 2-7).

Cutler-Hammer assumes no responsibility for malfunctioning accessories installed improperly by the customer.

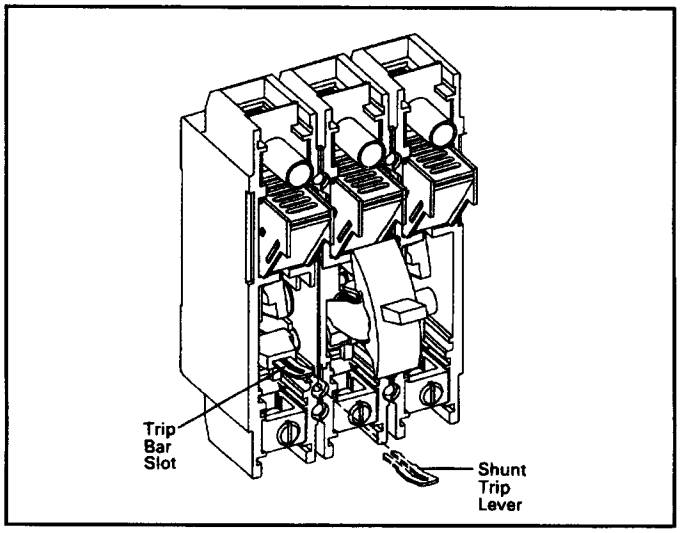

Fig. 2-4

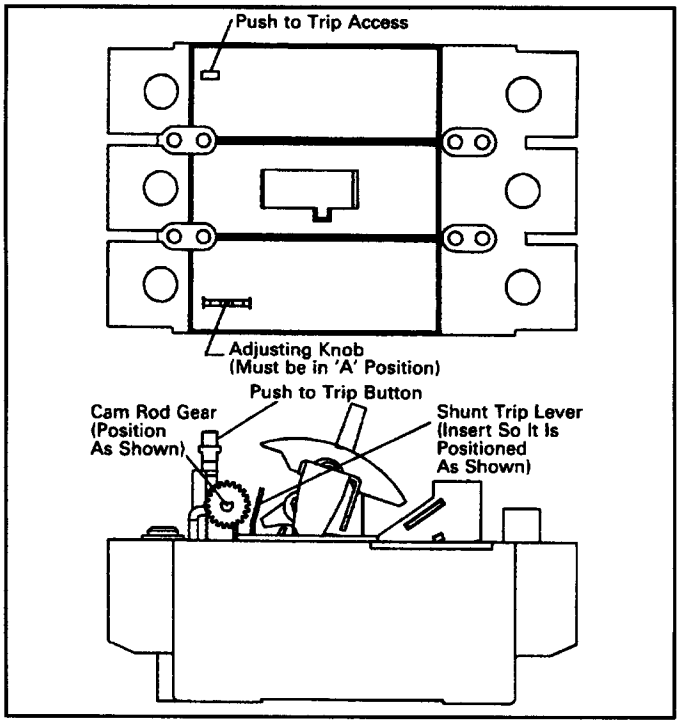

Fig. 2-5

Table 1-1. Shunt Trip Electrical Rating Data①②③④⑤⑥

Application Ratings		Electrical Operating Ratings						
Voltage (V)	Frequency (Hz)	Supply Voltage (V)	Minimum Operating Voltage (V)	I_p at 0.017s (A)	I_{Dc} at 0.25s (A)	I_{rms} at 0.033s (A)	VA	One Minute Dielectric Withstand Voltage (V)
120-240	50/60	120 240	66 66	1.6 3.0		1.1 2.1	135 500	1500

Notes:
① Shunt trip is suitable for ground fault protection when combined with Class 1 ground fault sensing element.
② Average unlatching time approximately 6 milliseconds.
③ Average circuit breaker contact total opening time approximately 18 milliseconds.
④ Endurance - 600 electrical operations of the shunt trip plus 9400 mechanical operations of the circuit breaker.
⑤ Shunt trip can be operated up to a maximum of six times per minute.
⑥ Maximum operating voltage 100% of maximum voltage range rating.

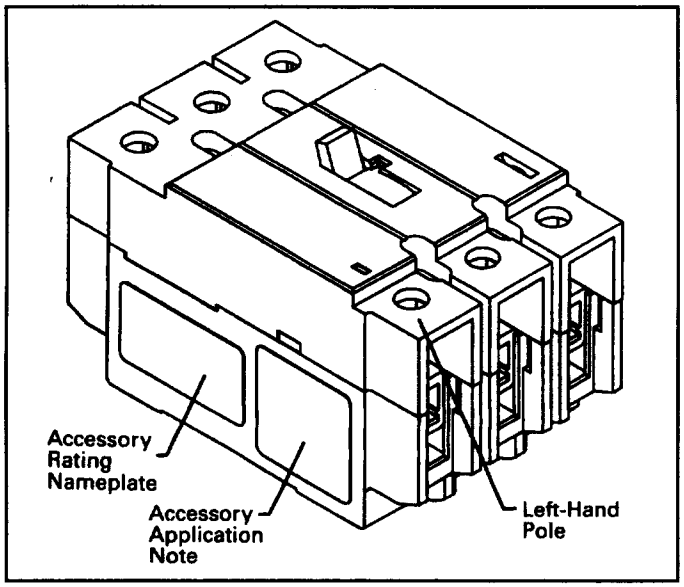

Fig. 2-6 Preferred Mounting Locations for Accessory Nameplate Labels

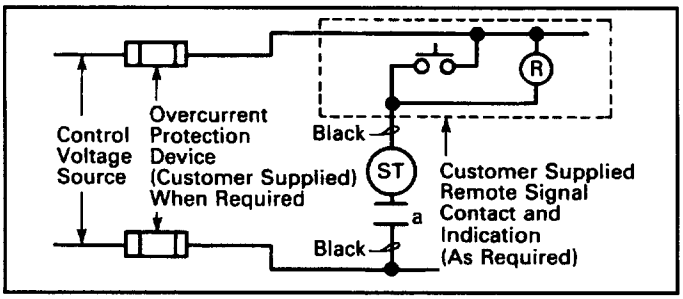

Fig. 2-7 Shunt Trip Connection Diagram

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