



Installation Instructions for GB/GHB/GDB Molded Case Circuit Breakers



WARNING

DO NOT ATTEMPT TO INSTALL OR PERFORM MAINTENANCE ON EQUIPMENT WHILE IT IS ENERGIZED. SEVERE PERSONAL INJURY, DEATH, 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 judgment, 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

GB/GHB/GDB circuit breakers (Fig. 1-1) (hereafter referred to as circuit breaker) are thermal-magnetic 1, 2, and 3 pole devices available in ratings from 15A to 100A continuous current. These circuit breakers are listed in accordance with Underwriters Laboratories, Inc. Standard UL489 (Procedure E7819, Volume B), Canadian Standards Association (LR43556), and satisfy the (P1) requirements of the International Electrotechnical Commission Standard No. IEC 157-1.

The circuit breaker is designed for use with Cutler-Hammer Power Line 2 type panelboards or equivalent.

The following accessories are available for use with GB/GHB/GDB circuit breakers:

- Auxiliary Switch
- Alarm (signal)/Lockout Switch
- Shunt Trip
- Undervoltage Release Mechanism
- Lock Dog (S# 1294C01H01)
- Padlockable Handle (S# 1223C77G03, for 1 Pole only)

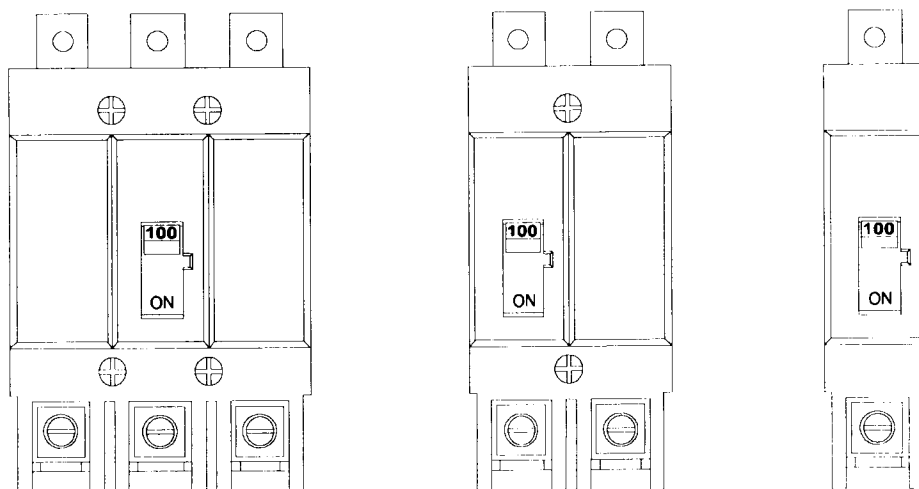


Fig. 1-1 GB/GHB/GDB 1, 2, and 3 Pole Circuit Breakers

2. Installation

The installation procedure consists of inspection and mounting the circuit breaker, connection and torquing the terminations. To install the circuit breaker, perform the following steps.

Note: GB/GHB/GDB circuit breakers are factory sealed. Underwriters Laboratories, Inc. Standard requires that internal accessories be installed at the factory. Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

2-1. Make sure that the circuit breaker is suitable for the intended installation by comparing nameplate data with system requirements. Inspect the circuit breaker for completeness, and check for damage before mounting.



WARNING

BEFORE MOUNTING THE CIRCUIT BREAKER IN AN ELECTRICAL SYSTEM, MAKE SURE THAT THE CIRCUIT BREAKER IS SWITCHED TO THE OFF POSITION AND THAT 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 SEVERE PERSONAL INJURY OR DEATH.

2-2. Switch the main power disconnect to OFF

Note: If circuit breaker includes factory installed internal accessories, make sure that accessory wiring can be reached when the circuit breaker is mounted.

2-3. Remove panelboard front trim.

2-4. Remove circuit breaker line-end conductor retaining screw from bus bar.

2-5. Position circuit breaker load-end retaining recess under hook mounting rail (Fig. 2-1).

2-6. Secure line-end conductor to bus bar with screw provided (Fig. 2-1). Torque screw to 20 in-lbs (2.26 N.m).

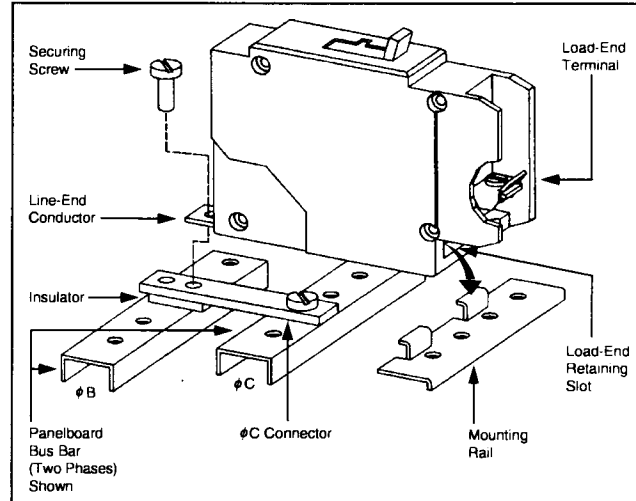


Fig. 2-1 Circuit Breaker Panelboard Installation.



CAUTION

WHEN ALUMINUM CONDUCTORS ARE USED, THE APPLICATION OF A SUITABLE JOINT COMPOUND IS RECOMMENDED TO REDUCE THE POSSIBILITY OF TERMINAL OVER HEATING. TERMINAL OVERHEATING CAN CAUSE NUISANCE TRIPPING AND DAMAGE TO THE CIRCUIT BREAKER.

2-7. After mounting the circuit breaker, load terminals and accessory leads should be connected. (See accessory lead identification on side of circuit breaker.)

2-8. After the circuit breaker is installed, check terminal connecting hardware for correct torque loading. Torque values for load terminations are given in Tables 2-1 and 2-2 and on the circuit breaker nameplate.

2-9. Install panelboard front trim.

3. Manual Operation

Manual operation of the circuit breaker is controlled by the circuit breaker handle. There are two positions shown on the handle to indicate when the circuit breaker is ON or OFF, also, the tripped position is shown by a white strip. (See Fig. 3-1.)

Circuit Breaker Reset

After automatic tripping, the circuit breaker is reset by moving the circuit breaker handle to the extreme OFF position.

TABLE 2-1. TERMINAL TYPES

For Load-side terminal only. Line-side connection is extended tang which bolts directly to bus bar.

Load terminals are UL listed as suitable for wire type and size given below.

Circuit Breaker Amps.	Terminal Type Material	Screw Head Type	Wire Type	AWG Wire Range	Metric Wire Range (mm ²)	Torque Value
15-20	Clamp (Plated Steel)	Slotted	Cu/Al	#14-10	1.5-4*	See Table 2-2
25-100	Pressure (Aluminum Body)	Slotted	Cu/Al	#10-1/0	4-50*	See Table 2-2

*Not UL Listed sizes

TABLE 2-2. TERMINAL TORQUE VALUES

AWG Wire Range	Torque Value lb-in	Torque Value N.m
#14-#10	20	2.26
#8	40	4.52
#6-#4	45	5.09
#3-1/0	45	5.09

Note: In the event of a thermal trip, the circuit breaker cannot be reset until the thermal element cools.

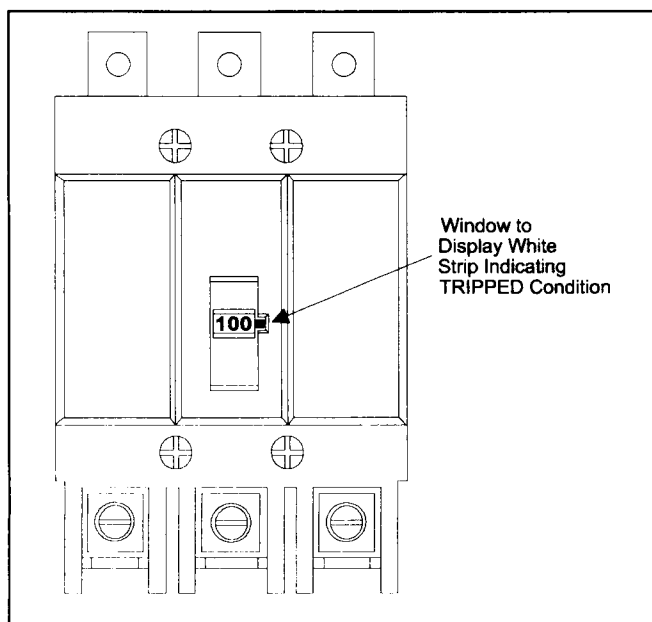


Fig. 3-1 Circuit Breaker Manual Controls

4. Inspection and Field Testing

Cutler-Hammer industrial molded case circuit breakers are designed to provide years of almost maintenance-free operation. The following procedure describes how to inspect and test a circuit breaker in service.

Inspection

Circuit breakers in service should be inspected periodically. The inspection should include the following checks.



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CAUTION

MAKE SURE THAT CLEANING AGENTS OR SOLVENTS USED TO CLEAN THE CIRCUIT BREAKER ARE SUITABLE FOR THE JOB. SOME COMMERCIAL CLEANING AGENTS WILL DAMAGE THE NAMEPLATES OR MOLDED PARTS.

4-1. Remove dust, dirt, soot, grease, or moisture from the surface of the circuit breaker using a lint-free dry cloth, brush, or vacuum cleaner. Do not blow debris into circuit breaker. If contamination is found, look for the source and eliminate the problem.

4-2. Switch circuit breaker to ON and OFF several times to be sure that the mechanical linkages are free and do not bind. If mechanical linkages are not free and are binding, replace circuit breaker.

4-3. Check base, cover, and operating handle for cracks, chipping, and discoloration. Circuit breakers should be replaced if cracks or severe discoloration is found.

4-4. Check terminals and connectors for looseness or signs of overheating. Overheating will show as discoloration, melting, or blistering of conductor insulation, or as pitting or melting of conductor surfaces due to arcing. If there is no evidence of overheating or looseness, do not disturb or tighten the connections. If there is evidence of overheating, terminations should be cleaned or replaced. Before re-energizing the circuit breaker, all terminations and cable should be refurbished to the condition when originally installed.

4-5. Check circuit breaker mounting hardware, tighten if necessary.

4-6. Check area where circuit breaker is installed for any safety hazards, including personal safety and fire hazards. Exposure to certain types of chemicals can cause deterioration of electrical connections.

Field Testing

Any field testing should be done in accordance with NEMA Standards Publication AB4-Latest edition.

Cutler-Hammer

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