Fred #15552

Installation Instructions for Alarm (Signal)/Lockout Switch for GB/GHB, GC/GHC Circuit Breakers

⚠ 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 alarm (signal)/lockout switch (ASL switch) (Fig. 1-1) provides remote signaling and interlocking when the circuit breaker trips, and consists of one single-pole double-throw (SPDT) switch housed in a plug-in module. The ASL switch is wired for one "make/break" contact arrangement (Fig. 2-7). The ASL switch is mounted so that the switch actuator arm is connected to the circuit breaker operating mechanism cradle. The actuator arm extends past the operating mechanism cradle; therefore only one ASL switch can be used in a circuit breaker. When the circuit breaker is in the ON or OFF position, the cradle holds the "make" contact open and the "break" contact closed. When the circuit breaker is in the tripped position, the "make" contact is closed and the "break" contact is open. Any trip operation actuates the ASL switch.

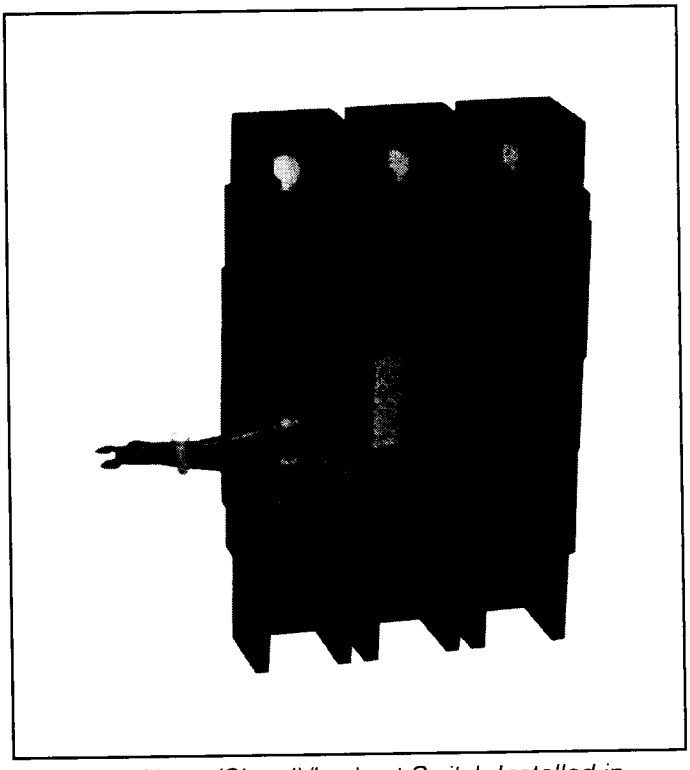

Fig. 1-1 Alarm (Signal)/Lockout Switch Installed in GHC Circuit Breaker

Table 1-1 lists electrical rating data for the ASL switch.

Table 1-1. Alarm (Signal)/Lockout Switch Electrical Rating Data①②

Maximum Voltage (V)	Freq. (Hz)	Maximum Current (A)	Dielectric Withstand Voltage (V)
240	50/60	6	1500

① Endurance - 600 electrical operations of the ASL switch plus 9400 mechanical operations of the circuit breaker

② Pigtail wire size - No 18 AWG (0.82 mm^2)

This Instruction Leaflet (IL) gives detailed procedures for installing the ASL switch.

2. INSTALLATION

Note: For sealed circuit breakers, Underwriters Laboratories, Inc. UL489 requires that internal accesso-

ries be factory installed. The ASL switch is listed only for factory installation under UL File E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field-installed. In this case, the UL listing mark must be removed.

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

The ASL switch, shown in kit form in Fig. 2-1, can be installed in the right-hand accessory mounting cavity in the cover of a 2- or 3-pole circuit breaker. An ASL switch must be installed in a circuit breaker before the circuit breaker is mounted in an electrical system. Install the ASL switch as follows:

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

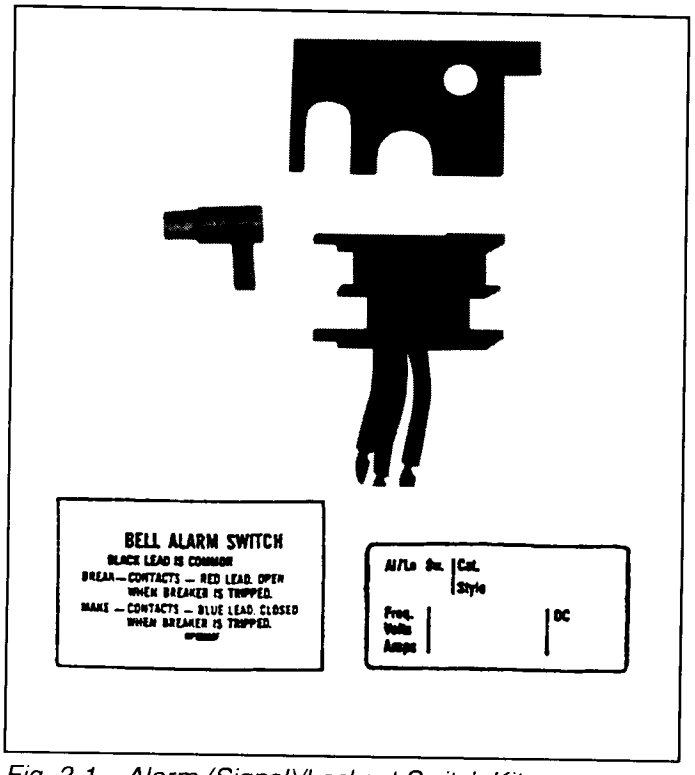

Fig. 2-1 Alarm (Signal)/Lockout Switch Kit

⚠ WARNING

BEFORE REMOVING A CIRCUIT BREAKER INSTALLED IN AN ELECTRICAL SYSTEM, MAKE SURE THE CIRCUIT BREAKER 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 circuit breaker to the OFF position.

2-2. Disconnect and remove circuit breaker from installation and terminal connections.

2-3. Remove cover screws and cover.

2-4. Remove circuit breaker operating handle from handle arm (Fig. 2-2).

⚠ CAUTION

DURING INSTALLATION OF ACCESSORY, DO NOT TOUCH THE CIRCUIT BREAKER CALIBRATED TRIP MECHANISM. CONTACT WITH THE CALIBRATED TRIP MECHANISM COULD CHANGE THE TRIP CHARACTERISTICS.

Note: To install the ASL switch, the circuit breaker operating mechanism must be in the tripped position.

2-5. Trip the circuit breaker mechanism by lightly depressing the trip bar actuating barrier (Fig. 2-2).

2-6. Remove interphase barrier between right-hand pole and operating mechanism. Insert replacement interphase barrier (Fig. 2-2).

⚠ CAUTION

EPOXY CEMENT MUST BE FULLY CURED (STEP 2-6) BEFORE TESTING. FAILURE TO ALLOW EPOXY CEMENT TO CURE CAN RESULT IN INCORRECT RETENTION OF ASL SWITCH ACTUATOR BY CRADLE KEY.

USE ONLY RECOMMENDED TYPES OF EPOXY CEMENT. ALTERNATE TYPES, INCLUDING SUPER BOND, WILL ADVERSELY AFFECT THE ASL SWITCH ACTUATOR MATERIAL.

Note: For standard epoxy cement (Hy-Sol Epoxy Kit 11C, Hy-Sol Company, Olean, New York) allow at least 12 hours to cure.

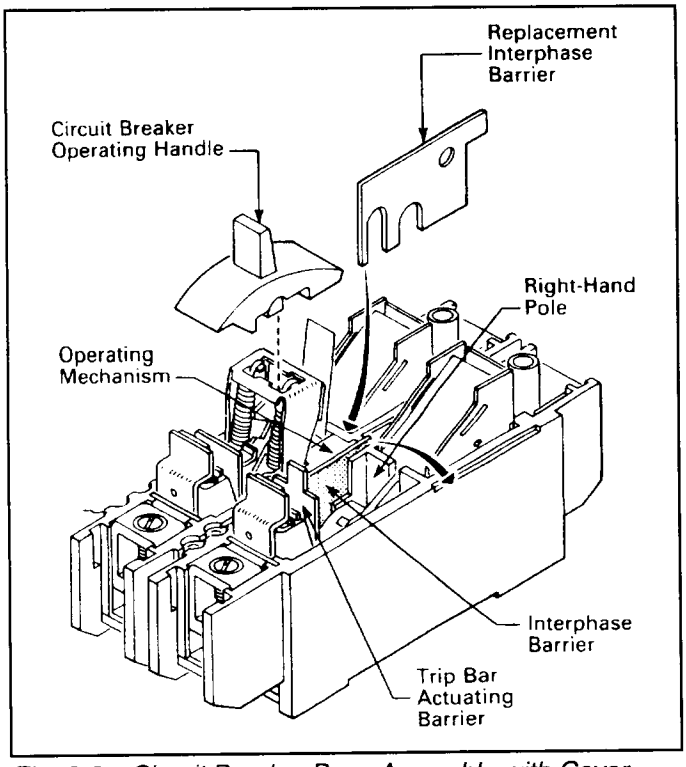

Fig. 2-2 Circuit Breaker Base Assembly with Cover Removed. Replacement of Right-Hand Interphase Barrier

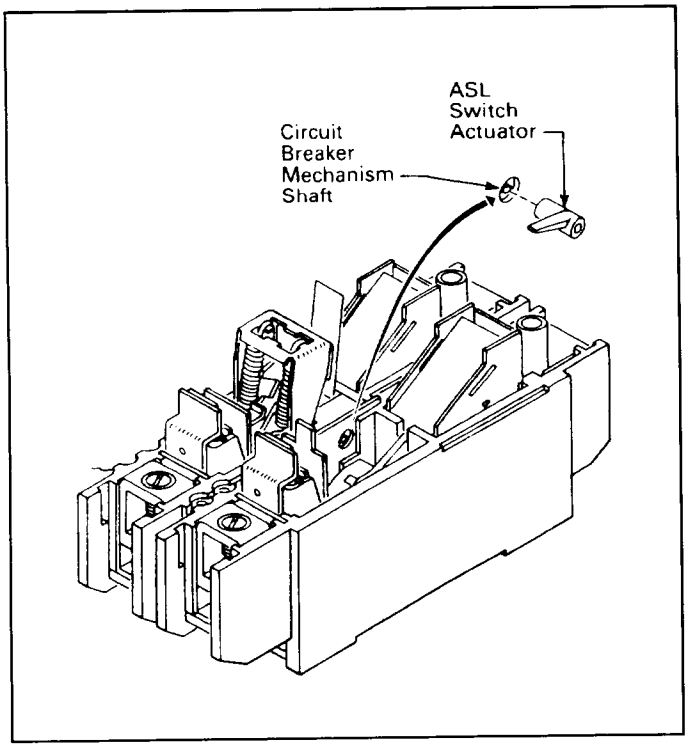

Fig. 2-3 ASL Switch Actuator

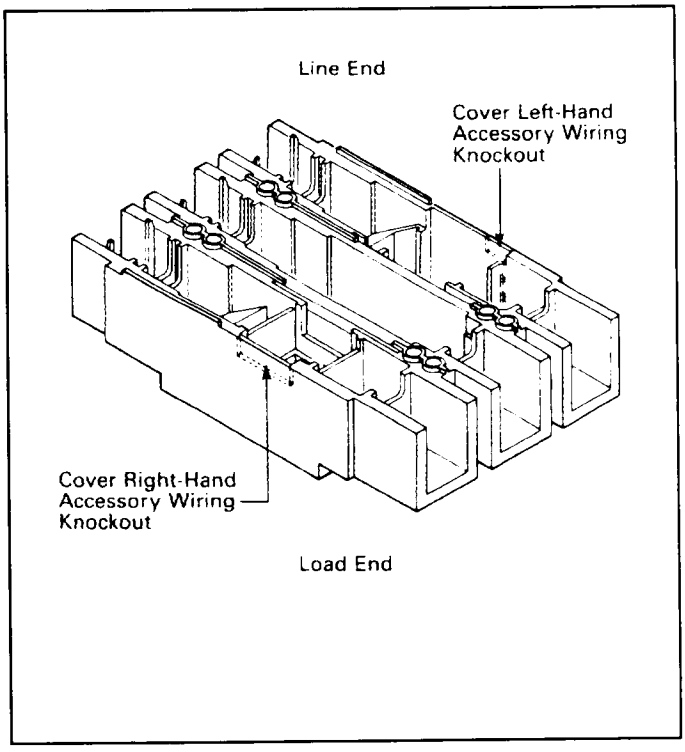

Fig. 2-4 Location of Accessory Wiring Knockout in Cover

For fast acting epoxy cement (HySol Epoxy-Kit 390) allow at least one hour to cure.

2-7. Apply one drop of epoxy cement to inside of key hole slot in ASL switch actuator (Fig. 2-3). Wipe off excess cement. Push ASL switch actuator onto circuit breaker mechanism shaft.

2-8. After the epoxy cement curing period, check that actuator is secure on circuit breaker mechanism shaft. Gently try to remove actuator. Actuator must not move.

2-9. Locate knockout (Fig. 2-4) provided in right side of cover for accessory wiring. Remove knockout and file rough edges smooth.

2-10. With cover in inverted position (Fig. 2-5), position ASL switch plug-in module as shown and slide into mounting cavity in circuit breaker cover.

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

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

Note: Testing of ASL switch should not be carried out until epoxy resin has fully cured.

2-11. Carry out preliminary mechanical operation check. After epoxy has cured on the ASL switch actuator and before the cover is installed, confirm the correct operation of the actuator by doing the following checks:

a. Close the circuit breaker. Trip the circuit breaker by depressing the barrier (which rotates the trip bar). (See Fig. 2-2.) The ASL switch actuator should move upwards.

b. Relatch and reclose the circuit breaker. Open the circuit breaker by moving the handle to the OFF position. The ASL switch actuator should not move.

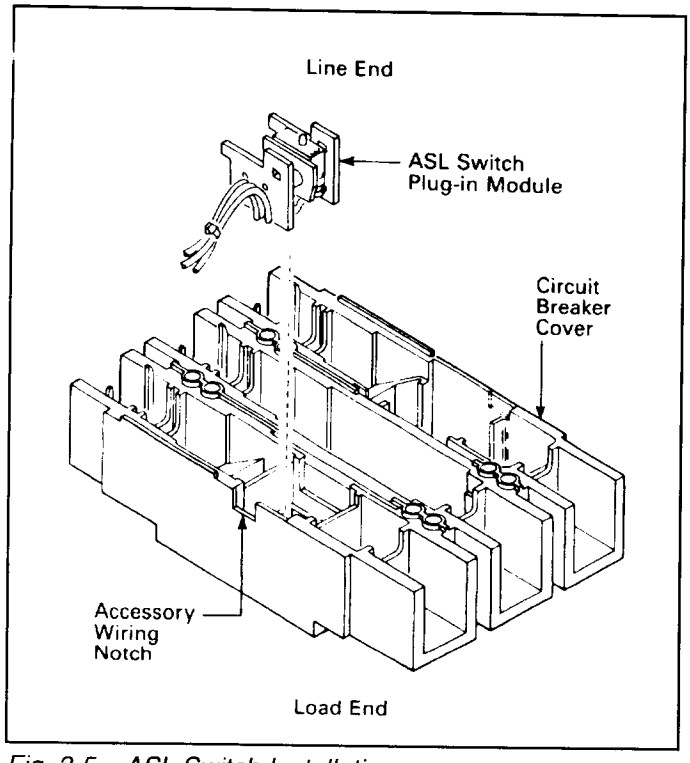

Fig. 2-5 ASL Switch Installation

CAUTION

WHEN INSTALLING THE CIRCUIT BREAKER COVER, MAKE SURE THAT ALL INTERNAL PARTS ARE IN PLACE:

- **ARC EXTINGUISHERS ARE IN THE ARC EXTINGUISHERS CAVITIES.**
- **INTERPHASE BARRIER IS FULLY INSERTED IN BASE.**
- **PIGTAIL LEADS ARE NOT PINCHED BY THE COVER.**

2-12. Install circuit breaker handle on handle arm (Fig. 2-2).

2-13. With circuit breaker handle in the OFF position and pigtail leads routed as required, install cover and cover screws.

2-14. When ASL switch is installed at a non-UL approved location, remove and discard UL listing label.

2-15. Place labels supplied with kit on circuit breaker. (See Fig. 2-6.)

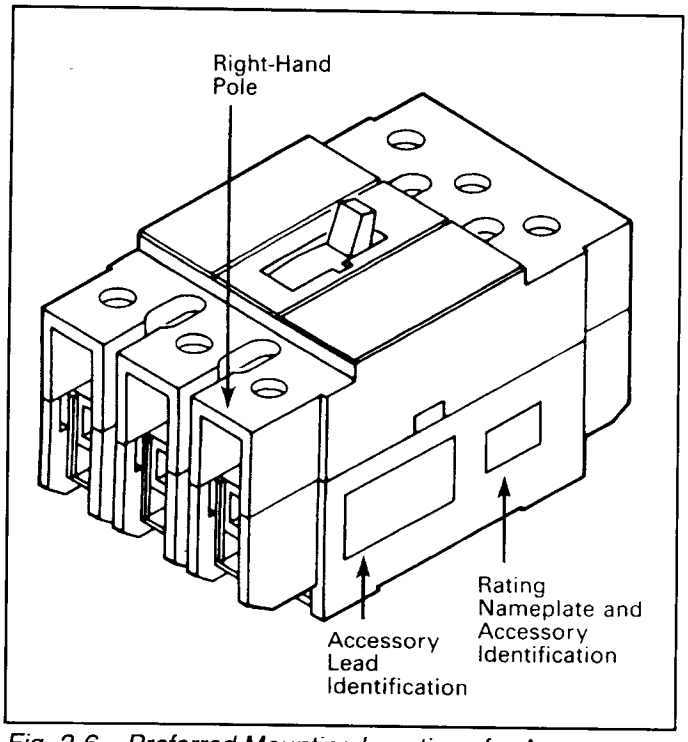

Fig. 2-6 Preferred Mounting Locations for Accessory Labels

Note: Label on circuit breaker shows connection diagram for ASL switch contacts. Pigtail leads are color coded red, black, and blue (see Fig. 2-7).

2-16. Test ASL switch. Connect continuity tester or ohmmeter across pigtail leads. Check continuity as follows:

a. Circuit breaker handle OFF - Check that the make contact (blue lead) is open and the break contact (red lead) is closed.

b. Circuit breaker handle ON - Check that the make contact (blue lead) is open and the break contact (red lead) is closed.

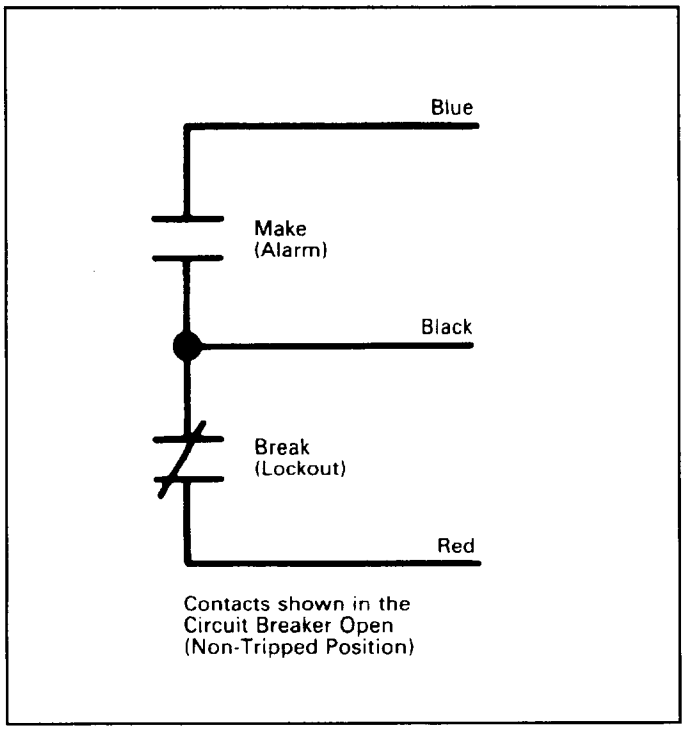

Fig. 2-7 Alarm (Signal)/Lockout Switch Connection Diagram

Note: There should be no change in position of the ASL switch contacts between the circuit breaker OFF and ON positions since ASL contacts only change position after a tripping operation.

2-17. Install circuit breaker.

2-18. Connect accessory leads as required (see Fig. 2-7).

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

NOTES