Loadcenters and Circuit Breakers

Residential Loadcenters and Breaker Family

Learn Online

Eaton Type CH Convertible Family

Contents

Overview

Product Selection Guide

CH Loadcenters

Description	
Service	
Single-phase, three-wire, 120/240 Vac	Three-phase, four-wire, 208Y/120 Vac
Three-phase, three-wire, 240V corner grounded delta (see Accessories **Page V1-T1-27**)	Three-phase, three-wire, 240 Vac delta
Short-Circuit Current Rating	
10 kAIC: All single- and three-phase loadcenters 40–400A, 2–42 circuits except when series ratings are applied	35 kAIC: All convertible and factory-installed main breakers single-phase loadcenters rated 150–225A using Type CSH main breakers 42,000 and 100,000 are available on some styles: single-phase and three-phase
Main Breaker/Main Lug Loadcenters	
Single-phase	Three-phase
Main breaker: 100, 125, 150, 200, 225, 400A	Main breaker: 150, 200, 225, 300, 400A
Main lugs: 40, 70, 125, 150, 200, 225, 400A	Main lugs: 125, 150, 200, 225, 400A
Convertible Loadcenters	
Main breaker or main lugs: single-phase up to 225A	
Branch Breakers	
Type CH: 10–150A. Single-, two- and three-pole. Selected amperages available in shunt trip, HACR and switching duty	Type CH-AFCI arc fault circuit interrupter
Ground fault circuit interruptors: 15–60A	Type CHP: 10–125A. Single-, two- and three-pole. three-position commercial trip
Type CH-HID: 15–30A. Single-, two- and three-pole	Selected amperages available in HACR switching duty
CH-HM high magnetic	Type CHP-HID: 15–30A. Single-, two- and three-pole
CH-M50 high ambient	Type CHP-GFCI: 15–30A. Single-pole ground fault breakers
Enclosures	
NEMA® Type 1 indoor	NEMA Type 3R outdoor.
Loadcenter and Breaker Accessories	
Branch circuit breaker:	Complete line of ground bar kits 5, 10, 14 and 21 circuits, some with additional #2/0 lugs
Auxiliary components	Each terminal will accommodate: (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al
Hold-down kits	Sub-feed lugs 125, 150A—two- and three-pole
Handle ties	Shunt trips
Lockoffs	Universal rainproof conduit hubs Group One: 3/4, 1, 1-1/4, 1-1/2, 2 inches (19.1, 25.4, 31.8, 38.1, 50.8 mm) Group Two: 2, 2-1/2, 3 inches (50.8, 63.5, 76.2 mm)
Lockdogs	Adapter plate
Bussing	
Silver flash plated copper bus is a standard feature	

Product Description

Loadcenters are enclosures specifically designed to house the branch circuit breakers and wiring required to distribute power to individual circuits. They contain either a main breaker when used at the service entrance point or a main lug when used as a sub-panel to add circuits to existing service. The main breaker protects the main entire panel and can be used as a service disconnect. The branch breakers protect the wires leading to individual electrical loads such as fixtures and outlets.

Features, Benefits and Functions

Loadcenter Construction

Eaton's Type CH loadcenters feature silver flash plated copper bus in all interiors. Fingers are rated 200A throughout the CH line. Therefore, the sum of the handle ratings connected to any one stab is limited to 200A 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

Eaton's Type CH loadcenters feature three types of neutrals:

Factory-Bonded Split Neutral

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 Neutral

Most single-phase main lug panels (12 circuits 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.

Inboard Plug-On Neutral

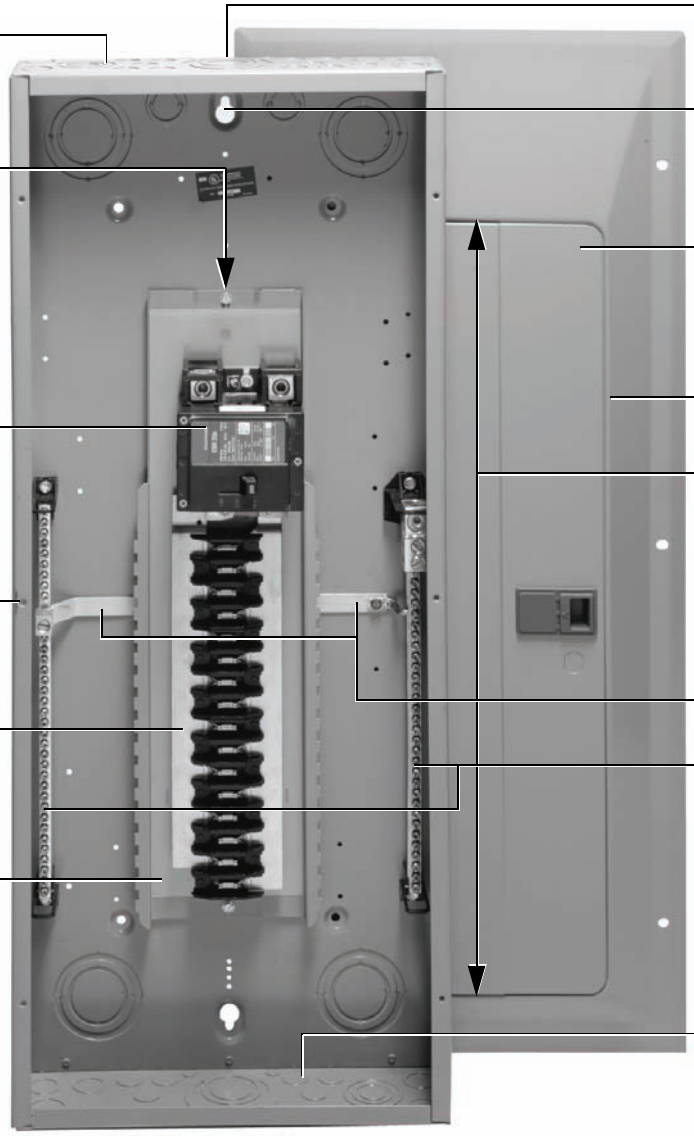
Code changes and higher safety standards are leading to more arc fault circuit interrupter (AFCI) installations. With the electrical contractor in mind, Eaton has revolutionized the way Combination AFCIs are installed with the Plug-on Neutral line of loadcenters and breakers. This unique product solution enables the contractor to connect the breaker directly to the neutral bar, eliminating the need for wiring a pigtail.

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.

Type CH Loadcenter



Extra 1.5-Inch (38.1 mm) Knockout for Bundling
Provides for easier installation, less installation time.

Top or Bottom Feed
- Straight-in wiring saves labor and material
- Only one panel for either application—no modifications necessary

Commercial Grade Main Breaker
- 35 kAIC series rated main breaker in 150 and 200A loadcenters
- 42 and 100 kAIC series ratings available

Drywall Marking on Enclosure
Indicates proper mounting depth for flush applications.

One-Piece Silver Flash Plated Copper Bus
Provides superior conductivity throughout the entire product line.

Steel Backpan
- Provides positive, reliable breaker mounting
- One-piece designed for stability

Convertible Styles Available
- Uses field installable main breaker or main lug kits
- Flexible inventory—same breaker is used in loadcenter and circuit breaker enclosures

"Tangential" Center Knockout
For easier installation

Single Keyhole Mounting
Just one keyhole at top and bottom for easier mounting and leveling.

Unique Sandalwood Finish
Immediately recognizable, aesthetically appealing, scratch resistant powder coating.

Separately Packaged Covers
- Full line of "true" surface and combination covers.
- Built-in flush leveling feature.
- Choice of circuit identification by breaker labels or circuit directory.

Neutral Design
(for styles as indicated)
- Bonding strap is easily removable for sub-panel applications providing a ground and neutral
- Factory-bonded for service entrance applications providing a split neutral
- Ample additional 2/0 lugs provided; no kits necessary
- 200% size neutral

Improved Endwall Knockouts
Larger KOs are balanced to enhance installed appearance and to ease use of existing wiring.

Warranty

The minimum warranty for residential loadcenters, breakers and surge protection devices shall be as follows:

- Lifetime loadcenter warranty
- Lifetime warranty on all arc fault circuit interrupting circuit breakers
- Lifetime warranty on CHSPULTRA including $5000 connected load warranty
- Lifetime warranty on all thermal-magnetic and GFCI branch circuit breakers
- 1-year warranty on plug-in surge protection device (CHSURGE)

Standards and Certifications

UL® Listings

All Eaton 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 **Page V1-T1-26**.

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, 225A 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

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

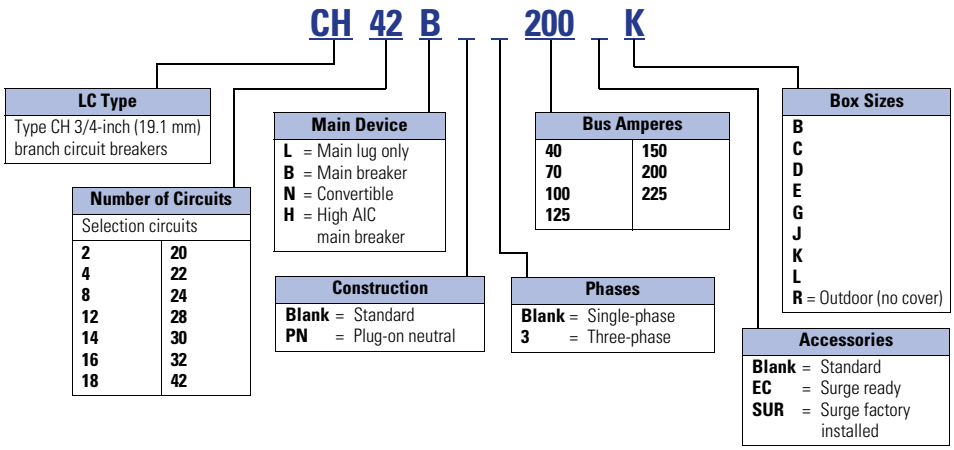
Single- and double-pole CH breakers rated 15 and 20A have low instantaneous magnetic trip levels. The 15 and 20A breakers with "HM" suffix have high magnetic trip settings recommended for circuits with inherently high inrush currents. All Type CH breakers are marked for heating, air conditioning and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

Listed

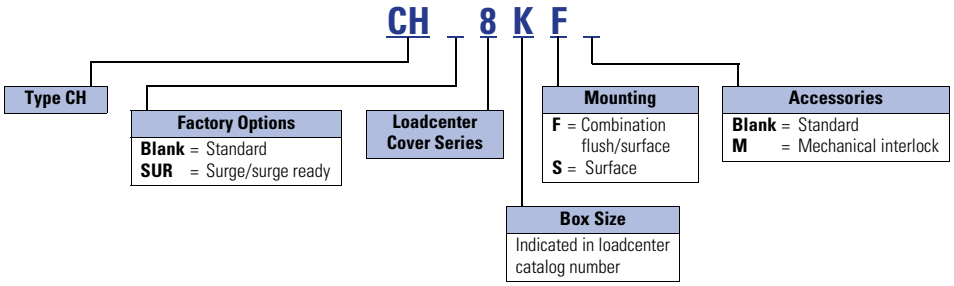
1

Catalog Number Selection

Loadcenters 100–225A and 12–42 Circuits



Indoor Covers Ordered Separately

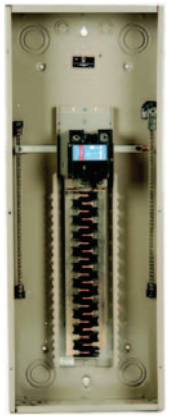


Note: All combinations are not valid, refer to the catalog section.

Product Selection

Single-Phase—Main Circuit Breaker Loadcenters—10/35 kAIC

CH42B200K



Single-Phase Three-Wire—120/240 Vac—Factory-Bonded Split Neutral (Unless Otherwise Noted)

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) of Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ①② Catalog Number	Loadcenter Cover Catalog Number Combination ③	Surface
CH 10 kAIC	100	14	Indoor	B	#6–1/0	**CH14B100B** ④⑤	**CH8BF**	**CH8BS**
		14	Outdoor	B	#6–1/0	**CH14B100R** ⑥⑦	—	—
		18	Indoor	C	#6–1/0	**CH18B100C** ④⑤	**CH8CF**	**CH8CS**
		18	Outdoor	C	#6–1/0	**CH18B100R** ⑥⑦	—	—
		22	Indoor	C	#6–1/0	**CH22B100C** ④⑤	**CH8CF**	**CH8CS**
		22	Outdoor	C	#6–1/0	**CH22B100R** ⑥⑦	—	—
		30	Indoor	D	#6–1/0	**CH30B100D** ④⑤	**CH8DF**	**CH8DS**
		30	Outdoor	D	#6–1/0	**CH30B100R** ⑥⑦	—	—
	125	22	Indoor	C	#6–1/0	**CH22B125C** ④⑤	**CH8CF**	**CH8CS**
		22	Outdoor	C	#6–1/0	**CH22B125R** ⑥⑦	—	—
		30	Indoor	D	#6–1/0	**CH30B125D** ④⑤	**CH8DF**	**CH8DS**
		30	Outdoor	D	#6–1/0	**CH30B125R** ⑥⑦	—	—
CSH 35 kAIC ⑧	150	8	Outdoor	E	#2–300 kcmil	**CH8B150RF** ⑥⑥⑨	—	—
		24	Indoor	E	#2–300 kcmil	**CH24B150E** ④⑤	**CH8EF**	**CH8ES**
		24	Outdoor	E	#2–300 kcmil	**CH24B150R** ⑥⑦	—	—
		32	Indoor	J	#2–300 kcmil	**CH32B150J** ④⑤	**CH8JF**	**CH8JS**
		32	Outdoor	J	#2–300 kcmil	**CH32B150R** ⑥⑦	—	—
	200	8	Outdoor	E	#2–300 kcmil	**CH8B200RF** ⑥⑥⑨	—	—
		24	Indoor	E	#2–300 kcmil	**CH24B200E** ④⑤	**CH8EF**	**CH8ES**
		24	Outdoor	E	#2–300 kcmil	**CH24B200R** ⑥⑦	—	—
		32	Indoor	J	#2–300 kcmil	**CH32B200J** ④⑤	**CH8JF**	**CH8JS**
		32	Outdoor	J	#2–300 kcmil	**CH32B200R** ⑥⑦	—	—
		42	Indoor	K	#2–300 kcmil	**CH42B200K** ④⑤	**CH8KF**	**CH8KS**
		42	Outdoor	K	#2–300 kcmil	**CH42B200R** ⑥⑦	—	—
	225	32	Indoor	J	#2–300 kcmil	**CH32B225J** ④⑤	**CH8JF**	**CH8JS**
		32	Outdoor	J	#2–300 kcmil	**CH32B225R** ⑥⑦	—	—
		42	Indoor	K	#2–300 kcmil	**CH42B225K** ④⑤	**CH8KF**	**CH8KS**
		42	Outdoor	K	#2–300 kcmil	**CH42B225R** ⑥⑦	—	—
DK 10 kAIC	300	42	Indoor	PM	(2) 3/0–250 kcmil	**CH42PM300**	**CH7PMF** ⑩	**CH7PMS**
	400	42	Indoor	PM	(2) 3/0–250 kcmil	**CH42PM400**	**CH7PMF** ⑩	**CH7PMS**

Notes

① All main circuit breaker loadcenters are listed for use as service entrance equipment.
② Ground bar kits priced separately. See **Page V1-T1-27**.
③ Combination style covers may be used in surface or flush applications.
④ Loadcenters are factory-bonded for service entrance applications. Remove bonding strap for separate neutral and ground bars for sub-feed applications.
⑤ Can be top or bottom fed by rotating the enclosure and trim 180 degrees.
⑥ Loadcenter contains single insulated/bondable neutral.
⑦ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-27**.
⑧ 35 kAIC series combination rating is obtained when Types CH, CHT and CHP branch breakers are used with CSH main.
⑨ Panel includes #4–300 kcmil feed-through lugs.
⑩ This cover is for flush applications only (not combination).

Box sizes **Pages V1-T1-42** and **V1-T1-43**.

1

Single-Phase—High Interrupting Rated Main Circuit Breaker Loadcenters—42/100 kAIC

Single-Phase Three-Wire—120/240 Vac—Factory-Bonded Split Neutral (Unless Otherwise Noted)

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ① Catalog Number	Loadcenter Cover Catalog Number Combination ②	Surface
CHB4 42 kAIC ③	100	20	Indoor	C	#6–1/0	**CH20H100C** ④⑤	**CH8CF**	**CH8CS**
		20	Outdoor	C	#6–1/0	**CH20H100R** ⑥⑦	—	—
		28	Indoor	D	#6–1/0	**CH28H100D** ④⑤	**CH8DF**	**CH8DS**
		28	Outdoor	D	#6–1/0	**CH28H100R** ⑥⑦	—	—
CHH 100 kAIC ⑧	150	32	Indoor	L	#2/0–300 kcmil	**CH32H150L** ④	**CH8LF**	**CH8LS**
		32	Outdoor	L	#2/0–300 kcmil	**CH32H150R** ⑥⑦	—	—
	200	32	Indoor	L	#2/0–300 kcmil	**CH32H200L** ④	**CH8LF**	**CH8LS**
		32	Outdoor	L	#2/0–300 kcmil	**CH32H200R** ⑥⑦	—	—
		42	Indoor	L	#2/0–300 kcmil	**CH42H200L** ④	**CH8LF**	**CH8LS**
		42	Outdoor	L	#2/0–300 kcmil	**CH42H200R** ⑥⑦	—	—
	225	42	Indoor	L	#2/0–300 kcmil	**CH42H225L** ④	**CH8LF**	**CH8LS**
		42	Outdoor	L	#2/0–300 kcmil	**CH42H225R** ⑥⑦	—	—

Notes

① All main circuit breaker loadcenters are listed for use as service entrance equipment.
② Combination style covers may be used in surface or flush applications.
③ Series rated for 42 kAIC with all Types CH, CHT and CHP breakers.
④ Loadcenters are factory-bonded for service entrance applications. Remove bonding strap for separate neutral and ground bars for sub-feed applications.
⑤ Loadcenter can be top or bottom fed by rotating the enclosure and trim 180 degrees.
⑥ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-27**.
⑦ Loadcenter contains single insulated/bondable neutral.
⑧ Series rated for 100 kAIC with all Types CH, CHT and CHP breakers.

Single-Phase—Main Lug Loadcenters

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral

	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Space	Poles	Enclosure Type	Type of Trim (Included)	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number
Surface Outdoor 	40	2	4 ①	Indoor	Surface (no door)	5	#14–6	**CH2L40SP** ②③
		2	4 ①	Outdoor	—	5R	#14–6	**CH2L40RP** ②③④
		2	4 ①	Indoor	Flush (no door)	5	#14–6	**CH2L40FP** ②③
Flush Outdoor 	70	2	4 ①	Indoor	Surface (no door)	5	#14–2	**CH2L70SP** ②③
		2	4 ①	Outdoor	—	5R	#14–2	**CH2L70RP** ②③④
		2	4 ①	Indoor	Flush (no door)	5	#14–2	**CH2L70FP** ②③
Surface (No Door) 	125	2	4 ①	Indoor	Surface (no door)	6	#14–1/0	**CH2L125SP** ②③
		2	4 ①	Outdoor	—	6R	#14–1/0	**CH2L125RP** ②③④
		2	2	Outdoor	—	—	#14–1/0	**CH2L125RSE2P** ④⑤⑥
		2	4 ①	Indoor	Flush (no door)	6	#14–1/0	**CH2L125FP** ②③
		4	8 ①	Indoor	Surface (no door)	7	#14–1/0	**CH4L125SP** ②⑦
		4	8 ①	Outdoor	—	7R	#14–1/0	**CH4L125RP** ②④⑦
		4	8 ①	Indoor	Flush (no door)	7	#14–1/0	**CH4L125FP** ②⑦
Flush (No Door) 		8	16 ①	Indoor	Surface (no door)	7	#6–1/0	**CH8L125SP** ②⑧
		8	16 ①	Outdoor	—	7R	#6–1/0	**CH8L125RP** ②⑥⑦
		8	16 ①	Indoor	Flush (no door)	7	#6–1/0	**CH8L125FP** ②⑧
Outdoor 								

Notes

① Requires the use of Type CHNT breakers.

② Ground bar kits priced separately, see **Page V1-T1-27**.
- For 2/4 circuit loadcenters use Type GBK5 or GBK520 ground bar
- For 4/8 and 8/16 circuit loadcenters use Type GBK10 ground bar
- Ground bars mount to the left side wall of the enclosure for the 4/8 and 8/16 circuit loadcenters

③ Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-27**.

⑤ For use as service entrance applications only.

⑥ Neutral/ground holes (6) #14–6 and (3) #14–2/0 AWG Cu/Al.

⑦ Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

⑧ Suitable for use as service equipment when a main breaker is used or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

Box sizes **Pages V1-T1-42** and **V1-T1-43**.

CH42L225G

Single-Phase Three-Wire—120/240 Vac—Twin Neutral—Factory-Installed Ground Bar

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number	Loadcenter Cover Catalog Number Combination	Loadcenter Cover Catalog Number Surface
125	12	Indoor	B	#6–2/0	**CH12L125B** ①	**CH8BF**	**CH8BS**
	12	Outdoor	B	#6–2/0	**CH12L125R** ①②	—	—
	16	Indoor	B	#6–2/0	**CH16L125B** ①	**CH8BF**	**CH8BS**
	16	Outdoor	B	#6–2/0	**CH16L125R** ①②	—	—
	20	Indoor	C	#6–2/0	**CH20L125C** ①	**CH8CF**	**CH8CS**
	20	Outdoor	C	#6–2/0	**CH20L125R** ①②	—	—
	24	Indoor	C	#6–2/0	**CH24L125C** ①	**CH8CF**	**CH8CS**
	24	Outdoor	C	#6–2/0	**CH24L125R** ①②	—	—
150	24	Indoor	D	#4–300 kcmil	**CH24L150D** ①	**CH8DF**	**CH8DS**
	24	Outdoor	D	#4–300 kcmil	**CH24L150R** ②③	—	—
	32	Indoor	D	#4–300 kcmil	**CH32L150D** ①	**CH8DF**	**CH8DS**
	32	Outdoor	D	#4–300 kcmil	**CH32L150R** ②③	—	—
200	12	Indoor	D	#4–300 kcmil	**CH12L200D** ①	**CH8DF**	**CH8DS**
	12	Outdoor	D	#4–300 kcmil	**CH12L200R** ②③	—	—
	16	Indoor	D	#4–300 kcmil	**CH16L200D** ①	**CH8DF**	**CH8DS**
	16	Outdoor	D	#4–300 kcmil	**CH16L200R** ②③	—	—
225	24	Indoor	D	#4–300 kcmil	**CH24L225D** ①	**CH8DF**	**CH8DS**
	24	Outdoor	D	#4–300 kcmil	**CH24L225R** ②③	—	—
	32	Indoor	D	#4–300 kcmil	**CH32L225D** ①	**CH8DF**	**CH8DS**
	32	Outdoor	D	#4–300 kcmil	**CH32L225R** ②③	—	—
	42	Indoor	G	#4–300 kcmil	**CH42L225G** ③	**CH8GF**	**CH8GS**
	42	Outdoor	G	#4–300 kcmil	**CH42L225R** ②③	—	—
400	42	Indoor	P	(2) 1/0–300 kcmil (1) 750 kcmil	**CH42PL400** ④	**CH7PF** ⑤	**CH7PS**

Notes

① Suitable for use as service equipment when not more than six disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

② Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-27**.

③ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and requires hold-down bracket kit catalog number **CH125RB**.

④ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and must be a Type CHB. **The breaker cannot be a Type CH**.

⑤ This cover is for flush application only (not combination).

Box sizes **Pages V1-T1-42** and **V1-T1-43**.

Three-Phase—Main Circuit Breaker Loadcenters—10 kAIC

CH42B3200L

Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ①② Catalog Number	Loadcenter Cover Catalog Number Combination	Surface
CC 10 kAIC	150	30	Indoor	L	#1–4/0	**CH30B3150L**	**CH8LF**	**CH8LS**
		30	Outdoor	L	#1–4/0	**CH30B3150R** ③	—	—
	200	30	Indoor	L	#2/0–300 kcmil	**CH30B3200L**	**CH8LF**	**CH8LS**
		30	Outdoor	L	#2/0–300 kcmil	**CH30B3200R** ③	—	—
		42	Indoor	L	#2/0–300 kcmil	**CH42B3200L**	**CH8LF**	**CH8LS**
		42	Outdoor	L	#2/0–300 kcmil	**CH42B3200R** ③	—	—
	225	30	Indoor	L	#2/0–300 kcmil	**CH30B3225L**	**CH8LF**	**CH8LS**
		30	Outdoor	L	#2/0–300 kcmil	**CH30B3225R** ③	—	—
		42	Indoor	L	#2/0–300 kcmil	**CH42B3225L**	**CH8LF**	**CH8LS**
		42	Outdoor	L	#2/0–300 kcmil	**CH42B3225R** ③	—	—
	400	42	Indoor	PM	(2) 3/0–350 kcmil	**CH424PM400**	**CH7PMF** ④	**CH7PMS**

Three-Phase—Main Lug Loadcenters

Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Spaces	Poles	Enclosure Type	Type of Trim Included	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number
125	6	12 ⑤	Indoor	Surface no door	7	#14–1/0	**CH6L3125SP** ⑥⑦
	6	12 ⑤	Outdoor	—	7R	#14–1/0	**CH6L3125RP** ⑥⑦③
	6	12 ⑤	Indoor	Flush no door	7	#14–1/0	**CH6L3125FP** ⑥⑦

Notes

① All main circuit breaker loadcenters are listed for use as service entrance equipment.

② For ground bar kits, see **Page V1-T1-27**.

③ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-27**.

④ This cover for flush application only (not combination).

⑤ Requires the use of CHNT breakers.

⑥ Suitable for use as service equipment when not more than two service disconnecting means are provided or when not more than six service disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

⑦ Ground bar kits priced separately, see **Page V1-T1-27**.
– Use GBK10 ground bar
– Ground bars mount to the left side wall of the enclosure.

Box sizes **Pages V1-T1-42** and **V1-T1-43**.

Three-Phase Four-Wire—208Y/120 Vac or 240 Vac—Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number	Loadcenter Cover Catalog Number Combination	Surface
125	12	Indoor	B	#6–2/0	**CH12L3125B** ①②	**CH8BF**	**CH8BS**
	12	Outdoor	B	#6–2/0	**CH12L3125R** ①②③	—	—
	18	Indoor	C	#6–2/0	**CH18L3125C** ①②	**CH8CF**	**CH8CS**
	18	Outdoor	C	#6–2/0	**CH18L3125R** ①②⑤	—	—
	24	Indoor	C	#6–2/0	**CH24L3125C** ①②	**CH8CF**	**CH8CS**
	24	Outdoor	C	#6–2/0	**CH24L3125R** ①②⑤	—	—
150	30	Indoor	D	#4–300 kcmil	**CH30L3150D** ①②	**CH8DF**	**CH8DS**
	30	Outdoor	D	#4–300 kcmil	**CH30L3150R** ①③④	—	—
225	24	Indoor	D	#4–300 kcmil	**CH24L3225D** ①②	**CH8DF**	**CH8DS**
	24	Outdoor	D	#4–300 kcmil	**CH24L3225R** ①③④	—	—
	30	Indoor	D	#4–300 kcmil	**CH30L3225D** ①②	**CH8DF**	**CH8DS**
	30	Outdoor	D	#4–300 kcmil	**CH30L3225R** ①③④	—	—
	42	Indoor	G	#4–300 kcmil	**CH42L3225G** ④⑤	**CH8GF**	**CH8GS**
	42	Outdoor	G	#4–300 kcmil	**CH42L3225R** ③④⑤	—	—
400	42	Indoor	P	(2) 1/0–300 kcmil (1) 750 kcmil	**CH424PL400** ⑥⑦	**CH7PF** ⑧	**CH7PS**

Three-Phase—High Interrupting Rated Main Circuit Breaker Loadcenters—100 kAIC

Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) of Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number ⑨⑩	Loadcenter Cover Catalog Number Combination	Surface
CHH 100 kAIC ⑪	200	30	Indoor	L	#2/0–300 kcmil	**CH30H3200L**	**CH8LF**	**CH8LS**
		30	Outdoor	L	#2/0–300 kcmil	**CH30H3200R** ⑫	—	—
		42	Indoor	L	#2/0–300 kcmil	**CH42H3200L**	**CH8LF**	**CH8LS**
		42	Outdoor	L	#2/0–300 kcmil	**CH42H3200R** ⑫	—	—
	225	42	Indoor	L	#2/0–300 kcmil	**CH42H3225L**	**CH8LF**	**CH8LS**
		42	Outdoor	L	#2/0–300 kcmil	**CH42H3225R** ⑫	—	—

Notes

① Ground bar Type GBK14 is installed.

② Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and requires hold-down bracket kit catalog number Type **CH125RB**. Suitable for use as service equipment when not more than six service disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

③ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-27**.

④ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and requires hold-down kit catalog number Type **CH125RB**.

⑤ Ground bar Type GBK21 is installed.

⑥ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and must be a Type CHB. **The breaker cannot be a Type CH**.

⑦ For ground bar kits, see **Page V1-T1-27**.

⑧ This cover is for flush application only (not combination).

⑨ All main circuit breaker loadcenters are listed for use as service entrance equipment.

⑩ Ground bar kits priced separately.

⑪ 100 kAIC series combination rating is obtained when Types CH and CHP branch breakers are used with CHH main.

⑫ Rainproof loadcenters are furnished with hub closure plates.

Convertible Loadcenters MCB or MLO—Base Units and Main Devices—10/35 kAIC

Complete assembly consists of: loadcenter, cover, and either main breaker kit or main lug kit.

Indoor—Single-Phase—Three-Wire—120/240V—Factory-Bonded Split Neutral—Top or Bottom Feed

Maximum Main Ampere Rating	Maximum Number of Single Poles	Box Size	Loadcenter Box and Panel Catalog Number ①②	Loadcenter Cover Catalog Number		Main Lug Kit		Main Breaker Kit		
				Combination	Surface	Wire Size	Catalog Number	kAIC Rating	Wire Size	Catalog Number
125	22	C	**CH22N125C**	**CH8CF**	**CH8CS**	#10–1/0	**CHL125N**	10	#10–1/0	**CH2100N** ③
										CH2125N ③
200	32	J	**CH32N200J**	**CH8JF**	**CH8JS**	#4–300 kcmil	**CHL225N**	25	#2–300 kcmil	**CSH2125N** ④⑤
										CSH2150N ④⑤
										CSH2175N ④⑤
										CSH2200N ④⑤
225	42	K	**CH42N225K**	**CH8KF**	**CH8KS**	#4–300 kcmil	**CHL225N**	25	#2–300 kcmil	**CSH2125N** ④⑤
										CSH2150N ④⑤
										CSH2175N ④⑤
										CSH2200N ④⑤
										CSH2225N ④⑤

Outdoor—Single-Phase—Three-Wire—120/240V—Insulated/Bondable Neutral

Maximum Main Ampere Rating	Maximum Number of Single Poles	Box Size	Loadcenter Box and Panel Catalog Number ①	Main Lug Kit		Main Breaker Kit		
				Wire Size	Catalog Number	kAIC Rating	Wire Size	Catalog Number
200	8	E	**CH8N200RF** ⑥⑦	#4–300 kcmil	**CHL225N**	25	#2–300 kcmil	**CSH2125N**
								CSH2150N
								CSH2175N
								CSH2200N
125	22	C	**CH22N125R** ⑥	#10–1/0	**CHL125N**	10	#10–1/0	**CH2100N** ③
								CH2125N ③
200	32	J	**CH32N200R** ⑥	#4–300 kcmil	**CHL225N**	25	#2–300 kcmil	**CSH2125N** ④⑤
								CSH2150N ④⑤
								CSH2175N ④⑤
								CSH2200N ④⑤
225	42	K	**CH42N225R** ⑥	#4–300 kcmil	**CHL225N**	25	#2–300 kcmil	**CSH2125N** ④⑤
								CSH2150N ④⑤
								CSH2175N ④⑤
								CSH2200N ④⑤
								CSH2225N ④⑤

Notes

① Panel does not include main. Order main breaker or main lug kit separately.
② Loadcenters are factory-bonded for service entrance applications. Remove bonding strap for separate neutral and ground bars for sub-feed applications.
③ Hold-down kit included.
④ 35 kAIC series combination rating is obtained when Types CH, CHT and CHP branch breakers are used with CSR main.
⑤ CSH breakers include line lugs only as standard.
⑥ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-27**.
⑦ Includes feed-through lugs for both phase and neutral conductors.

Interrupting rating depends on main circuit breaker selected.

Spa Panels

Quick-Pro℠
All you need to know to save time and make more money. Specified on certain Eaton products, the Quick-Pro symbol allows for immediate recognition of products that are designed for straightforward installation. When you see Quick-Pro, you know you can install quickly—sometimes up to 50% less than the usual installation time—and move onto your next job.

CH Spa Panel

Single-Phase Three-Wire—120/240 Vac Insulated/Bondable Neutral—Factory-Installed Ground Bar

Main Ampere Rating	Circuit Breaker Included	Enclosure Type	Type of Trim Included	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Catalog Number
30	CH230GF	Outdoor	—	5R	#14–1/0	**CH30SPA** ①
40	CH240GF	Outdoor	—	5R	#14–1/0	**CH40SPA** ②
50	CH250GF	Outdoor	—	5R	#14–1/0	**CH50SPA** ③
60	CH260GF	Outdoor	—	5R	#14–1/0	**CH60SPA** ④

Notes

① Includes a CH230GFI breaker, factory installed, and two extra circuits for convenience.
② Includes a CH240GFI breaker, factory installed, and two extra circuits for convenience.
③ Includes a CH250GFI breaker, factory installed, and two extra circuits for convenience.
④ Includes a CH260GFI breaker, factory installed, and two extra circuits for convenience.

Single-Phase and Three-Phase Circuit Breaker Unit Enclosures—10/35 kAIC

Circuit Breaker Unit Enclosures

Type ECB Circuit Breaker Unit Enclosure—Order Type CSR Circuit Breaker Separately—Unit Enclosure Includes Lug Tree Kit

Main Ampere Rating	Unit Enclosure Type	Mounting	Type of Circuit Breaker	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number
Single-Phase Three-Wire—240 Vac Maximum					
150	Outdoor	—	CSR (included) ①	④	**ECB150RB** ⑤⑥⑦
200	Outdoor	—	CSR (included) ②	④	**ECB200RB** ⑤⑥⑦
225	Indoor	Flush	CSR ③	④	**ECB225F** ③⑥⑦
	Indoor	Surface	CSR ③	④	**ECB225S** ③⑥⑦
	Outdoor	—	CSR ③	④	**ECB225R** ③⑤⑥⑦

CSH2200N

Type CSH Circuit Breakers 120/240 Vac—35 kAIC For Use in Type ECB Unit Enclosures

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C for Line Terminals	Two-Pole Breakers 35 kAIC Catalog Number
100	#2–300 kcmil	**CSH2100N**
125	#2–300 kcmil	**CSH2125N**
150	#2–300 kcmil	**CSH2150N**
175	#2–300 kcmil	**CSH2175N**
200	#2–300 kcmil	**CSH2200N**
225	#2–300 kcmil	**CSH2225N**

Shunt Trips

Type	Volts	Catalog Number Suffix Adder ⑧
CSH	12	**SR12**
CSH	24	**SR24**
CSH	120	**SR01**

CSR Lug Tree Kit For Replacement Purposes Only For Use in Type ECB Unit Enclosures

Ampere Rating	Description	Wire Size Range Cu/Al 60°C or 75°C for Line Terminals	Catalog Number
225	For use on 125, 150, 175, 200 and 225A CSR breakers	#2–300 kcmil	**MCBK225**

Wire Data

Wire/Application	Maximum Wire Size	Maximum Ampere Rating
Aluminum—standard	250 kcmil	200
Aluminum—service entrance	250 kcmil	225
Copper—standard and service entrance	250 kcmil	225

Notes

① CSR2150N factory-installed circuit breaker.
② CSR2200N factory-installed circuit breaker.
③ Order circuit breaker separately.
④ Wire size is determined by the circuit breaker installed in enclosure. Maximum wire size and ampere rating is determined by Wire Data table above.
⑤ Rainproof panels are furnished with hub closures plates. For rainproof hubs, refer to **Page V1-T1-27**.
⑥ One ground lug accepting (1) #14 –#2 is factory installed. Also, there are pre-drilled holes to accept a GBK5 ground bar.
⑦ Approved for service entrance.
⑧ Add suffix indicated to end of breaker catalog number.

Box sizes **Pages V1-T1-42** and **V1-T1-43**.

Type ECC Circuit Breaker Unit Enclosure—Order Type CC Circuit Breaker Separately

Main Ampere Rating	Unit Enclosure Type	Mounting	Circuit Breaker Type	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number
Single-Phase Three-Wire—240 Vac Maximum					
225	Indoor	Flush	CC ①	②	**ECC225F** ①③④
225	Indoor	Surface	CC ①	②	**ECC225S** ①③④
225	Outdoor	—	CC ①	②	**ECC225R** ①③④⑤

Type CC Circuit Breakers 240 Vac—10 kAIC For Use in Type ECC Unit Enclosures

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C for Line Terminals	Type CC 10 kAIC Catalog Number
Two-Pole		
100	#4–4/0	**CC2100**
125	#4–4/0	**CC2125**
150	#4–4/0	**CC2150**
175	#2/0–300 kcmil	**CC2175**
225	#2/0–300 kcmil	**CC2200**
225	#2/0–300 kcmil	**CC2225**
Three-Pole		
100	#4–4/0	**CC3100**
125	#4–4/0	**CC3125**
150	#4–4/0	**CC3150**
175	#2/0–300 kcmil	**CC3175**
200	#2/0–300 kcmil	**CC3200**
225	#2/0–300 kcmil	**CC3225**

Shunt Trips, Auxiliary and Alarm Contacts

Type	Volts	Catalog Number Suffix Adder
Shunt Trip		
CC	12 DC	**SR12**
CC	24 DC	**SR24**
CC	120 AC	**SR01**
CC	208 AC	**SR08**
CC	240 AC	**SR02**
Auxiliary Contact		
CC (1) NO and (1) NC	—	**AL1**
Alarm Contact		
CSR	—	**CR1**

Wire Data

Wire/Application	Maximum Wire Size	Maximum Ampere Rating
Aluminum—standard	250 kcmil	200
Aluminum—service entrance	250 kcmil	225
Copper—standard and service entrance	250 kcmil	225

Notes

① Order circuit breaker separately.

② Wire size is determined by the circuit breaker installed in enclosure. Maximum wire size and ampere rating is determined by the Wire Data table above.

③ One ground lug accepting (1) #14–#2 is factory installed. Also, there are pre-drilled holes to accept a GBK5 ground bar.

④ Approved for service entrance.

⑤ Rainproof panels are furnished with hub closures plates. For rainproof hubs, refer to **Page V1-T1-27**.

Box sizes **Pages V1-T1-42** and **V1-T1-43**.

Technical Data and Specifications

General

A. The Contractor shall furnish and install loadcenters incorporating circuit breakers of the number, rating and type as specified herein and as shown on the contract drawings.

B. The loadcenter and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of UL and NEMA including:

1. UL 67—standards for panelboards
2. UL 50—standards for cabinets and boxes
3. UL 489—standards for molded case circuit breakers
4. Federal Spec Classification W-C 375
5. UL 1699 —þall fault interrupting

Qualifications

A. The manufacturer of the loadcenter shall be the manufacturer of the circuit breaker within the load center. All breakers shall be full size.

B. For the equipment specified herein, the manufacturer shall be ISO® 9000 certified.

C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of seven (7) years.

Manufacturers

A. Eaton

Ratings

A. Loadcenters shall be rated for 240 Vac and shall have short-circuit ratings as shown on the drawings or as herein scheduled, but not less than 10,000 amperes rms symmetrical.

B. Breakers shall be full size and a minimum of 125A frame. Breakers 10 –125A trip size shall take up the same pole spacing.

C. Loadcenters shall be labeled with a UL short-circuit rating. When series ratings are applied with integral or remote devices, a label shall be provided. Series ratings shall cover all trip ratings of installed frames. It shall state the conditions of the UL series ratings including:

1. Size and type of upstream device.
2. Branch devices that can be used.
3. UL series short-circuit rating.

Construction

A. All interiors, with the exception of the branch circuit breakers shall be completely factory assembled with main breakers, main lugs or no main device.

B. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.

C. Physical means must be provided to prevent the installation of more overcurrent devices than that number for which the enclosure was designed. Full size breakers are required.

Bus

A. Bus bars for the main and cross connectors shall be of silver flash plated copper construction in accordance with UL standards. Bussing shall be braced to 65 kAIC.

B. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection of same ampacity as branch.

Wiring/Termination

A. All wire connectors and terminals shall be of the anti-turn solderless type and suitable for copper or aluminum wire of the sizes indicated. All connectors shall meet the "Requirements for Wire Connectors and Soldering Lugs" UL 486B.

B. All loadcenters where marked shall be suitable for use with 60/75°C rated wire.

Circuit Breakers

A. Circuit breakers shall be molded case type, 3/4-inch (19.1 mm) wide per pole. Multipole circuit breakers shall be of a stack pole design to provide electrical phase isolation and have an internal common trip.

B. Each pole of the circuit breaker will have inverse time delay overload and instantaneous short-circuit protection by means of both thermal and magnetic sensors. Circuit breakers shall be quick-make/quick-break.

C. The circuit breaker calibration shall not be affected by environmental changes in relative humidity. Breakers shall be calibrated after assembly.

D. All circuit breakers shall be operated by a toggle-type handle and multipole circuit breakers shall have an internal common trip mechanism. The circuit breakers shall incorporate trip mechanisms that are mechanically trip-free from the handle. The handle position shall provide good visual trip indication.

E. Contacts shall be of non-welding silver alloy.

F. All branch breaker handles shall be of a different color than the case of the breaker.

G. All terminals shall be listed for use with copper or aluminum conductors. Terminals shall be of the box lug design. The terminals shall meet UL 486B requirements and shall be suitable for use with either 60° or 75°C wire.

H. Breakers shall be SWD rated and/or HACR rated as required.

I. Arc fault interrupting circuit breakers, (AFC), shall be provided on all 15 and 20A single-phase 120/240 Vac circuits except those indicated as remote controlled breakers. AFI breakers shall be "Classified for mitigating the effects of arcing faults," or conforming to UL Standard 1699 and as defined by per Article 210.12 Section A of the 1999 NEC Code.

1

Enclosures

A. Loadcenters shall have NEMA 1 general purpose or NEMA 3R rainproof enclosures as indicated on the drawings and shall be surface or flush mounted except where noted.

B. For indoor applications, enclosures shall be rated NEMA 1. Enclosures shall be manufactured from cold-rolled code-gauge sheet steel having multiple knockouts and painted per paint specification. For outdoor applications, enclosures shall be rated NEMA 3R. Enclosures shall be manufactured from galvanized steel which shall be painted per the painted as specified. Enclosures shall be of sufficient size to meet or exceed NEC wire bending space.

C. The cover shall have an easy adjustment feature for flush applications.

D. Boxes shall be factory assembled into a single rigid structure.

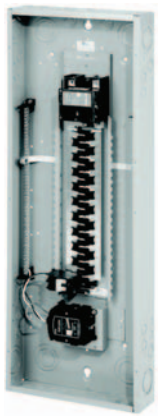
E. Provide circuit breaker marking labels and directories.

Finish

A. Boxes and trims shall be finished with a high scratch-resistant aesthetically pleasing finish. The finish shall be polyurethane coating electrostatically applied to a thickness of 1.8 to 2 mils.

B. All loadcenters shall be provided with provisions for accepting a paintable or wall paperable decorator accessory cover. Where loadcenters are installed in living areas, provide manufacturer designed and tested decorator cover kits.

Surge Panel



Contents

Surge Panel

Product Description

Eaton's Type CH Surge Loadcenter includes a factory-mounted and wired surge suppressor device. There is a knockout in the cover that allows the user to view the status indication lights on the surge suppressor. The CH Surge Loadcenter reduces the surge current, helping protect sensitive home electronic equipment.

Save labor by installing a factory-mounted surge protective device.

Factory-Installed Surge Protection

- Includes a CHSPULTRA and a two-pole 15A circuit breaker
- Increases the effectiveness of surge protection due to reduced lead length
- A modified deadfront allows for easy viewing of indicating lights

Surge Ready

- Provides a mounting provision for CHSPULTRA
- A modified deadfront allows for easy viewing of indicating lights

Product Selection

Surge Installed Loadcenters

Ampere Rating	Type	Number of Circuits	Loadcenter Catalog Number	Loadcenter Cover Catalog Number Combination	Surface
225	Convertible	42	**CHSUR42N225L** ①	**CHSUR8LF**	**CHSUR8LS**
225	Convertible ②	42	**CHSUR42L225L2** ①	**CHSUR8LF**	**CHSUR8LS**
200	Main breaker	42	**CHSUR42B200L2** ①	**CHSUR8LF**	**CHSUR8LS**
225	Convertible	32	**CHSUR32N225K** ①	**CHSUR8KF**	**CHSUR8KS**
225	Convertible ②	32	**CHSUR32L225K** ①	**CHSUR8KF**	**CHSUR8KS**
200	Main breaker	32	**CHSUR32B200K**①	**CHSUR8KF**	**CHSUR8KS**
150	Main breaker	32	**CHSUR32B150K**①	**CHSUR8KF**	**CHSUR8KS**
100	Main breaker	32	**CHSUR32B100K** ①	**CHSUR8KF**	**CHSUR8KS**
125	Convertible ②	24	**CHSUR24L125E** ①	**CHSUR8EF**	**CHSUR8ES**
100	Main breaker	24	**CHSUR24B100E** ①	**CHSUR8EF**	**CHSUR8ES**
200	Convertible	40/40	**BRSUR4040N200**	Cover included	
200	Main lug	40/40	**BRSUR4040L200**	Cover included	
200	Main breaker	40/40	**BRSUR4040B200**	Cover included	
200	Convertible	30/40	**BRSUR3040N200**	Cover included	
200	Main lug	30/40	**BRSUR3040L200**	Cover included	
200	Main breaker	30/40	**BRSUR3040B200**	Cover included	

Notes

① Order cover separately.
② With main lugs installed.

Surge Ready Loadcenters (provision only, CHSPULTRA and breaker not included)

Ampere Rating	Type	Number of Circuits	Loadcenter Catalog Number ①	Loadcenter Cover Catalog Number	
				Combination	Surface
225	Convertible	42	**CHEC42N225L**	**CHSUR8LF**	**CHSUR8LS**
225	Convertible ②	42	**CHEC42L225L**	**CHSUR8LF**	**CHSUR8LS**
200	Main breaker	42	**CHEC42B200L**	**CHSUR8LF**	**CHSUR8LS**
225	Convertible ②	32	**CHEC32L225K**	**CHSUR8KF**	**CHSUR8LS**
225	Convertible	32	**CHEC32N225K**	**CHSUR8KF**	**CHSUR8LS**
200	Main breaker	32	**CHEC32B200K**	**CHSUR8KF**	**CHSUR8LS**
150	Main breaker	32	**CHEC32B150K**	**CHSUR8KF**	**CHSUR8LS**
100	Main breaker	32	**CHEC32B100K**	**CHSUR8KF**	**CHSUR8LS**
125	Convertible ②	24	**CHEC24L125E**	**CHSUR8EF**	**CHSUR8LS**
100	Main breaker	24	**CHEC24B100E**	**CHSUR8EF**	**CHSUR8LS**

Main Breaker Kits

Maximum Main Ampere Rating	Catalog Number
100	**CSH2100N**
150	**CSH2150N**
200	**CSH2200N**
225	**CSH2225N**

Main Lug Kits

Maximum Main Ampere Rating	Catalog Number
125	**CHL125N**
225	**CHL225N**

Technical Data and Specifications

Ratings

- Loadcenter
  - 35 kAIC main breaker, main lug only, and convertible main breaker/main lug
  - Factory installed or provision for field-installed surge suppressor
  - Top or bottom feed
- Surge suppressor (CHSPULTRA)
  - Total joules: 3500 joules
  - Maximum surge current: 175,000A
  - Per phase (L-N/L-G) surge current: 75,000A
  - Warranty: lifetime
  - Connected equipment warranty: $75,000

Notes

① Order cover separately.
② With main lugs installed.

60-Circuit Plug-On Neutral Loadcenter

Contents

Plug-On Neutral Loadcenter

Product Description

Code changes and higher safety standards are leading to more arc fault and ground fault circuit interrupter installations. Eaton offers a unique product solution that enables a direct connection of the breaker to the neutral bar, eliminating the need for wiring a pigtail.

Features and Benefits

- Time savings up to 25% per AFCI/GFCI installation
- Eliminates nuisance tripping due to loose pigtail connections
- Clean gutter space
- Easier troubleshooting due to less wiring
- Backed by a limited lifetime warranty

Product Selection

Main Breaker Plug-On Neutral Loadcenters

Main Breaker Type	Main Ampere Rating	Max. Number 3/4-Inch Circuits	Max. Number of Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al	Catalog Number	Cover Catalog Number Combination	Cover Catalog Number Surface
CSH 35 kAIC	100	24	24	Indoor	E	#2–300 kcmil	**CH24BPN100E**	**CH8EF**	**CH8ES**
	200	32	32	Indoor	J	#2–300 kcmil	**CH32BPN200J**	**CH8JF**	**CH8JS**
	200	42	42	Indoor	K	#2–300 kcmil	**CH42BPN200K**	**CH8KF**	**CH8KS**
	200	60	120 ①	Indoor	N	#2–300 kcmil	**CH60BPN200N**	**CH8NF**	—

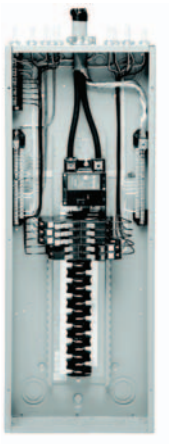
Main Lug Only/Convertible Plug-On Neutral Loadcenters—With Factory Installed Main Lugs

Max. Ampere Rating	Max. Number 3/4-Inch Poles	Enclosure Type	Box Size	Catalog Number	Wire Size Range for Main Lug	Main Breaker Kit	Wire Size Range For Main Breaker	Cover Catalog Number Combination	Cover Catalog Number Surface
125	24	Indoor	E	**CH24NLPN125E**	#6–300 kcmil	**CSH2100N**	#2–300 kcmil	**CH8NLEF**	**CH8NLES**
						CSH2125N			
225	32	Indoor	J	**CH32NLPN225J**	#6–300 kcmil	**CSH2125N**	#2–300 kcmil	**CH8NLJF**	**CH8NLJS**
						CSH2200N			
						CSH2100N			
225	42	Indoor	K	**CH42NLPN225K**	#6–300 kcmil	**CSH2125N**	#2–300 kcmil	**CH8NLKF**	**CH8NLKS**
						CSH2150N			
						CSH2200N			

Note

① Requires the use of type CHNT breakers.

Renovation Panel



Contents

Type CH Renovation Loadcenter

Product Description

Eaton's Renovation Loadcenter is designed for the service contractor. With the addition of a five-circuit terminal block factory mounted in the top left corner of the loadcenter, the service contractor can terminate short-circuit wires instead of having to use expensive wire nuts. Also, the Renovation Loadcenter incorporates a twin-stacked neutral design that places the neutral and ground terminations higher in the loadcenter. Both of these features were added without increasing any size from a standard loadcenter. These features will eliminate the need for wire nuts and make for a much neater installation. There is a provision to field mount a second five-circuit terminal block (RN5TB) in the top right corner of the loadcenter. Choose amongst Eaton's Type CH breaker family for use in the Renovation Panel.

Product Selection

Single-Phase—Main Circuit Breaker Loadcenters 35 kAIC ①

Single-Phase, Three-Wire—120/240 Vac—Factory-Bonded Stacked Split Neutral

Main Breaker Type	Main Ampere Rating	Max. Number 3/4-Inch (19.1 mm) of Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 or 70°C for Main Breakers	Loadcenter Catalog Number	Cover Catalog Number ②	
							Combination	Surface
CH	100	20	Indoor	C	#6–1/0	**CH22B100CRN**	**CH8CFF**	**CH8CS**
CSH	150	32	Indoor	J	#2–300 kcmil	**CH32B150JRN**	**CH8JF**	**CH8JS**
CSH	200	32	Indoor	J	#2–300 kcmil	**CH32B200JRN**	**CH8J**	**CH8JS**
CSH	200	42	Indoor	K	#2–300 kcmil	**CH42B200KRN**	**CH8KF**	**CH8KS**

Branch Circuit Breakers (CH)

See **Pages V1-T1-2–V1-T1-14**.

Renovation Loadcenter

Description	Catalog Number
Five-circuit terminal block kit	**RN5TB**
Ground bar kits (two maximum per panel)	(See **Page V1-T1-27**)

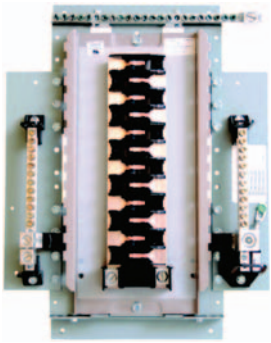
Notes

① 100A main breaker is rated 10 kAIC.

② Combination style covers may be used in surface or flush applications.

All main circuit breaker loadcenters are listed for use as service entrance equipment. Loadcenters are factory-bonded for service entrance applications. Remove bonding strap for separate neutral and ground bars for sub-feed applications.

Type CH Retrofit Interior



Type CH Retrofit Adjustable Interior

Type CH Retrofit Interior Collar and Assembly with Trim

Contents

Type CH Retrofit Interior Kits

Product Description

Replacing existing loadcenters and panelboards can be a time consuming and expensive job. CH retrofit kits can be the solution to save time and money. The kit consists of a standard trim to fit the interior, a picture frame trim to fit the existing box, and a field-adjustable interior assembly that includes neutral and ground bars. These are especially applicable when the existing box is flush mounted in drywall, plaster or block wall. The existing box, and many times existing wiring, can remain.

Features and Benefits

Upgrading Existing Electrical Infrastructure Is Simple

- Replaces vintage brands that have hard to find, expensive replacement breakers
- Allows safety upgrade to arc fault and ground fault breakers
- Maximizes number of circuits available with compact design
- Meets 2008 NEC wire bending requirements
- Eco-friendly in asbestos-filled environments
- Exclusive design

Save Time and Money Throughout the Installation

- Uses existing panel box and wires
- Eliminates expensive drywall/paint repair
- Saves 2–3 hours compared to a complete panel changeout—get off the job faster
- Eliminates precise measurements with field-adjustable kit

Detailed Product Guide

All standard retrofit kits are suitable for a range of existing box sizes:

- Box width ranging from 14.50 to 22.00 inches (368.3 to 558.8 mm)
- Box depth ranging from 4.25 inches (108.0 mm) for CH to 6.00 inches (152.4 mm)
- Box height ranging from 21.00 to 45.00 inches (533.4 to 1143.0 mm)

For box dimensions outside of these ranges, contact the Lincoln Flex Center at 800-330-6479. Be sure to provide the existing incoming line wire size.

Standards and Certifications

Interiors are UL recognized under UL 67, Panelboard standard.

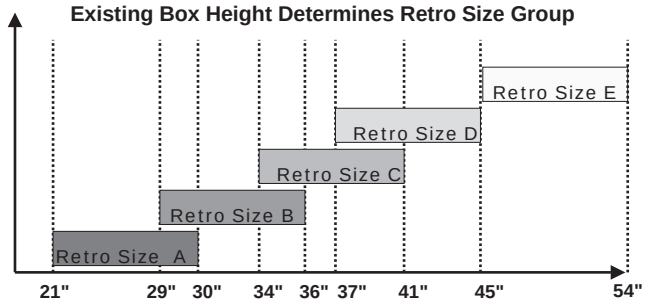
1

Product Selection

To select the retrofit kit:

1. From the existing box size determine which retrofit groups are suitable (may be more than one).
2. Use type of interior, number of phases, and type of main to find the selection chart.
3. Select part number from chart (if main breaker, replace XXX with specific amp rating).
4. Note that the overlap of the existing wall is the retro cover size minus the existing box size. If specific measurements are needed, communicate that you need a custom trim size.
5. Contact the Lincoln Flex Center at 800-330-6479 for pricing, lead-times, and order entry instructions.

Retro Size Groups



Retrofit Stocking Kits (BR and CH Kits Available) ①②

Five recommended groups: existing box height determines retro group size.

Description	Retrofit Kit Interior Catalog Number	Collar Catalog Number	Cover Catalog Number	Existing Enclosure Parameters—Inches (mm) Height	Width	Depth	Existing Box Height Determines Retro Size Group—Inches (mm)
BR-Aluminum Bus/CH-Copper Bus							
BR 125A MLO 12/24 circuit retro kit	**RAABR12L125**	Included	Included	14.00–18.00 (355.6–457.2)	10.50–12.50 (266.7–317.5)	3.50–5.25 (88.9–133.35)	Retro size AA/size 14.00–21.00 (355.6–533.4)
BR 100A MCB 10/20 circuit retro kit	**RAABR10B100**	Included	Included	14.00–18.00 (355.6–457.2)	10.50–12.50 (266.7–317.5)	3.50–5.25 (88.9–133.35)	Retro size AA/size 14.00–21.00 (355.6–533.4)
BR 125A MLO 12/24 circuit retro kit	**RAABR12L125A**	Included	Included	14.00–21.00 (355.6–533.4)	10.50–15.50 (266.7–393.7)	3.50–5.25 (88.9–133.35)	Retro size AA/size 14.00–21.00 (355.6–533.4)
BR 100A MCB 10/20 circuit retro kit	**RAABR10B100A**	Included	Included	14.00–21.00 (355.6–533.4)	10.50–15.50 (266.7–393.7)	3.50–5.25 (88.9–133.35)	Retro size AA/size 14.00–21.00 (355.6–533.4)
CH interior 125A MCB 22 circuits	**RACH22B125I**	**RACHFRAME**	**CH8CF**	21.00–30.00 (533.4–762.0)	13.00–22.00 (330.2–558.8)	4.25–6.00 (108.0–152.4)	Retro size A/size 21.00–30.00 (533.4–762.0)
CH interior 125A MLO 24 circuits	**RACH24L125I**	**RACHFRAME**	**CH8CF**	21.00–30.00 (533.4–762.0)	13.00–22.00 (330.2–558.8)	4.25–6.00 (108.0–152.4)	Retro size A/size 21.00–30.00 (533.4–762.0)
CH interior 150A MCB 24 circuits	**RBCH24B150I**	**RACHFRAME**	**CH8EF**	29.00–36.00 (736.6–914.4)	13.00–22.00 (330.2–558.8)	4.25–6.00 (108.0–152.4)	Retro size B/size 29.00–36.00 (736.6–914.4)
CH interior 225A MLO 32 circuits	**RBCH32L225I**	**RACHFRAME**	**CH8DF**	29.00–36.00 (736.6–914.4)	13.00–22.00 (330.2–558.8)	4.25–6.00 (108.0–152.4)	Retro size B/size 29.00–36.00 (736.6–914.4)
CH interior 200A MCB 32 circuits	**RCCH32B200I**	**RCCHFRAME**	**CH8JF**	34.00–41.00 (863.3–1041.4)	13.00–22.00 (330.2–558.8)	4.25–6.00 (108.0–152.4)	Retro size C/size 34.00– 41.00 (863.3–1041.4)
CH interior 225A MLO 42 circuits	**RCCH42L225I**	**RCCHFRAME**	**CH8GF**	34.00–41.00 (863.3–1041.4)	13.00–22.00 (330.2–558.8)	4.25–6.00 (108.0–152.4)	Retro size C/size 34.00– 41.00 (863.3–1041.4)
CH interior 200A MCB 42 circuits	**RDCH42B200I**	**RDCHFRAME**	**CH8KF**	37.00–45.00 (939.8–1143.0)	13.00–22.00 (330.2–558.8)	4.25–6.00 (108.0–152.4)	Retro size D/size 37.00–45.00 (939.8–1143.0)
CH interior 225A MLO 42 circuits	**RDCH42L225I**	**RDCHFRAME**	**CH8KF**	37.00–45.00 (939.8–1143.0)	13.00–22.00 (330.0–558.8)	4.25–6.00 (108.0–152.4)	Retro size D/size 37.00–45.00 (939.8–1143.0)

Notes

① Other options are available.

② CH retrofit interiors and collar cartons are color coded to ensure accuracy of kit.

Circuit Analyzer

Contents

Circuit Analyzer

Product Description

Eaton's Circuit Analyzer provides accurate testing of AFCI and GFCI devices while also testing for faulty wiring conditions.

There are other testing devices on the market, but this will be the only one available from an AFCI manufacturer. Eaton has more than 100 years of electrical control and power distribution experience, and a thorough understanding of what arc faults are all about. This experience with AFCI breakers led to developing a feature of the analyzer that will save contractors time and aggravation. It allows contractors to verify whether they have a grounded neutral simply by depressing the red Neutral Isolation test button. In this way, they will be able to determine whether they have a grounded neutral or have other neutrals connected before they leave the job site. Additionally, the Circuit Analyzer has a button that tests AFCI and two that test GFCI devices (both 40 mA and 8 mA).

Application Description

The Circuit Analyzer serves as a handy troubleshooting tool for contractors and electrical inspectors. It provides accurate testing of AFCI and GFCI devices while also testing for faulty wiring conditions.

Features, Benefits and Functions

- All-in-one tester for ground fault, arc fault and faulty wiring conditions
- Neutral isolation test button is a feature that allows the contractor to determine whether they have a grounded neutral or have other neutrals connected before leaving the job
- Additional Test button for AFCI and two that test GFCI devices (40 mA and 8 mA)
- Only product available from an AFCI manufacturer
- Three standard accessories enhance the usefulness of the Circuit Analyzer:
  - An alligator clip attachment to test hardwired circuits, such as smoke detectors, that lack a receptacle. The clip simply is attached to the smoke alarm's terminals
  - An adapter (three-prong to two-prong) for testing in older homes that lack three-prong receptacles
  - Light socket adapter for AFCI testing when no receptacle is available. Examples are ceiling fans that contain sockets and recessed lighting
  - Additionally, the Circuit Analyzer comes with a black carrying case

1

Technical Data and Specifications

How it Works

1. Plug the tester (or one of the accessories) into the receptacle, light fixture or hardwired terminals to be tested.
2. Check the wiring LEDs on the Circuit Analyzer to determine if the circuit is wired correctly.
3. If the circuit is wired correctly, then proceed to test for neutral isolation, arc fault or ground fault conditions, depending on the breaker or receptacle type that is on the circuit.
4. To perform these tests, press the corresponding button on the Circuit Analyzer and review the results.

Options and Accessories

CHSF2125

CHSF3125

CHFP

TDL

BINA

CHRLS

Field Installation and Parts

Description	Ordering Quantity ①	Catalog Number
Sub-feed lug blocks—two-pole, 125A, 3/4-inch (19.1 mm) spaces needed	1	**CHSF2125**
Sub-feed lug blocks—three-pole, 125A, 3/4-inch (19.1 mm) spaces needed	1	**CHSF3125**
Neutral/ground lug—add-on neutral or ground lug	1	**NL20**
	1	**NL30**
	1	**NL300**
Filler plates—3/4-inch (19.1 mm) space circuit breaker space	25	**CHFP**
CSR main circuit breaker filler plate (with hardware)	1	**CSRFP**
Door lock—12–42 circuits, and 100–225A	1	**TDL**
Sandlewood spray paint	1	**SPCSW**
ANSI-61 light gray touchup paint for outdoor loadcenters	1	**SPC61**
Isolated neutral assembly (computer circuits)	1	**BINA**
Circuit directory—adhesive backed	10	**TCD**
Cover screws	25	**LCCS**
Cover replacement latch 14-5/16 inch (363.55 mm) wide loadcenters only	1	**CHRLS**
Circuit marking strip (next to breakers)	10	**CHMS**
Circuit identification label (preprinted breaker labels next to breakers)	25	**CHBL**
Series rated caution label	25	**SRL**
Branch circuit numbering strip	20	**CHNS**
Bonding strap with screw	1	**BSSUSE**

Note

① Must be purchased in multiples of ordering quantities indicated.

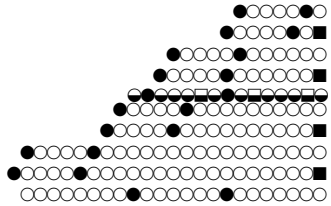
Field Installation Rainproof Conduit Hubs

DS100H1

Description	Conduit Size Inches (mm)	Ordering Quantity ①	Catalog Number
Group 1—for use with 70, 100 and 125A MLO and MCB loadcenters and circuit breaker enclosures, and the following 150 and 200A panels: CH8B150RF, CH8B200RF	0.75 (19.1)	1	**DS075H1**
	1.00 (25.4)	1	**DS100H1**
	1.25 (31.8)	1	**DS125H1**
	1.50 (38.1)	1	**DS150H1**
	2.00 (50.8)	1	**DS200H1**
Group 2—for use with 150, 200 and 225A MLO and MCB loadcenters and circuit breaker enclosure except for the following 150 and 200A panels: CH8B150RF, CH8B200RF	2.00 (50.8)	1	**DS200H2**
	2.50 (63.5)	1	**DS250H2**
	3.00 (76.2)	1	**DS300H2**
Adapter kit—allows Installing a Group 1 hub on devices arranged for Group 2 hubs	—	1	**DS900AP**
Group 1—small blank hub closure plate	—	1	**DS900CP1**
Group 2 —large blank hub closure plate	—	1	**DS900CP2**

Ground Bar Kits

GBK14

Description (See Legend)	Length Inches (mm)	Ordering Quantity ②	Catalog Number
	2.54 (64.5)	1	**GBK5** ②
	3.59 (91.2)	1	**GBK520** ②
	4.29 (109.0)	1	**GBK10** ②
	5.34 (135.6)	1	**GBK1020** ②
	4.61 (117.1)	1	**GBK13** ②
	5.69 (144.5)	1	**GBK14** ②
	6.74 (171.2)	1	**GBK1420** ②
	8.14 (206.8)	1	**GBK21** ②
	9.19 (233.4)	1	**GBK2120** ②
	7.94 (201.7)	1	**CH9GP21** ③④

Ground Bar Legend

○ = (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al
■ = (1) #6–2/0 Cu/Al
⬓ = (1) 1/0–14 or (3) #10–12 Cu/Al
◒ = (1) #14–1/0 Cu/Al or (3) #14–#10 Cu/Al
● = Mounting hole

Grounded "B" Phase Adapters

Maximum Amperes	Three-Phase Loadcenter Types of Panels	Kit Catalog Number ⑤
125	12–32 circuit main lug	**CHGRD1**
225	Main lug and CHH main breaker panels	**CHGRD2**
	CC main CB panels	**CHGRD3**

Neutral Bar Accessories

Description	Catalog Number ⑤
Split neutral kit for 22 circuit 125A maximum	**CHSN125C**
Split neutral kit for 32 circuit 200A maximum	**CHSN225J**
Split neutral kit for 42 circuit 200A maximum	**CHSN225K**
Replacement neutral for all C type boxes	**CHN125C**
Replacement neutral for all D type boxes	**CHN125D**
Replacement neutral for all L type boxes	**CHN225L**
Isolated Neutral Assembly (computer circuits)	**BINA**

Notes

① Must be purchased in multiples of ordering quantities indicated.
② Distance between mounting holes is 1-3/4 inches (44.5 mm).
③ For single- and three-phase 400A loadcenters.
④ Distance between mounting holes is 2-13/32 inches.
⑤ Cannot be used in Safety Breaker Panels. Classic Plus Panels only.

1

Mechanical Interlock Covers

Covers mechanically interlock two breakers. Type A covers interlock two CH breakers mounted across from one another. Type B covers interlock a main Type CSR breaker with a Type CH.

Mechanical Interlocks

CH8BRM Type A

CH8EFM Type B

Type	Fits Loadcenter Catalog Numbers	Mechanical Interlock Panel Cover Catalog Number Flush	Surface
A	CH12L125B, CH16L125B, CH12L3125B, CH14B100B	**CH8BFM**	**CH8BSM**
	CH20L125C, CH24L125C, CH18L3125C, CH24L3125C, CH22B100C, CH22N100C	**CH8CFM**	**CH8CSM**
	CH24L150D, CH32L150D, CH24L3225D, CH30L3150D	**CH8DFM**	**CH8DSM**
	CH42L225G, CH42L3225G	**CH8GFM**	**CH8GSM**
	Inner cover of Box B raintight	—	**CH8BRM**
	Inner cover of Box C raintight	—	**CH8CRM**
B	CH24B150E, CH24B200E	**CH8EFM**	**CH8ESM**
	CH32B150J, CH32B200J, CH3242B200J, CH32N200J, CH32B225J	**CH8JFM**	**CH8JSM**
	CH42B200K, CH42N200K, CH42B225K	**CH8KFM**	**CH8KSM**
	CHPC32B150L, CHPC32B200L, CHPC32N200L	**CHPC8B32LFM**	—
	CHPC42B150L, CHPC42B200L, CHPC42N200L	**CHPC8B42LFM**	—
	CH8B150RF, CH8B200RF, CH8N200RF, CH24B150R, CH24B200R	**CH3RDF7M**	—
	CH32B150R, CH32B200R, CH32N200R, CH32B225R	**CH3RDF9M**	—
	CH42B200R, CH42N200R, CH42B225R	**CH3RDF10M**	—

Decorator Cover Accessory

- For easy use with CH loadcenters mounted in living space
- Easily wallpapered or painted to match any decor
- Loadcenter accessory—exclusively from Eaton

Now you see it …

… Now you don't.

Decorator Cover Accessory ①

Catalog Number	
Corresponding Cover	**Existing CH Loadcenter Cover**
CH8BF	**CH8KDNB**
CH8CF	**CH8KDNC**
CH8DF/EF	**CH8KDND**
CH8GF/JF	**CH8KDNJ**
CH8KF	**CH8KDNK**

CH Loadcenter Goof Collars

Don't let an ugly drywall problem ruin a beautiful electrical installation.

Eaton's Goof Collar is designed to cover gaps between the finished drywall and loadcenter enclosure. This is often necessary when upgrading the electrical service and the drywall surrounding the panel is damaged. The collar allows 2 inches of overhang beyond the standard flush trim.

Currently available in three sizes for the CH style loadcenters.

Goof Collars are also available for the BR style loadcenters upon request. Please contact the Lincoln Flex Center at 1-800-330-6479 for questions and product opportunities.

Before

After

Goof Collars

Inches (mm)		Catalog Number	
Height	**Width**	**Loadcenter Cover**	**Goof Collar**
26.00 (660.4)	19.00 (482.6)	**CH8CF**	**CH8CFC1926**
39.00 (990.6)	19.00 (482.6)	**CH8JF**	**CH8JFC1939**
42.00 (1066.8)	19.00 (482.6)	**CH8KF**	**CH8KFC1942**

Note

① For interlock covers for loadcenters not listed in chart, please contact the Flex Center at 1-800-330-6479.

1

Plug-On Circuit Breakers

Contents

Circuit Breakers

Product 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.

Special Application Plug-On Circuit Breakers—Type CH 10 kAIC 120 Vac and 120/240 Vac

Branch Feeder Type Arc Fault Circuit Breakers

A branch feeder type arc fault circuit interrupter is a device intended to mitigate high current arcing faults in the complete circuit, including connected cords. High current arcing faults can occur from line to neutral or line to ground. These arcing faults are in parallel with the load and produce the most energy of all arcing faults. The current level of low current arcing faults is limited by the load.

The branch feeder type AFCI is required in the 1999 and 2002 National Electrical Code.

The Combination Type AFCI is required in the 2005 and 2008 National Electrical Code.

Combination Type Arc Fault Circuit Breakers

A combination type arc fault circuit interrupter is a device that includes all of the protection offered by the branch feeder AFCI (mitigation of high current arcing faults in the complete circuit, including connected cords). In addition it provides direct detection of persistent low current arcing faults down to 5 amps with associated mitigation of fire hazards in the cords connected to the outlets. High current arcing faults can occur from line to neutral or line to ground. These arcing faults are in parallel with the load and produce the most energy of all arcing faults. The current level of low current arcing faults is limited by the load.

Ground Fault Circuit Breakers—Ground Fault Application Notes

Single-pole Type CHGFIs are designed for use in two-wire, 120 Vac circuits. The diagram on **Page V1-T1-40** shows a typical wiring configuration.

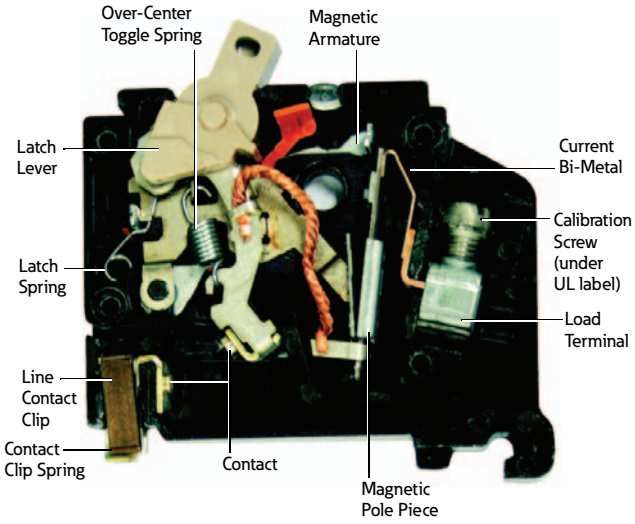
Two-pole Type CHGFIs are designed for use in three-wire, 120/240 Vac circuits, 120 Vac multiwire circuits employing common, neutral and two-wire, 240 Vac circuits obtained from a 120/240 Vac source.

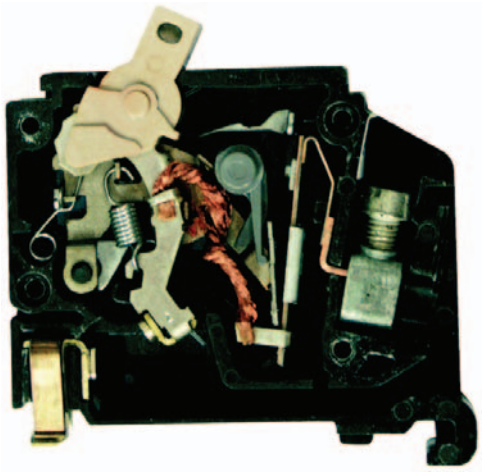
Diagrams on **Page V1-T1-40** illustrate typical wiring configurations for 120/240 Vac multiwire circuits.

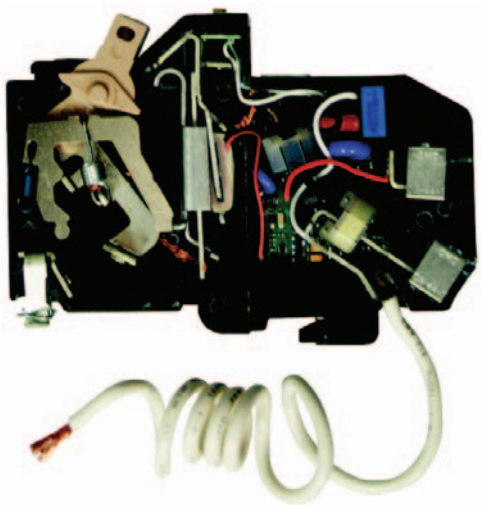
The diagram on **Page V1-T1-40** depicts a 240 Vac, two-wire circuit. Note the "panel neutral" conductor connects to the neutral bar, even though the neutral is not included in the load circuit. This connection is necessary to supply a 120 Vac power source to the ground fault sensing circuit.

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

Features







Plug-On Type CH Breaker

1

Product Selection

10 kAIC, 120 Vac, 120/240 Vac and 240 Vac

Plug-On Circuit Breakers

Type CH Breakers, 3/4-Inch (19.1 mm) per Pole 120, 120/240 or 240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton	Three-Pole 240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton
10	(1) #14–8 ① (2) #14–10 ①② (1) #14–6 ③	**CH110**	**CH210**	**CH310**
15		**CH115** ⑦⑧	**CH215** ⑧	**CH315** ⑧
20		**CH120** ⑦⑧	**CH220** ⑧	**CH320** ⑧
25		**CH125** ⑧	**CH225** ⑧	**CH325** ⑧
30		**CH130** ⑧	**CH230** ⑧	**CH330** ⑧
15		**CHF115** ⑦⑧⑩	**CHF215** ⑧⑩	**CHF315** ⑧
20		**CHF120** ⑦⑧⑩	**CHF220** ⑧⑩	**CHF320** ⑧
25		**CHF125** ⑧⑩	**CHF225** ⑧⑩	**CHF325** ⑧
30		**CHF130** ⑧⑩	**CHF230** ⑧⑩	**CHF330** ⑧
35	#14–2 ① #14–6 ③	**CH135** ⑧	**CH235** ⑧	**CH335** ⑧
40	#10–1/0 ④ #14–2 ⑤ #3/0 ⑥	**CH140** ⑧	**CH240** ⑧	**CH340** ⑧
45		**CH145** ⑧	**CH245** ⑧	**CH345** ⑧
50		**CH150** ⑧	**CH250** ⑧	**CH350** ⑧
70		**CH170**	**CH270**	**CH370**
80		—	**CH280**	**CH3080**
90		—	**CH290**	**CH3090**
100		—	**CH2100**	**CH3100**
110		—	**CH2110**	—
125		—	**CH2125**	—
150		—	**CH2150** ⑨	—

Notes

① For single- and two-pole breakers.
② Solid and stranded wire can be used together.
③ For three-pole breakers.
④ Single-pole 60–70A, two-pole 80–125A, three-pole 40–100A.
⑤ Single-pole 40–50A, two-pole 40–70A.
⑥ Two-pole 150A.
⑦ Switching duty rated.
⑧ HACR rated.
⑨ CH2150 requires four-pole spaces and is not suitable for use on three-phase panels, not CSA certified.
⑩ With trip indication.

For factory-installed options, refer to **Page V1-T1-39.**

Plug-On Branch Feeder Type Arc Fault Circuit Breakers, Type CH 10 kAIC, 120 Vac and 120/240 Vac

Type CH Single-Pole AFCI Circuit Breaker

Type CH 3/4-Inch (19.1 mm) Wide FIRE-GUARD® AFCI Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	AFCI	**CH115AF** ①
	20	AFCI	**CH120AF** ①
Two-Pole 10 kAIC ②③	15	AFCI common trip	**CH215AF**
	20	AFCI common trip	**CH220AF**

Plug-On Combination Type Arc Fault Circuit Breakers, Type CH 10 kAIC,120 Vac and 120/240 Vac

Type CH Single-Pole PON Combo AFCI Circuit Breaker

Type CH 3/4-Inch (19.1 mm) Wide FIRE-GUARD Combination Type AFCI Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	AFCI	**CH115CAF** ①
		AFCI plug-on neutral, no pigtail ④	**CH115CAFPN**
	20	AFCI	**CH120CAF** ①
		AFCI plug-on neutral, no pigtail ④	**CH120CAFPN**
Two-pole 10 kAIC	15	AFCI	**CH215CAF**
		AFCI plug-on neutral, no pigtail ④	**CH215CAFPN**
	20	AFCI	**CH220CAF**
		AFCI plug-on neutral, no pigtail ④	**CH220CAFPN**

Plug-On Ground Fault Circuit Breakers, Type CH 10 kAIC, 120 Vac and 120/240 Vac

Type CH Single-Pole

Type CH Ground Fault Circuit Breakers (5 Milliampere) 3/4-Inch (19.1 mm) per Pole 120 Vac or 120/240 Vac,10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number—1 per Shelf Carton Single-Pole 120 Vac Requires One 3/4-Inch (19.1 mm) Space	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces
15	#14–6 ⑤	**CH115GF**	**CH215GF**
20	#14–6 ⑤	**CH120GF**	**CH220GF**
25	#14–6 ⑤	**CH125GF**	**CH225GF**
30	#14–6 ⑤	**CH130GF**	**CH230GF**
35	#14–6 ⑤	—	**CH235GF**
40	#14–6 ⑤	—	**CH240GF**
45	#14–6 ⑤	—	**CH245GF**
50	#14–6 ⑤	—	**CH250GF**
60	#14–6 ⑤	—	**CH260GF**

Notes

① Clamshell packaging available with CS modification code on the end of catalog number.
② Common trip refers to two-pole 240V load application sourced by 120/240 Vac (see diagram on **Page V1-T1-40**).
③ Independent trip refers to two-pole multi-wire, home run or shared neutral circuits (see diagrams on **Page V1-T1-40**).
④ Requires plug-on neutral loadcenter.
⑤ 60A breaker listed for 75°C Cu wire only.

Type CH Two-Pole

Type CH Ground Fault Equipment Protectors (30 Milliampere) 3/4-Inch (19.1 mm) per Pole 120 Vac or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number—1 per Shelf Carton Single-Pole 120 Vac Requires One 3/4-Inch (19.1 mm) Space	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces
15	#14–6 ⑤	CH115EPD	CH215EPD
20	#14–6 ⑤	CH120EPD	CH220EPD
25	#14–6 ⑤	CH125EPD	—
30	#14–6 ⑤	CH130EPD	CH230EPD
40	#14–6 ⑤	—	CH240EPD
50	#14–6 ⑤	—	CH250EPD
60	#14–6 ⑤	—	CH260EPD

Type CH Switching Neutral Breakers—10 kAIC, 120 Vac and 120/240 Vac

Used to open the neutral along power line(s) for applications of gas pumps.

CH220SW

3/4-Inch (19.1 mm) per Pole 120/240 or 240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number—1 per Shelf Carton Two-Pole 120 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces (Hot leg) Neutral Out Neutral In	Three-Pole 120/240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces Phase Phase Neutral Out Neutral In
15	#14–8	CH215SW ②	CH315SW ③
20	#14–8	CH220SW ②	CH320SW ③
30	#14–8	CH230SW ②	CH330SW ③
40	#14–8	CH240SW ②	CH340SW ③
50	#14–8	CH250SW ②	CH350SW ③

Type CH-HID Circuit Breakers—10 kAIC, 120 Vac, 120/240 and 240 Vac

Suitable for use in circuits for fluorescent and high intensity discharge lighting. Also suitable for HACR applications.

3/4-Inch (19.1 mm) per Pole 120 Vac, 120/240 and 240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°	Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number	Three-Pole 240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number
15	#14–8	CH115HID	CH215HID ④	CH315HID
20	#14–8	CH120HID	CH220HID	CH320HID
30	#14–8	CH130HID	CH230HID	CH330HID

Notes

① 60A breaker listed for 75°C Cu wire only.
② For circuit breakers with shunt trip, add ST suffix. Shunt trip requires one additional pole space.
③ Switching duty rated.
④ CH215HID is rated for 120/240V.

Non-CTL Plug-On Replacement Circuit Breakers, Type CHNT 10 kAIC, 120/240 Vac

For use as replacement in loadcenters built prior to 1968 and within the current style 2–8 circuit loadcenters as indicated in the loadcenter section.

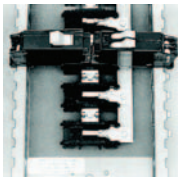
3/4-Inch (19.1 mm) per Pole 120 Vac, Non-CTL 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number 120/240 Vac 120/240 Vac
15–15	#14–8	**CHNT1515** ①②
15–20	#14–8	**CHNT1520** ①②
20–20	#14–8	**CHNT2020** ①②

CTL Plug-On Circuit Breakers, Type CHT Twin 10 kAIC, 120/240 Vac

All circuit breakers have rejection feature. Use only with loadcenters marked for use with CHT breakers.

Type CH and CHT Circuit Breakers Mounted in Twin Breaker Panel



Twin (CTL) 3/4-Inch (19.1 mm) per Pole 120 Vac Class CTL 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number 120/240 Vac 120/240 Vac
15–15	#14–8	**CHT1515** ①②
15–20	#14–8	**CHT1520** ①②
20–20	#14–8	**CHT2020** ①②

Notes

① Switching duty rated.
② HACR rated.

Type CHP Commercial Breakers—10 kAIC, 120 Vac, 120/240 Vac and 240 Vac

Note: CHP breakers feature on-off and trip positions for commercial applications.

3/4-Inch (19.1 mm) per Pole 120, 120/240 or 240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number	Three-Pole 240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number
10	(1) #14–8 ① (2) #14–10 ①② (1) #14–6 ③	**CHP110**	**CHP210**	**CHP310**
15		**CHP115** ⑥⑦	**CHP215** ⑦	**CHP315** ⑦
20		**CHP120** ⑥⑦	**CHP220** ⑦	**CHP320** ⑦
25		**CHP125** ⑦	**CHP225** ⑦	**CHP325** ⑦
30		**CHP130** ⑦	**CHP230** ⑦	**CHP330** ⑦
35	#14–2 ① #14–6 ③	**CHP135** ⑦	**CHP235** ⑦	**CHP335** ⑦
40	#10–1/0 ④ #14–2 ⑤	**CHP140** ⑦	**CHP240** ⑦	**CHP340** ⑦
45		**CHP145** ⑦	**CHP245** ⑦	**CHP345** ⑦
50		**CHP150** ⑦	**CHP250** ⑦	**CHP350** ⑦
60		**CHP160** ⑦	**CHP260** ⑦	**CHP360** ⑦
70		**CHP170**	**CHP270**	**CHP370**
80		—	**CHP280**	—
90		—	**CHP290**	—
100		—	**CHP2100**	**CHP3100**
110		—	**CHP2110**	—
125		—	**CHP2125**	—

Type CHP-GFCI Circuit Breakers—10 kAIC, 120 Vac and 120/240 Vac

Note: CHP breakers offer on-off and trip positions for commercial applications.

5 Milliampere—3/4-Inch (19.1 mm) per Pole 120V and 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120 Vac Requires One 3/4-Inch (19.1 mm) Space 1 per Individual Carton Catalog Number
15	#14–6	**CHP115GF**
20	#14–6	**CHP120GF**
30	#14–6	**CHP130GF**

Notes

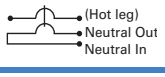
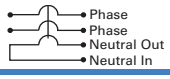
① For single- and two-pole breakers.
② Solid and stranded wire can be used together.
③ For three-pole breakers.
④ Single-pole 60–70A, two-pole 80–125A, three-pole 40–100A.
⑤ Single-pole 40–50A, two-pole 40–70A.
⑥ Switching duty rated.
⑦ HACR rated.

CHP breakers offer on-off and trip positions for commercial applications.

Type CHP Neutral Switching Breakers—10 kAIC, 120 Vac and 120/240 Vac

Used to open the neutral along power line(s) for applications of gas pumps.

3/4-Inch (19.1 mm) per Pole 120 or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Two-Pole 120 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 1 per Shelf Carton Catalog Number 	Three-Pole 120/240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces 1 per Shelf Carton Catalog Number 
15	#14–8	**CHP215SW** ①	**CHP315SW** ①
20	#14–8	**CHP220SW** ①	**CHP320SW** ①

Type CH-M50 High Ambient Breaker

3/4-Inch (19.1 mm) per Pole 120 or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number 	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number 
15	(1) #14–8 (2) #14–10	**CH115M50**	**CH215M50**
20		**CH120M50**	**CH220M50**
25		**CH125M50**	**CH225M50**
30		**CH130M50**	**CH230M50**
35		**CH135M50**	**CH235M50**
40		**CH140M50**	**CH240M50**
45		**CH145M50**	**CH245M50**
50		**CH150M50**	**CH250M50**
60		—	**CH260M50**
70		—	**CH270M50**

Type CH-HM and CHP-HM High Magnetic Breakers

3/4-Inch (19.1 mm) per Pole 120 or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number 	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number 
15	(1) #14–8 (2) #14–10	**CH115HM**	**CH215HM**
20		**CH120HM**	**CH220HM**
15	(1) #14–8 (2) #14–10	**CHP115HM**	**CHP215HM**
20		**CHP120HM**	**CHP220HM**

Note

① For circuit breakers with shunt trip, add ST suffix. Shunt trip requires one additional pole space, obtain pricing from **Page V1-T1-39**.

1

Options and Accessories

Field Installation Kits and Parts

CHHT

CHPL

CHPLGF

MCBPL

CHLO

CH125RB

CH9MB270

CHML

Description	Ordering Quantity ①	Catalog Number
Handle Ties ②		
Handle tie bar for physically joining the handles of two adjacent single-pole Type CH circuit breakers (molded plastic handle cover)	25	**CHHT**
Handle Lockoffs ③④		
Padlockable device for locking the handle of single-, two- or three-pole Type CH circuit breakers (escutcheon mounted) ⑤	1	**CHPL**
Padlockable device for locking the handle of a single-, two- or three-pole Type CHGFI circuit breaker (escutcheon mounted) ⑤	1	**CHPLGF**
Padlockable device for locking the handle of main circuit breaker Types CC and CCH into the ON or OFF position.(screw mounted) ⑥	1	**CCPL**
Padlockable device for locking the handle of main breaker Types BW and CSR into the ON or OFF position (escutcheon mounted) ⑤	1	**MCBPL**
Handle Lockdogs ④⑦		
Device used to secure handle in ON or OFF position for single-pole Type CH circuit breakers (handle mounted) ⑧	10	**CHLO**
Hold-Down Kits ⑨		
Hold-down retainer kit for single-, two-, three-pole Type CH circuit breakers. For 6–24 circuit 125A single- and three-phase, 12–42 circuit single-phase 225A and 24–42 circuit three-phase 225A MLO Type CH loadcenters	1	**CH125RB**
Hold-down retainer kit for single-, two-, three-pole Type CH circuit breakers for 2–4 circuit MLO CH loadcenters.	1	**CH125RB24**
Mounting Bases		
Mounting base for two-pole Type CH circuit breaker—70A maximum	1	**CH9MB270**
Main Breaker Lug Kits		
Types CC and CCH main breaker lug kit (2) 300 kcmil	1	**CCL300**
Type CSR main breaker lug kit (2) 300 kcmil	1	**MCBL300**
Mechanical Interlock		
Type CH for two-, three- and four-pole breakers	10	**CHML**
	10	**CHPLOFF**
	10	**CHPLOFFA**
	10	**CHL1P**
	10	**CHL2P**

Notes

① Must be purchased in multiples of ordering quantities indicated.
② Handle ties: typically used to join two similar independent single-pole breakers to form a two-pole noncommon trip breaker.
③ Handle lockoffs: devices that use a padlock to lock the circuit breaker's handle in the ON or OFF position.
④ Requires one additional pole space.
⑤ Escutcheon mounted: device mounted semipermanently to the face of the circuit breaker and secured by the loadcenter deadfront.
⑥ Screw mounted: device permanently mounted to the face of the circuit breaker by the use of a non-removable screw.
⑦ Handle lockdogs: devices that are used to secure a circuit breaker's handle in the ON or OFF position. Handle lockdogs are not padlockable devices.
⑧ Handle mounted: device mounted above or below handle using spring pressure.
⑨ Hold-down kits: devices used to secure the circuit breaker to the loadcenter for back-feed main application. See NEC Article 384.16(g).

Shunt Trip Options

Description Type	Volts	Catalog Number Suffix Adder ①
CSR	12 DC	**SR12**
CSR	24 DC	**SR24**
CSR	120 AC	**SR01**
CH	120 AC	**ST** ②
CC	12 DC	**SR12**
CC	24 DC	**SR24**
CC	120 AC	**SR01**
CC	208 AC	**SR08**
CC	240 AC	**SR02**

Handle Position Changeability Chart

	To Change Handle Position from ON to OFF or OFF to ON You Must...		
Handle Lockoff and Lockdog Types	**Remove Padlock**	**Remove Device**	**Remove Loadcenter Deadfront**
Lockoff escutcheon mounted	Remove	—	—
Lockoff screw mounted	Remove	—	—
Lockdog handle mounted	N/A	Remove	—

Notes

① Add suffix indicated to end of breaker catalog number.

② Requires one additional pole space.

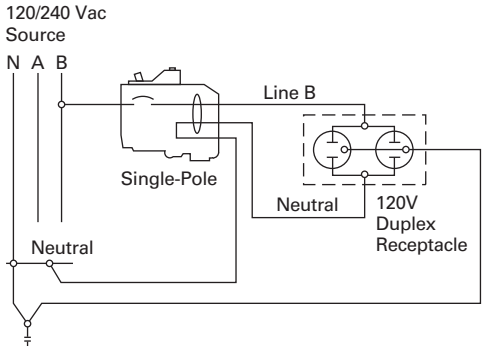
Technical Data and Specifications

Ratings

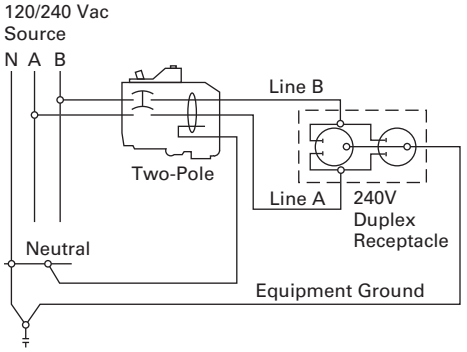
Single- and two-pole CH breakers rated 15 and 20A have low instantaneous magnetic trip levels. The 15 and 20A breakers with "HM" suffix have high magnetic trip settings recommended for circuits with inherently high inrush currents. All Type CH breakers are marked for heating, air conditioning and refrigeration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

Wiring Diagrams

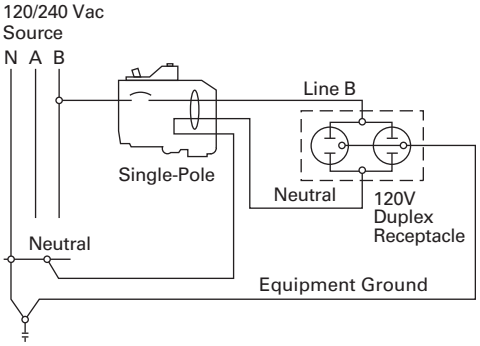
Typical Single-Pole



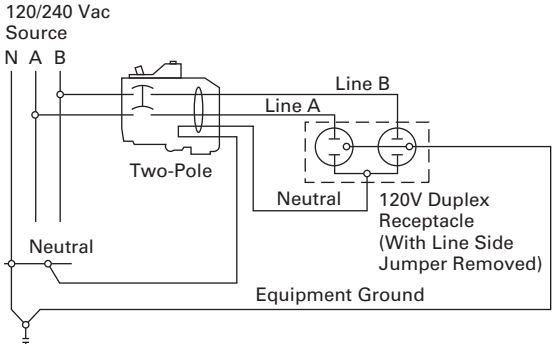
Two-Pole 240V Load Application Sourced by 120/240 Vac



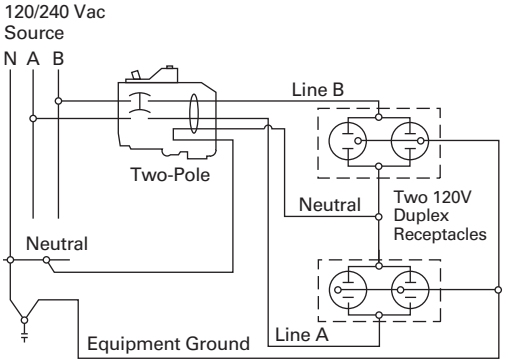
Single-Pole 120V Load Application Sourced by 120/240 Vac



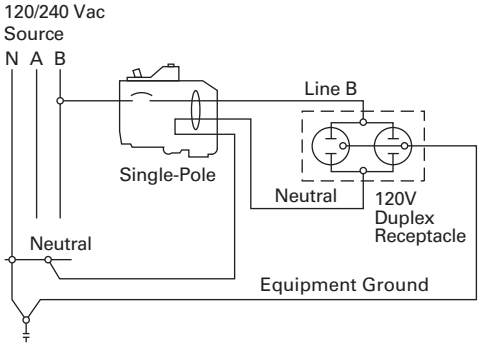
Two-Pole Shared Neutral with Duplex Receptacle Application



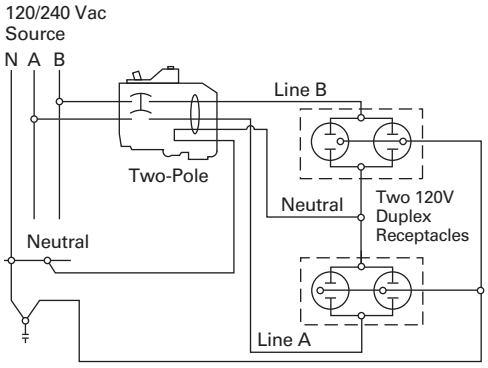
Two-Pole Shared Neutral with Multi-Duplex Receptacle Application



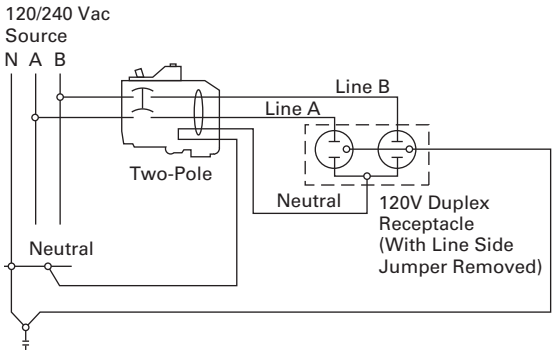
Single-Pole 120V Duplex Receptacle Application



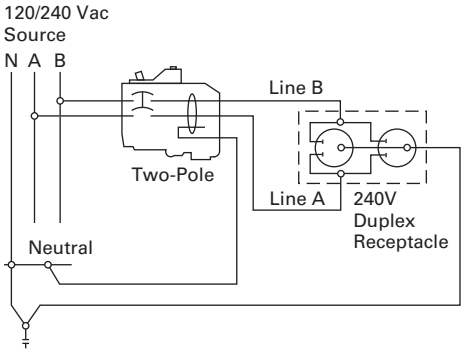
Two-Pole 120V Multi-Duplex Receptacle Application



Two-Pole 120V Duplex Receptacle Application



Two-Pole 240V Duplex Receptacle Application



1

Dimensions

Approximate Dimensions in Inches (mm)

Residential/Commercial/Unit Enclosure—Box Sizes

Note: Box sizes do not include covers/fronts.

Residential Loadcenters

Box Size	Height	Width	Depth
NEMA Type 1 Indoor			
5	9.50 (241.3)	4.50 (114.3)	3.13 (79.4)
6	11.38 (288.9)	6.88 (174.6)	3.39 (86.1)
7	13.00 (330.2)	11.00 (279.4)	3.69 (93.7)
B	16.75 (425.5)	14.31 (363.5)	3.88 (98.4)
C	21.00 (533.4)	14.31 (363.5)	3.88 (98.4)
D	29.13 (739.8)	14.31 (363.5)	3.88 (98.4)
E	29.13 (739.8)	14.31 (363.5)	3.88 (98.4)
G	34.13 (866.8)	14.31 (363.5)	3.88 (98.4)
J	34.13 (866.8)	14.31 (363.5)	3.88 (98.4)
K	37.00 (939.8)	14.31 (363.5)	3.88 (98.4)
L	39.00 (990.6)	14.31 (363.5)	3.88 (98.4)
NEMA Type 3R Outdoor			
5R	9.50 (241.3)	4.50 (114.3)	3.13 (79.4)
6R	11.75 (298.5)	6.50 (165.1)	4.50 (114.3)
7R	13.00 (330.2)	11.00 (279.4)	3.69 (93.7)
B	16.75 (425.5)	14.31 (363.5)	5.19 (131.8)
C	21.00 (533.4)	14.31 (363.5)	5.19 (131.8)
D	29.13 (739.8)	14.31 (363.5)	5.19 (131.8)
E	29.13 (739.8)	14.31 (363.5)	5.19 (131.8)
G	34.13 (866.8)	14.31 (363.5)	5.19 (131.8)
J	34.13 (866.8)	14.31 (363.5)	5.19 (131.8)
K	37.00 (939.8)	14.31 (363.5)	5.19 (131.8)
L	39.00 (990.6)	14.31 (363.5)	5.19 (131.8)

Commercial Loadcenters

Box Size	Height	Width	Depth
NEMA Type 1 Indoor			
P	54.38 (1381.1)	21.00 (533.4)	6.00 (152.4)
PM	62.63 (1590.7)	21.00 (533.4)	6.00 (152.4)

Types ECB and ECC Unit Enclosures

Height	Width	Depth
NEMA Type 1 Indoor		
23.25 (590.6)	8.88 (225.4)	4.50 (114.3)
NEMA Type 3R Outdoor		
23.69 (601.7)	9.31 (236.5)	5.44 (138.1)

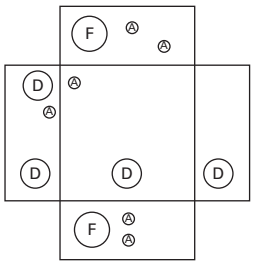
Residential Loadcenter Knockout

Residential NEMA Type 1 Indoor and NEMA Type 3R Outdoor Enclosures.

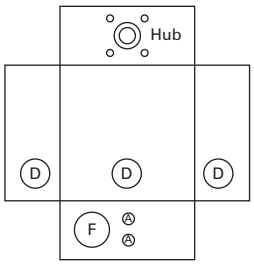
Knockouts for Box Sizes 5, 6, 7, 5R, 6R, 7R

Code	Diameter			
A	0.50 (12.7)	—	—	—
B	0.50 (12.7)	0.75 (19.1)	—	—
C	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	—
D	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)
E	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	—
F	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)
G	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—
H	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)
I	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—

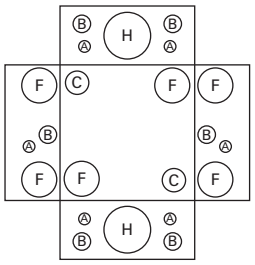
Knockout Positions



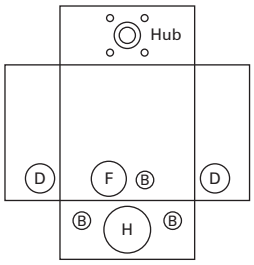
Box 5



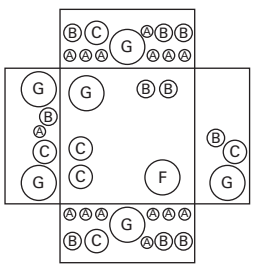
Box 5R



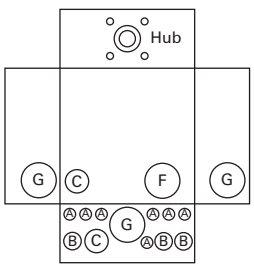
Box 6



Box 6R



Box 7



Box 7R

Approximate Dimensions in Inches (mm)

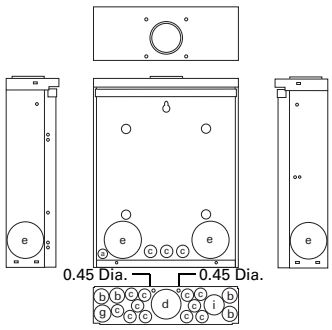
Residential and Commercial Loadcenter Knockout

Residential NEMA Type 1 indoor and NEMA Type 3R outdoor enclosures.

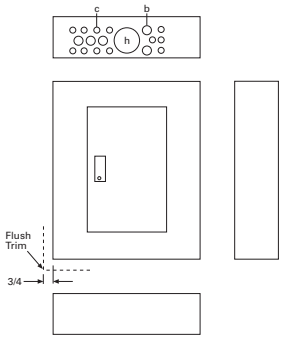
Knockouts for Box Sizes 8, 8R, P, PM, B, C, D, E, G, J, K, L, N and Outdoor Boxes 12–60 Circuits

Code	Diameter				
a	0.75 (19.1)	—	—	—	—
b	0.50 (12.7)	0.75 (19.1)	—	—	—
c	0.50 (12.7)	—	—	—	—
d	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)
e	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)	—
f	0.75 (19.1)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—
g	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	—	—
h	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)	—	—
i	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)
j	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—	—
k	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—	—
m	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)
n	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—
p	2.00 (50.8)	2.50 (63.5)	—	—	—

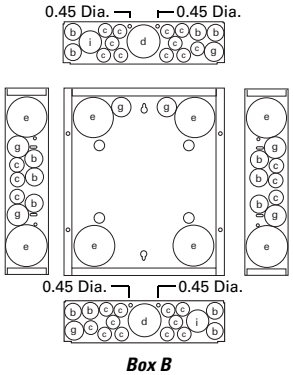
Knockout Diagram



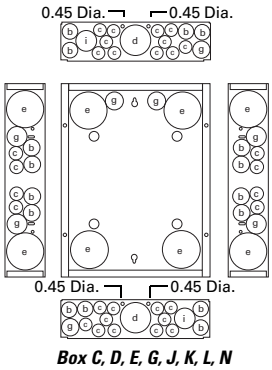
Outdoor Boxes 12–42 Circuits 225A Maximum



Box P, PM



Box B

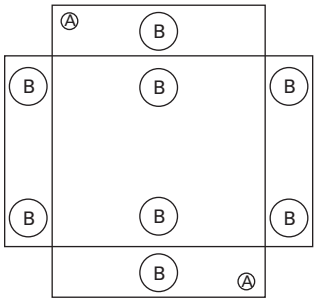


Box C, D, E, G, J, K, L, N

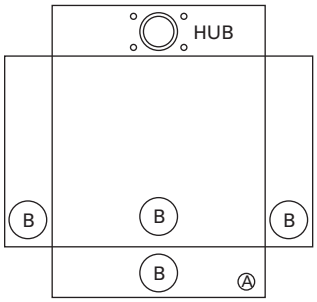
Type ECB and ECC Unit Enclosure Knockout

Code	Diameter				
NEMA Type 1 Indoor (Flush and Surface Trims)					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)	2.50 (63.5)
NEMA Type 3R Outdoor					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)	2.50 (63.5)

NEMA Type 1—Indoor



NEMA Type 3R—Outdoor



Type BR Loadcenters and Circuit Breakers

Contents

Overview

Product Selection Guide

BR Loadcenters

Description	
Service	
Single-phase, three-wire, 120/240 Vac	Three-phase, four-wire, 208Y/120 Vac Three-phase, three-wire, 240 Vac delta
Short-Circuit Current Rating	
10 kAIC: All single- and three-phase loadcenters 70–225A, 8 to 42 circuits 22 kAIC: All convertible loadcenters using 125A rated Type BRH main breakers or selected factory installed 125A rated Type BRH main breaker	25 kAIC: All convertible and factory-installed single-phase loadcenters rated 150 and 200A using Type BWH main breakers
Main Breaker/Main Lug Loadcenters	
Single-phase Main breaker: 100, 125, 150, 200, 225, 400, 600A Main lugs: 70, 125, 150, 200, 225, 400, 600A	Three-phase Main breaker: 100, 125, 150, 200, 225, 400, 600A Main lugs: 100, 125, 150, 200, 225, 400, 600A
Convertible Loadcenters	
Main breaker: single-phase up to 200A and three-phase up to 225A	Main lugs: single-phase up to 200A and three-phase up to 150A
Branch Breakers	
Types BR, BRH and BRHH: 10–150A. single-, two- and three-pole; selected amperage available in switching duty, HACR, shunt trip and high magnetic setting Type GFCB: 15–60A Types BJ and BJH: 125–225A; two- and three-pole Type BD Twin: 10–50A; two of one-pole; take one 1-inch (25.4 mm) space	Type BQ and BQC Multibreaker: 15–30A. Two of two-pole or one two-pole and two one-pole; takes two 1-inch (25.4 mm) spaces Type BRW: 15–30A; two-pole water heater breakers Type BRSN: 15–30A; two-pole switching neutral breakers Type BR 15–100A; two-pole, 240 Vac delta breakers BR-AFCI arc fault circuit interrupter
Enclosures	
NEMA Type 1 indoor NEMA Type 3R outdoor	NEMA 4X Meets or exceeds UL requirements for indoor or outdoor applications
Loadcenter and Breaker Accessories	
Branch circuit breaker: Auxiliary components Hold-down kits Handle ties Lockoffs Lockdogs Complete line of ground bar kits 5, 10, 14 and 21 circuit, some with additional #2/0 lugs; each terminal will accommodate: (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al Main and sub-feed lugs 125, 150, 225A—two- and three-pole Shunt trips	Surge protection: Single-phase plug-on surge protector Single-phase bottle type surge protector Three-phase bottle type surge protector Single-phase whole home surge protector Universal rainproof conduit hubs Group One: 3/4, 1, 1-1/4, 1-1/2, 2 inches (19.1, 25.4, 31.8, 38.1, 50.8 mm) Group Two: 2, 2-1/2, 3 inches (50.8, 63.5, 76.2 mm) Adapter plate
Bussing	
Tin-plated aluminum as standard	Limited copper bus panels available

1

Product Description

Loadcenters are enclosures specifically designed to house the branch circuit breakers and wiring required to distribute power to individual circuits. They contain either a main breaker when used at the service entrance point or a main lug when used as a sub-panel to add circuits to existing service. The main breaker protects the main entire panel and can be used as a service disconnect. The branch breakers protect the wires leading to individual electrical loads such as fixtures and outlets.

Features, Benefits and Functions

Loadcenter Construction

Eaton's Type BR loadcenters have standard tin-plated aluminum bus with a limited availability of copper bus. The sum of the handle ratings connected to any stab is limited to 150A maximum on the 100 and 125A loadcenters, and 200A on loadcenters with 150A or higher main bus. NEMA Type 1 boxes or enclosures are manufactured from galvanized steel. Raintight boxes are manufactured from galvanized steel, then finished using an electrostatic powder coat, baked urethane paint process.

Neutrals

Eaton's Type BR loadcenters feature three types of neutrals:

Insulated/Bondable Single/ Split Neutral

Panels are supplied with an insulated neutral and a bonded ground. For service entrance applications, the insulated neutral must be bonded utilizing the bonding strap supplied with the panel. When used as a service entrance panel, the bonded ground may be used as a neutral and/or ground, unused neutral holes on either side may be used for termination of equipment grounds. For non-service entrance (sub-panel) applications, the panel may be installed with bonding strap not connected to the neutral (the bonded ground must be used as a ground only).

Insulated/Bondable Single Neutral

Panels are supplied with a single insulated neutral. For service entrance applications, all that is required to bond the neutral 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. When used as a service entrance panel, unused neutral connections may be used for the termination of equipment grounds. For non-service entrance (sub-panel).

Insulated/Bondable Split Neutral

Panels are supplied with twin insulated neutrals with an insulated cross strap. For service entrance applications, the neutral must be bonded utilizing the bonding strap supplied with the panel. For non-service entrance (sub-panel) applications, the panel may be installed with bonding strap not connected to the neutral. Separate ground bars must be used on non-service entrance panels.

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 insulated/bondable single/split neutral panels have sufficient terminations for both ground and neutral conductors. The insulated/ bondable single split neutral panels are supplied with a separate factory-installed ground bar if the catalog number contains a "G." If not, a separate ground bar should be installed. Insulated/ Bondable Single Neutral panels are supplied without a ground bar (unless otherwise noted), and ground bar kits if needed must be purchased separately.

Neutral and Ground Terminals

The standard terminals on grounds and neutrals are rated to accept (3) #14–#10 Cu/Al or (1) #14–4, provided the cables terminated are of the same material. For larger cables, add-on neutral lugs may be ordered from the accessories on **Page V1-T1-73**.

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

Bottom Fed Loadcenters

For single-phase 225A and below loadcenters that are bottom fed, a standard panel can be rotated 180 degrees to allow straight-in wiring of power cables to the main terminals. Because the main circuit breaker handle operates horizontally, the orientation of the main circuit breaker handle is consistent with the requirements of NEC 2008 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 2008 Article 312.8.

Fire Rating

Due to the numerous openings in both loadcenter boxes and trims, they should not be mounted in firewalls. There is no approved 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 manufacturing, e.g., 023. The "!" sign at the end signifies the decade of the 2010. Therefore, the date code F023& would indicate that the product was manufactured in the 23rd week of 2010. The 1980s are represented by the "+" sign and the 1990s are represented by a "=" at the end of the code.

Surge Protectors

Complete home surge protection is available in multiple options, including a factory-installed option that provides the highest level of surge protection in a residential design. See Tab 3 for more details.

Circuit Breaker Case Interrupting Capacity

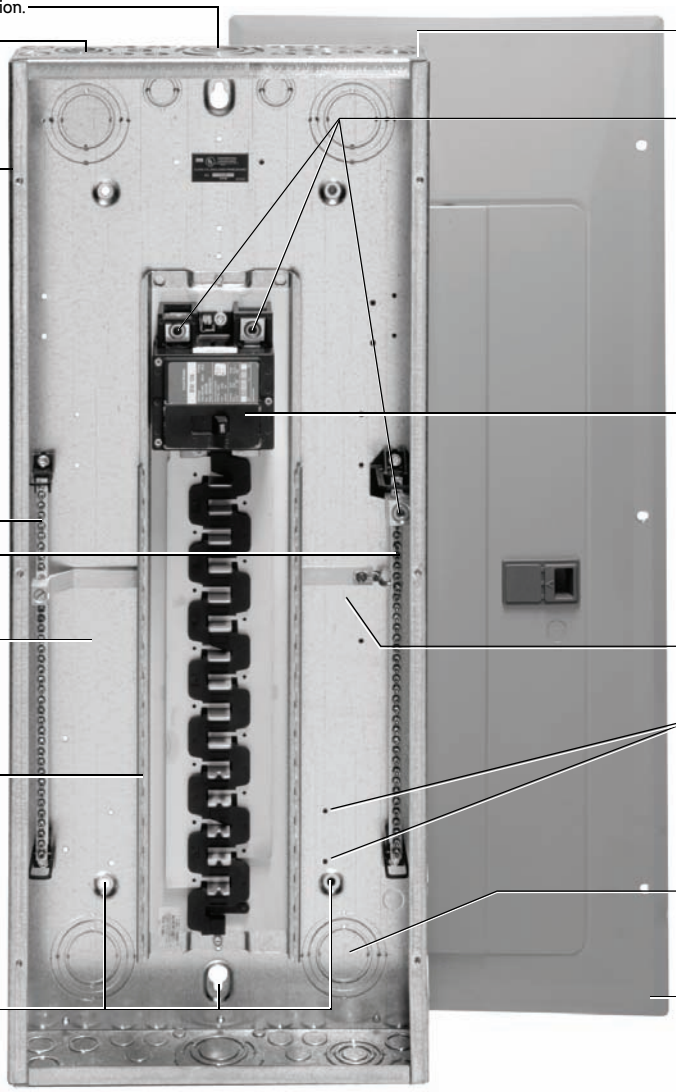
- 10 kAIC
- 22 kAIC

Warranty Information

- 10-year limited loadcenter warranty
- 10-year limited branch breaker warranty

1

Type BR Loadcenter—BR4040B200



Tangential main knockout for easy installation.

Extra 1.50-inch (38.1 mm) knockout for bundling of wires.

Drywall marking on enclosure.

Twin neutral design for easier wiring and balancing of the load, located in wireway, away from circuit breakers.

Maximum wiring gutter space for ease of wiring in compliance with NEC requirements.

One piece roll formed metal backpan with circuit breaker alignment notches ensures accurately aligned breaker and bus stabs.

Six mounting holes (three top, three bottom) for ease of installation.

Standard 14-3/8 inches (365.1 mm) wide enclosures fit snugly between wall studs.

Same size Allen wrench can be used for phase and neutral lugs.

Commercial grade 25 kAIC rated main breaker in 150A and above loadcenters designed for straight-in wiring that allows for top or bottom feed.

Factory pre-attached neutral bonding strap.

Predrilled mounting holes for ease of installing ground bar kits.

Maximum variety of concentric knockouts, at rear and sides.

Combination trim has sliding latch and adjustable deadfront for neat, clean appearance.

Standards and Certifications

UL Listings

All Eaton Type BR loadcenters are listed under UL File E52977 except the 2–8 circuit loadcenters, up through and including 125A, which are listed under UL File E8741.

Listed

Catalog Number Selection

Single- and Three-Phase Through 225A

3 BR _ 30 42 B C 200 _ _

Phase
Blank = Single-phase ①
3 = Three-phase

Eaton's Type BR Loadcenter

Factory Options
SUR = Factory integrated surge

Number of 1-Inch (25.4 mm) Spaces

Maximum Number of Circuits

Main Device
B = Main breaker
L = Main lug
N = Convertible main
H = Main breaker high AIC

Bus
Blank = Aluminum bus①
C = Copper bus

Amperes

50 = 50A	**150** = 150A
70 = 70A	**200** = 200A
100 = 100A	**225** = 225A
125 = 125A	

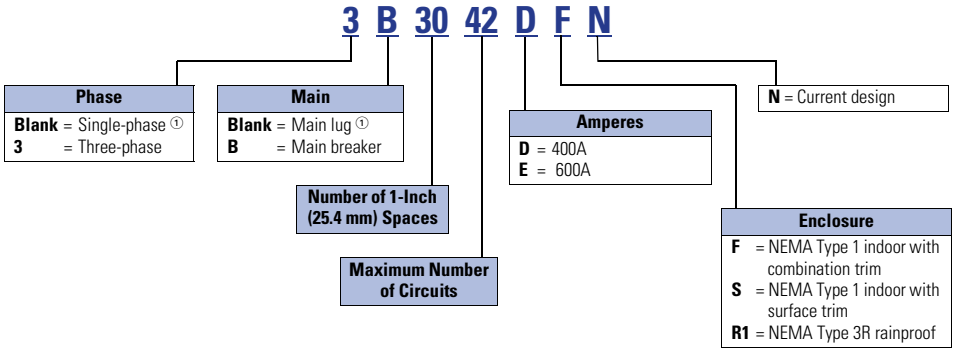
Enclosure
R = NEMA Type 3R rainproof
S = NEMA Type 1 indoor with surface trim
F = NEMA Type 1 indoor with flush trim
Blank = NEMA Type 1 indoor with combination trim ①
RIS = Riser panel

Construction
Blank = No feed thru lugs ①
F = Feed-through lugs
G = Ground bar
P = Current design
NY = NY City gutter space

Note
① No character space used.

1

Single- and Three-Phase 400–600A



Example No. 1: BR1224L125G

Single-phase Type BR loadcenter rated at 125A with main lugs, 12 spaces allowing 24 poles, indoor combination enclosure, aluminum bus and ground bar.

Example No. 2: BR24L70RP

Single-phase Type BR loadcenter rated at 70A with main lugs, two spaces allowing four poles, rainproof enclosure with aluminum bus.

Example No. 3: 3B4242EFN

Three-phase Type BR loadcenter rated at 600A with main breaker, 42 spaces allowing 42 poles, indoor combination enclosure.

Product Selection

Single-Phase—Main Circuit Breaker Loadcenters—10/25 kAIC

BR4040B200

Single-Phase, Three-Wire—120/240 Vac—Factory-Bonded Split Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Space	Maximum Number 1-Inch (25.4 mm) Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number with Combination Cover ②
BR 10 kAIC	100	20	20	Indoor	C2	#4–1/0	**BR2020B100**
	100	16	24	Indoor	C1		**BR1624B100**
BWH 25 kAIC	150	30	30	Indoor	G1	#2–300 kcmil	**BR3030B150**
	200	20	40	Indoor	D1	#2–300 kcmil	**BR2040B200**
	200	30	40	Indoor	G1		**BR3040B200**
	200	40	40	Indoor	L1		**BR4040B200**

Notes

① No character space used.

② Combination style covers may be used in surface or flush applications.

All main circuit breaker loadcenters are listed for use as service entrance equipment. Loadcenters are factory-bonded for service entrance applications. Remove bonding strap for separate neutral and ground bars for sub-feed applications.

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral

BR816B100

BR2030B150

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Maximum Number 1-Inch (25.4 mm) Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number with Combination ① or NEMA Type 3R Cover
BR 10 kAIC	100	8	16	Indoor	B1	#4–1/0 ②	**BR816B100**
		10	20	Indoor	A1		**BR1020B100S11**
		10	20	Indoor	A1		**BR1020B100F11**
		10	20	Outdoor	B2R		**BR1020B100RF** ③④
		12	12	Indoor	B2		**BR1212B100**
		12	20	Indoor	B2		**BR1220B100**
		12	24	Outdoor	B2R		**BR1224B100R** ④
		16	16	Indoor	C1		**BR1616B100**
		16	20	Indoor	C1		**BR1620B100**
		16	24	Outdoor	C1R		**BR1624B100R** ④
		20	24	Outdoor	C3R		**BR2024B100R** ④
		30	30	Indoor	⑤	⑤	⑤
	125	16	24	Indoor	C1	#4–2/0	**BR1624B125**
		20	24	Indoor	C1		**BR2024B125**
		20	24	Outdoor	C3R		**BR2024B125R** ④
BRH ⑥ 22 kAIC	100	20	24	Indoor	C2	#4–1/0	**BR2024H100** ⑥
BWH ⑦ 25 kAIC	150	8	16	Outdoor	C3R	#2–300 kcmil	**BR816B150RF** ③④
		16	30	Indoor	C4		**BR1630B150**
		20	30	Indoor	C4		**BR2030B150**
		20	30	Outdoor	D1R		**BR2030B150R** ④
		20	40	Indoor	D1		**BR2040B150**
		20	40	Outdoor	D1R		**BR2040B150R** ④
		24	30	Indoor	G1		**BR2430B150**
		30	30	Outdoor	G1R		**BR3030B150R** ④
		30	40	Indoor	G1		**BR3040B150**
	200	4	8	Outdoor	8R	#2–300 kcmil	**BR48B200RF** ③⑧⑨
		8	16	Outdoor	C3R		**BR816B200RF** ③④
		16	32	Indoor	C4		**BR1632B200**
		20	40	Outdoor	D1R		**BR2040B200R** ④
		24	40	Indoor	G1		**BR2440B200**
		30	40	Outdoor	G1R		**BR3040B200R** ④
		40	40	Outdoor	L1R		**BR4040B200R** ④
	225	42	42	Indoor	L2	#1–250 kcmil	**BR4242B225**
		42	42	Outdoor	L2R		**BR4242B225R** ④

Notes

① Combination style covers may be used in surface or flush applications.
② Wire range size for BR1020B100SP is #6–#1 Cu/Al.
③ Includes through-feed lugs for both phase and neutral conductors.
④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.
⑤ See copper bus offering, **Page V1-T1-60**.
⑥ 22 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFCB 10 kAIC branch breakers are used in series with Type BRH main breaker.
⑦ 25 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFCB 10 kAIC branch circuit breakers are used in series with Type BWH main breaker.
⑧ Supplied with adapter plate to use DS Group1 hubs on **Page V1-T1-73**. If 2.50-inch (63.5 mm) hub is needed, remove adapter and use ARP00007CH25 hub.
⑨ Neutral is bonded—suitable for service entrance only—cannot be converted for sub-feed application.

All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with neutral bonding strap preattached. The maximum rating of the panel is the main circuit breaker rating when used as service entrance equipment. Ground bar kits priced separately. See **Page V1-T1-73**.

1

Main Circuit Breaker Loadcenters—10/22/25 kAIC

BR3030BC100

Main Circuit Breaker Loadcenters—With Copper Bus—Single-Phase Three-Wire—120/240 Vac—Factory-Bonded Split Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number with Combination Cover ①②
BR 10 kAIC	100	20	20	Indoor	C2	#4–1/0	**BR2020BC100**
		30	30	Indoor	D1	#4–1/0	**BR3030BC100**
BRH 22 kAIC ③	100	30	30	Indoor	D1	#4–1/0	**BR3030HC100**
BWH 25 kAIC	150	30	30	Indoor	G1	#2–300 kcmil	**BR3030BC150**
	200	20	40	Indoor	D1	#2–300 kcmil	**BR2040BC200**
		30	40	Indoor	G1	#2–300 kcmil	**BR3040BC200**
		40	40	Indoor	L1	#2–300 kcmil	**BR4040BC200**

Main Circuit Breaker Loadcenters—10/22 kAIC

B4242DFN

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Commercial Loadcenter Catalog Number ④⑤⑥ With Flush or NEMA Type 3R Cover	With Surface Cover
DK ⑦	300	42	42	Indoor	24	(2) #3/0–250 kcmil	**BR304242F**	**BR304242S**
	400	42	42	Indoor	24	(2) #3/0–250 kcmil	**B4242DFN**	**B4242DSN**
		42	42	Outdoor	47	(2) #3/0–250 kcmil	**B4242DR1N** ⑧	—
HLD ⑨	600	42	42	Indoor	24	(2) #3/0–500 kcmil	**B4242EFN**	**B4242ESN**

Notes

① All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with neutral bonding strap preattached. The maximum rating of the panel is the main circuit breaker rating when used as service entrance equipment.
② Ground bar kits priced separately. See **Page V1-T1-73**.
③ 22 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFCB 10 kAIC branch breakers are used in series with Type BRH main breaker.
④ Ground bar kits priced separately. See **Page V1-T1-73**.
⑤ The maximum rating of the panel is the main circuit breaker rating when used as service entrance equipment.
⑥ Door lock and key included with loadcenter.
⑦ Type DK main circuit breaker is rated 65 kAIC at 240 Vac and allows a 22 kAIC series rating on the panel when Types BR, BD and BJ branch circuit breakers are used.
⑧ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.
⑨ Type HLD main circuit breaker is rated 65 kAIC at 240 Vac. Type HLD circuit breaker **is not** series rated with Types BR, BD and BJ branch circuit breakers.

Box sizes **Pages V1-T1-87** through **V1-T1-90**.

Single-Phase—Main Lug Loadcenters

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral

Surface Outdoor

Flush Outdoor

Surface (No Door)

Flush (No Door)

Outdoor

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Trim Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number
70	2	4	Indoor	Surface (no door)	5	#8–#2	**BR24L70SP** ①②
	2	4	Indoor	Surface (no door)	5		**BR24L70SGP** ②③
	2	4	Outdoor	—	5R		**BR24L70RP** ①②④
	2	4	Indoor	Flush (no door)	5		**BR24L70FP** ①②
	2	4	Indoor	Flush (no door)	5		**BR24L70FGP** ②⑤
125	2	4	Indoor	Surface (no door)	6	#14–1/0	**BR24L125SP** ①②
	2	4	Outdoor	—	6R		**BR24L125RP** ①②④
	2	4	Outdoor	—	6R		**BR24L125RSEP** ②⑦⑧
	2	4	Outdoor	—	6R		**BR24L125RSE2P** ②⑥⑦
	2	4	Indoor	Flush (no door)	6		**BR24L125FP** ①②
	4	8	Indoor	Surface (no door)	7	#14–1/0	**BR48L125SP** ①⑨
	4	8	Indoor	Surface (no door)	7		**BR48L125SGP** ③⑨
	4	8	Outdoor	—	7R		**BR48L125RP** ①④⑨
	4	8	Indoor	Flush (no door)	7		**BR48L125FP** ①⑨
	4	8	Indoor	Flush (with door)	7		**BR48L125FDP** ①⑨
	4	8	Indoor	Flush (no door)	7		**BR48L125FGP** ③⑨
	6	12	Indoor	Surface (no door)	7	#14–#1	**BR612L125SP** ①⑩
	6	12	Indoor	Surface (no door)	7		**BR612L125SGP** ⑩⑪
	6	12	Indoor	Surface (with door)	7		**BR612L125SDP** ①⑩
	6	12	Indoor	Surface (with door)	7		**BR612L125SDGP** ⑩⑪
	6	12	Outdoor	—	7R		**BR612L125RP** ①④⑩
	6	12	Indoor	Flush (no door)	7		**BR612L125FP** ①⑩
	6	12	Indoor	Flush (no door)	7		**BR612L125FGP** ⑤⑩⑪
	6	12	Indoor	Flush (with door)	7		**BR612L125FDP** ⑩
	6	12	Indoor	Flush (with door)	7		**BR612L125FDGP** ⑤⑩⑪
	8	16	Indoor	Surface (no door)	7	#14–#1	**BR816L125SP** ①⑩
	8	16	Indoor	Surface (no door)	7		**BR816L125SGP** ⑩⑫
	8	16	Indoor	Surface (with door)	7		**BR816L125SDP** ①⑩
	8	16	Indoor	Surface (with door)	7		**BR816L125SDGP** ⑩⑫
	8	16	Outdoor	—	7R		**BR816L125RP** ①④⑩
	8	16	Indoor	Flush (no door)	7		**BR816L125FP** ①⑩
	8	16	Indoor	Flush (no door)	7		**BR816L125FGP** ⑤⑩⑫
	8	16	Indoor	Flush (with door)	7		**BR816L125FDP** ①⑩
	8	16	Indoor	Flush (with door)	7		**BR816L125FDGP** ⑤⑩⑫

Notes

① Ground bar kits priced separately. See **Page V1-T1-73**.
– For 2/4 circuit loadcenters, use GBK5 or GBK520 ground bar.
– For 4/8, 6/12 and 8/16 circuit loadcenters, use GBK10 ground bar.
– Ground bars mount to the left side wall of the enclosure for the 4/8, 6/12 and 8/16 circuit loadcenters.

② Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

③ Ground bar GBK5 is installed.

④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.

⑤ CSA and UL approved.

⑥ Neutral/ground holes (6) #14–6 and (3) #14–2/0 AWG Cu/Al.

⑦ For use as service entrance applications only.

⑧ Neutral/ground holes (6) #14–6 and (3) #14–1/0 AWG Cu/Al.

⑨ Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

⑩ Suitable for use as service equipment when a main breaker is used or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

⑪ Ground bar GBK10 is installed.

⑫ Ground bar GBK14 is installed.

Box sizes **Pages V1-T1-87** through **V1-T1-90**.

1

Single-Phase—Main Lug Loadcenters

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral, continued

	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Maximum Number 1-Inch (25.4 mm) Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number with Combination or NEMA Type 3R Cover ①
BR1224L125 	125	12	12	Indoor	B1	#6–2/0	**BR1212L125** ②③④⑤
		12	24	Indoor	B1		**BR1224L125** ②④⑤
		12	24	Indoor	B1		**BR1224L125G** ②④⑤
		12	24	Indoor	B1		**BR1224L125DG** ②④⑤⑥
		12	24	Outdoor	B1R		**BR1224L125R** ②⑤⑦
		16	16	Indoor	B2		**BR1616L125** ②④⑤
		16	24	Indoor	B2		**BR1624L125** ②④
		16	24	Indoor	B2		**BR1624L125G** ②④
		16	24	Outdoor	B2R		**BR1624L125R** ②⑦
		20	20	Indoor	C1		**BR2020L125** ②④⑤
		20	24	Indoor	C1		**BR2024L125** ②④
		20	24	Indoor	C1		**BR2024L125G** ②④⑧
		20	24	Outdoor	C1R		**BR2024L125R** ②⑦
		24	24	Indoor	C2		**BR2424L125** ②④
		24	24	Indoor	C2		**BR2424L125G** ②④⑧
	150	16	30	Indoor	C2	#1–300 kcmil	**BR1630L150** ④⑨
		20	30	Indoor	C2		**BR2030L150** ④⑨
BR1224L200 	200	8	16	Outdoor	B2R	#1–300 kcmil	**BR816L200RF** ⑤⑦⑩
		12	24	Indoor	B2		**BR1224L200** ④⑤⑨
		12	24	Outdoor	B2R		**BR1224L200R** ⑤⑦⑨
		20	40	Indoor	C2		**BR2040L200** ④⑨
		20	40	Indoor	C2		**BR2040L200G** ④⑧⑨
		20	40	Outdoor	C3R		**BR2040L200R** ⑦⑨
		24	40	Indoor	C4		**BR2440L200** ④⑨
		30	40	Indoor	D1		**BR3040L200** ④⑨
		30	40	Indoor	D1		**BR3040L200G** ④⑧⑨
		30	40	Outdoor	D1R		**BR3040L200R** ⑦⑨
		40	40	Indoor	G1		**BR4040L200** ④⑨
		40	40	Indoor	G1		**BR4040L200G** ④⑨
		40	40	Outdoor	G1R		**BR4040L200R** ⑦⑨
	225	42	42	Indoor	L1	#1–300 kcmil	**BR4242L225** ④
		42	42	Outdoor	L1R		**BR4242L225R** ⑦

Notes

① Ground bar kits priced separately unless otherwise noted. See **Page V1-T1-73**.
② Has notch for BREQS125 hold-down kit.
③ Single, movable neutral is provided.
④ Combination cover style.
⑤ Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
⑥ Ground bars GBK5 and GBK520 installed.
⑦ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.
⑧ Ground bar GBK1220 installed.
⑨ Has notch for BRHDK125 hold-down kit.
⑩ Includes through-feed lugs for both phase and neutral conductors.

Single-Phase—Main Lug Loadcenters, Non-Metallic

2460SNM

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Trim Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number
40 ①	②	②	Indoor	Flush (no door)	2	②	**TT120FLGNM** ②③
	②	②	Indoor	Surface (no door)	2		**TT120SLGNM** ②③
60	2	4	Indoor	Flush (no door)	2	#14–2	**2460FNM**
	2	4	Indoor	Surface (no door)	2		**2460SNM**
	2	4	Indoor	Flush (no door)	2		**2460FGNM** ③
	2	4	Indoor	Surface (no door)	2		**2460SGNM** ③
	2	4	Outdoor	—	④		**2460RNM**

BR816LC125FDP

Single-Phase Three-Wire—120/240 Vac—Single Neutral with Copper Bus

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Trim Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number
125	8	16	Indoor	Surface (with door)	7	#14–1	**BR816LC125SDP**
	8	16	Indoor	Flush (with door)	7		**BR816LC125FDP**

Notes

① Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

② This device has no main lugs. A Type BR or BD breaker is required to be backfed to supply power to branch breakers. This device is single-phase 120 Vac only. With the use of three Type BR breakers there are two branch circuits available. With the use of three Type BD breakers there are five branch circuits available.

③ Includes GB4NM ground bar.

④ 2460 RNM uses the non-metrical ACD enclosure. See **ACD Section** for dimensions.

Box sizes **Pages V1-T1-87** through **V1-T1-90**.

1

Single-Phase—Main Lug Loadcenters—400 and 600A

4242DFN

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Commercial Loadcenter Catalog Number ①②③ With Flush or NEMA Type 3R Cover	With Surface Cover
400	12	24	Indoor	19	(1) #4/0–750 kcmil or (2) #3/0–400 kcmil	—	**1224DSN** ⑤
	12	24	Outdoor	42		**1224DR1N** ④⑤	—
	24	42	Indoor	20		—	**2442DSN**
	42	42	Indoor	22		**4242DFN**	**4242DSN**
	42	42	Outdoor	46		**4242DR1N** ④	—
600	42	42	Indoor	22	(2) #2–500 kcmil	—	**4242ESN**

Three-Phase—Main Circuit Breaker Loadcenters—10 kAIC

3BR4242B200

Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number ⑥⑦ (With Combination or NEMA Type 3R Cover)
BR 10 kAIC	100	12	24	Indoor	C1	#4–1/0	**3BR1224B100**
		12	24	Outdoor	C1R		**3BR1224B100R** ⑧
CC 10 kAIC	150	30	42	Indoor	L1	#1–3/0	**3BR3042B150**
		30	42	Outdoor	L1R		**3BR3042B150R** ⑧
	200	30	42	Indoor	L1	#1–250 kcmil	**3BR3042B200**
		30	42	Outdoor	L1R		**3BR3042B200R** ⑧
		42	42	Indoor	L2		**3BR4242B200**
		42	42	Outdoor	L2R		**3BR4242B200R** ⑧
	225	42	42	Indoor	L2	#1–300 kcmil	**3BR4242B225**
		42	42	Outdoor	L2R		**3BR4242B225R** ⑧

Notes

① Ground bar kits priced separately unless otherwise noted. See **Page V1-T1-73**.
② Has notch for BRHDK125 hold-down kit.
③ Ground bar GBK8 installed.
④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.
⑤ Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
⑥ All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with a neutral bonding strap pre-attached (commercial loadcenters do not have a pre-attached bonding strip). The maximum main rating of the panel is the main circuit breaker rating when used as service entrance equipment.
⑦ Ground bar kits priced separately. See **Page V1-T1-73**.
⑧ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.

Three-Phase—Main Circuit Breaker Loadcenters—22/65 kAIC

Three-Phase, Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Maximum Number 1-Inch (25.4 mm) Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Commercial Loadcenter Catalog Number ①②③ With Combination or NEMA Type 3R Cover
DK ④ 22 kAIC	400	42	42	Indoor	24	(2) #3/0–250 kcmil	**3B4242DFN**
		42	42	Outdoor	47		**3B4242DR1N** ⑤
LD ⑥	600	42	42	Indoor	24	(2) #3/0–500 kcmil	**3B4242EFN**

Three-Phase—High Interrupting Rated Main Circuit Breaker Loadcenters—22/100 kAIC

3BR4242H200

Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Maximum Number 1-Inch (25.4 mm) Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number ⑦⑧ with Combination Cover	with Surface Cover
BRH 22 kAIC ⑨	100	12	24	Indoor	C1	#4–1/0	**3BR1224H100**	**3BR1224H100S**
CHH 100 kAIC ⑩	150	30	42	Indoor	L1	#1–250 kcmil	**3BR3042H150**	**3BR3042H150S**
CHH 100 kAIC ⑩	200	30	42	Indoor	L1	#1–250 kcmil	**3BR3042H200**	**3BR3042H200S**
		42	42	Indoor	L2		**3BR4242H200**	**3BR4242H200S**

Notes

① All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with a neutral bonding strap pre-attached (commercial loadcenters do not have a pre-attached bonding strip). The maximum main rating of the panel is the main circuit breaker rating when used as service entrance equipment.

② Ground bar kits priced separately. See **Page V1-T1-73**.

③ Door lock and key included with loadcenter.

④ Type DK main circuit breaker is rated 65 kAIC at 240 Vac and allows a 22 kAIC series rating on the loadcenter when Types BR, BD and BJ branch circuit breakers are used.

⑤ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.

⑥ The LD main circuit breaker is rated 65 kAIC at 240 Vac. Type LD circuit breaker **is not** series rated with Types BR, BD and BJ branch circuit breakers.

⑦ All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with a neutral bonding strap pre-attached.

⑧ Ground bar kits priced separately.

⑨ 22 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFGB branch breakers are used with BRH main.

⑩ 100 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFGB branch breakers are used with CHH main.

Box sizes **Pages V1-T1-87** through **V1-T1-90**.

1

Three-Phase—Main Lug Loadcenters

3BR1224L125

Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number ① (With Combination or NEMA Type 3R Cover)
100	3	3	Indoor	9	#14–1/0	**3BR3L100S** ②
	3	3	Outdoor	9R		**3BR3L100R** ③
125	12	24	Indoor	C1	#6–2/0	**3BR1224L125** ④⑤
	12	24	Outdoor	C1R		**3BR1224L125R** ③④⑤
150	24	42	Indoor	D1	#1–300 kcmil	**3BR2442L150**
	24	42	Outdoor	D1R		**3BR2442L150R** ③
200	12	24	Indoor	C4	#1–300 kcmil	**3BR1224L200** ⑤
	12	24	Outdoor	C3R		**3BR1224L200R** ③⑤
	30	42	Indoor	G1		**3BR3042L200**
	30	42	Outdoor	G1R		**3BR3042L200R** ③
	42	42	Indoor	L1		**3BR4242L200**
	42	42	Outdoor	L1R		**3BR4242L200R** ③
225	42	42	Indoor	L1	#1–300 kcmil	**3BR4242L225**
	42	42	Outdoor	L1R		**3BR4242L225R** ③

34242DFN

Three-Phase, Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Commercial Loadcenter Catalog Number ⑥ With Flush or NEMA Type 3R Cover	With Surface Cover
400	18	36	Indoor	19	(1) 250–750 kcmil or (2) #3/0–250 kcmil	—	—
	18	36	Outdoor	43		—	—
	24	42	Indoor	19		—	—
	42	42	Indoor	22		**34242DFN**	**34242DSN**
	42	42	Outdoor	46		**34242DR1N** ③	—
600	42	42	Indoor	22	(2) #2–500 kcmil	—	**34242ESN**

Notes

① Ground bar kits priced separately. See **Page V1-T1-73**.
② Surface cover only.
③ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.
④ Has notch for BREQS125 hold-down kit.
⑤ Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
⑥ Door lock and key included with loadcenter.

Box sizes **Pages V1-T1-87** through **V1-T1-90**.

Convertible Loadcenters MCB or MLO—Base Units and Main Devices 10/22/25 kAIC, Complete Assembly Consists of: Loadcenter and Either Main Breaker Kit or Main Lug Kit

Note: Interrupting rating depends on main circuit breaker selected.

BR3040N200

Base Units—Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral

Main Ampere Rating ①	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main	Loadcenter Catalog Number With Combination or NEMA Type 3R Cover ②③
125 ④	12	24	Indoor	B2	See main breaker and main lug kit tables **Page V1-T1-61**.	**BR1224N125** ⑤⑥
	12	24	Outdoor	B2R		**BR1224N125R** ⑤⑥⑦
	16	24	Indoor	C1		**BR1624N125** ⑤
	16	24	Outdoor	C1R		**BR1624N125R** ⑤⑦
	20	24	Indoor	C2		**BR2024N125** ⑤
	20	24	Outdoor	C3R		**BR2024N125R** ⑤⑦
200 ⑧	8	16	Outdoor	C3R		**BR816N200RF** ⑦⑨⑩
	12	24	Indoor	C4		**BR1224N200** ⑩
	12	24	Outdoor	C3R		**BR1224N200R** ⑦⑩
	16	32	Indoor	C4		**BR1632N200** ⑩
	20	40	Indoor	D1		**BR2040N200** ⑩
	20	40	Indoor	D1		**BR2040N200G** ⑪
	20	40	Outdoor	D1R		**BR2040N200R** ⑦⑩
	20	40	Outdoor	D1R		**BR2040N200RG** ⑪
	24	40	Indoor	G1		**BR2440N200** ⑦⑩
	30	40	Indoor	G1		**BR3040N200** ⑩
	30	40	Indoor	G1		**BR3040N200G** ⑪
	30	40	Outdoor	G1R		**BR3040N200R** ⑦⑩
	30	40	Outdoor	G1R		**BR3040N200RG** ⑪
	40	40	Indoor	L1		**BR4040N200** ⑩
	40	40	Indoor	L1		**BR4040N200G** ⑪
	40	40	Outdoor	L1R		**BR4040N200R** ⑦⑩
	40	40	Outdoor	L1R		**BR4040N200RG** ⑪

Notes

① The maximum rating of the loadcenter is the main circuit breaker rating when used as service entrance equipment.

② 100, 125 and 200A convertible base unit catalog numbers include interior, box and cover only. Main devices and accessories must be ordered separately for field installation. All convertible base units are listed as suitable for use as service entrance equipment when used per Article 384 of the NEC.

③ Ground bar kits priced separately except as noted, refer to **Page V1-T1-73**.

④ For main breaker, use Type BR. For main lug use Type BRSF.

⑤ BREQS125 hold-down screw comes with loadcenter for back-fed Types BR and BRH main circuit breakers.

⑥ Convertible to maximum of 100A main circuit breaker and 125A main lug.

⑦ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.

⑧ For main breaker, use Type BW or BWH. For main lug, use Type BRL.

⑨ Includes through-feed lugs for both phase and neutral conductors.

⑩ No hold-down provisions for back-fed Types BR and BRH main circuit breakers.

⑪ Includes GBK2120 ground bar.

1

3BR3030N100

Base Units—Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Ampere Rating ①	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main	Loadcenter Catalog Number ②③ (With Combination or NEMA Type 3R Cover)
100 ④	30	30	Indoor	D1	See main breaker and main lug kit tables on **Page V1-T1-61**.	**3BR3030N100** ⑤
	30	30	Outdoor	D1R		**3BR3030N100R** ⑤⑥
125 ④	12	24	Indoor	C1		**3BR1224N125** ⑤⑥⑦
	12	24	Outdoor	C1R		**3BR1224N125R** ⑤⑥⑦⑧

Convertible Loadcenters—With Copper Bus 10/22/25 kAIC

BR3040NC200

Convertible—Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main	Loadcenter Catalog Number with Combination or NEMA Type 3R Cover ②③⑨
125 10/22 kAIC ⑩⑪	12	24	Indoor	B2	See main breaker and main lug kit tables on **Page V1-T1-61**.	**BR1224NC125** ⑥⑫
	12	24	Outdoor	B2R		**BR1224NC125R** ④⑥⑫
	20	24	Indoor	C2		**BR2024NC125** ⑫
	20	24	Outdoor	C3R		**BR2024NC125R** ④⑫
200 10/25 kAIC ⑧⑩	20	40	Indoor	D1		**BR2040NC200**
	20	40	Outdoor	D1R		**BR2040NC200R** ④
	30	40	Indoor	G1		**BR3040NC200**
	30	40	Outdoor	G1R		**BR3040NC200R** ④
	40	40	Indoor	L1		**BR4040NC200**
	40	40	Outdoor	L1R		**BR4040NC200R** ④

Notes

① The maximum rating of the loadcenter is the main circuit breaker rating when used as service entrance equipment.

② 100, 125 and 200A convertible base unit catalog numbers include interior, box and cover only. Main devices and accessories must be ordered separately for field installation. All convertible base units are listed as suitable for use as service entrance equipment when used per Article 384 of the NEC.

③ Ground bar kits priced separately, refer to **Page V1-T1-73**.

④ For main breaker, use Type BR. For main lug, use Type BRSF.

⑤ BREQS125 hold-down screw comes with loadcenter for back-fed Types BR and BRH main circuit breakers.

⑥ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.

⑦ Convertible to maximum of 100A main circuit breaker and 125A main lug.

⑧ Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

⑨ All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with a neutral bonding strap preattached. The maximum main rating of the loadcenter is the main breaker rating when used as service entrance equipment.

⑩ Interrupting rating depends on main circuit breaker selected. See **Page V1-T1-73** for mains.

⑪ For main breaker, use Type BW or BWH. For main lug, use Type BRL.

⑫ Hold-down screw BREQS125 comes with loadcenter for back-fed Types BR and BRH main circuit breakers.

Convertible Loadcenters MCB or MLO—Base Units and Main Devices 10/22/25 kAIC, Complete Assembly Consists of: Loadcenter and Either Main Breaker Kit or Main Lug Kit

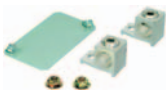
Note: Interrupting rating depends on main circuit breaker selected.

BW2200

Main Devices—Two- and Three-Pole Main Circuit Breakers—120/240 Vac or 208Y/120 Vac or 240 Vac

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	10 kAIC Catalog Number	22/25 kAIC Catalog Number ①
Two-Pole			
100	#4–1/0	**BR2100**	**BRH2100**
110	#4–1/0	**BR2110**	**BRH2110**
125	#4–2/0	**BR2125**	**BRH2125**
125	#2–300 kcmil	**BW2125**	**BWH2125**
150	#2–300 kcmil	**BW2150**	**BWH2150**
175	#2–300 kcmil	**BW2175**	**BWH2175**
200	#2–300 kcmil	**BW2200**	**BWH2200**
Three-Pole			
100	#1	**BR3100**	**BRH3100**

BRL200



Main Devices—Two- and Three-Pole Main Lug Kits—120/240 Vac or 208Y/120 Vac or 240 Vac

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Catalog Number
Two-Pole		
125	#6–2/0	**BRSF125**
150	#1–300 kcmil	**BRL200**
175	#1–300 kcmil	**BRL200**
200	#1–300 kcmil	**BRL200**
Three-Pole		
150	#6–3/0	**3BRSF150**

Main Circuit Breaker with Accessory

Example: BW22005R01 (Put description with catalog number on order. See **Page V1-T1-85**.)

Spa Panels

Spa Panel—Meets NEC Article 680.40 Through 680.43—Requirements for GFCI Protection

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Space	Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Catalog Number
40	—	—	Outdoor	5R	#8–#2	**BR40SPA** ②
50	—	—	Outdoor	5R	#8–#2	**BR50SPA** ③

Notes

① Series combination rating with Types BD, BR, BQ, BQC and GFCB is 22 kAIC with BRH main and 25 kAIC with BWH main.
② Includes a GFCB240 breaker, factory installed.
③ Includes a GFCB250 breaker, factory installed.

1

Single-Phase and Three-Phase Circuit Breaker Unit Enclosures—10/25 kAIC

Circuit Breaker Unit Enclosures

Type ECB Circuit Breaker Unit Enclosure—Order Type BW and BWH Circuit Breaker Separately—Unit Enclosure Includes Lug Tree Kit

Main Ampere Rating	Unit Enclosure Type	Mounting Type	Circuit Breaker Type	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number
Single-Phase Three-Wire—240 Vac Maximum					
225	Indoor	Flush	BW, BWH	①	**ECB225F** ②③④
225	Indoor	Surface	BW, BWH	①	**ECB225S** ②③④
225	Outdoor	—	BW, BWH	①	**ECB225R** ②③④⑤

BWH2200

Types BW and BWH Circuit Breakers 120/240 Vac—25 kAIC for Use in Type ECB Unit Enclosures

Ampere Rating	Two-Pole Breakers 10 kAIC	Wire Size Range Cu/Al 60°C or 75°C for Line Terminals	Two-Pole Breakers 25 kAIC
125	**BW2125**	#2–300 kcmil	**BWH2125**
150	**BW2150**		**BWH2150**
175	**BW2175**		**BWH2175**
200	**BW2200**		**BWH2200**
225	**BW2225**		**BWH2225**

BW/BWH Lug Tree Kit for Replacement Purposes Only for Use in Type ECB Unit Enclosures

Ampere Rating	Description	Wire Size Range Cu/Al 60°C or 75°C for Line Terminals	Catalog Number
225	For use on 125, 150, 175, 200 and 225A BW and BWH breakers	#2–300 kcmil	**MCBK225**

Shunt Trips, Auxiliary and Alarm Contacts

Description	Catalog Number Suffix Adder ⑥
Shunt Trip for Types BW/BWH	
12V	**SR12**
24V	**SR24**
120V	**SR01**
Auxiliary Contact for Types BW/BWH	
1NO and 1NC	**AL1**
2NO and 2NC	**AL2**
Alarm Contacts for Types BW/BWH	
Types BW/BWH	**CR1**
Alarm Contacts for Type GFCB (Single-Pole)	
Alarm contact for GFCB (single-pole)	**W1**
1NO and 1NC	**W2**

Wire/Application Chart

Wire/Application	Maximum Wire Size	Maximum Ampere Rating
Aluminum—standard	250 kcmil	200
Aluminum—service entrance	250 kcmil	225
Copper—standard and service entrance	250 kcmil	225

Notes

① Wire size is determined by the circuit breaker installed in enclosure. Maximum wire size and ampere rating is determined by Wire/Application Chart.
② Order circuit breaker separately.
③ One ground lug accepting (1) #14–#2 is factory installed. Also, there are pre-drilled holes to accept a GBK5 ground bar.
④ Approved for service entrance.
⑤ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-73**.
⑥ Add suffix indicated to end of breaker catalog number.

Box sizes **Pages V1-T1-87** through **V1-T1-90**.

Single-Phase and Three-Phase Circuit Breaker Unit Enclosures—10/25 kAIC

Type ECC Circuit Breaker Unit Enclosure—Order Type CC Circuit Breaker Separately

Main Ampere Rating	Unit Enclosure Type	Mounting Type	Circuit Breaker Type	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number
Single- and Three-Phase—240 Vac Maximum					
225	Indoor	Flush	CC/CCV	⑤	**ECC225F** ①②③
225	Indoor	Surface	CC/CCV	⑤	**ECC225S** ①②③
225	Outdoor	—	CC/CCV	⑤	**ECC225R** ①②③④

CCV2200

Type CC and CCV Circuit Breaker 240 Vac—10 kAIC for Use in Type ECC Unit Enclosures

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C for Line Terminals	Type CCV and CC 10 kAIC Catalog Number
Two-Pole		
100	#4–4/0	**CCV2100**
125		**CCV2125**
150		**CCV2150**
175	#2/0–300 kcmil	**CCV2175**
200		**CCV2200**
225		**CCV2225**
Three-Pole		
100	#4–4/0	**CC3100**
125		**CC3125**
150		**CC3150**
175	#2/0–300 kcmil	**CC3175**
200		**CC3200**
225		**CC3225**

Shunt Trips and Auxiliary Contacts ⑥

Description Type	Volts	Catalog Number Suffix Adder ⑦
Shunt Trip		
CC	12 DC	**SR12**
CC	24 DC	**SR24**
CC	120 AC	**SR01**
CC	208 AC	**SR08**
CC	240 AC	**SR02**
CCV	48–127 AC/48–60 DC	**SR01**
CCV	9–24 AC/12–24 DC	**SR24**
Auxiliary Contact		
CC 1NO and 1NC	—	**AL1**

Wire/Application Chart

Wire/Application	Maximum Wire Size	Maximum Ampere Rating
Aluminum—standard	250 kcmil	200
Aluminum—service entrance	250 kcmil	225
Copper—standard and service entrance	250 kcmil	225

Notes

① Order circuit breaker separately.
② One ground lug accepting (1) #14–#2 is factory installed. Also, there are pre-drilled holes to accept a GBK5 ground bar.
③ Approved for service entrance.
④ Rainproof panels are furnished with hub closures plates. For rainproof hubs, refer to **Page V1-T1-73**.
⑤ Wire size is determined by the circuit breaker installed in enclosure. Maximum wire size and ampere rating is determined by the Wire/Application Chart.
⑥ CCV breakers are two-pole only.
⑦ Add suffix indicated to end of breaker catalog number.

Box sizes **Pages V1-T1-87** through **V1-T1-90**.

1

Commercial Loadcenters—Indoor Enclosures
Main Circuit Breaker, Main Lug and Convertible, New York City Approved
Single-Phase and Three-Phase

BR4242B200NY
With 3BR42FTNY
Cover Installed

Single-Phase Main Circuit Breaker—Factory Installed

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Maximum Number 1-Inch (25.4 mm) Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number	Loadcenter Cover Catalog Number Flush	Loadcenter Cover Catalog Number Surface
Single-Phase Three-Wire—120/240 Vac Insulated/Bondable Neutral									
CC 10 kAIC	200	42	42	Indoor	A	#1–300 kcmil	**BR4242B200NY** ①	**3BR42FTNY**	**3BR42STNY**

BR4242L225NY
With 3BR42FTNY
Cover Installed

Single-Phase Main Lugs—Factory Installed

Main Lug Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Maximum Number 1-Inch (25.4 mm) Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number	Loadcenter Cover Catalog Number Flush	Loadcenter Cover Catalog Number Surface
Single-Phase Three-Wire—120/240 Vac Insulated/Bondable Neutral								
225	42	42	Indoor	A	#1–300 kcmil	**BR4242L225NY** ①	**3BR42FTNY**	**3BR42STNY**

3BR4242N225NY

Three-Phase Convertible Loadcenters

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Spaces	Maximum Number 1-Inch (25.4 mm) Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number	Loadcenter Cover Catalog Number Flush	Loadcenter Cover Catalog Number Surface
Three-Phase Four-Wire—120/240 Vac Insulated/Bondable Neutral								
225	42	42	Indoor	B	#1–300 kcmil	**3BR4242N225NY** ①	**3BR42FTNY**	**3BR42STNY**

Three-Phase Main Breaker Kits

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Main Breaker Kit 10 kAIC
150	#4–4/0 #2/0–300 kcmil	**CC3150N**
175		**CC3175N**
200		**CC3200N**
225		**CC3225N**

Three-Phase Main Lugs Kit

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Main Lugs Kit
225	#2/0–300 kcmil	**3BRL225**

Note

① Approved for 150A and up for residential services in New York City.

Technical Data and Specifications

General

A. The Contractor shall furnish and install deadfront loadcenters incorporating circuit breakers of the number, rating and type as specified herein and as shown on the contract drawings.

B. The loadcenter and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of UL, NEMA and NEC including:

1. UL 67—Standards for Panelboards.

C. UL 50—Standards for Cabinets and Boxes.

D. UL 489—Standards for Molded Case Circuit Breakers.

E. UL 869—Standards for Service Equipment.

F. Federal Specification W-C 375B—Circuit Breakers.

G. Federal Specification W-C P115b—Panel Power Distribution Type 1, Class 2.

Qualifications

A. The manufacturer of the loadcenter shall be the manufacturer of the circuit breaker within the loadcenter.

B. For the equipment specified herein, the manufacturer shall be ISO 9000 certified.

C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of seven (7) years.

Manufacturers

A. Eaton.

Ratings

A. Loadcenters shall be rated for 120/240 Vac and shall have short-circuit ratings as shown on the drawings or as herein scheduled, but not less than 10,000 amperes rms symmetrical.

B. Circuit breakers shall be a minimum of 125A frame. Circuit breakers 15 through 125A trip size shall take up the same pole spacing.

C. Loadcenters shall be labeled with a UL short-circuit rating. When series combination ratings are applied with integral or remote upstream devices, a label shall be provided. Series combination ratings shall cover all trip ratings of installed frames. It shall state the conditions of the UL series ratings including:

1. Size and type of upstream device.

2. Branch devices that can be used.

3. UL series short circuit rating.

Construction

A. All interiors, with the exception of the branch circuit breakers, shall be completely factory assembled with main breakers, main lugs, or no main device.

B. Interiors shall be designed so that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be designed so that circuits may be changed without machining, drilling, or tapping.

C. Physical means shall be provided to prevent the installation of more overcurrent devices than that number for which the enclosure was designed, rated and approved. Half-size breakers shall have a UL listed rejection tab over the line terminals. Loadcenter interiors must have notched stabs to accept these rejection tab class CTL breakers, if required and approved.

Bus

A. Bus bars for the main and cross connectors shall be [tin-plated aluminum] [copper] in accordance with Underwriters Laboratories standards. Busing shall be braced throughout to conform to industry standard practice governing short-circuit stresses in loadcenters.

Note: Note to spec writer—select one (copper available in limited ratings).

B. Neutral busing shall have a suitable lug for each outgoing feeder requiring a neutral connection of same ampacity as branch.

Wiring/Termination

A. All wire connectors and terminals shall be of the anti-turn solderless type and shall be suitable for copper or aluminum wire of the sizes indicated. All connectors must meet the "Requirements for Wire Connectors and Soldering Lugs" as stated in UL 486B.

B. All loadcenters where marked shall be suitable for use with 60°C or 75°C rated wire.

Circuit Breakers

A. Circuit breakers shall be molded case type. Circuit breakers shall have four-rivet construction (GFI Type—5 rivets). Multipole circuit breakers shall be of a stack pole design to provide electrical phase isolation.

B. Each pole of the circuit breaker will provide inverse time delay overload and instantaneous short-circuit protection by means of both thermal and magnetic sensors.

C. The circuit breaker calibration shall not be affected by environmental changes in relative humidity. The thermal bimetal element shall be welded to the steel frame and calibration shall be set independent of the molded case by computer controlled equipment.

D. All circuit breakers shall be operated by a toggle-type handle and multipole circuit breakers shall have an internal common trip mechanism. The circuit breakers shall incorporate trip mechanisms that are mechanically trip-free from the handle. The handle position shall provide visual trip indication.

E. Contacts shall be of non-welding silver alloy.

F. All circuit breakers shall have the trip rating inscribed on the handle on each circuit breaker pole. Also, unique color-coded cases that indicate the UL listed 10 kA or 22 kA interrupting ratings. Breakers shall be able to be used as main or branch disconnect devices.

G. Branch circuit breakers may also be used in the 1/2-inch (12.7 mm) per pole ratings that include two-pole 1-inch (25.4 mm) wide modules and four-pole 2-inch (50.8 mm) wide modules. Two-pole circuit breakers must incorporate a common trip mechanism. The exclusive CTL rejection tab feature shall be provided to limit the number of branch devices for a loadcenter to 42, in compliance with NEC Article 384.15.

H. Circuit breakers shall be completely enclosed in a molded case of thermoset material. No internal aluminum parts shall be used. All internal ferrous parts shall be plated to prevent corrosion.

I. All terminals shall be listed for use with copper or aluminum conductors. Terminals shall be of the box lug or clamp type design. The terminals shall meet UL 486B requirements and shall be suitable for use with either 60°C or 75°C wire.

J. The calibrated bimetal assembly shall be mechanically isolated from the load terminal using a flexible braided copper shunt wire, such that movement of the terminals due to twisting and overtorquing does not affect breaker calibration.

K. Breakers shall be SWD rated and/or HACR rated as required.

L. Arc Fault Interrupting circuit breakers, (AFI), shall be provided on all 15 and 20A single-phase 120/240 Vac circuits except those indicated as remote controlled breakers. AFI breakers shall be "Classified for mitigating the effects of arcing faults," or conforming to UL Standard 1699 and as defined by Article 210.12 Section A of the 1999 NEC Code.

Surge Protection Devices

See Section 4 of the Distribution Products Catalog for complete details on surge protection.

Enclosures

A. Loadcenter shall have NEMA Type 1 general purpose or NEMA Type 3R rainproof enclosures as indicated on the drawings and shall be surface or combination flush/surface mounted except where noted.

B. Boxes shall be made from galvanized sheet steel having multiple knockouts. Rainproof boxes shall use galvanized steel or an approved coating system which meets or exceeds standards for outdoor NEMA Type 3R enclosures. Boxes shall be of sufficient size to provide at least a minimum code gutter space on all sides.

C. The deadfront shall have an easy adjustment feature for flush applications.

D. Boxes shall be factory assembled into a single rigid structure.

E. Unless otherwise noted on drawings, hinged doors covering all circuit breaker handles shall be included in all trims. Trim doors shall not uncover any live parts in making the circuit breaker handles accessible. If key locks are required, all locks shall be keyed alike.

F. Combination trims for flush and surface panels shall be flat and shall overlap the box by at least 5/8-inch (15.9 mm) all around. Trims shall be mounted by a screwdriver without the need for special tools.

Finish

A. Trims shall be bonderized and finished with a light gray ANSI-61 enamel. The paint finish shall be of a type to which field applied paint will adhere.

Factory Testing

A. The standard factory tests shall be performed on the equipment provided under this section. All tests shall be in accordance with the latest version of UL and NEMA.

Riser Panel

Contents

Riser Panel

Product Description

Eaton's Riser Panel is a loadcenter with an offset interior to allow riser cables to pass through the enlarged gutter. By using lay-in tap lugs, the contractor is able to simply strip off a length of the riser cable's insulation, and tap off to the riser panel's main lugs. These panels are used in the construction of assisted living homes, dormitories, public housing complexes and apartments.

Eaton offers three 125A and one 200A main lug riser panels, a 12/24 and a 20/24, 20/30 and 30/40. The panels are convertible to main breaker by adding the appropriate breaker and a BREQS125 hold-down kit. Additionally, the 12/24 is offered in a bulk-packed version. The bulk-packed product must be ordered in multiples of 16, and consists of a pallet with uncartoned loadcenters on the bottom, and cartoned trims on top. The entire pallet is shrink-wrapped for protection. By supplying the loadcenter without a carton, the contractor is able to save the unpacking time as well as saving on the scrap cardboard on the site.

For applications higher than 125A, or the circuits provided by the panels above, we offer the BRGUTTER. This is essentially a junction box that mounts next to, and assembles to standard BR or CH loadcenters. There is a matching concentric knockout that allows the tapped cables to pass through from the BRGUTTER to the loadcenter. The trims of the loadcenter and the BRGUTTER are designed to allow the two boxes to bolt to one another in a flush application. There is no need to allow for the trim overhang.

Also offered is the GTAP250, which is a set of three lay-in, insulated tap lugs. The maximum wire size for the GTAP250 is 250 kcmil. GTAP250 can be used with either the riser panels or the BRGUTTER.

1

Product Selection

BR1224L125RIS

Riser Panel

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Space	Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Catalog Number
125	12	24	Indoor	C4	#6–2/0	**BR1224L125RIS**
125	12	24	Indoor	C4	#6–2/0	**BR1224L125RISBP** ①
125	20	24	Indoor	C4	#6–2/0	**BR2024L125RIS**
125	20	24	Indoor	C4	#6–2/0	**BR2024L125RISBP** ①
125	20	30	Indoor	C2	#6–2/0	**BR2030L125RIS**
200	30	40	Indoor	D1	#1–300	**BR3040L200RIS**

Accessories

For riser panels not shown, contact the Flex Center at 1-800-330-6479 for both CH and BR riser panels.

BRGUTTER (Shown with Loadcenter)

Riser Panel Accessories

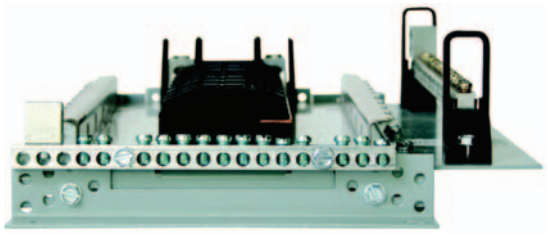
Catalog Number
BRGUTTER ②
GTAP250

Notes

① Bulk-packaged loadcenter without carton. Must be ordered in multiples of 16.

② Refer to **Page V1-T1-87** for dimensions. BRGUTTER is box size C2.

BRRETRO



Contents

Type BR Retrofit Interior Kits

Product Description

Replacing existing loadcenters and panelboards can be a time consuming and expensive job. BR retrofit kits can be the solution to save time and money. The kit consists of a standard trim to fit the interior, a picture frame trim to fit the existing box, and a field adjustable interior assembly that includes neutral and ground bars as well. These are especially applicable when the existing box is flush mounted in drywall, plaster or block wall. The existing box, and many times existing wiring, can remain. Interiors are UL recognized under UL 67, Panelboard standard.

Quick-Pro℠

All you need to know to save time and make more money. Specified on certain Eaton products, the Quick-Pro symbol allows for immediate recognition of products that are designed for straightforward installation. When you see Quick-Pro, you know you can install quickly—sometimes up to 50% less than the usual installation time—and move onto your next job.

Features

Detailed Product Guide

All standard retrofit kits are suitable for a range of existing box sizes:

- Box width ranging from 14.50 to 22.00 inches (368.3 to 558.8 mm)
- Box depth ranging from 4.00 inches (101.6 mm) for BR
- Box height ranging from 21.00 to 45.00 inches (533.4 to 1143.0 mm)

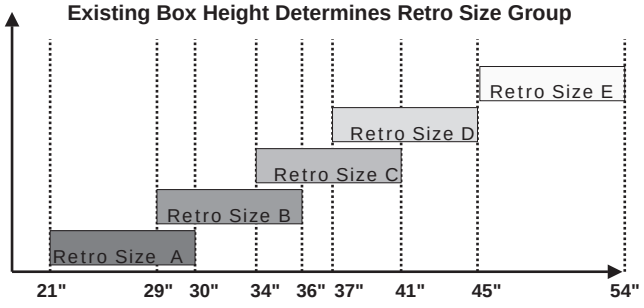
For box dimensions outside of these ranges, contact the Lincoln Flex Center at 800-330-6479. Be sure to provide the existing incoming line wire size.

Product Selection

To select the retrofit kit:

1. From the existing box size determine which retrofit groups are suitable (may be more than one).
2. Use type of interior, number of phases, and type of main to find the selection chart.
3. Select part number from chart (if main breaker, replace XXX with specific amp rating).
4. Note that the overlap of the existing wall is the retro cover size minus the existing box size. If specific measurements are needed, communicate that you need a custom trim size.
5. Contact the Lincoln Flex Center at 800-330-6479 for pricing, lead-times, and order entry instructions.

Retro Size Groups



1

Dimensions

Approximate Dimensions in Inches (mm)

Type BR Interior—With Main Breaker

Main Breaker Rating		Existing Box Height		Wire	Number	Part	Retro	Retro Cover Size ①	
Amperes	kAIC	Minimum	Maximum	Size	of Circuits	Number	Size Group	Height	Width
Single-Phase									
60–125	10	21.00 (533.4)	30.00 (762.0)	#4–2/0	20	**RABR20BXXX** ②	A	33.00 (838.2)	24.00 (609.6)
	22			#4–2/0		**RABR20HXXX** ②			
60–125	10	29.00 (736.6)	36.00 (914.4)	#4–1/0	30	**RBBR30BCXXX** ②	B	40.00 (1016.0)	24.00 (609.6)
	22			#4–1/0		**RBBR30HCXXX** ②			
100–200	25	29.00 (736.6) 31.00 (787.4)	30.50 (774.7) 36.00 (914.4)	#2–250 kcmil #2–300 kcmil	20	**RBBR20HXXX** ②			
100–225	25	34.00 (863.6) 36.00 (914.4)	35.50 (901.7) 41.00 (1041.4)	#2–250 kcmil #2–300 kcmil	30	**RCBR30HXXX** ②	C	43.00 (1092.2)	24.00 (609.6)
100–225	25	37.00 (939.8) 39.00 (990.6) 41.00 (1041.4)	38.50 (977.9) 40.50 (1028.7) 45.00 (1143.0)	#2–4/0 #2–250 kcmil #2–300 kcmil	40	**RDBR40HXXX** ②	D	47.00 (1193.8)	24.00 (609.6)
Three-Phase									
60–100	10	21.00 (533.4)	30.00 (762.0)	#4–2/0	12	**RABR12B3XXX** ②	A	33.00 (838.2)	24.00 (609.6)
	22			#4–2/0		**RABR12H3XXX** ②			
60–100	10	29.00 (736.6)	36.00 (914.4)	#4–1/0	30	**RBBR30BXXX** ②	B	40.00 (1016.0)	24.00 (609.6)
	22			#4–1/0		**RBBR30H3XXX** ②			
100–200	10	37.00 (939.8)	45.00 (1143.0)	2/0–300 kcmil	30	**RDBR30B3XXX** ②			
	100	37.00 (939.8) 39.00 (990.6)	38.50 (977.9) 45.00 (1143.0)	2/0–250 kcmil 2/0–300 kcmil		**RDBR30H3XXX** ②	D	47.00 (1193.8)	24.00 (609.6)
100–225	10	34.00 (863.6)	35.50 (901.7)	2/0–250 kcmil	42	**REBR42B3XXX** ②	E	56.00 (1422.4)	24.00 (609.6)
	100	36.00 (914.4)	41.00 (1041.4)	2/0–300 kcmil		**REBR42H3XXX** ②			

Type BR Interior—Main Lug Only

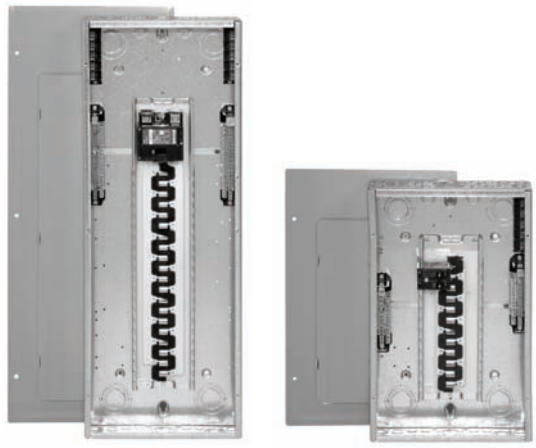
Maximum Bus	Existing Box Height		Wire	Number	Part	Retro	Retro Cover Size ①	
Ampere Rating	Minimum	Maximum	Size	of Circuits	Number	Size Group	Height	Width
Single-Phase								
125	21.00 (533.4)	30.00 (762.0)	#14–2/0	24	**RABR20L125**	A	33.00 (838.2)	24.00 (609.6)
200	29.00 (736.6) 32.00 (812.9)	31.50 (800.1) 36.00 (914.4)	#1–250 kcmil #1–300 kcmil	30	**RBBR30L200**	B	40.00 (1016.0)	24.00 (609.6)
200	34.00 (863.6) 37.00 (939.8)	36.50 (927.1) 41.00 (1041.4)	#1–250 kcmil #1–300 kcmil	40	**RCBR40L200**	B	43.00 (1092.2)	24.00 (609.6)
200	37.00 (939.8) 39.00 (990.6)	38.50 (977.9) 45.00 (1143.0)	#1–250 kcmil #1–300 kcmil	42	**RDBR42L225**	B	47.00 (1193.8)	24.00 (609.6)
Three-Phase								
125	21.00 (533.4)	30.00 (762.0)	#8–2/0	24	**RABR12L3125**	A	33.00 (838.2)	24.00 (609.6)
100	29.00 (736.6)	36.00 (914.4)	#8–2/0	24	**RBBR30L3100**	B	40.00 (1016.0)	24.00 (609.6)
150	29.00 (736.6)	36.00 (914.4)	#4–4/0	24	**RBBR24L3150**			
200	34.00 (863.6) 36.00 (914.4)	35.50 (901.7) 41.00 (1041.4)	#4–250 kcmil #4–300 kcmil	30	**RCBR30L3200**	C	43.00 (1092.2)	24.00 (609.6)
225	37.00 (939.8) 39.00 (990.6)	38.50 (977.9) 45.00 (1143.0)	#4–250 kcmil #4–300 kcmil	42	**RDBR42L3225**	D	47.00 (1193.8)	24.00 (609.6)
225	45.00 (1143.0)	54.00 (1371.6)	#4–300 kcmil	42	**REBR42L3225**	E	56.00 (1422.4)	24.00 (609.6)

Notes

① Specific cover sizes are available. Be sure to specify the custom cover option and provide exact dimensions required.

② XXX is for Main Breaker specific ampere rating.

BR Renovation Loadcenters



Contents

Type BR Renovation Loadcenters

Product Description

- Available in 10, 20, 30 and 40 circuit main breaker styles
- Designed to replace existing loadcenters and fuse boxes
- Type BR loadcenter packaged with circuit breakers
- Factory-installed 5-circuit terminal block(s)
- Twin-stacked neutral design

Quick-Pro℠

All you need to know to save time and make more money. Specified on certain Eaton products, the Quick-Pro symbol allows for immediate recognition of products that are designed for straightforward installation. When you see Quick-Pro, you know you can install quickly—sometimes up to 50% less than the usual installation time—and move onto your next job.

Features, Benefits and Functions

- Factory-installed terminal block(s) allows installer to terminate existing short wires without using wire nuts or junction boxes
- Twin-stacked neutrals are mounted up high in the loadcenter, which allows for all neutral and ground wires to be terminated in the top half of the loadcenter
- Specifically designed for the service contractor—this is the ONLY renovation line in the industry
- Single-pole and two-pole breakers included
- 10-year warranty on loadcenter and breakers

Product Selection

BR2020B100RN

BR Value Packs ①

Main Breaker Type	Description	Wire Size Range	Number of 5-Circuit Terminal Blocks	Single-Pole Breakers	Two-Pole Breakers	Catalog Number
BR 10 kAIC	Single-phase 100A 10k main breaker 10/20 circuit surface-mount box is 11.75" wide x 13" tall	#6–1/0	0	(2) BR115	(1) BR230	**BR1020B100S11RN**
	Single-phase 100A 10k main breaker 10/20 circuit flush-mount box is 11.75" wide x 13" tall		0	(2) BR115	(1) BR230	**BR1020B100F11RN**
	Single-phase 100A 10 kAIC main breaker 20/20 circuit		1	(5) BR120	(1) BR230	**BR2020B100RN**
BWH 25 kAIC	Single-phase 200A 25 kAIC main breaker 30/40 circuit	#2–300 kcmil	2	(5) BR115 (5) BR120	(1) BR230 (1) BR250	**BR3040B200RN**
	Single-phase 200A 25 kAIC main breaker 40/40 circuit		2	(6) BR115 (6) BR120	(1) BR230 (1) BR250	**BR4040B200RN**

Note

① Indoor enclosure type.

1

Options and Accessories

Mechanical Interlock Cover

Covers mechanically interlock two breakers—Type BW or BWH main breaker with a Type BR branch breaker.

BR4040B200

Mechanical Interlock Cover

Fits Loadcenter Catalog Numbers	Mechanical Interlock Panel Cover Catalog Number Flush
BR816B200RF	**BR3RDF5M**
BR2040B200R	**BR3RDF11M**
BR3040B200R	**BR3RDF12M**
BR4040B200R	**BR3RDF13M**
BR2040B200	**BRCOV20D1FM**
BR3040B200	**BRCOV30G1FM**
BR4040B200	**BRCOV40L1FM**

BRSF125

3BRS225

BRL200

TDL

Field Installation Kits and Parts

Number of Poles	Ampere Rating	Number of 1-Inch (25.4 mm) Spaces Needed	Wire Size Range Cu/Al 60°C or 75°C	Ordering Quantity ②	Catalog Number
Main and Sub-Feed Lug Blocks					
2	125	2	#8–2/0	1	**BRSF125**
	150	2	#8–2/0	1	**BRSF150** ②
	225	4	#2–300 kcmil	1	**BRS225**
3	150	3	#8–2/0	1	**3BRSF150** ②
	225	6	#2–300 kcmil	1	**3BRS225**
Main Lugs					
Two-pole, 200A stud mounted (includes deadfront filler plate)			#1–300 kcmil	1	**BRL200**
Neutral/ground lug Add-on neutral or ground lug			#2/0 maximum	1	**NL20**
			#3/0 maximum	1	**NL30**
			300 kcmil maximum	1	**NL300**
Filler Plates					
1-inch (25.4 mm) circuit breaker space				25	**BRFP**
BW main circuit breaker space (with hardware)				1	**BWFP**
Door lock —12–42 circuits, and 100–225A				1	**TDL**
Door lock—4–8 circuits, 125A				1	**CH9FL**
ANSI-61 light gray touchup paint for current loadcenters				1	**SPC61**
Isolated neutral assembly (computer circuits)				1	**BINA**
Circuit directory—adhesive backed				10	**TCD**
Cover screws				25	**LCCS**
Cover replacement latch (gray) 14-5/16 (363.5 mm) wide loadcenters only				1	**BRRL**
Circuit marking strip (next to breaker)				10	**BRMS**
Circuit identification label (preprinted breaker labels)				25	**CHBL**
Series rated caution label				25	**SRL**
Bonding strip with screw				1	**BSSUSE**

Notes

① Must be purchased in multiples of ordering quantities indicated.
② #8–2/0 wire size range is 75°C rated only.

DS300H2

Field Installation Rainproof Conduit Hubs

Description	Conduit Size Inches (mm)	Ordering Quantity ①	Catalog Number
Group 1—for use with 70, 100 and 125A MLO and MCB loadcenters and circuit breaker enclosures and the following 150 and 200A panels: BR48B200RF	0.75 (19.1)	1	**DS075H1**
	1.00 (25.4)	1	**DS100H1**
	1.25 (31.8)	1	**DS125H1**
	1.50 (38.1)	1	**DS150H1**
	2.00 (50.8)	1	**DS200H1**
Group 2—for use with 150, 200 and 225A MLO and MCB loadcenters and circuit breaker enclosures except for the following 200A loadcenters: BR48B200RF. Also for use with 400 and 600A loadcenters and New York City loadcenters manufactured after November 1, 2005	2.00 (50.8)	1	**DS200H2**
	2.50 (63.5)	1	**DS250H2**
	3.00 (76.2)	1	**DS300H2**
Type H conduit hubs for loadcenters PL0724R and S3100RN	0.75 (19.1)	1	**RH75P**
	1.00 (25.4)	1	**RH100P**
	1.25 (31.8)	1	**RH125P**
	1.50 (38.1)	1	**RH150P**
Adapter kit—Allows Installing a Group 1 hub on devices arranged for Group 2 hubs	—	1	**DS900AP**
Group 1 small blank hub plate with bump	—	1	**DS900CP1**
Group 2 Large blank hub plate with bump	—	1	**DS900CP2**

GBK14

BRGBK39512

Ground Bar Kits

Description (See Legend)	Length Inches (mm)	Ordering Quantity ①	Catalog Number
●○○○○●○	2.54 (64.5)	1	**GBK5** ②
●○○○○●○■	3.59 (91.2)	1	**GBK520** ②
●○○○○●○○○○○○	4.29 (109.0)	1	**GBK10** ②
●○○○○●○○○○○○■	5.34 (135.6)	1	**GBK1020** ②
◒●◒◒◒⬓◒●◒⬓◒◒◒	4.61 (117.1)	1	**GBK13** ②
●○○○○●○○○○○○○○○○	5.69 (144.5)	1	**GBK14** ②
●○○○○●○○○○○○○○○○■	6.74 (171.2)	1	**GBK1420** ②
●○○○○●○○○○○○○○○○○○○○○	8.14 (206.8)	1	**GBK21** ②
●○○○○●○○○○○○○○○○○○○○○■	9.19 (233.4)	1	**GBK2120** ②
◒⬓◒●◒⬓◒◒◒⬓◒●◒⬓◒◒◒⬓◒	5.78 (146.8)	1	**BRGBK39512** ③④
○○○○○	1.84 (46.7)	1	**GB4NM** ⑤

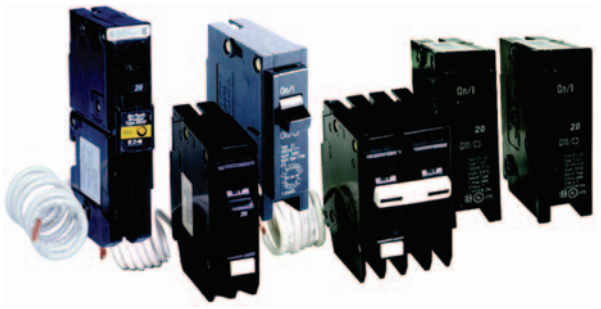
Ground Bar Legend

○ (3) #14–10 Cu/Al or (1) #14–4 Cu/Al
■ (1) #6–2/0 Cu/Al
⬓ (1) #14–1/0 Cu/Al or (3) #14–10 Cu/Al
◒ (1) #14–6 Cu/Al or (2) #14–12 Cu/Al
● Mounting Hole

Notes

① Must be purchased in multiples of ordering quantities indicated.
② Distance between mounting holes is 1.75 inches (44.5 mm).
③ For single- and three-phase 400 and 600A applications.
④ Distance between mounting holes is 2.34 inches (59.5 mm).
⑤ For non-metallic enclosures. Snaps into molded base.

BR Circuit Breakers



Contents

Circuit Breakers

Product Description

Plug-On Branch Feeder Type Arc Fault Circuit Breakers, Type BR—10 kAIC, 120 Vac and 120/240 Vac

A branch feeder type arc fault circuit interrupter is a device intended to mitigate high current arcing faults in the complete circuit, including connected cords. High current arcing faults can occur from line to neutral or line to ground. These arcing faults are in parallel with the load and produce the most energy of all arcing faults.

The branch feeder type AFCI is required in the 1999 and 2002 National Electrical Code.

The Combination Type AFCI is required in the 2005 and 2008 National Electrical Code.

Plug-On Combination Type Arc Fault Circuit Breakers, Type BR—10 kAIC, 120 Vac and 120/240 Vac

A combination type arc fault circuit interrupter is a device that includes all of the protection offered by the branch feeder AFCI (mitigation of high current arcing faults in the complete circuit, including connected cords). In addition it provides direct detection of persistent low current arcing faults down to 5 amps with associated mitigation of fire hazards in the cords connected to the outlets. High current arcing faults can occur from line to neutral or line to ground. These arcing faults are in parallel with the load and produce the most energy of all arcing faults. The current level of low current arcing faults is limited by the load.

Plug-On Ground Fault Circuit Breakers, Type GFCB and GFEP—10/22 kAIC, 120 Vac and 120/240 Vac

Ground Fault Application Notes

Single-pole GFCBs are designed for use in two-wire, 120 Vac circuits. See **Page V1-T1-85** for a typical wiring configuration.

Two-pole GFCBs are designed for use in three-wire, 120/240 Vac circuits, 120 Vac multiwire circuits employing common, neutral and two-wire, 240 Vac circuits obtained from a 120/240 Vac source.

Page V1-T1-85 shows typical wiring configurations for a 120/240 Vac multiwire circuits, and a 240 Vac, two-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 120 Vac power source to the ground fault sensing circuit.

The figures are shown with a 120/240 Vac, single-phase, three-wire power source, but are also applicable to a 120/208 Vac, three-phase, four-wire power supply. For all figures, the electrical operation of the GFCB is not affected by the equipment ground.

Non-CTL Plug-On Replacement —Circuit Breakers, Type BRD—10 kAIC, 120/240 Vac

Non-CTL 10 kAIC for Replacement Purposes Only

For replacement in enclosures manufactured prior to 1968 with unnotched stabs. Circuit breakers do not have rejection tab.

Product Selection

Plug-On Circuit Breakers, Types BR—10/22/42 kAIC, 120 Vac, 120/240 Vac and 240 Vac

BR120

BR215

BR320

BRH2100

Type BR Breakers, 1-Inch (25.4 mm) per Pole 120/240, 10, 22 and 42 kAIC

		Single-Pole 120/240 Vac Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton		Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton		
		10 kAIC	22 kAIC	10 kAIC	22 kAIC	42 kAIC
Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
10	#14–4	**BR110**	—	**BR210**	—	—
15	#14–4	**BR115** ①②	**BRH115**	**BR215** ③	**BRH215**	—
20	#14–4	**BR120** ①②	**BRH120**	**BR220** ③	**BRH220**	—
25	#14–4	**BR125**	**BRH125**	**BR225** ③	**BRH225**	—
30	#14–4	**BR130**	**BRH130**	**BR230** ③	**BRH230**	—
35	#14–4	**BR135**	**BRH135**	**BR235** ③	**BRH235**	—
40	#14–4	**BR140**	**BRH140**	**BR240** ③	**BRH240** ③	—
45	#14–4	—	**BRH145**	**BR245** ③	**BRH245**	—
50	#14–4	**BR150**	**BRH150**	**BR250** ③	**BRH250** ③	—
55	#14–3	**BR150**	**BRH155**	**BR255**	**BRH255**	—
60	#8–1/0	**BR160**	**BRH160**	**BR260**	**BRH260**	**BRHH260**
70	#8–1/0	**BR170**	**BRH170**	**BR270**	**BRH270**	**BRHH270**
80	#8–1/0	—	—	**BR280**	**BRH280**	**BRHH280**
90	#8–1/0	—	—	**BR290**	**BRH290**	**BRHH290**
100	#8–1/0	—	—	**BR2100**	**BRH2100**	**BRHH2100**
110	#8–1/0	—	—	**BR2110**	**BRH2110**	**BRHH2110**
125	#4–2/0	—	—	**BR2125**	**BRH2125**	**BRHH2125**
150	#4–2/0	—	—	**BR2150** ④	—	—

Notes

① One pole, 1-inch (25.4 mm) per pole circuit breakers are available with high magnetic setting for switching large tungsten lamp loads. Add suffix H to catalog number.

② Switching duty rated.

③ On the black handle breaker, add suffix "B" to the catalog number to obtain a tapped molded opening for proper use with hold-down kits.

④ For use as a branch circuit breaker in 400 and 600 ampere panels only.

All Type BR single-, two- and three-pole circuit breakers carry listing for HACR application. For circuit breakers with a shunt trip, add ST suffix.

1

BR Breakers

Type BR Breakers, 1-Inch (25.4 mm) per Pole 240 Vac, 10, 22 and 42 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Three-Pole 240 Vac Common Trip Requires Three 1-Inch (25.4 mm) Spaces 5 per Shelf Carton 10 kAIC Catalog Number	22 kAIC Catalog Number
10	#14–4	**BR310**	—
15	#14–4	**BR315** ①	**BRH315**
20	#14–4	**BR320** ①	**BRH320**
25	#14–4	**BR325**	**BRH325**
30	#14–4	**BR330**	**BRH330**
35	#14–4	**BR335**	**BRH335**
40	#14–4	**BR340**	**BRH340**
45	#14–4	**BR345**	**BRH345**
50	#14–4	**BR350**	**BRH350**
55	#14–3	**BR355**	**BRH355**
60	#4–1/0	**BR360**	**BRH360**
70	#4–1/0	**BR370**	**BRH370**
80	#4–1/0	**BR380**	**BRH380**
90	#4–1/0	**BR390**	**BRH390**
100	#4–1/0	**BR3100**	**BRH3100**

Plug-On Branch Feeder Type Arc Fault Circuit Breakers, Type BR—10 kAIC, 120 Vac and 120/240 Vac

Type BR AFCI Circuit Breaker

Type BR, 1-Inch (25.4 mm) Wide FIRE-GUARD AFCI Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	AFCI	**BR115AF** ②
	20	AFCI	**BR120AF** ②
Single-pole 22 kAIC	15	AFCI	**BRH115AF**
	20	AFCI	**BRH120AF**
Two-pole 10 kAIC ③④	15	AFCI Common Trip	**BRL215AF**
	20	AFCI Common Trip	**BRL220AF**

Notes

① One pole, 1-inch (25.4 mm) per pole circuit breakers are available with high magnetic setting for switching large tungsten lamp loads. Add suffix H to catalog number.

② Clamshell packaging available with CS modification code on the end of catalog number.

③ Common trip refers to two-pole 240V load application sourced by 120/240 Vac (see **Page V1-T1-85**).

④ Independent trip refers to two-pole multi-wire, home run or shared neutral circuits (see **Pages V1-T1-85** and **V1-T1-85**).

All Type BR single-, two- and three-pole circuit breakers carry listing for HACR application. For circuit breakers with a shunt trip, add ST suffix.

Plug-On Combination Type Arc Fault Circuit Breakers, Type BR—10 kAIC, 120 Vac and 120/240 Vac

Type BR, 1-Inch (25.4 mm) wide FIRE-GUARD Combination Type AFCI Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	AFCI	**BR115CAF** ①
			BRC115CAF
	20	AFCI	**BR120CAF** ①
			BRC120CAF
Single-pole 15 kAIC	15	AFCI	**BRLH115CAF** ①
	22	AFCI	**BRLH120CAF** ①
Two-pole 10 kAIC	15	AFCI	**BR215CAF**
	20	AFCI	**BR220CAF**

Plug-On Ground Fault Circuit Breakers, Type GFCB and GFEP—10/22 kAIC, 120 Vac and 120/240 Vac

Type GFCB Single-Pole

Type GFCB Two-Pole

Type GFCB Ground Fault Circuit Breakers—5 Milliampere—1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120 Vac Requires One 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number ②	Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces 1 per Shelf Carton Catalog Number
15	#14–4	**GFCB115**	**GFCB215**
20	#14–4	**GFCB120**	**GFCB220**
25	#14–4	**GFCB125**	**GFCB225**
30	#14–4	**GFCB130**	**GFCB230**
40	#14–4	**GFCB140**	**GFCB240**
50	#14–4	—	**GFCB250** ③
60	#14–6	—	**GFCB260**

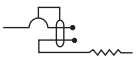
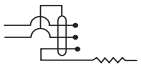
Notes

① Clamshell packaging available with CS modification code on the end of catalog number.

② Available with bell alarm or auxiliary switch. See circuit breaker accessories on **Page V1-T1-83**.

③ For use with copper wire only.

Type GFCBH Ground Fault Breakers—5 Milliampere—1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 22 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	 Single-Pole 120 Vac Requires One 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number	 Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces 1 per Shelf Carton Catalog Number
15	#14–4	**GFCBH115**	**GFCBH215**
20	#14–4	**GFCBH120**	**GFCBH220**
25	#14–4	**GFCBH125**	**GFCBH225**
30	#14–4	**GFCBH130**	**GFCBH230**

Type GFEP Ground Fault Equipment Protectors—30 Milliampere—1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 10 kAIC

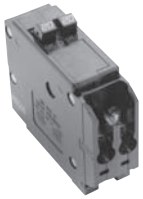
Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	 Single-Pole 120 Vac Requires One 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number	 Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number
15	#14–4	**GFEP115**	**GFEP215**
20	#14–4	**GFEP120**	**GFEP220**
25	#14–4	**GFEP125**	**GFEP225**
30	#14–4	**GFEP130**	**GFEP230**
40	#14–4	—	**GFEP240**
50	#14–4	—	**GFEP250** ①

Note

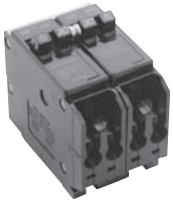
① For use with copper wire only.

CTL Plug-On Circuit Breakers, Type BD Duplex, BQ and BQC Quadplex—10 kAIC, 120/240 Vac

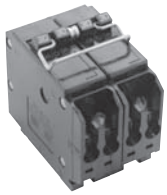
BD2020



BQ2302115

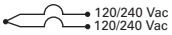


BQ230230



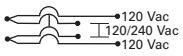
Class CTL, 1-Inch (25.4 mm) per Pole 10 kAIC—All Circuit Breakers Have Rejection Tab Feature

Type BD Duplex (UL Type BRD)



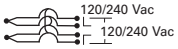
Single-Pole ② Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton

Type BQ Quadplex Independent Trip (UL Type BRD)



Two-Pole ① and Single-Pole ② Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton

Type BQ Quadplex Independent Trip (UL Type BRD)



Two-Pole Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton

	120 Vac		120 Vac	120/240 Vac	120 Vac		120/240 Vac		
		Wire Size Range	Ampere Rating				Ampere Rating		
Ampere Rating	Catalog Number	Cu/Al 65°C or 75°C	Outer Left Single-Pole	Center Two-Pole Independent Trip	Outer Right Single-Pole	Catalog Number	Outer Two-Pole Independent Trip	Center Two-Pole Independent Trip	Catalog Number
10–10	**BD1010**	#14–4	15	20	15	**BQ2202115**	15	15	**BQ215215**
15–15	**BD1515**	#14–4	20	20	20	**BQ2202120**	15	20	**BQ215220**
15–20	**BD1520**	#14–4	15	30	15	**BQ2302115**	15	30	**BQ215230**
15–30	**BD1530**	#14–4	20	30	20	**BQ2302120**	15	40	**BQ215240**
20–15	**BD2015**	#14–4	15	40	15	**BQ2402115**	15	50	**BQ215250**
20–20	**BD2020**	#14–4	20	40	20	**BQ2402120**	20	20	**BQ220220**
20–30	**BD2030**	#14–4	15	50	15	**BQ2502115**	20	30	**BQ220230**
25–25	**BD2525**	#14–4	20	50	20	**BQ2502120**	20	40	**BQ220240**
30–15	**BD3015**	#14–4	—	—	—	**—**	20	50	**BQ220250**
30–20	**BD3020**	#14–4	—	—	—	**—**	25	25	**BQ225225**
30–30	**BD3030**	#14–4	—	—	—	**—**	30	30	**BQ230230**
30–40	**BD3040**	#14–4	—	—	—	**—**	30	40	**BQ230240**
30–50	**BD3050**	#14–4	—	—	—	**—**	30	50	**BQ230250**
50–30	**BD5030**	#14–4	—	—	—	**—**	40	40	**BQ240240**
50–50	**BD5050**	#14–4	—	—	—	**—**	40	50	**BQ240250**
—	**—**	—	—	—	—	**—**	50	50	**BQ250250**

Notes

① All Type BD duplex and BQ quadplex circuit breakers carry listing for HACR applications.

② All 15 and 20A single poles are switch-duty rated.

1

Non-CTL Plug-On Replacement—Circuit Breakers, Type BRD—10 kAIC, 120/240 Vac

BR2020

Class Non-CTL, 1-Inch (25.4 mm) per Pole 10 kAIC—Breakers Do Not Have Rejection Tab Feature

Type BR Duplex

120/240 Vac
120/240 Vac

Single-Pole Requires One 1-Inch (25.4 mm) Space
10 per Shelf Carton

Type Brand BRD Quadplex Independent Trip

120/240 Vac
120/240 Vac

Two-Pole Requires Two 1-Inch (25.4 mm) Spaces
5 per Shelf Carton

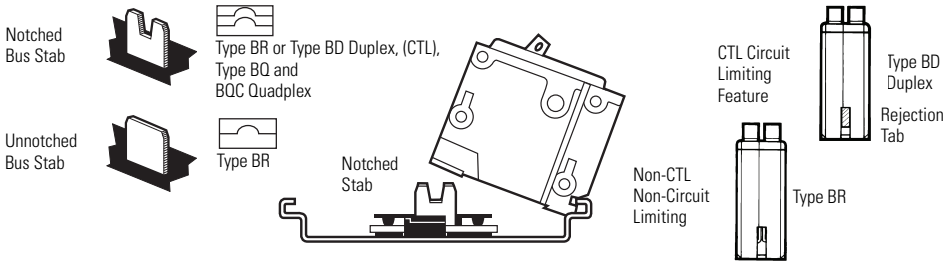
Type BRD Quadplex Common Trip Center and Outer Poles

120/240 Vac
120/240 Vac

Two-Pole Requires Two 1-Inch (25.4 mm) Spaces
5 per Shelf Carton

	120 Vac		120/240 Vac Ampere Rating			120/240 Vac Ampere Rating		
Ampere Rating	Catalog Number	Wire Size Range Cu/Al 65°C or 75°C	Outer Two-Pole Independent Trip	Center Two-Pole Independent Trip	Catalog Number	Outer Two-Pole Common Trip	Center Two-Pole Common Trip	Catalog Number
15–15	**BR1515**	#14–4	15	15	**BR415**	15	15	**BRDC215215**
15–20	**BR1520**	#14–4	20	20	**BR420**	30	30	**BRDC230230**
20–15	**BR2015**	#14–4	30	30	**BR430**	30	40	**BRDC230240**
20–20	**BR2020**	#14–4	20	30	**BRD220230**	30	50	**BRDC230250**
30–30	**BR3030**	#14–4	30	40	**BRD230240**	—	—	**—**
30–50	**BR3050**	#14–4	30	50	**BRD230250**	—	—	**—**

CTL and Non-CTL Breakers

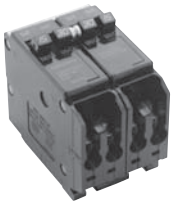


Note

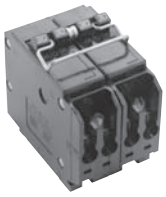
Type BD Duplex, BQ and BQC Quadplex (CTL) circuit breakers conform to Section 384-15 of the latest National Electrical Code. Install breaker only in panel positions that have notched bus stabs.

Common Trip Quadplex Breakers

BQC2302115

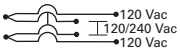


BQC2302115



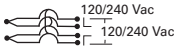
Class CTL, 1-Inch (25.4 mm) per Pole 10 kAIC—All Circuit Breakers Have Rejection Tab Feature

Type BQC Quadplex Common Trip Center Poles (UL Type BRD)



Two-Pole ① and Single-Pole ②
Requires Two 1-Inch (25.4 mm) Spaces
5 per Shelf Carton

Type BQC Quadplex Common Trip Center and Outer Poles (UL Type BRD)



Two-Pole ①
Requires Two 1-Inch (25.4 mm) Spaces
5 per Shelf Carton

120 Vac	120/240 Vac	120 Vac			120/240 Vac		
Ampere Rating				Wire Size Range	Ampere Rating		
Outer Left Single-Pole	Center Two-Pole Common Trip	Outer Right Single-Pole	Catalog Number	Cu/Al 65°C or 75°C	Outer Two-Pole Common Trip	Center Two-Pole Common Trip	Catalog Number
15	20	15	**BQC2202115**	#14–4	15	15	**BQC215215**
15	25	15	**BQC2252115**	#14–4	15	20	**BQC215220**
15	30	15	**BQC2302115**	#14–4	15	30	**BQC215230**
15	40	15	**BQC2402115**	#14–4	20	15	**BQC220215**
15	50	15	**BQC2502115**	#14–4	20	20	**BQC220220**
—	—	—	**—**	#14–4	20	30	**BQC220230**
—	—	—	**—**	#14–4	20	40	**BQC220240**
—	—	—	**—**	#14–4	20	50	**BQC220250**
20	15	20	**BQC2152120**	#14–4	25	25	**BQC225225**
20	20	20	**BQC2202120**	#14–4	25	30	**BQC225230**
20	25	20	**BQC2252120**	#14–4	30	15	**BQC230215**
20	30	20	**BQC2302120**	#14–4	30	30	**BQC230230**
20	40	20	**BQC2402120**	#14–4	30	40	**BQC230240**
20	50	20	**BQC2502120**	#14–4	30	50	**BQC230250**
30	50	20	**BQC2502030**	#14–4	40	30	**BQC240230**
—	—	—	**—**	#14–4	40	40	**BQC240240**
—	—	—	**—**	#14–4	40	50	**BQC240250**
—	—	—	**—**	#14–4	50	20	**BQC250220**
—	—	—	**—**	#14–4	50	50	**BQC250250**

Notes

① All Type BQC quadplex circuit breakers carry listing for HACR applications.

② All 15 and 20 ampere single poles are switch-duty rated.

1

Plug-On Circuit Breakers, Types BJ and BJH—10/22 kAIC, 120/240 Vac and 240 Vac

For Use in Single-Phase and Three-Phase Loadcenters—150 Amperes and Above

Type BJ

Types BJ and BJH Breakers, 1-Inch (25.4 mm) per Pole, 120/240 or 240 Vac, 10, 22 kAIC

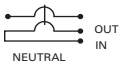
Ampere Rating	Two-Pole 120/240 Vac Common Trip Requires Four 1-Inch (25.4 mm) Spaces ① 10 per Shelf Carton 10 kAIC Catalog Number	22 kAIC Catalog Number	Wire Size Range Cu/Al 60°C or 75°C	Three-Pole 240 Vac Common Trip Requires Six 1-Inch (25.4 mm) Spaces ② 5 per Shelf Carton 10 kAIC Catalog Number	22 kAIC Catalog Number
125	**BJ2125**	**BJH2125**	#2–300 kcmil	**BJ3125**	**BJH3125**
150	**BJ2150**	**BJH2150**	#2–300 kcmil	**BJ3150**	**BJH3150**
175	**BJ2175**	**BJH2175**	#2–300 kcmil	**BJ3175**	**BJH3175**
200	**BJ2200**	**BJH2200**	#2–300 kcmil	**BJ3200**	**BJH3200**
225	**BJ2225**	**BJH2225**	#2–300 kcmil	**BJ3225**	**BJH3225**

Plug-On Special Application Circuit Breakers—10 kAIC, 120 Vac, 120/240 Vac and 240 Vac

BRWH215
Water Heater Breaker

BRSN220
Switching Neutral Breaker

Special Application Circuit Breakers, 1-Inch (25.4 mm) per Pole



Water Heater Breakers: Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces With Isolated Line Terminals for Separately Metered Water Heaters 5 per Shelf Carton 10 kAIC		Switching Neutral Breakers: Two-Pole 120 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces With Switching Neutral Pole for Gasoline Pump Applications 5 per Shelf Carton 10 kAIC		Wire Size Range Cu/Al 60°C or 75°C	240V Breakers: Two-Pole 240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces Where Voltage to Ground is 240 Vac 5 per Shelf Carton 10 kAIC		Non-Automatic Molded Case Switches: Two-Pole 240 Vac Requires Two 1-Inch (25.4 mm) Spaces For Use as Disconnect Contains No Magnetic or Thermal Trip Properties 5 per Shelf Carton 5 kAIC	
Ampere Rating	Catalog Number	Ampere Rating	Catalog Number		Ampere Rating	Catalog Number	Ampere Rating	Catalog Number
15	**BRWH215**	15	**BRSN215**	#14–4	10	**BR210H**	—	—
20	**BRWH220**	20	**BRSN220**	#14–4	15	**BR215H**	—	—
30	**BRWH230**	25	**BRSN225**	#14–4	20	**BR220H**	—	—
—	—	30	**BRSN230**	#14–4	25	**BR225H**	—	—
—	—	—	—	#14–4	30	**BR230H**	—	—
—	—	—	—	#14–4	35	**BR235H**	—	—
—	—	—	—	#14–4	40	**BR240H**	—	—
—	—	—	—	#14–4	45	**BR245H**	—	—
—	—	—	—	#14–4	50	**BR250H**	50	**BR250NA**
—	—	—	—	#14–4	55	**BR255H**	—	—
—	—	—	—	#4–1/0	60	**BR260H**	60	**BR260NA**
—	—	—	—	#4–1/0	70	**BR270H**	—	—
—	—	—	—	#4–1/0	80	**BR280H**	—	—
—	—	—	—	#4–1/0	90	**BR290H**	—	—
—	—	—	—	#4–1/0	100	**BR2100H**	100	**BR2100NA**

Notes

① Breaker uses two 1-inch (25.4 mm) pole spaces on left side and two 1-inch (25.4 mm) pole spaces on right side of loadcenter.

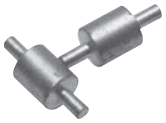
② Breaker uses three 1-inch (25.4 mm) pole spaces on left side and three 1-inch (25.4 mm) pole spaces on right side of loadcenter.

If BJ or BJH breakers are used as a main or a back feed device, a hold-down kit is required. See **Page V1-T1-83**.

Circuit Breaker Accessories

Field Installation Kits and Parts

THS1



BHLW2

BRQLW

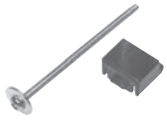
MCBPL (Installed)

BHLW

BRLW2

BREQS125

BRHDK125



Description	Ordering Quantity ①	Catalog Number
Handle Ties ②		
Handle tie bar for physically joining the handles of two adjacent single-pole Type BR circuit breakers (metal cylinder pin type)	10	**BHT**
Handle tie bar for joining two independent outside poles of Types BQ and BQC Quadplex and outside poles of two Type BD duplex circuit breakers	10	**THOW**
Handle tie bar for joining two adjacent outside poles of Types BQ and BQC Quadplex and outside poles of two Type BD duplex circuit breakers	10	**THS1**
Handle Lockoffs ③④		
Padlockable device for locking the handle of single-, two- or three-pole Type BR Circuit Breakers and single-pole of a Type BD Duplex or one independent outside pole of a Type BQ or BQC Quadplex circuit breakers (escutcheon mounted) ⑤	10	**BRLW**
Padlockable device for locking the handle of a single-pole Type BR circuit breaker.(handle mounted) ⑥	10	**BRLW1**
Padlockable device for locking the handle of a two- and three-pole Type BR circuit breaker (handle mounted) ⑥	10	**BRLW2**
Padlockable device for locking the handle of a single-pole Type BD Duplex, BQ or BQC Quadplex breaker (handle mounted) ⑥	10	**BRDL1**
Padlockable device for locking the handle of the two center poles and the two outer poles of a two-pole Types BQ and BQC quadplex circuit breakers (escutcheon mounted) ⑤	10	**BRQLW**
Padlockable device for locking the handle of main circuit breaker Types CC and CHH into the ON or OFF position (screw mounted) ⑦	1	**CCPL**
Padlockable device for locking the handle of main breaker Types BW and BWH into the ON or OFF position (escutcheon Mounted) ⑤	1	**MCBPL**
Device used to secure handle in ON or OFF position for single-, two- or three-pole Type BR circuit breakers and single-pole of Type BD duplex and one independent outside pole of Type BQ or BQC Quadplex circuit breakers (escutcheon mounted) ⑤	10	**BHLW**
Device used to secure handle in ON or OFF position for single-pole Type BR circuit breakers (handle mounted) ⑥	10	**BHLW1**
Device used to secure handle in ON or OFF position for two- and three-pole Type BR circuit breakers (handle mounted) ⑥	10	**BHLW2**
Device used to secure handle in ON or OFF position for single-pole Type GFCB ground fault circuit breakers (handle mounted) ⑥	10	**BHGW**
Device used to secure handle in ON or OFF position for one independent outside pole of Types BQ and BQC Quadplex or single-pole Type BD duplex circuit breakers (handle mounted) ⑥	10	**HLW1**
Hold-Down Kits ⑨		
Hold-down retainer kit for three-pole Type BR circuit breakers in S3100 and 3100R loadcenters only	1	**BRHDB**
Hold-down screw kit for two-pole Type BR circuit breakers in single-phase MLO loadcenters through 125A	1	**BREQS125**
Hold-down screw kit for two-pole Type BR circuit breakers in MLO loadcenters 150–225A (single-phase only)	1	**BRHDK125**
Hold-down screw kit for two-pole Types BJ and BJH circuit breakers in MLO loadcenters 125–225A	1	**BJHDS**
Hold-down screw kit for three-pole Types BJ and BJH circuit breakers in MLO loadcenters 125–225A	1	**BJHDS3P**
Main Breaker Lug Kits		
Types CC and CHH main breaker lug kit (2) 300 kcmil	1	**CCL300**
Types BW/BWH main breaker lug kit (2) 300 kcmil	1	**MCBL300**

Notes

① Must be purchased in multiples of ordering quantities indicated.
② Handle ties: typically used to join two similar independent single-pole breakers to form a two-pole noncommon trip breaker.
③ Handle lockoffs: devices that use a padlock to lock the circuit breaker's handle in the ON or OFF position.
④ See table on **Page V1-T1-84** for handle position changeability chart.
⑤ Escutcheon mounted: device mounted semipermanently to the face of the circuit breaker and secured by the loadcenter deadfront.
⑥ Handle mounted: device mounted directly to the handle by the use of a set screw.
⑦ Screw mounted: device permanently mounted to the face of the circuit breaker by the use of a non-removable screw.
⑧ Handle lockdogs: devices that are used to secure a circuit breaker's handle in the ON or OFF position. Handle Lockdogs are not padlockable devices.
⑨ Hold-down kits: devices used to secure the circuit breaker to the loadcenter for back-feed main application. See NEC Article 384.16(g).

1

BRML

Field Installation Kits and Parts, continued

Description	Ordering Quantity ①	Catalog Number
Mechanical Interlocks		
Types BR for two-, three- and four-pole breakers	10	**BRML**
	10	**BRPLOFF**
	10	**BRPLOFF2P**
	10	**BRPLOFF3P**
	10	**BJL2P**
	10	**BJL3P**
	10	**GHQRLOFF2P**
	10	**GHQRLOFF**
	10	**QCD123PLOFF**

Shunt Trips, Auxiliary and Alarm Contacts

Description	Catalog Number ② Suffix Adder
Shunt Trip for Types BW/BWH	
12 Volts	**SR12**
24 Volts	**SR24**
120 Volts	**SR01**
Shunt Trip for Types BR	
120 Volts	**ST**
Auxiliary Contact for Types BW/BWH	
1NO and 1NC	**AL1**
2NO and 2NC	**AL2**
Alarm Contacts for Types BW/BWH	
Types BW/BWH	**CR1**
Alarm Contacts for Type GFCB (Single-Pole)	
Alarm contact for GFCB (single-pole)	**W1**
1NO and 1NC	**W2**

Handle Position Changeability Chart

	To Change Handle Position from ON to OFF, or OFF to ON You Must...		
Handle Lockoff and Lockdog Types	**Remove Padlock**	**Remove Device**	**Remove Loadcenter Deadfront**
Lockoff escutcheon mounted	Remove	—	—
Lockoff handle mounted	Remove	Remove	—
Lockoff screw mounted	Remove	—	—
Lockdog escutcheon mounted	N/A	Remove	Remove
Lockdog handle mounted	N/A	Remove	—

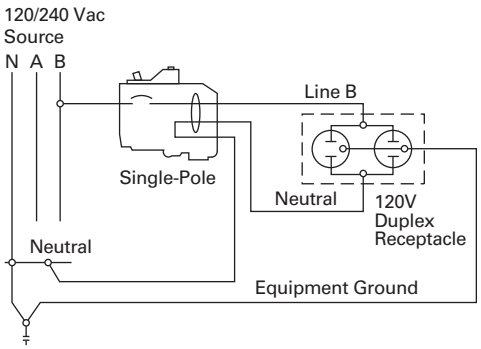
Notes

① Must be purchased in multiples of ordering quantities indicated.

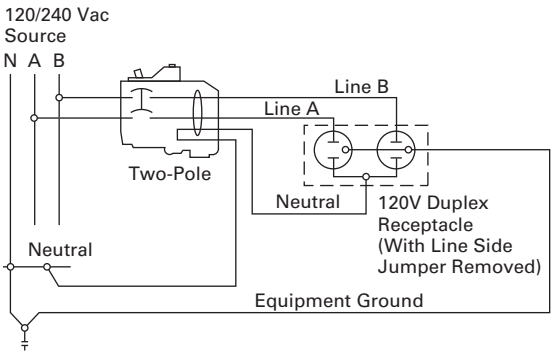
② Add suffix indicated to end of breaker catalog number.

Wiring Diagrams

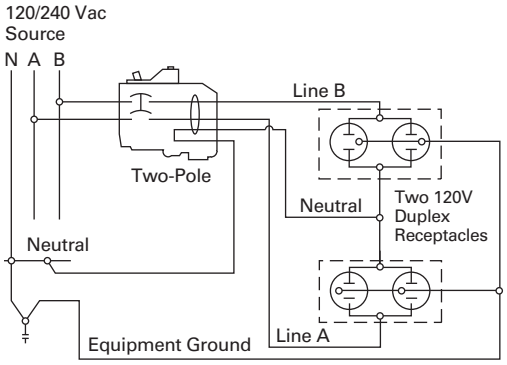
Single-Pole 120V Load Application Sourced by 120/240 Vac



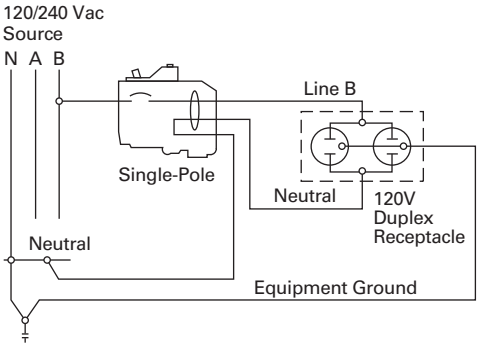
Two-Pole Shared Neutral with Duplex Receptacle Application



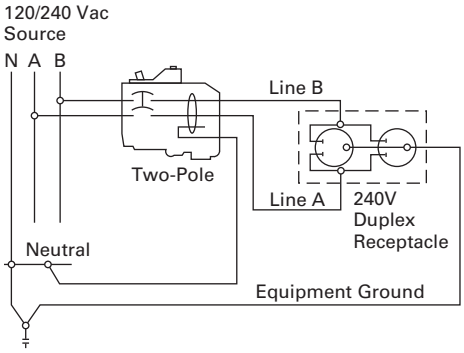
Two-Pole Shared Neutral with Multi-Duplex Receptacle Application



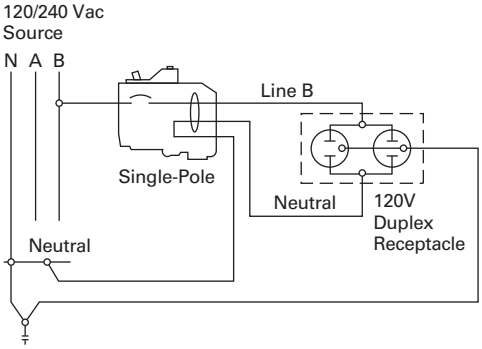
Single-Pole 120V Load Application Sourced by 120/240 Vac



Two-Pole 240V Load Application Sourced by 120/240 Vac

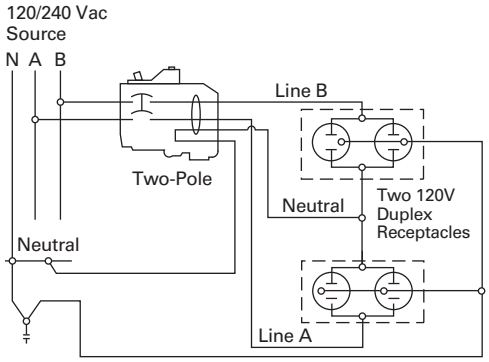


Single-Pole 120V Duplex Receptacle Application

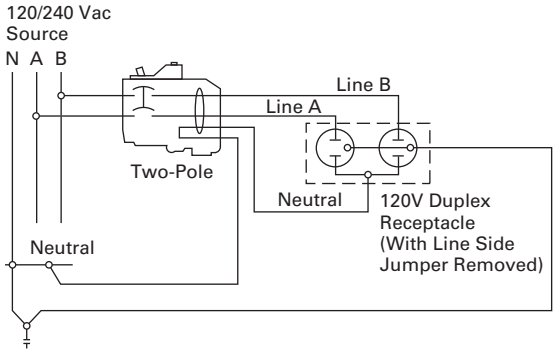


1

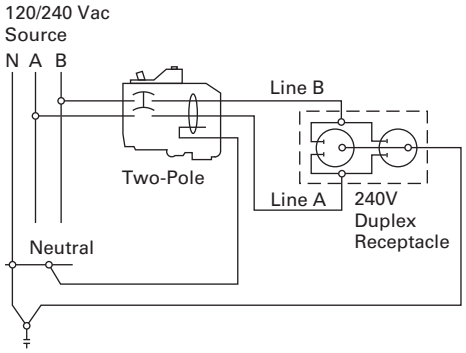
Two-Pole 120V Multi-Duplex Receptacle Application



Two-Pole 120V Duplex Receptacle Application



Two-Pole 240V Duplex Receptacle Application



Dimensions

Approximate Dimensions in Inches (mm)

Residential/Commercial/New York City Loadcenters, Unit Enclosures—Box Sizes

Note: Box sizes do not include covers/fronts.

Residential Loadcenters—NEMA Type 1 Indoor

Box Size	Height	Width	Depth
A1	15.00 (381.0)	11.25 (285.8)	3.75 (95.3)
B1	16.75 (425.5)	14.31 (363.5)	3.88 (98.4)
B2	18.75 (476.3)	14.31 (363.5)	3.88 (98.4)
C1	21.00 (533.4)	14.31 (363.5)	3.88 (98.4)
C2	23.00 (584.2)	14.31 (363.5)	3.88 (98.4)
C4	27.00 (685.8)	14.31 (363.5)	3.88 (98.4)
D1	29.13 (739.8)	14.31 (363.5)	3.88 (98.4)
G1	34.13 (866.8)	14.31 (363.5)	3.88 (98.4)
L1	39.00 (990.6)	14.31 (363.5)	3.88 (98.4)
L2	45.00 (1143.0)	14.31 (363.5)	3.88 (98.4)
2	8.63 (219.1)	5.00 (127.0)	3.50 (88.9)
3	9.44 (239.7)	4.50 (114.3)	3.00 (76.2)
4	13.00 (330.2)	11.00 (279.4)	3.56 (90.5)
5	9.44 (239.7)	4.50 (114.3)	3.00 (76.2)
6	12.00 (304.8)	6.88 (174.6)	4.50 (114.3)
7	13.00 (330.2)	11.00 (279.4)	3.56 (90.5)
9	14.50 (368.3)	6.50 (165.1)	3.50 (88.9)

Residential Loadcenters—NEMA Type 3R Outdoor

Box Size	Height	Width	Depth
B1R	16.75 (425.5)	14.31 (363.5)	5.19 (131.8)
B2R	18.75 (476.3)	14.31 (363.5)	5.19 (131.8)
C3R	25.00 (635.0)	14.31 (363.5)	5.19 (131.8)
D1R	29.13 (739.8)	14.31 (363.5)	5.19 (131.8)
G1R	34.13 (866.8)	14.31 (363.5)	5.19 (131.8)
L1R	39.00 (990.6)	14.31 (363.5)	5.19 (131.8)
L2R	45.00 (1143.0)	14.31 (363.5)	5.19 (131.8)
2R	8.63 (219.1)	5.00 (127.0)	3.50 (88.9)
3R	9.44 (239.7)	4.50 (114.3)	3.00 (76.2)
4R	13.00 (330.2)	11.00 (279.4)	3.56 (90.5)
5R	9.44 (239.7)	4.50 (114.3)	3.00 (76.2)
6R	11.75 (298.5)	6.50 (165.1)	4.50 (114.3)
7R	13.00 (330.2)	11.00 (279.4)	3.56 (90.5)
8R	27.00 (685.8)	10.50 (266.7)	4.75 (120.7)
9R	14.25 (362.0)	6.50 (165.1)	4.00 (101.6)
C1R	21.00 (533.4)	14.31 (363.5)	5.19 (131.8)

Commercial Loadcenters—NEMA Type 1 Indoor

Box Size	Height	Width	Depth
19	44.00 (1117.6)	16.16 (410.4)	6.25 (158.8)
20	44.00 (1117.6)	16.16 (410.4)	6.25 (158.8)
22	54.00 (1371.6)	16.22 (412.0)	6.31 (160.3)
24	66.50 (1689.1)	16.22 (412.0)	6.31 (160.3)

Commercial Loadcenters—NEMA Type 3R Outdoor

Box Size	Height	Width	Depth
42	38.00 (965.2)	16.31 (414.3)	6.38 (161.9)
43	44.00 (1117.6)	16.31 (414.3)	6.38 (161.9)
46	54.00 (1371.6)	16.31 (414.3)	6.38 (161.9)
47	66.56 (1690.7)	16.31 (414.3)	6.38 (161.9)

New York City Loadcenters—NEMA Type 1 Indoor

Box Size	Height	Width	Depth
A	38.00 (965.2)	18.13 (460.4)	5.00 (127.0)
B	44.00 (1117.6)	18.13 (460.4)	5.00 (127.0)
C	66.50 (1689.1)	18.13 (460.4)	6.25 (158.8)

Types ECB and ECC Unit Enclosures—NEMA Type 1 Indoor

Height	Width	Depth
23.25 (590.6)	8.88 (225.4)	4.50 (114.3)

Types ECB and ECC Unit Enclosures—NEMA Type 3R Outdoor

Height	Width	Depth
23.68 (601.7)	9.31 (236.5)	5.44 (138.1)

1

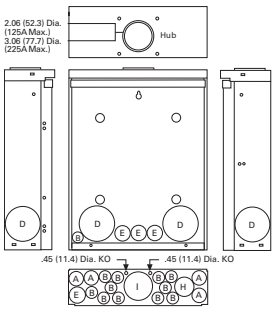
Approximate Dimensions in Inches (mm)

Residential Loadcenter Knockouts

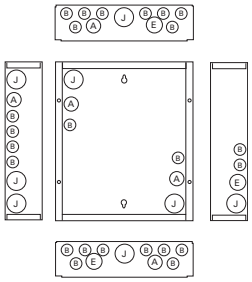
Knockouts for Box Sizes A1, B1, B2, C1, C2, C4, D1, G1, L1, L2, B1R, B2R, C1R, C3R, D1R, G1R, L1R, L2R

Code	Diameter				
A	0.50 (12.7)	0.75 (19.1)	—	—	—
B	0.50 (12.7)	—	—	—	—
C	0.50 (12.7)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)
D	1.25 (31.8)	1.25 (31.8)	2.00 (50.8)	2.50 (63.5)	—
E	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	—	—
F	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.50 (38.1)	2.00 (50.8)
G	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—	—
H	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)
I	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)
J	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—	—

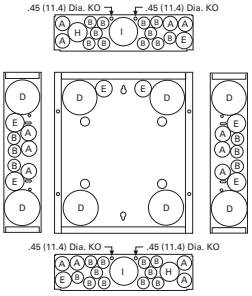
Residential NEMA Type 1 Indoor and NEMA Type 3R Outdoor Enclosures



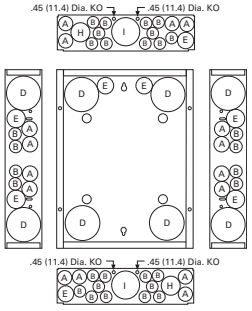
Outdoor Boxes B1R, B2R, C1R, C3R, D1R, G1R, L1R, L2R



Indoor Boxes A1



Indoor Boxes B1, B2



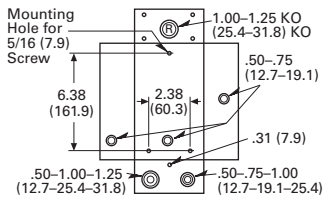
Indoor Boxes C1, C2, C4, D1, G1, L1, L2

Approximate Dimensions in Inches (mm)

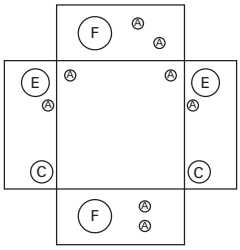
Knockouts for Box Sizes 3, 4, 5, 6, 7, 9, 2R, 3R, 4R, 5R, 6R, 7R, 8R, 9R

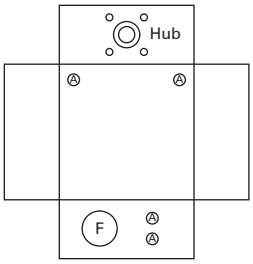
Code	Diameter			
A	0.50 (12.7)	—	—	—
B	0.50 (12.7)	0.75 (19.1)	—	—
C	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	—
D	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)
E	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	—
F	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)
G	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—
H	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)
I	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—

Residential NEMA Type 1 Indoor and NEMA Type 3R Outdoor Enclosures

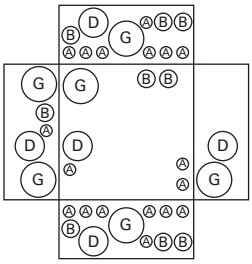


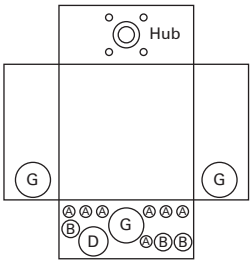
Box 2, 2R


Box 3

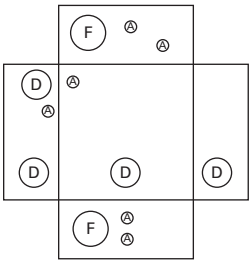


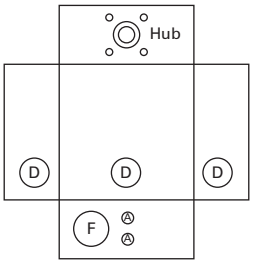
Box 3R


Box 4

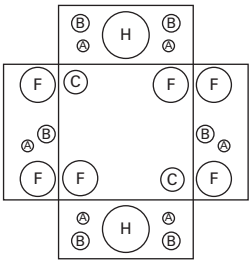


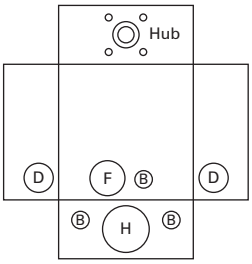
Box 4R


Box 5

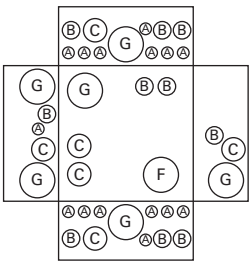


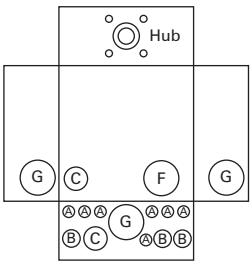
Box 5R


Box 6

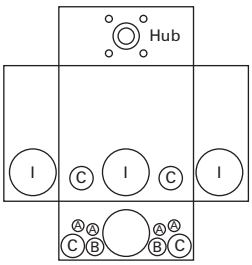


Box 6R

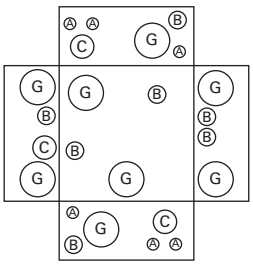

Box 7

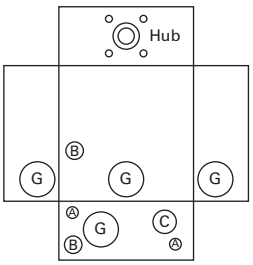


Box 7R



Box 8R


Box 9



Box 9R

1

Approximate Dimensions in Inches (mm)

Commercial Loadcenter Knockouts

NEMA Type 1 Indoor Commercial Enclosures Knockouts for Box Sizes 19, 20, 22, 24

Code	Diameter			
A	0.50 (12.7)	—	—	—
B	0.50 (12.7)	0.75 (19.1)	—	—
C	0.75 (19.1)	1.00 (25.4)	1.50 (38.1)	—
D	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)	3.00 (76.2)
E	2.00 (50.8)	2.50 (63.5)	3.00 (76.2)	—
F	2.50 (63.5)	3.00 (76.2)	3.50 (88.9)	—

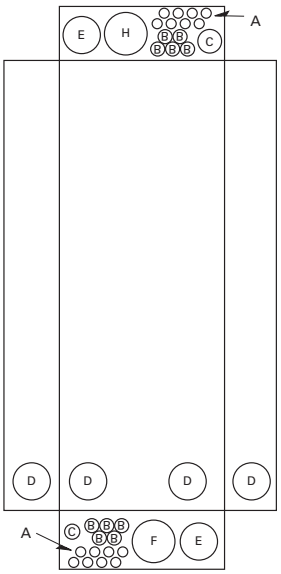
NEMA Type 3R Outdoor Commercial Enclosures Knockouts for Box Sizes 42, 43, 46, 47

Code	Diameter			
A	0.50 (12.7)	—	—	—
B	0.50 (12.7)	0.75 (19.1)	—	—
C	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	—
D	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)	—
E	2.00 (50.8)	2.50 (63.5)	3.00 (76.2)	—
F	2.50 (63.5)	3.00 (76.2)	3.50 (88.9)	—
G	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)
H	3.25 (82.6) Sq.	—	—	—

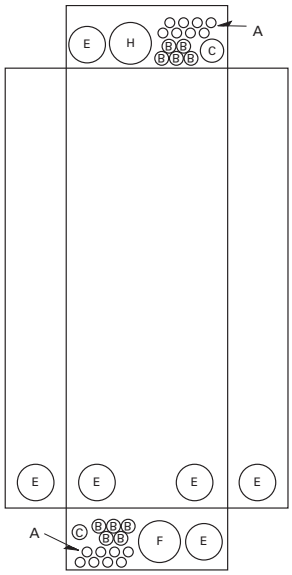
Unit Enclosure Knockouts, Types ECB and ECC Knockouts

Code	Diameter				
NEMA Type 1 Indoor (Flush and Surface Trims)					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)	2.50 (63.5)
NEMA Type 3R Outdoor					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)	2.50 (63.5)

Indoor Commercial Enclosures

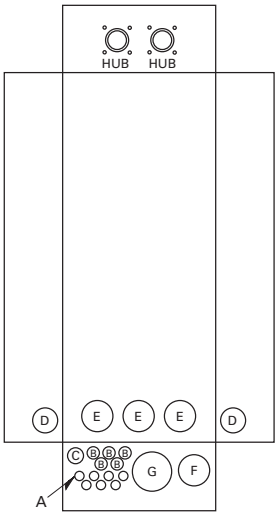


Box 19, 20

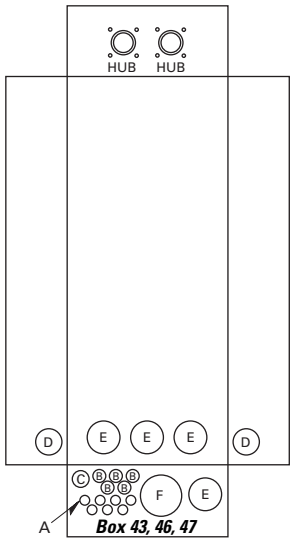


Box 22, 24

Outdoor Commercial Enclosures

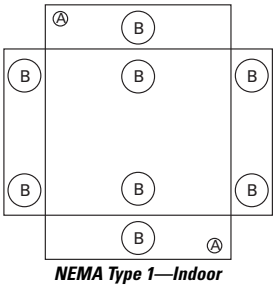


Box 42

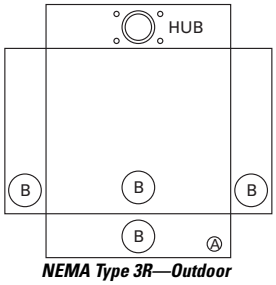


Box 43, 46, 47

Unit Enclosure Knockouts



NEMA Type 1—Indoor



NEMA Type 3R—Outdoor

OEM Loadcenters

Contents

Product Description

As a leader in the electrical distribution equipment business, Eaton has a unique product offering for equipment manufacturers, panel builders and virtually any OEM that has a need for power distribution within their equipment. The OEM interior offering consists of a wide variety of power distribution options utilizing components from Eaton's CH and BR loadcenter product lines. With high-volume, standardized products, OEMs can expect to receive high-quality products covering configurations meeting virtually any power distribution need.

Coupled with Eaton's expertise in circuit breaker design and manufacturing, OEM interiors provide solid power distribution and circuit protection in a compact, easy-to-install package. Interiors are offered from 2 to 42 circuits and from 70 to 225A.

Quality

Built in ISO 9002 certified manufacturing facilities, customers can be assured of the process quality in place for the manufacture of these products. Utilizing the latest in computer-controlled plating, painting, molding, stamping and welding processes, Eaton's customers have come to expect consistent high-quality from shipment to shipment.

Two Products Offer Design Flexibility

As a manufacturer of two lines of loadcenters, Eaton is in a unique position to offer the broadest range of interiors in the market. Each line has its own unique characteristics that appeal to various segments of the market. OEM interiors are UL recognized components and are listed in either of the following UL files: E8741 or E52977.

The CH interiors feature 100% copper bus and use the CH 3/4-inch (19.1 mm) wide circuit breaker, which minimizes panel space. Recognized by contractors for its sturdy design, the CH interior will appeal to those customers seeking an industrial quality bolted bus bar and the space saving of 3/4-inch (19.1 mm) per bus stab. With a typical 12 circuit CH interior, this space savings amounts to an inch and a half savings over its 1-inch (25.4 mm) counterparts. The stab rating of the CH interiors is 140A maximum meaning that the handle rating of breakers mounted across from one another may not exceed 140A.

The BR interiors are manufactured of formed, plated aluminum or copper, and use Eaton's Type BR 1-inch (25.4 mm) wide circuit breaker. This design affords customers the most circuit flexibility as many of these interiors allow the installation of standard single- and two-pole breakers as well as duplex (two poles in a 1-inch (25.4 mm) space) or quadplex (four poles in a 2-inch (50.8 mm) space) breakers.

The stab rating of the BR interiors is 200A maximum, meaning that the handle rating of the breakers that are mounted across from one another may not exceed 200A.

The interiors are designed for either horizontal (single-row breaker mounting), or vertical (double-row breaker mounting). To comply with National Electrical Code (NEC) requirements, if mounted horizontally, when the breaker is ON, the handle should be in the UP position. When mounted vertically, the handle toggles from left to right, so this is not a concern.

1

Standards and Certifications

Class CTL

National Electrical Code Paragraph 384-15 requires branch circuit panelboards to be provided with physical means to prevent the installation of more overcurrent devices than that number of which the enclosure was designed, rated and approved. Class CTL Duplex, Quadplex and twin breakers (identified by a catalog number prefix BD, BQ, BQC and CHT) are equipped with a UL listed rejection tab over the line terminal. All OEM interiors have appropriately notched stabs to accept these rejection tab Class CTL breakers.

Duplex, Quadplex and twin breakers manufactured without the rejection tab (identified by a catalog number prefix BR, BRD and CHNT) are available for replacement purposes in older interiors.

Federal Specifications

All loadcenter enclosures meet Federal Specifications W-P-115b, Type 1, Class 2 requirements.

All 120/240V breakers, both 1-inch (25.4 mm), 1/2-inch (12.7 mm) and 3/4-inch (19.1 mm) per pole meet the requirement of Federal Specifications W-C 375B/ Gen Type 1.

Canadian Standards Association Listing

All single-pole and two-pole, 120/240V breakers, both 1-inch (25.4 mm), 1/2-inch (12.7 mm) and 3/4-inch (19.1 mm) per pole, 225A maximum, are listed as Certified by the Canadian Standards Association, Guide No. 69-11.19, Class 1432, File 18328.

Underwriters Laboratories Listing

All grounding bars manufactured comply with Underwriters Laboratories standards and are listed under Guide No. DHJR, File E31424, Volume W, Section 17.

All circuit breakers 10A and larger comply with the Underwriters Laboratories "Standard for Branch Circuit and Service Circuit-Breakers" UL 489; Guide No. 60 10.2 File E31424, and "Requirements for Wire Connectors and Soldering Lugs," UL 486B, Guide No. 461 10-C File E7830.

All Eaton breakers where marked, are suitable for use with 60/75ºC rated wire, unless otherwise specified.

All devices comply with the 22 kAIC–10 kAIC UL series connected components File DKSY2 of the Recognized Components Index.

Lighting and Appliance Panelboards

Lighting and appliance branch circuit panelboards are defined in NEC (Article 384) as "One having more than 10 percent of its overcurrent devices rated 30A or less for which neutral connections are provided." Article 384 also limits the number of overcurrent devices (branch circuit poles) to a maximum of 42 in any one cabinet. When the 42 poles are exceeded, two or more separate panels are required.

For more details and engineering drawings, see BR.31.02.S.E.

Listed

Product Selection

BR Loadcenter Interior Assembly

Type BR Loadcenter Interior Assemblies

Ampere Rating	Maximum Number 1-Inch (24.5 mm) Spaces	Single Poles	UL File Reference	Main Terminal Size (Per Phase)	Standard Package Quantity	Catalog Number
Single-Phase Single Row Breaker Mounting—Aluminum Bus—120/240 Vac, Three-Wire						
70	2	4	—	(1) #8–#2 AWG Cu/Al	20	**24INT70B**
125	2	4	E8741	(1) 1/0–#14 AWG Cu 2/0–12 AWG All	20	**24INT125B**
125	6	12	E52977	(1) 2/0–#14 AWG Cu/Al	20	**612INT125SRB**
Single-Phase Double Row Breaker Mounting—Aluminum Bus—120/240 Vac, Three-Wire						
125	4	8	E8741	(1) 2/0–#14 AWG Cu/Al	20	**48INT125B**
125	6	12	E8741	(1) 2/0–#14 AWG Cu/Al	20	**612INT125B**
125	8	16	E8741	(1) 2/0–#14 AWG Cu/Al	20	**816INT125B**
125	12	812	E52977	(1) 2/0–#14 AWG Cu/Al	20	**1212INT125B**
125	12	24	E52977	(1) 2/0–#14 AWG Cu/Al	20	**1224INT125B**
125	16	24	E52977	(1) 2/0–#14 AWG Cu/Al	20	**1624INT125B**
125	20	24	E52977	(1) 2/0–#14 AWG Cu/Al	10	**2024INT125B**
125	24	24	E52977	(1) 2/0–#14 AWG Cu/Al	10	**2424INT125B**
200	8	16	E52977	(1) 300 kcmil–#1 AWG Cu/Al	20	**816INT200B**
200	12	24	E52977	(1) 300 kcmil–#1 AWG Cu/Al	20	**1224INT200B**
200	30	40	E52977	(1) 300 kcmil–#1 AWG Cu/Al	10	**3040INT200B**
200	42	42	E52977	(1) 300 kcmil–#1 AWG Cu/Al	10	**4242INT225B**
Single-Phase Double Row Breaker Mounting—Copper Bus—120/240 Vac, Three-Wire						
125	8	16	E5297	(1) 2/0–#14 AWG Cu/Al	20	**816INT125BC**
125	12	12	E5297	(1) 2/0–#14 AWG Cu/Al	20	**1212INT125BC**
200	12	24	E5297	(1) 300 kcmil–#1 AWG Cu/Al	20	**1224INT200BC**
Three-Phase Double Row Breaker Mounting—Aluminum Bus—208Y/120 Vac, Four-Wire—240 Vac, Three-Wire—120/240 Vac, Four-Wire Delta						
125	12	34	E52977	(1) 2/0–#8 AWG Cu/Al	10	**1224INT3125B**
150	18	36	E52977	(1) 300 kcmil–#2 AWG Cu/Al	10	**1836INT3150B**
150	24	42	E52977	(1) 300 kcmil–#2 AWG Cu/Al	10	**2442INT3150B**
200	30	42	E52977	(1) 300 kcmil–#2 AWG Cu/Al	10	**3042INT3200B**
225	42	42	E52977	(1) 300 kcmil–#2 AWG Cu/Al	10	**4242INT3225B**
Three-Phase Double Row Breaker Mounting—Copper Bus—208Y/120 Vac, Four-Wire—240 Vac, Three-Wire—120/240 Vac, Four-Wire Delta						
125	12	24	E52977	(1) 2/0–#8 AWG Cu/Al	10	**1224INT3125BC**
200	12	24	E52977	(1) 300 kcmil–#2 AWG Cu/Al	10	**1224INT3200BC**

1

Classified Breakers

Contents

Product Description

Eaton UL classified Replacement Circuit Breakers are available in both 3/4-inch Type CHQ and 1-inch Type CL, single- and two-pole configurations. These breakers are classified as direct replacements by Underwriters Laboratories. In addition to a UL listing, they also come with a 15-year warranty.

Specified vs. UL Classified

Specified breakers are listed by the manufacturer of the panelboard for use in a particular panel. This doesn't mean that the panelboard manufacturer produced the specified breaker; it merely means that the panelboard manufacturer has tested the breaker in the panel. In fact, through the years, Eaton has manufactured thousands of breakers for other panelboard manufacturers.

UL classified breakers are produced by one manufacturer for use in place of the breakers specified on the panelboard. Like specified breakers, UL classified breakers have been tested in the panels for which they are approved.

Testing

Classified breakers are tested extensively in numerous General Electric®, Siemens®, Murray®, Thomas & Betts®, Square D®, and Crouse-Hinds® panels. The tests are conducted with witnesses from Underwriters Laboratories Inc. and involve short-circuit, temperature, and insertion/withdrawal applications. This level of testing ensures that the breakers meet identified standards and have been found suitable by UL for the specified purpose.

Understanding Classified Breaker Terminology

Definitions

Specified circuit breaker—each manufacturer lists the brands of circuit breakers that can be used in their panelboards. Often, manufacturers will not list competitors as specified, even though they are suitable replacements.

Classified circuit breaker—a breaker that is considered suitable, by a qualified third-party organization, for use in another manufacturer's panelboard.

Listed breaker—the listing of a circuit breaker is by an independent third party. Eaton classified breakers are listed by UL.

Labeled breaker—a breaker with a label affixed by an independent third party.

Product Selection

Type CHQ Replacement Breakers for Square D Type QO Loadcenters

10 kAIC, 120 and 120/240 Vac

CHQ120 CHQ230

Type CHQ Classified Breakers 3/4-Inch (19.1 mm) per Pole 120 or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number
15	(1) #14–8 (2) #14–10	**CHQ115**	**CHQ215**
20		**CHQ120**	**CHQ220**
25		**CHQ125**	**CHQ225**
30		**CHQ130**	**CHQ230**
35		**CHQ135**	**CHQ235**
40		**CHQ140**	**CHQ240**
45		**CHQ145**	**CHQ245**
50		**CHQ150**	**CHQ250**
60		—	**CHQ260**

Type CHQ Ground Fault and Arc Fault Replacement Breakers for Square D Type QO Loadcenters

10 kAIC, 120 and 120/240 Vac

CHQ115GF CHQ220GF

Type CHQ Ground Fault Breakers—5 Milliampere—3/4-Inch (19.1 mm) per Pole, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number
15	(1) #14–8 (2) #14–10	**CHQ115GF**	**CHQ215GF**
20		**CHQ120GF**	**CHQ220GF**
25		**CHQ125GF**	**CHQ225GF**
30		**CHQ130GF**	**CHQ230GF**
35		—	**CHQ235GF**
40		—	**CHQ240GF**
45		—	**CHQ245GF**
50		—	**CHQ250GF**

Type CHQ Surge Arrester

Catalog Number
CHQSA

1 Type CL Replacement Breakers for Square D HOMELINE, General Electric, Crouse-Hinds, Thomas & Betts, Murray and ITE®/Siemens Loadcenters

CL_

Type CL Breakers, 1-Inch (25.4 mm) per Pole, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240V Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240V Common Trip Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton Catalog Number
15	#14–4	**CL115**	**CL215**
20	#14–4	**CL120**	**CL220**
25	#14–4	**CL125**	**CL225**
30	#14–4	**CL130**	**CL230**
35	#14–4	**CL135**	**CL235**
40	#14–4	**CL140**	**CL240**
45	#14–4	**CL145**	**CL245**
50	#14–4	**CL150**	**CL250**

CL_AF

Type CL Classified Arc and Ground Fault Breakers (5 Milliampere), 1-Inch (25.4 mm) per Pole, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240V Requires One 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number
Arc Fault Breakers		
15	#14–4	**CL115AF**
20	#14–4	**CL115CAF**
20	#14–4	**CL120AF**
20	#14–4	**CL120CAF**
Arc Fault/Ground Fault Breakers		
15	#14–4	**CL115AFGF**
20	#14–4	**CL120AFGF**
Ground Fault Breakers		
15	#14–4	**CL115GF**
20	#14–4	**CL120GF**
30	#14–4	**CL130GF**

CLR_

Type CL Classified Latching Remote Control Smart Breakers™, 1-Inch (25.4 mm) per Pole, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120V Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240V Common Trip Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton Catalog Number
15	(2) #14–10	**CLRP115**	**CLRP215**
20	(2) #14–10	**CLRP120**	**CLRP220**
25	(1) #8–6	**CLRP125**	**CLRP225**
30	(1) #8–6	**CLRP130**	**CLRP230**

Accessories

CHQ Breaker Accessories

Description	Catalog Number
Breaker handle lock	**CHLO**

Technical Data

Arc Fault Application Notes

An arc fault circuit interrupter is a device intended to provide protection from the effects of arc faults by recognizing characteristics unique to arcing and by functioning to de-energize the circuit when the arc fault is detected. As of January 1, 2002, the National Electrical Code (NEC) requires all branch circuits that supply 125V, single-phase, 15 and 20A receptacle outlets installed in dwelling unit bedrooms shall be protected by an arc fault circuit interrupter(s). This includes ceiling lighting (recessed, ceiling fans, etc.) as well as smoke detectors and all other bedroom outlets. The 2005 NEC introduced the application of the Combination Type AFCI for bedroom circuits required as of January 1, 2008. The 2008 NEC expands this application to other living areas.

Ground Fault Application Notes

Single-pole GFCBs are designed for use in two-wire, 120 Vac circuits. Drawing on **Page V1-T1-98** shows a typical wiring configuration.

Two-pole GFCBs are designed for use in three-wire, 120/240 Vac circuits, 120 Vac multiwire circuits employing common, neutral and two-wire, 240 Vac circuits obtained from a 120/240 Vac source.

Drawings on **Page V1-T1-98** illustrate typical wiring configurations for 120/240 Vac multiwire circuits.

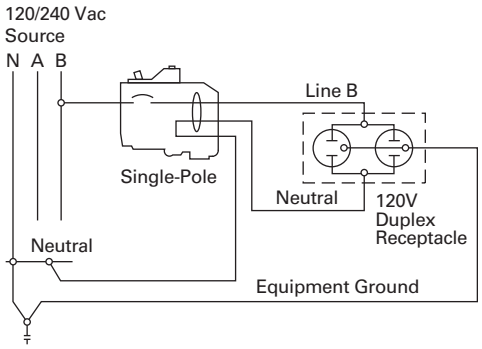
Drawing on **Page V1-T1-98** depicts a 240 Vac, two-wire circuit. Note the "panel neutral" conductor connects to the neutral bar, even though the neutral is not included in the load circuit. This connection is necessary to supply a 120 Vac power source to the ground fault sensing circuit.

The figures are shown with a 120/240 Vac, single-phase, three-wire power source, ut are also applicable to a 120/208 Vac, three-phase, four-wire power supply. For all figures, the electrical operation of the GFCB is not affected by the equipment ground.

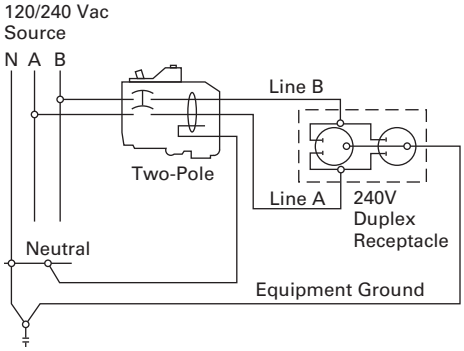
1

Wiring Diagrams

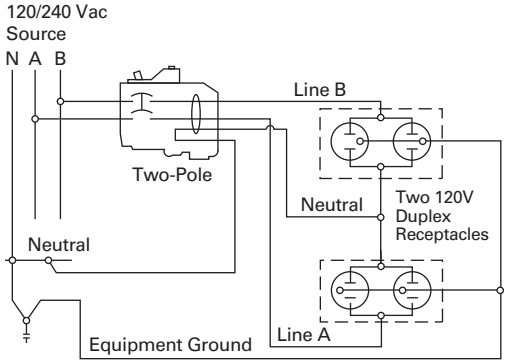
Single-Pole 120V Load Application Sourced by 120/240 Vac



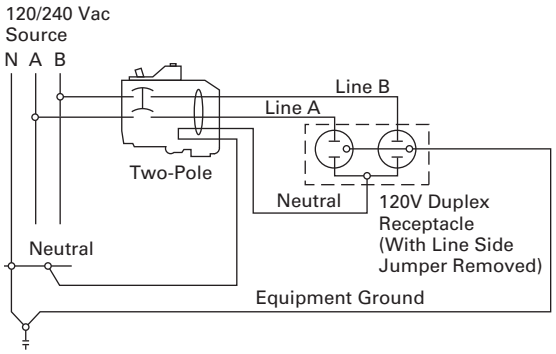
Two-Pole 240V Load Application Sourced by 120/240 Vac



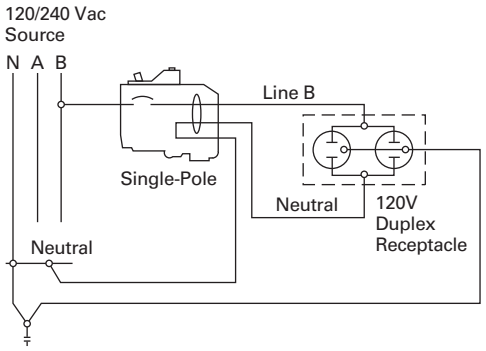
Two-Pole Shared Neutral with Multi-Duplex Receptacle Application



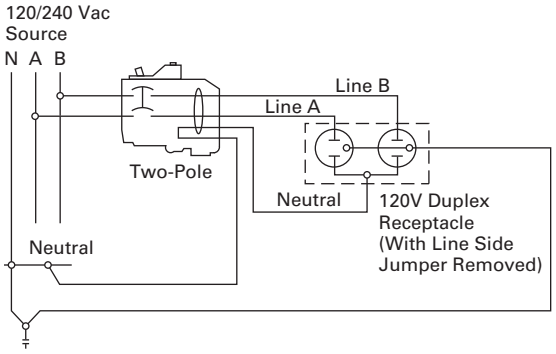
Two-Pole Shared Neutral with Duplex Receptacle Application



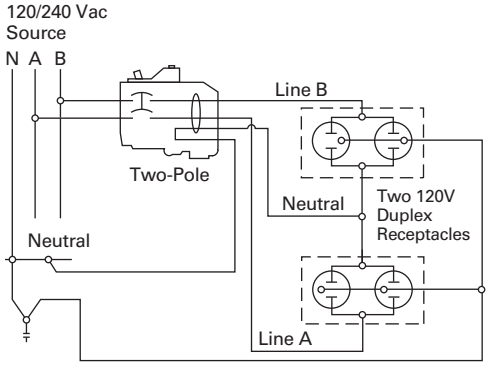
Single-Pole 120V Duplex Receptacle Application



Two-Pole 120V Duplex Receptacle Application



Two-Pole 120V Multi-Duplex Receptacle Application



Two-Pole 240V Duplex Receptacle Application