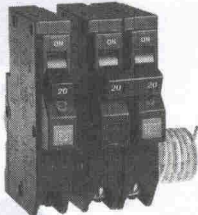


Type CH

Replacement for Square D
Type QO Breakers

Type CHQ Ground Fault
10,000 Amperes Interrupting Capacity
120V and 120/240V AC



CHQ115GF CHQ220GF

Ground Fault Application Notes

Single-pole Type CHQGFIs are designed for use in 2-wire, 120V AC circuits. **Figure 3-10** shows a typical wiring configuration.

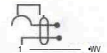

Two-pole Type CHQGFIs are designed for use in 3-wire, 120/240V AC circuits, 120V AC multiwire circuits employing common, neutral and 2-wire, 240V AC circuits obtained from a 120/240V AC source.

Figure 3-11 and **Figure 3-12** illustrate typical wiring configurations for a 120/240V AC multiwire circuits.

Figure 3-13 depicts a 240V AC, 2-wire circuit. Note the "panel neutral" conductor connects to the neutral bar, even though the neutral is not included in the load circuit. This connection is necessary to supply a 120V AC power source to the ground fault sensing circuit.

The figures are shown with a 120/240V AC, single-phase, 3-wire power source, but are also applicable to a 120/208V AC, 3-phase, 4-wire power supply. For all figures the electrical operation of the Type CHQGF is not affected by the equipment ground.

Table 3-54. Type CHQ Ground Fault — 5 Milliamperes — 3/4-Inch (19.1 mm) per Pole

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	1-Pole 120V AC 		2-Pole ® 120/240VAC 	
		Requires One 3/4-inch (19.1 mm) Space		Common Trip Requires Two 3/4-inch (19.1 mm) Spaces	
		10 per Shelf Carton		5 per Shelf Carton	
		10,000 AIC		10,000 AIC	
		Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
15	(1) #14 – 8	CHQ115GF	155.	CHQ215GF	274.
20	(2) #14- 10	CHQ120GF	155.	CHQ220GF	274.
30		CHQ130GF	155.	CHQ230GF	274.
40		—	—	CHQ240GF	274.
50		—	—	CHQ250GF	274.

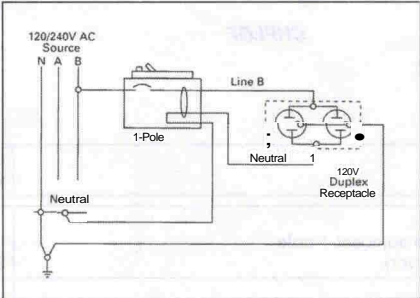


Figure 3-10.1-Pole

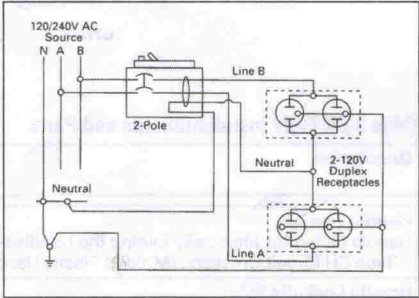


Figure 3-12.2-Pole

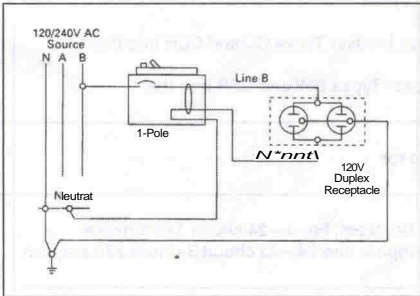


Figure 3-11.2-Pole

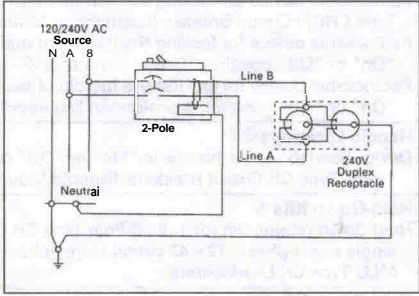


Figure 3-13.2-Pole

Application Description

Loadcenter Construction

CH loadcenters feature solid copper bus and branch fingers in all interiors. Fingers are tin-plated and rated 140 amperes throughout the CH line. Therefore, the sum of the handle ratings connected to any one stab is limited to 140 amperes maximum. NEMA 1 boxes are manufactured from cold rolled 16 gauge sheet steel. Raintight boxes are manufactured from galvanized steel. All boxes and trims are finished using an electrostatic powder coat, baked urethane paint process.

Neutrals

Cutler-Hammer Type CH loadcenters feature three types of neutrals:

Factory Bonded Split Neutrals

Single-phase main circuit breaker panels are supplied with a factory-bonded twin neutral. When used as a sub panel, the bonding strap should be removed, and the bonding screw should be reinstalled. The bonded side is now the ground, and the un-bonded side is the neutral. When used as a service entrance panel, the unused neutral holes on either side may be used for terminating ground wires.

Insulated Split Neutrals

Most single-phase main lug panels (12 circuit and greater) are supplied with a twin neutral with an insulated cross strap. These panels are shipped in an un-bonded state. For service entrance applications, the neutral must be bonded utilizing the bonding strap supplied with the panel. For sub-feed applications, the panel may be installed as is. Separate ground bars are provided on these panels.

Insulated/Bondable Single Neutral

When a panel is supplied with a single neutral, it arrives from the factory in an "unbonded" state. All that is required to bond the neutral in a service entrance application is to loosen the bonding screw and the neutral screw directly beside it, insert the bonding strap into the neutral bar, and re-tighten both connections. The single neutral can be moved by the contractor to the other side of the panel, if desired. In a service entrance application, where the neutral is bonded, unused neutral connections may be used for the termination of equipment grounds.

Grounds

In service entrance applications where the neutral is bonded, unused neutral holes may be used for terminating ground conductors. In sub-feed panels, the neutral must be isolated (non-bonded), and ground wires must be terminated on a separate ground bar.

The Factory Bonded Split Neutral panels have sufficient terminations for both ground and neutral conductors. The Insulated Split Neutral panels are supplied with a separate factory-installed ground bar. Insulated/Bondable Single Neutral panels are supplied without a ground bar (unless otherwise noted), and ground bar kits if needed must be purchased separately.

Standards and Certifications

UL Listings

All Cutler-Hammer Type CH loadcenters are listed under UL file E8741.

Neutral and Ground Terminals

The standard terminals on grounds and neutrals are rated to accept (3) — #14 - #10 Cu/Al or (1) — #14 - 4 wires. For larger cables, add-on neutral lugs may be ordered from the accessories on **Pages 3-21 and 3-22.**

Note: NEC allows only one current carrying conductor per hole on neutrals unless otherwise noted.

Bottom-Fed Loadcenters

When the power cable is brought into the loadcenter from below the panel; then the main lug panels, and single-phase, 225 ampere and below, loadcenters can be rotated 180 degrees to allow straight-in wiring of power cables to the main terminals. Because the CSR main circuit breaker handle operates horizontally, the orientation of the main circuit breaker handle is consistent with the requirements of NEC Article 240-81.

Gutter Splicing

Loadcenters are not UL listed as wiring troughs. Therefore, gutter splicing of riser cables to tap off to the main device is not permitted. Refer to NEC article 373-8.

Fire Rating

Due to the numerous openings in both loadcenter boxes and trims, they should not be mounted in firewalls. There is no approval method for sealing the enclosures for this application.

Date Code

The date of manufacture of each loadcenter is printed on the outside of the carton as well as inside the loadcenter. On the carton, the date code is printed on the end carton label. In the loadcenter, the date code is located on the small white label located on the right side wall (with the main device on top).

The date code is in the following format: F ### &. The "F" is the numeric code for the Lincoln, IL plant, and the three numbers are the year and week of manufacture e.g., 023. The "&" sign at the end signifies the decade of the 2000s. Therefore, the date code F023& would indicate that the product was manufactured in the 23rd week of 2000. The 1980s are represented by a "+" sign and the 1990s are represented by a "=" at the end of the code.

Plug-On Type CH Breakers

Description

Quick-make, quick-break switch mechanism combined with inverse time element tripping operation and trip-free handle design. Type CH Circuit Breakers trip to the OFF position eliminating nuisance callbacks. The thermal-magnetic trip curve avoids nuisance tripping on mild overloads while reacting almost instantaneously to severe short circuit conditions. Multipole breakers have internal common trip connection to operate all poles simultaneously. Handles are marked with ON-OFF indication and ampere rating of the breaker. Type CH breakers meet UL Standard 489, NEMA standards, and Federal Spec Classification W-C 375 b/Gen. They are UL listed under file number E11713, E8741, E3624 and E51287; and CSA certified file number LR87196, except Type CHT breakers.

Type CH Circuit Breaker Ratings

Single- and double-pole CH breakers rated 15 and 20 amperes have low instantaneous magnetic trip levels. The 15 and 20 ampere breakers with "HM" suffix have high magnetic trip settings recommended for circuits with inherently high inrush currents. All Type CH breakers are marked for heating, air conditioning and refrigeration (HACR) equipment application. Single-pole 15-20 ampere breakers are also suitable for switching duty (SWD). Shunt trip coils operate on 120V AC and require one additional pole space per breaker.