

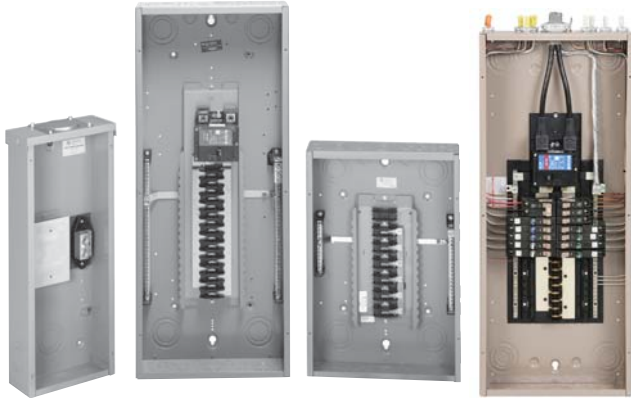
Residential Loadcenters and Breaker Family



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**Eaton Type CH Convertible Family**



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### Overview

#### 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.

#### CH Plug-on Neutral Loadcenter

The CH Plug-on Neutral portfolio offers a unique design that offers improved safety, ease of installation and leaves the end result with a clean and professional look and feel.

#### Features, Benefits and Functions

##### Loadcenter Construction

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

##### Neutrals

Eaton Type CH loadcenters feature three types of neutrals:

##### Insulated/Bondable Split Neutral

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

#### 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.

#### 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) applications, the panel may

be installed with the 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. All CH Main Lug Only Plug-on Neutral loadcenters come with a factory-installed 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 wires. For larger cables, add-on neutral lugs may be ordered from the Accessories.

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

**Bottom-Fed Loadcenters**

When the power cable is brought into the loadcenter from below the panel; then the main lug panels, and single-phase, 225 A 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. The “!” at the end signifies the decade of the 2010s. 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. CHF breakers include a ‘trip flag’ to differentiate between a tripped breaker and one that has been turned off. Multipole breakers have internal common trip connection to operate all poles simultaneously. Handles are marked with ON-OFF indication and ampere rating of the breaker. Type CH breakers meet UL Standard 489, NEMA standards, and Federal Spec Classification W-C 375 b/Gen. They are UL listed under File Number E11713, E8741, E3624 and E51287; and CSA® certified file number LR87196, except Type CHT breakers.

**Type CH Circuit Breaker Ratings**

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

**Standards and Certifications****UL Listings**

All Eaton Type CH loadcenters are listed under the UL 67 certification in file E8741.



#### Type CH Loadcenter

##### Optimized Knockouts

- Provide additional access and allow for easier removal improving installation times

##### Top or Bottom Feed

- Straight-in wiring saves labor and material
- One panel for either top or bottom applications

##### Smooth Case Edges

- Provide a more professional look and feel

##### 2/0 Lug

- Easily removable and can be installed in any location on the neutral bar

##### Commercial-Grade Main Breaker

- 25 kAIC series rated main breaker in 150 A–225 A loadcenters. 35, 42 and 100 kAIC series ratings are available
- Optional convertible design—reduces inventory requirements

##### Full-Length Neutral Bars

- Offer flexibility of placing electronic breakers at any space within the panel
- Offer easy installation of neutral connection time and labor savings

##### Inboard Neutral

- Increases gutter space to allow for the installation of conductors

##### One-Piece Silver-Flashed Copper Bus

- Provides superior conductivity, corrosion resistance and durability

##### Drywall Offsets

- (located on both sides of enclosure)
- Allow for faster installation using predetermined self-leveling tabs

##### Steel Backpan

- Provides solid and reliable breaker mounting—single-piece design for stability and durability

##### “Tangential” Center Knockout

- Easier installation for conduit applications

##### Unique Sandalwood Finish

- Aesthetically appealing, scratch-resistant powder coating

##### Full-Length Neutral Bars

- Offer flexibility of placing electronic breakers at any space within the panel
- Allow for easy installation of neutral wire connection

##### Plug-on Neutral

- Eliminates the pigtail connection, providing time and labor savings
- Provides a professional installation

##### Type CHF AFCI/GFCI/Thermal-Magnetic Breakers

- Advanced electronics effectively reduce nuisance tripping
- CHF AFCI breakers have a standard diagnostic LED indicating 1 of 7 trip codes
- Mechanical flag for trip indication (on thermal-magnetic AFCI and GFCI)
- All CH breakers provide industry-exclusive 2-position handle with simple 1-step reset

##### Cover Features not Shown:

- Improved Cover Twistouts
- Easier to remove twistouts

##### Embossed Cover Circuit Numbers

- Durable circuit numbering with added marking for twin breakers

##### Cover Keyhole Hanging Feature

- Provide easier cover installation by allowing quick hanging of cover regardless of panel orientation

##### Rigid Center Cover Spine

- Provides strengthened center spine when the twistouts are removed

##### Single Keyhole Mounting

- One keyhole at the top and bottom provides easier mounting and leveling

#### Warranty

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

- Lifetime loadcenter warranty

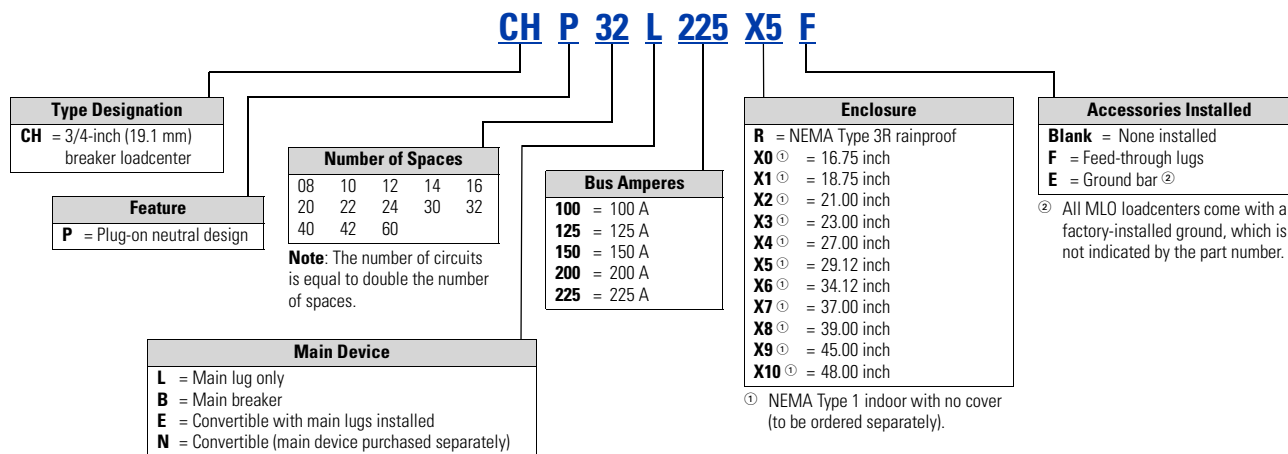
- Lifetime warranty on CH circuit breakers
- Lifetime warranty on CHSPT2ULTRA including \$75,000 connected equipment warranty

- 1-year warranty on plug-in surge protective device (CHSA)

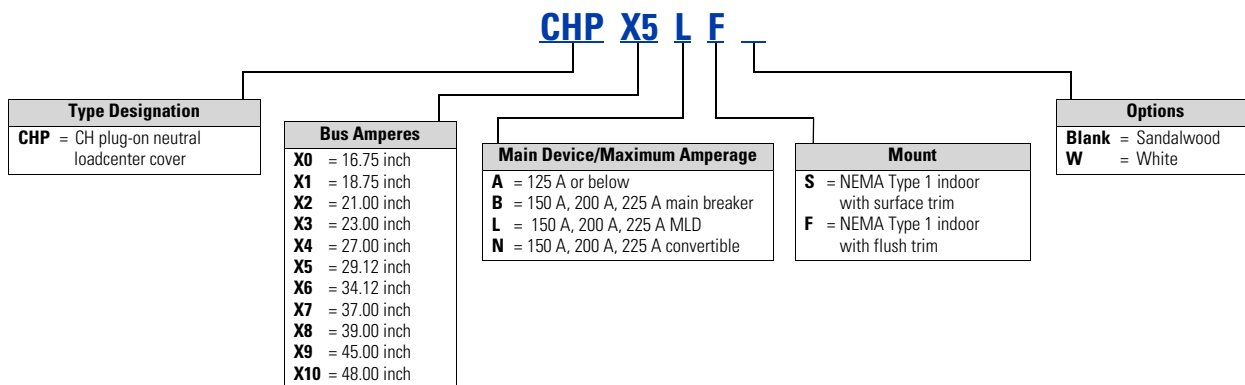


### Catalog Number Selection

#### CH Plug-on Neutral Loadcenters



#### CH Plug-on Neutral Covers (Ordered Separately)



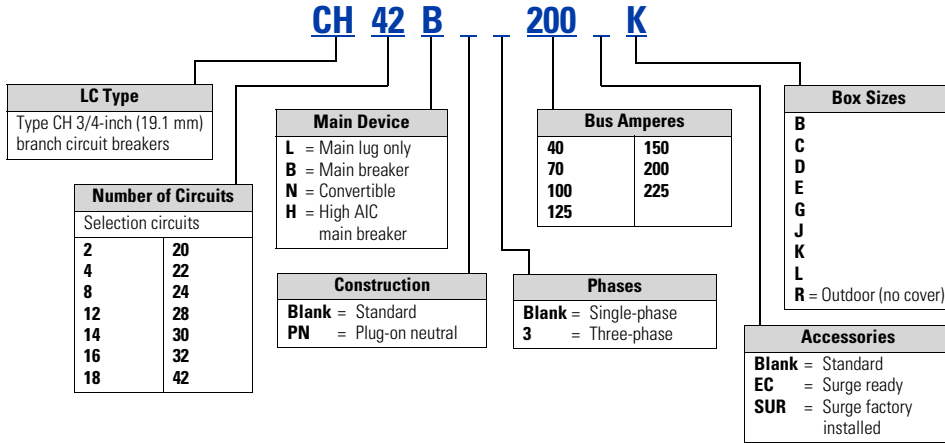
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## Loadcenters and Circuit Breakers

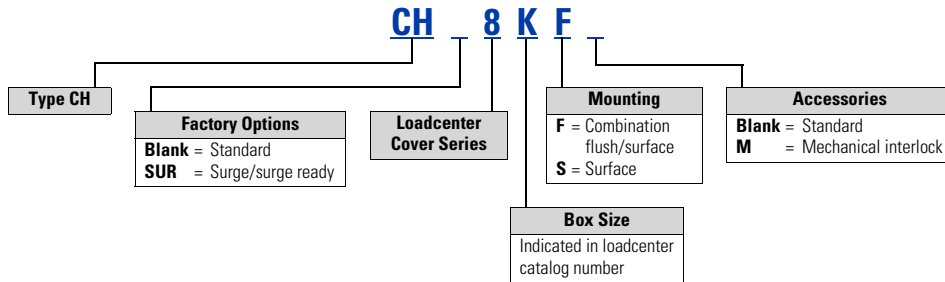
### Type CH Loadcenters and Circuit Breakers

#### 1

#### CH Legacy Loadcenters



#### CH Legacy Indoor Covers (Ordered Separately)



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

### Product Selection

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

CHP30B125X5



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

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) of Spaces	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 <sup>①②</sup> Catalog Number	Combination <sup>③</sup>	Surface	
CH 10 kAIC	100	14	28	Indoor	X1	#6–1/0	CHP14B100X1 <sup>④⑤</sup>	CHPX1AF <sup>⑤</sup>	CHPX1AS <sup>⑤</sup>	
		14	28	Outdoor	X0R	#6–1/0	CHP14B100R <sup>⑥</sup>	—	—	
		18	36	Indoor	X2	#6–1/0	CHP18B100X2 <sup>④⑤</sup>	CHPX2AF <sup>⑤</sup>	CHPX2AS <sup>⑤</sup>	
		22	44	Indoor	X2	#6–1/0	CHP22B100X2 <sup>④⑤</sup>	CHPX2AF <sup>⑤</sup>	CHPX2AS <sup>⑤</sup>	
		22	44	Outdoor	X2R	#6–1/0	CHP22B100R <sup>⑥</sup>	—	—	
		30	60	Indoor	X5	#6–1/0	CHP30B100X5 <sup>④⑤</sup>	CHPX5AF <sup>⑤</sup>	CHPX5AS <sup>⑤</sup>	
	30	60	Outdoor	X5R	#6–1/0	CHP30B100R <sup>⑥</sup>	—	—		
	125	125	22	44	Indoor	X2	#6–1/0	CHP22B125X2 <sup>④⑤</sup>	CHPX2AF <sup>⑤</sup>	CHPX2AS <sup>⑤</sup>
			22	44	Outdoor	X2R	#6–1/0	CHP22B125R <sup>⑥</sup>	—	—
			30	60	Indoor	X5	#6–1/0	CHP30B125X5 <sup>④⑤</sup>	CHPX5AF <sup>⑤</sup>	CHPX5AS <sup>⑤</sup>
			30	60	Outdoor	X5R	#6–1/0	CHP30B125R <sup>⑥</sup>	—	—
	CSR 25 kAIC	150	24	48	Indoor	X5	#2–300 kcmil	CHP24B150X5 <sup>④⑤</sup>	CHPX5BF <sup>⑤</sup>	CHPX5BS <sup>⑤</sup>
24			48	Outdoor	X5R	#2–300 kcmil	CHP24B150R <sup>⑥</sup>	—	—	
32			64	Indoor	X6	#2–300 kcmil	CHP32B150X6 <sup>④⑤</sup>	CHPX6BF <sup>⑤</sup>	CHPX6BS <sup>⑤</sup>	
32			64	Outdoor	X6R	#2–300 kcmil	CHP32B150R <sup>⑥</sup>	—	—	
200		200	8	16	Outdoor	X5R	#2–300 kcmil	CHP08B200RF <sup>⑦</sup>	—	—
			24	48	Indoor	X5	#2–300 kcmil	CHP24B200X5 <sup>④⑤</sup>	CHPX5BF <sup>⑤</sup>	CHPX5BS <sup>⑤</sup>
			24	48	Outdoor	X5R	#2–300 kcmil	CHP24B200R <sup>⑥</sup>	—	—
			32	64	Indoor	X6	#2–300 kcmil	CHP32B200X6 <sup>④⑤</sup>	CHPX6BF <sup>⑤</sup>	CHPX6BS <sup>⑤</sup>
			32	64	Outdoor	X6R	#2–300 kcmil	CHP32B200R <sup>⑥</sup>	—	—
			42	84	Indoor	X7	#2–300 kcmil	CHP42B200X7 <sup>④⑤</sup>	CHPX7BF <sup>⑤</sup>	CHPX7BS <sup>⑤</sup>
			42	84	Outdoor	X7R	#2–300 kcmil	CHP42B200R <sup>⑥</sup>	—	—
			60	120	Indoor	X9	#2–300 kcmil	CHP60B200X9 <sup>④⑤</sup>	CHPX9BF <sup>⑤</sup>	—
225	225	32	64	Outdoor	X6R	#2–300 kcmil	CHP32B225R <sup>⑥</sup>	—	—	
		42	84	Indoor	X7	#2–300 kcmil	CHP42B225X7 <sup>④⑤</sup>	CHPX7BF <sup>⑤</sup>	CHPX7BS <sup>⑤</sup>	
		42	84	Outdoor	X7R	#2–300 kcmil	CHP42B225R <sup>⑥</sup>	—	—	
		60	120	Indoor	X9	#2–300 kcmil	CHP60B225X9 <sup>④⑤</sup>	CHPX9BF <sup>⑤</sup>	—	
DK 10 kAIC	300	42	84	Indoor	PM	(2) 3/0–250 kcmil	CHP42PM300	CH7PMF <sup>⑧</sup>	CH7PMS	
		400	84	Indoor	PM	(2) 3/0–250 kcmil	CHP42PM400	CH7PMF <sup>⑧</sup>	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-T1-24**.
- ③ Combination style covers may be used in surface or flush applications.
- ④ Can be top or bottom fed by rotating the enclosure and trim 180 degrees.
- ⑤ Plug-on Neutral style loadcenter.
- ⑥ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-23**.
- ⑦ Panel includes #2–300 kcmil feed-through lugs.
- ⑧ This cover is for flush applications only (not combination).

Box sizes **Pages V1-T1-29** and **V1-T1-30**.

# 1.1

## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

1

#### Single-Phase—Main Lug Loadcenters—Small Space

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

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm)		Enclosure Type	Type of Trim (Included)	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Lugs	Loadcenter Catalog Number <sup>①</sup>	
	Space	Poles						
40	Surface	Outdoor	Indoor	Surface (no door)	5	#14–6	<b>CH2L40SP</b> <sup>②③</sup>	
			Outdoor	—	5R	#14–6	<b>CH2L40RP</b> <sup>②③④</sup>	
			Indoor	Flush (no door)	5	#14–6	<b>CH2L40FP</b> <sup>②③</sup>	
70	Flush	Outdoor	Indoor	Surface (no door)	5	#14–2	<b>CH2L70SP</b> <sup>②③</sup>	
			Outdoor	—	5R	#14–2	<b>CH2L70RP</b> <sup>②③④</sup>	
			Indoor	Flush (no door)	5	#14–2	<b>CH2L70FP</b> <sup>②③</sup>	
125	Surface (No Door)		Indoor	Surface (no door)	6	#14–1/0	<b>CH2L125SP</b> <sup>②③</sup>	
			Outdoor	—	6R	#14–1/0	<b>CH2L125RP</b> <sup>②③④</sup>	
			Outdoor	—	—	#14–1/0	<b>CH2L125RSE2P</b> <sup>④⑤⑥</sup>	
			Indoor	Flush (no door)	6	#14–1/0	<b>CH2L125FP</b> <sup>②③</sup>	
			Indoor	Surface (no door)	7	#14–1/0	<b>CH4L125SP</b> <sup>②⑦</sup>	
	Flush (No Door)			Indoor	Flush (no door)	7	#14–1/0	<b>CH4L125RP</b> <sup>②④⑦</sup>
				Indoor	Flush (no door)	7	#14–1/0	<b>CH4L125FP</b> <sup>②⑦</sup>
				Outdoor	—	6R	#14–1/0	<b>CH6L125R</b> <sup>②⑥⑦</sup>
				Indoor	Surface (no door)	7	#6–1/0	<b>CH8L125SP</b> <sup>②⑦</sup>
				Outdoor	—	7R	#6–1/0	<b>CH8L125RP</b> <sup>②⑥⑦</sup>
Outdoor			Indoor	Flush (no door)	7	#6–1/0	<b>CH8L125FP</b> <sup>②⑧</sup>	

#### Notes

- ① Requires the use of Type CHT breakers.
- ② Ground bar kits priced separately, see **Page V1-T1-24**.
  - For 2/4 and 6/12 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, 6/12 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.
- ④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-23**.
- 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.
- 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.

Box sizes **Pages V1-T1-29** and **V1-T1-31**.

### Single-Phase—Main Lug Loadcenters

CHP32L225X5



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

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Spaces	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 Catalog Number	Loadcenter Cover Catalog Number	
							Flush	Surface
125	12	24	Indoor	X0	#6–2/0	CHP12L125X0 ①	CHPX0AF	CHPX0AS
	12	24	Outdoor	X0R	#6–2/0	CHP12L125R ①②	—	—
	16	32	Indoor	X1	#6–2/0	CHP16L125X1 ①	CHPX1AF	CHPX1AS
	16	32	Outdoor	X0R	#6–2/0	CHP16L125R ①②	—	—
	20	40	Indoor	X2	#6–2/0	CHP20L125X2 ①	CHPX2AF	CHPX2AS
	20	40	Outdoor	X2R	#6–2/0	CHP20L125R ①②	—	—
	24	48	Indoor	X2	#6–2/0	CHP24L125X2 ①	CHPX2AF	CHPX2AS
	24	48	Outdoor	X2R	#6–2/0	CHP24L125R ①②	—	—
150	24	48	Indoor	X5	#4–300 kcmil	CHP24L150X5 ①③	CHPX5LF	CHPX5LS
	32	64	Indoor	X5	#4–300 kcmil	CHP32L150X5 ①③	CHPX5LF	CHPX5LS
200	12	24	Outdoor	X5R	#4–300 kcmil	CHP12L200R ②④	—	—
	16	32	Indoor	X5	#4–300 kcmil	CHP16L200X5 ①③	CHPX5LF	CHPX5LS
	16	32	Outdoor	X5R	#4–300 kcmil	CHP16L200R ②④	—	—
225	24	48	Indoor	X5	#4–300 kcmil	CHP24L225X5 ①③	CHPX5LF	CHPX5LS
	24	48	Outdoor	X5R	#4–300 kcmil	CHP24L225R ②④	—	—
	32	64	Indoor	X5	#4–300 kcmil	CHP32L225X5 ①③	CHPX5LF	CHPX5LS
	32	64	Outdoor	X5R	#4–300 kcmil	CHP32L225R ②④	—	—
	42	84	Indoor	X6	#4–300 kcmil	CHP42L225X6 ①③	CHPX6LF	CHPX6LS
	42	84	Outdoor	X6R	#4–300 kcmil	CHP42L225R ②④	—	—
400	42	84	Indoor	P	(2) 1/0–300 kcmil (1) 750 kcmil	CHP42PL400 ⑤	CH7PF ⑥	CH7PS

#### Notes

- ① Suitable for use as service equipment when not more than six disconnecting means are provided.
- ② Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-23**.
- 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 **CHPHD**.
- 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 bracket kit catalog number **CH125RB**.
- ⑤ 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.**
- ⑥ This cover is for flush application only (not combination).

Box sizes **Pages V1-T1-29 and V1-T1-31**.



# 1.1

## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

1

#### Convertible Loadcenters MCB or MLO—Base Units and Main Devices—10/25/35 kAIC

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

#### Indoor—Single-Phase—Three-Wire—120/240 V—Insulated/Bondable Split Neutral—Top or Bottom Feed

Maximum Main Ampere Rating	Maximum Number of 3/4 Inch Spaces	Maximum Number of 3/4 Inch Poles	Enclosure Type	Box Size	Loadcenter Box and Panel Catalog Number <sup>①②</sup>	Loadcenter Cover Catalog Number <sup>③</sup>		Main Lug Kit <sup>④</sup> Catalog Number	Main Breaker Kit <sup>④</sup>	
						Combination	Surface		Catalog Number	Catalog Number
125	22	44	Indoor	X2	CHP22N125X2 <sup>⑤</sup>	CHPX2AF	CHPX2AS	CHSF2125 <sup>⑥</sup>	CH2100	—
									CH2125	—
225	32	64	Indoor	X6	CHP32N225X6	CHPX6NF	CHPX6NS	CHPL225 <sup>⑥</sup>	CSR2125N <sup>⑦</sup>	CSH2125N <sup>⑧</sup>
									CSR2150N <sup>⑦</sup>	CSH2150N <sup>⑧</sup>
									CSR2175N <sup>⑦</sup>	CSH2175N <sup>⑧</sup>
									CSR2200N <sup>⑦</sup>	CSH2200N <sup>⑧</sup>
									CSR2225N <sup>⑦</sup>	CSH2225N <sup>⑧</sup>
225	42	84	Indoor	X7	CHP42N225X7	CHPX7NF	CHPX7NS	CHPL225 <sup>⑥</sup>	CSR2125N <sup>⑦</sup>	CSH2125N <sup>⑧</sup>
									CSR2150N <sup>⑦</sup>	CSH2150N <sup>⑧</sup>
									CSR2175N <sup>⑦</sup>	CSH2175N <sup>⑧</sup>
									CSR2200N <sup>⑦</sup>	CSH2200N <sup>⑧</sup>
									CSR2225N <sup>⑦</sup>	CSH2225N <sup>⑧</sup>

#### Indoor—Single-Phase—Three-Wire—120/240 V—Insulated/Bondable Split Neutral—Top or Bottom Feed—Main Lugs Installed

Maximum Main Ampere Rating	Maximum Number of 3/4 Inch Spaces	Maximum Number of 3/4 Inch Poles	Enclosure Type	Box Size	Loadcenter Box and Panel Catalog Number <sup>②</sup>	Loadcenter Cover Catalog Number <sup>③</sup>		Main Lug Kit Catalog Number	Main Breaker Kit	
						Combination	Surface		Catalog Number	Catalog Number
225	32	64	Indoor	X6	CHP32E225X6	CHPX6NF	CHPX6NS	Factory installed CHPL225 <sup>⑥</sup>	CSR2125N <sup>⑦</sup>	CSH2125N <sup>⑧</sup>
									CSR2150N <sup>⑦</sup>	CSH2150N <sup>⑧</sup>
									CSR2175N <sup>⑦</sup>	CSH2175N <sup>⑧</sup>
									CSR2200N <sup>⑦</sup>	CSH2200N <sup>⑧</sup>
									CSR2225N <sup>⑦</sup>	CSH2225N <sup>⑧</sup>
225	42	84	Indoor	X7	CHP42E225X7	CHPX7NF	CHPX7NS	Factory installed CHPL225 <sup>⑥</sup>	CSR2125N <sup>⑦</sup>	CSH2125N <sup>⑧</sup>
									CSR2150N <sup>⑦</sup>	CSH2150N <sup>⑧</sup>
									CSR2175N <sup>⑦</sup>	CSH2175N <sup>⑧</sup>
									CSR2200N <sup>⑦</sup>	CSH2200N <sup>⑧</sup>
									CSR2225N <sup>⑦</sup>	CSH2225N <sup>⑧</sup>
225	60	120	Indoor	X9	CHP60E225X9	CHPX9NF	CHPX9NS	Factory installed CHPL225 <sup>⑥</sup>	CSR2125N <sup>⑦</sup>	CSH2125N <sup>⑧</sup>
									CSR2150N <sup>⑦</sup>	CSH2150N <sup>⑧</sup>
									CSR2175N <sup>⑦</sup>	CSH2175N <sup>⑧</sup>
									CSR2200N <sup>⑦</sup>	CSH2200N <sup>⑧</sup>
									CSR2225N <sup>⑦</sup>	CSH2225N <sup>⑧</sup>

#### Notes

- ① Panel does not include main. Order main breaker or main lug kit separately.
- ② Interrupting rating depends on main selected.
- ③ Panel does not include cover. Order cover assembly separately.
- ④ See V1-T1-19 for lug sizes.
- ⑤ Hold-down kit included.
- ⑥ 10 kAIC series combination rating is obtained when Types CH, CHT and CHP branch breakers are used with CH main or MLO.
- ⑦ 25 kAIC series combination rating is obtained when Types CH, CHT and CHP branch breakers are used with CSR main.
- ⑧ 35 kAIC series combination rating is obtained when Types CH, CHT and CHP branch breakers are used with CSH main.

**Note:** See V1-T1-19 for wire sizes and kAIC ratings.

### Outdoor—Single-Phase—Three-Wire—120/240 V—Insulated/Bondable Split Neutral (Unless Otherwise Noted)

Maximum Main Ampere Rating	Maximum Number of Single Poles	Box Size	Loadcenter Box and Panel Catalog Number ①②	Main Lug Kit Wire Size	Catalog Number	Main Breaker Kit		Catalog Number	Catalog Number
						kAIC Rating	Wire Size		
125	22	X2R	CHP22N125R ③	#10-1/0	CHL125N	10	#10-1/0	CH2100N ⑦	—
								CH2125N ⑦	—
200	8	X5R	CHP08N200RF ③④⑤	#4-300 kcmil	CHL225N	25/35 ⑥	#2-300 kcmil	CSR2125N	CSH2125N
								CSR2150N	CSH2150N
								CSR2175N	CSH2175N
								CSR2200N	CSH2200N
200	32	X6R	CHP32N200R ③	#4-300 kcmil	CHL225N	25/35 ⑥	#2-300 kcmil	CSR2125N	CSH2125N ⑧
								CSR2150N	CSH2150N ⑧
								CSR2175N	CSH2175N ⑧
								CSR2200N	CSH2200N ⑧
225	42	X7R	CHP42N225R ③	#4-300 kcmil	CHL225N	25/35 ⑥	#2-300 kcmil	CSR2125N	CSH2125N ⑧
								CSR2150N	CSH2150N ⑧
								CSR2175N	CSH2175N ⑧
								CSR2200N	CSH2200N ⑧
								CSR2225N	CSH2225N ⑧

#### Notes

- ① Panel does not include main. Order main breaker or main lug kit separately.
- ② Interrupting rating depends on main circuit breaker selected.
- ③ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-23**.
- ④ Includes feed-through lugs for both phase and neutral conductors.
- ⑤ Insulated/bondable single neutral.
- ⑥ If 35 kAIC is required, use CSH breaker.
- ⑦ Hold-down kit included.
- ⑧ 35 kAIC series combination rating is obtained when Types CH, CHT and CHP branch breakers are used with CSH main.

#### Three-Phase—Main Circuit Breaker Loadcenters—10 kAIC

CH42B3200L



#### Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split 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 <sup>①②</sup> Catalog Number	Loadcenter Cover Catalog Number	
							Combination	Surface
CC 10 kAIC	150	30	Indoor	L	#1–4/0	CH30B3150L	CH8LF	CH8LS
		200	Indoor	L	#2/0–300 kcmil	CH30B3200L	CH8LF	CH8LS
	200	30	Outdoor	L	#2/0–300 kcmil	CH30B3200R <sup>③</sup>	—	—
		42	Indoor	L	#2/0–300 kcmil	CH42B3200L	CH8LF	CH8LS
	200	42	Outdoor	L	#2/0–300 kcmil	CH42B3200R <sup>③</sup>	—	—
		225	30	Indoor	L	#2/0–300 kcmil	CH30B3225L	CH8LF
	30		Outdoor	L	#2/0–300 kcmil	CH30B3225R <sup>③</sup>	—	—
	225	42	Indoor	L	#2/0–300 kcmil	CH42B3225L	CH8LF	CH8LS
		42	Outdoor	L	#2/0–300 kcmil	CH42B3225R <sup>③</sup>	—	—
	400	42	Indoor	PM	(2) 3/0–350 kcmil	CH424PM400	CH7PMF <sup>④</sup>	CH7PMS

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

② Ground bar kits priced separately. For ground bar kits, see **Page V1-T1-24**.

③ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-23**.

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

### Three-Phase—Main Lug Loadcenters

#### Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral (Unless Otherwise Noted)

Main Ampere Rating	Number of 3/4-Inch (19.1 mm) Spaces	Maximum Number of 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	Loadcenter Cover Catalog Number	
								Combination	Single
125	6	12 <sup>①</sup>	Indoor	Surface, no door	7	#14–1/0	<b>CH6L3125SP</b> <sup>②③④</sup>	—	—
	6	12 <sup>①</sup>	Outdoor	—	7R	#14–1/0	<b>CH6L3125RP</b> <sup>②③④⑤</sup>	—	—
	6	12 <sup>①</sup>	Indoor	Flush, no door	7	#14–1/0	<b>CH6L3125FP</b> <sup>②③④</sup>	—	—
	12	12	Indoor	—	B	#6–2/0	<b>CH12L3125B</b> <sup>⑥⑦</sup>	<b>CH8BF</b>	<b>CH8BS</b>
	12	12	Outdoor	—	B	#6–2/0	<b>CH12L3125R</b> <sup>⑥⑦</sup>	—	—
	18	18	Indoor	—	C	#6–2/0	<b>CH18L3125C</b> <sup>⑥⑦</sup>	<b>CH8CF</b>	<b>CH8CS</b>
	18	18	Outdoor	—	C	#6–2/0	<b>CH18L3125R</b> <sup>⑥⑦⑧</sup>	—	—
	24	24	Indoor	—	C	#6–2/0	<b>CH24L3125C</b> <sup>⑥⑦</sup>	<b>CH8CF</b>	<b>CH8CS</b>
24	24	Outdoor	—	C	#6–2/0	<b>CH24L3125R</b> <sup>⑥⑦⑧</sup>	—	—	
150	30	30	Indoor	—	D	#4–300 kcmil	<b>CH30L3150D</b> <sup>⑥⑦</sup>	<b>CH8DF</b>	<b>CH8DS</b>
225	24	24	Indoor	—	D	#4–300 kcmil	<b>CH24L3225D</b> <sup>⑥⑦</sup>	<b>CH8DF</b>	<b>CH8DS</b>
	24	24	Outdoor	—	D	#4–300 kcmil	<b>CH24L3225R</b> <sup>⑥⑦⑧</sup>	—	—
	30	30	Indoor	—	D	#4–300 kcmil	<b>CH30L3225D</b> <sup>⑥⑦</sup>	<b>CH8DF</b>	<b>CH8DS</b>
	30	30	Outdoor	—	D	#4–300 kcmil	<b>CH30L3225R</b> <sup>⑥⑦⑧</sup>	—	—
	42	42	Indoor	—	G	#4–300 kcmil	<b>CH42L3225G</b> <sup>⑥⑧</sup>	<b>CH8GF</b>	<b>CH8GS</b>
	42	42	Outdoor	—	G	#4–300 kcmil	<b>CH42L3225R</b> <sup>⑥⑦⑧</sup>	—	—
400	42	42	Indoor	—	P	(2) 1/0–300 kcmil (1) 750 kcmil	<b>CH424PL400</b> <sup>⑩⑪</sup>	<b>CH7PF</b> <sup>Ⓣ</sup>	<b>CH7PS</b>

#### Notes

- ① Requires the use of Type CHT breakers.
- ② 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.
- ③ Ground bar kits priced separately, see **Page V1-T1-24**.  
– Use GBK10 ground bar  
– Ground bars mount to the left side wall of the enclosure.
- ④ Insulated/bondable single neutral.
- ⑤ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-23**.
- ⑥ Ground bar Type GBK14 is installed.
- ⑦ 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.
- ⑧ Ground bar Type GBK21 is installed.
- ⑨ 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**.
- ⑩ For ground bar kits, see **Page V1-T1-24**.
- ⑪ 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.**
- Ⓣ This cover for flush application only (not combination).

Box sizes **Pages V1-T1-29** and **V1-T1-31**.

#### Spa Panels



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### CH Specialty Products

#### Spa Panels

##### Product Description

Eaton’s CH Spa Panels are premium factory-assembled “combination” units that provide ground fault protection, as well as a convenient way to turn spa pumps on and off. The NEC requires that all pool and spa pumps be protected by a ground fault interrupter and a disconnect switch mounted within 10 feet of the tub or the spa.

##### Features

- Two extra circuits for additional loads (120 V single-pole breakers only)
- Limited lifetime warranty
- UL Listed
- Tough powder-coated galvanized steel enclosure
- Factory-installed two-pole ground fault circuit interrupter (GFCI)

##### Product Selection

CH Spa Panel



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

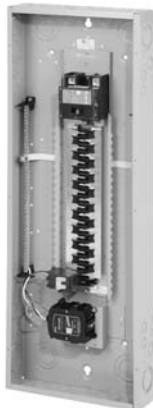
Main Ampere Rating	Circuit Breaker Included	Enclosure Type	Type of Trim Included	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Lugs	Catalog Number
30	CHN230GF	Outdoor	—	5R	#14–1/0	<b>CHSPA30</b> <sup>①</sup>
40	CHN240GF	Outdoor	—	5R	#14–1/0	<b>CHSPA40</b> <sup>②</sup>
50	CHN250GF	Outdoor	—	5R	#14–1/0	<b>CHSPA50</b> <sup>③</sup>
60	CHN260GF	Outdoor	—	5R	#14–1/0	<b>CHSPA60</b> <sup>④</sup>

##### Notes

- ① Includes a CHN230GF breaker, factory installed, and two extra circuits for convenience.
- ② Includes a CHN240GF breaker, factory installed, and two extra circuits for convenience.
- ③ Includes a CHN250GF breaker, factory installed, and two extra circuits for convenience.
- ④ Includes a CHN260GF breaker, factory installed, and two extra circuits for convenience.



Surge Panel



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## 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 CHSPT2ULTRA and a two-pole 50 A 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 CHSPT2ULTRA
- 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	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

#### Notes

- ① Order cover separately.
- ② With main lugs installed.

**Surge Ready Loadcenters** (provision only, CHSPT2ULTRA and breaker not included)

Ampere Rating	Type	Number of Circuits	Loadcenter Catalog Number <sup>①</sup>	Loadcenter Cover Combination	Catalog Number Surface
225	Convertible	42	CHEC42N225L	CHSUR8LF	CHSUR8LS
225	Convertible <sup>②</sup>	42	CHEC42L225L	CHSUR8LF	CHSUR8LS
200	Main breaker	42	CHEC42B200L	CHSUR8LF	CHSUR8LS
225	Convertible <sup>②</sup>	32	CHEC32L225K	CHSUR8KF	CHSUR8KS
225	Convertible	32	CHEC32N225K	CHSUR8KF	CHSUR8KS
225	Convertible	32	CHEC32N225R <sup>③</sup>	—	—
200	Main breaker	32	CHEC32B200K	CHSUR8KF	CHSUR8KS
150	Main breaker	32	CHEC32B150K	CHSUR8KF	CHSUR8KS
100	Main breaker	32	CHEC32B100K	CHSUR8KF	CHSUR8KS
125	Convertible <sup>②</sup>	24	CHEC24L125E	CHSUR8EF	CHSUR8ES
100	Main breaker	24	CHEC24B100E	CHSUR8EF	CHSUR8ES

**Technical Data and Specifications****Ratings**

- Loadcenter
  - 25 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 protective device (CHSPT2ULTRA)
  - Nominal discharge current: 20 kA ( $I_n$ )
  - Surge current capacity per phase: 108 kA
  - Warranty: \$75,000 connected equipment <sup>④</sup>
  - For further product ratings, see Volume 1, Tab 2.1 Surge Protection

**Notes**

- <sup>①</sup> Order cover separately.
- <sup>②</sup> With main lugs installed.
- <sup>③</sup> Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-23**.
- <sup>④</sup> For warranty details, visit [www.eaton.com/surgetrap](http://www.eaton.com/surgetrap).

### Non-Metallic Loadcenter

#### Single-Phase—Main Lug Loadcenters, Non-Metallic

2460SNM



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

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Trim Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Lugs	Loadcenter Catalog Number
40 <sup>①</sup>	2	4	Indoor	Flush (no door)	2	<sup>②</sup>	TT120FLGNM <sup>②③</sup>
	2	4	Indoor	Surface (no door)	2		TT120SLGNM <sup>②③</sup>
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 <sup>③</sup>
	2	4	Indoor	Surface (no door)	2		2460SGNM <sup>③</sup>
	2	4	Outdoor	—	—		2460RNM-A2

#### 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.
- 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.

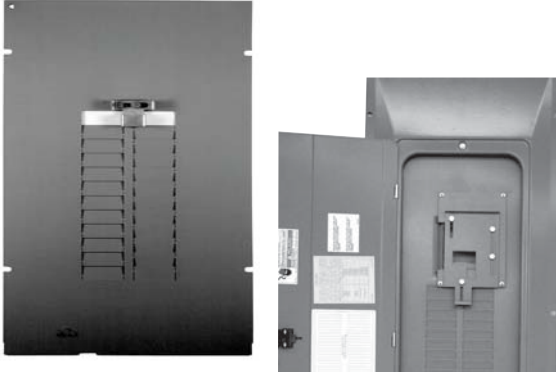
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## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

1

#### Options and Accessories—Mechanical Interlocks



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## CH Loadcenter Options and Accessories

### Product Selection

#### Plug-on Neutral Installation and Parts

Description	Ordering Quantity <sup>①</sup>	Catalog Number
Bonding kit for bonding the neutral bus to the loadcenter	1	<b>BONDKITP</b>
Cover replacement latch—indoor loadcenters (brown)	1	<b>LATCHPS</b>
Cover replacement latch—indoor loadcenters (white)	1	<b>LATCHPW</b>
Door replacement latch—outdoor loadcenters	1	<b>CH3RLATCH</b>
Replacement main lugs for 200 A/225 A MLO or convertible panels (#1–300 kcmil)	1	<b>CHPL225</b>
Incoming 2/0 neutral lug	1	<b>NLP20</b>
Incoming 300 kcmil neutral lug	1	<b>NLP300</b>
Screws used to mount loadcenter cover	25	<b>LCCS</b>
Screws used to mount loadcenter cover (white)	25	<b>LCCSW</b>
Spray paint—12 oz can (white)	1	<b>SPCWH</b>
Series rating caution label	25	<b>SRL</b>
Circuit directory (2) 42 Ckt cards, (2) adhesive plastic sleeves	12	<b>CKTDIR</b>
Circuit directory—adhesive backed	10	<b>TCD</b>
Keyed door lock for loadcenter trim door	1	<b>TDL</b>
Terminal insulator kit—Type CSR, CSH, BW, BWH mains	10	<b>TICSR300</b>
Terminal insulator kit—Type CH, BR, BRH, BRHH, BRX mains	10	<b>TIMCB3/0</b>
5 circuit terminal block for renovation	1	<b>RN5TB</b>
Retaining bracket for backfed main breaker—CH	1	<b>CHPHD</b>
Mechanical interlock kit for CH loadcenters with backfed main breaker	1	<b>CHPMIKCH</b>
Mechanical interlock kit for CH loadcenters with Type CSR main breaker	1	<b>CHPMIKCSR</b>
3/4-inch filler plates for branch breakers slot in CH loadcenter	25	<b>CHFP</b>
Multipack—3/4-inch filler plates for branch breakers slot in CH loadcenter (5 pieces)	1	<b>CHFPP</b>
Blank deadfront directory marking strip	10	<b>CHMS</b>
CSR main breaker filler plate (sandalwood)	1	<b>CSRFP</b>
Spray paint—12 oz can (sandalwood)	1	<b>SPCSW</b>

#### Note

① Must be purchased in multiples of ordering quantities indicated.

### CHSF2125



### CHSF3125



### CHFP



### TDL



### BINA



## Legacy Field Installation and Parts

Description	Ordering Quantity <sup>①</sup>	Catalog Number
Sub-feed lug blocks—two-pole, 125 A, 3/4-inch (19.1 mm) spaces needed	1	CHSF2125 <sup>②</sup>
Sub-feed lug blocks—three-pole, 125 A, 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 100–225 A	1	TDL
Sandalwood 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
CH plug-on neutral ground bonding strap	1	BSCHPON

## Main Breaker Kits

Maximum Main Ampere Rating	Wire Size	Catalog Number		
		10 kAIC	25 kAIC	35 kAIC
100	#10–1/0	CH2100	—	—
125	#10–1/0	CH2125	—	—
125	#2–300 kcmil	—	CSR2125N	CSH2125N
150	#2–300 kcmil	—	CSR2150N	CSH2150N
175	#2–300 kcmil	—	CSR2175N	CSH2175N
200	#2–300 kcmil	—	CSR2200N	CSH2200N
225	#2–300 kcmil	—	CSR2225N	CSH2225N

## Main Lug Kits

Maximum Main Ampere Rating	Wire Size	Catalog Number
125	#10–1/0	CHSF2125
225	#4–300 kcmil	CHL225N <sup>③</sup>
225	#4–300 kcmil	CHPL225

### Notes

- ① Must be purchased in multiples of ordering quantities indicated.
- ② CHSF2125 is also used as 125 A main lug kit for convertible loadcenters.
- ③ Used on legacy panels only.



# 1.1

## Loadcenters and Circuit Breakers



### Type CH Loadcenters and Circuit Breakers

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

	Type	Fits Loadcenter Catalog Numbers	Mechanical Interlock Trim/Deadfront Catalog Numbers		Field-Installable Interlock Kit
			Flush	Surface	
<b>CH8BRM Type A</b> 	A	CH12L125B	CH8BFM	CH8BSM	—
		CH16L125B			
		CH12L3125B			
		CH14B100B			
		CH20L125C	CH8CFM	CH8CSM	—
		CH24L125C			
		CH18L3125C			
		CH24L3125C			
		CH22B100C			
		CH22N100C			
		CH24L150D	CH8DFM	CH8DSM	—
		CH32L150D			
		CH24L3225D			
		CH30L3150D			
		CH42L225G	CH8GFM	CH8GSM	—
		CH42L3225G			
Inner cover of Box B raintight	—	CH8BRM	—		
Inner cover of Box C raintight	—	CH8CRM	—		
<b>Indoor</b>					
<b>CHMIKCSR Type B</b> 	B	CH24B150E	—	—	CHMIKCSR
		CH24B200E			
		CH24BPN200E			
		CH32B150J			
		CH32B200J			
		CH3242B200J			
		CH32BPN200J			
		CH32N200J			
		CH32B225J			
		CH42B200K			
		CH42N200K			
		CH42BPN200K			
		CH42B225K			
		CH60BPN200N			

### CH8EFM Type B



### Mechanical Interlocks, continued

Type	Fits Loadcenter Catalog Numbers	Mechanical Interlock Trim/Deadfront Catalog Numbers		
		Flush	Surface	
<b>Outdoor</b>				
B	CH8B150RF	CH3RDF7M	—	
	CH8B200RF			
	CH8N200RF			
	CH12B200RF			
	CH24B150R			
	CH24B200R			
	CH32B150R	CH3RDF9M	—	
	CH32B200R			
	CH32N200R			
	CH32B225R			
	CH42B200R	CH3RDF10M	—	
	CH42N200R			
	CH42B225R			
	<b>Next Generation Power Center</b>			
B	CHPC32B150L	CHPC8B32LFM	—	
	CHPC32B200L			
	CHPC32N200L			
	CHPC42B150L	CHPC8B42LFM	—	
	CHPC42B200L			
	CHPC42N200L			
	CHPC32B125TR	CH3RDF15M	—	
	CHPC32B150TR			
	CHPC32B200TR			
	CHPC32N200TR			
	CHPC42B150TR	CH3RDF16M	—	
	CHPC42B200TR			
	CHPC42N200TR			
	CHPC32B150TR	CH3RDF17M	—	
	CHPC32B200TR			
	CHPC42B200BR	CH3RDF18M	—	
	<b>Vintage <sup>①</sup></b>			
		CH20JJM200	CH7JFREPLM	—
CH24JJM150				
CH30JJM150				
CH30JJM200				
CH30JJM150H				
CH3040JMM200				
CH304JJM150				
CH304JJM200				
CH304JJM200H				
CH30KKM225		CH7KKFREPLM	—	
CH40KKM200H				
CH40KKM225				
CH40KKM200H				
CH40KKM225H				
CH304KKM200				
CH304KKM200H				
CH304LLM225		CH7LLFREPLM	—	
CH424LLM225H				

**Note**

<sup>①</sup> If vintage part number does not match exactly, the cover may not fit. Simple variations such as an "N" at the end of the part number contain minor design variations that will prevent our cover from working with that particular loadcenter.

# 1.1

## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

1

#### PON Mechanical Interlock Kits

##### CHPMIKCSR



#### Loadcenter Catalog Numbers for CHPMIKCSR ①

Indoor	Raintight
CHP32B150	CHP08B200RF
CHP32B200	CHP08N200RF
CHP42B200	CHP24B150R
CHPX5BF, BS	CHP24B200R
CHPX6BF, BS	CHP32B150R
CHPX6NF, NS	CHP32B200R
CHPX7BF, BS	CHP32B225R
CHPX7NF, NS	CHP32N200R
CHPX9BF	CHP42B200R
CHPX9NF	CHP42B225R
	CHP42N225R

##### CHPMIKCH



#### Loadcenter Catalog Numbers for CHPMIKCH ①

Indoor	Raintight
CHP14B100	CHP14B100R
CHP22B100	CHP18B100R
CHPX0AF, AS	CHP22B100R
CHPX1AF, AS	CHP22B125R
CHPX2AF, AS	CHP22N125R
CHPX5AF, AS	CHP30B100R
	CHP30B125R

#### Note

① Hold-down kit for generator breaker not included. Order CHPHD hold-down kit separately.

### PON Rainproof Conduit Hub

DS100H1

#### Field Installation Rainproof Conduit Hubs



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

#### Note

<sup>①</sup> Must be purchased in multiples of ordering quantities indicated.

# 1.1

## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

1

#### GBKP1420



#### Plug-on Neutral Ground Bar Kits

Description (See Legend)	Length Inches (mm)	Ordering Quantity <sup>①</sup>	Catalog Number
●○○○○○●○○○○○	4.05	1	<b>GBKP10</b> <sup>②</sup>
●○○○○○●○○○○○■	5.05	1	<b>GBKP1020</b> <sup>②</sup>
●○○○○○●○○○○○	4.05	1	<b>GBKP10P</b> <sup>②③</sup>
●○○○○○●○○○○○○○○○	5.39	1	<b>GBKP14</b> <sup>②</sup>
●○○○○○●○○○○○○○○○■	6.39	1	<b>GBKP1420</b> <sup>②</sup>
●○○○○○●○○○○○○○○○	5.39	1	<b>GBKP14P</b> <sup>②③</sup>
●○○○○○●○○○○○○○○○○○○○○○	7.72	1	<b>GBKP21</b> <sup>②</sup>
●○○○○○●○○○○○○○○○○○○○○○■	8.72	1	<b>GBKP2120</b> <sup>②</sup>
●○○○○○●○○○○○○○○○○○○○○○	7.72	1	<b>GBKP21P</b> <sup>②③</sup>
●○○○○○●	2.39	1	<b>GBKP5</b> <sup>②</sup>
●○○○○○●■	3.39	1	<b>GBKP520</b> <sup>②</sup>
●○○○○○●	2.39	1	<b>GBKP5P</b> <sup>②③</sup>

#### Ground Bar Legend

- = (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al
- = (1) #6–2/0 Cu/Al
- = Mounting hole

#### GBK14



#### Legacy Ground Bar Kits

Description (See Legend)	Length Inches (mm)	Ordering Quantity <sup>①</sup>	Catalog Number
●○○○○○●	2.54 (64.5)	1	<b>GBK5</b> <sup>④</sup>
●○○○○○●■	3.59 (91.2)	1	<b>GBK520</b> <sup>④</sup>
●○○○○○●○○○○○○○	4.29 (109.0)	1	<b>GBK10</b> <sup>④</sup>
●○○○○○●○○○○○○○■	5.34 (135.6)	1	<b>GBK1020</b> <sup>④</sup>
●○○○○○●○○○○○○○○○	5.69 (144.5)	1	<b>GBK14</b> <sup>④</sup>
●○○○○○●○○○○○○○○○■	6.74 (171.2)	1	<b>GBK1420</b> <sup>④</sup>
●○○○○○●○○○○○○○○○○○○○○○	8.14 (206.8)	1	<b>GBK21</b> <sup>④</sup>
●○○○○○●○○○○○○○○○○○○○○○■	9.19 (233.4)	1	<b>GBK2120</b> <sup>④</sup>

#### 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

#### Notes

- ① Must be purchased in multiples of ordering quantities indicated.
- ② Distance between mounting holes is 2 inches (50.8 mm).
- ③ Individually packaged.
- ④ Distance between mounting holes is 1-3/4 inches (44.5 mm).



### Legacy Grounded “B” Phase Adapters

Maximum Amperes	Three-Phase Loadcenter Types of Panels	Kit Catalog Number <sup>①</sup>
125	12–32 circuit main lug	<b>CHGRD1</b>
225	Main lug and CHH main breaker panels	<b>CHGRD2</b>
	CC main CB panels	<b>CHGRD3</b>

### Legacy Neutral Bar Accessories

Description	Catalog Number <sup>①</sup>
Replacement neutral for all B and C type boxes	<b>CHN125C</b>
Replacement neutral for all D type boxes	<b>CHN125D</b>
Replacement neutral for all E, G, J, K and L type boxes	<b>CHN225L</b>
Isolated neutral assembly (computer circuits)	<b>BINA</b>

### 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.



**Before**



**After**

### CH Goof Collars

Inches (mm)		Catalog Number	
Height	Width	BR Box Size	Goof Collar
21.00 (533.4)	19.00 (482.6)	X0	<b>CHPX0GC2119</b>
23.00 (584.2)	19.00 (482.6)	X1	<b>CHPX1GC2319</b>
25.00 (635.0)	19.00 (482.6)	X2	<b>CHPX2GC2519</b>
34.00 (863.6)	19.00 (482.6)	X5	<b>CHPX5GC3419</b>
39.00 (965.2)	19.00 (482.6)	X6	<b>CHPX6GC3919</b>
41.00 (1041.4)	19.00 (482.6)	X7	<b>CHPX7GC4119</b>
48.00 (1219.2)	19.00 (482.6)	X9	<b>CHPX9GC4819</b>

#### Note

<sup>①</sup> Cannot be used in Safety Breaker Panels. Classic Plus Panels only.

Please contact the Lincoln Flex Center for any configurations not listed.

**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—all fault interrupting

**Qualifications**

- A. The manufacturer of the loadcenter shall be the manufacturer of the circuit breaker within the loadcenter. 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 A rms symmetrical.
- B. Breakers shall be full size and a minimum of 125 A frame. Breakers 10 –125 A 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. Busbars 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 °C or 75 °C wire.
- H. Breakers shall be SWD rated and/or HACR rated as required.
- I. Arc fault interrupting circuit breakers (AFCI) shall be provided on all 15 and 20 A single-phase 120/240 Vac circuits except those indicated as remote-controlled breakers. AFCI 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 NEC.

**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 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.

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.

#### CH Loadcenters

##### Description

##### Service

Single-phase, three-wire, 120/240 Vac	Three-phase, four-wire, 208Y/120 Vac
Three-phase, three-wire, 240 V corner grounded delta	Three-phase, three-wire, 240 Vac delta

##### Short-Circuit Current Rating

10 kAIC: All single- and three-phase loadcenters 40–400 A, 2–42 circuits except when series ratings are applied	35 kAIC available on convertible units using CSH main breaker
25 kAIC: All factory-installed main breakers single-phase loadcenters rated 150–225 A using Type CSR main breakers	42 and 100 kAIC are available on some styles: single-phase and three-phase ①

##### Main Breaker/Main Lug Loadcenters

Single-phase	Three-phase
Main breaker: 100, 125, 150, 200, 225, 400 A	Main breaker: 150, 200, 225, 300, 400 A
Main lugs: 40, 70, 125, 150, 200, 225, 400 A	Main lugs: 125, 150, 200, 225, 400 A

##### Convertible Loadcenters

Main breaker or main lugs: single-phase up to 225 A

##### Branch Breakers

Type CH: 10–150 A. Single-, two- and three-pole. Selected amperages available in shunt trip, HACR and switching duty Ground fault circuit interrupters: 15–60 A	Type CH-AFCI arc fault circuit interrupter
Type CH-HID: 15–30 A. Single-, two- and three-pole CH-HM high magnetic CH-M50 high ambient	Type CHP: 10–125 A. Single-, two- and three-pole, three-position commercial trip Selected amperages available in HACR switching duty Type CHP-HID: 15–30 A. Single-, two- and three-pole Type CHP-GFCI: 15–30 A. 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 Each terminal will accommodate: (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al
Auxiliary components	Sub-feed lugs 125, 150 A—two- and three-pole
Hold-down kits	Shunt trips
Handle ties	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)
Lockoffs	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

#### CH Series Short Circuit Ratings

Main Module Overcurrent Device Breaker Type or Class Fuse	System AIC Rating at 240 Vac Maximum	Meter Module Tenant Feeder Breaker or Loadcenter Main Breaker	Tenant Feeder Breaker Short-Circuit Rating	Loadcenter Branch Breaker (Single-, Two- or Three-Pole) ②
None	10,000	None	N/A	③
	100,000	T fuse (400 A Max)	100,000	CH ④, CHFCAF, CHFGF
Without Main Disconnect	10,000	BR, CC, BW, CCV, CH, CHF	10,000	③
	22,000	BRH	22,000	③
Cable Tap Box Family Type 1MTB, 3MTB	22,000	QBHW	22,000	CH, CHF, CHFAFGF, CHFGFT, CHFCAF
	25,000	CSR ⑤, BWH ⑤	25,000	CH, CHF, CHT, CHFCAF, CHFGF
Main Switch Module Family Type 1MFS, 3MFS Type 1BS, 3BPS	25,000	CCVH	42,000	CH, CHF, CHFGFT, CHFCAF
	42,000	BRHH, CVS	65,000	③
Main Breaker Module Family Type 1MCB, 3MCB	65,000	BRX, CV, ED, GHB	65,000	③
	65,000	KD	100,000	③
	100,000	CVH	100,000	③
Main Breaker Module Family Type 1MCB, 3MCB, RGH 2000 A, NGS 1200 A, MDL 800 A, LGS/LD 600 A, KD 400 A	65,000	BRHX	22,000	③
	100,000	BRHX	22,000	③
Main Switch Module Family Type 1MFS, 3MFS with Class T fuse 600 A maximum	100,000	BRH	22,000	③
	100,000	BRHH, CVS	42,000	③

##### Notes

- ① For 100 kAIC systems the main needs to be rated to 100 kAIC.
- ② Breakers in this column may not fit in this loadcenter, see breaker info to left.
- ③ Also includes these branch breakers: CH, CHF, CHT, CHFAFGF, CHFGFT, CHFCAF.
- ④ CH: 70 A maximum.
- ⑤ CSR and BWH: 200 A maximum.

### Dimensions

Approximate Dimensions in Inches (mm)

#### Residential/Commercial/Unit Enclosure—Box Sizes

**Note:** Box sizes do not include covers/fronts.

#### CH Plug-on Neutral Residential Loadcenters

Box Size	Height	Width	Depth
<b>NEMA Type 1 Indoor</b>			
X0	16.75 (425.5)	14.30 (363.2)	3.13 (79.4)
X1	18.75 (476.3)	14.30 (363.2)	3.39 (86.1)
X2	21.00 (533.4)	14.30 (363.2)	3.69 (93.7)
X3	23.00 (584.2)	14.30 (363.2)	3.88 (98.4)
X4	27.00 (685.8)	14.30 (363.2)	3.88 (98.4)
X5	29.13 (739.9)	14.30 (363.2)	3.88 (98.4)
X6	34.13 (866.9)	14.30 (363.2)	3.88 (98.4)
X7	37.00 (939.8)	14.30 (363.2)	3.88 (98.4)
X8	39.00 (990.6)	14.30 (363.2)	3.88 (98.4)
X9	45.00 (1143.0)	14.30 (363.2)	3.88 (98.4)
X10	48.38 (1228.9)	14.30 (363.2)	3.88 (98.4)
<b>NEMA Type 3R Outdoor</b>			
X0R	16.75 (425.5)	14.31 (363.5)	5.19 (131.8)
X2R	21.00 (533.4)	14.31 (363.5)	5.19 (131.8)
X11R	25.00 (635.0)	14.31 (363.5)	5.19 (131.8)
X5R	29.13 (739.8)	14.31 (363.5)	5.19 (131.8)
X6R	34.13 (866.8)	14.31 (363.5)	5.19 (131.8)
X7R	37.00 (939.8)	14.31 (363.5)	5.19 (131.8)
X8R	39.00 (990.6)	14.31 (363.5)	5.19 (131.8)
X10R	48.00 (1219.2)	14.31 (363.5)	5.19 (131.8)

#### Legacy CH Residential Loadcenters

Box Size	Height	Width	Depth
<b>NEMA Type 1 Indoor</b>			
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)
N	45.00 (1143.0)	14.31 (363.5)	3.88 (98.4)
<b>NEMA Type 3R Outdoor</b>			
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)

#### Legacy Commercial Loadcenters

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

# 1.1

## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

1

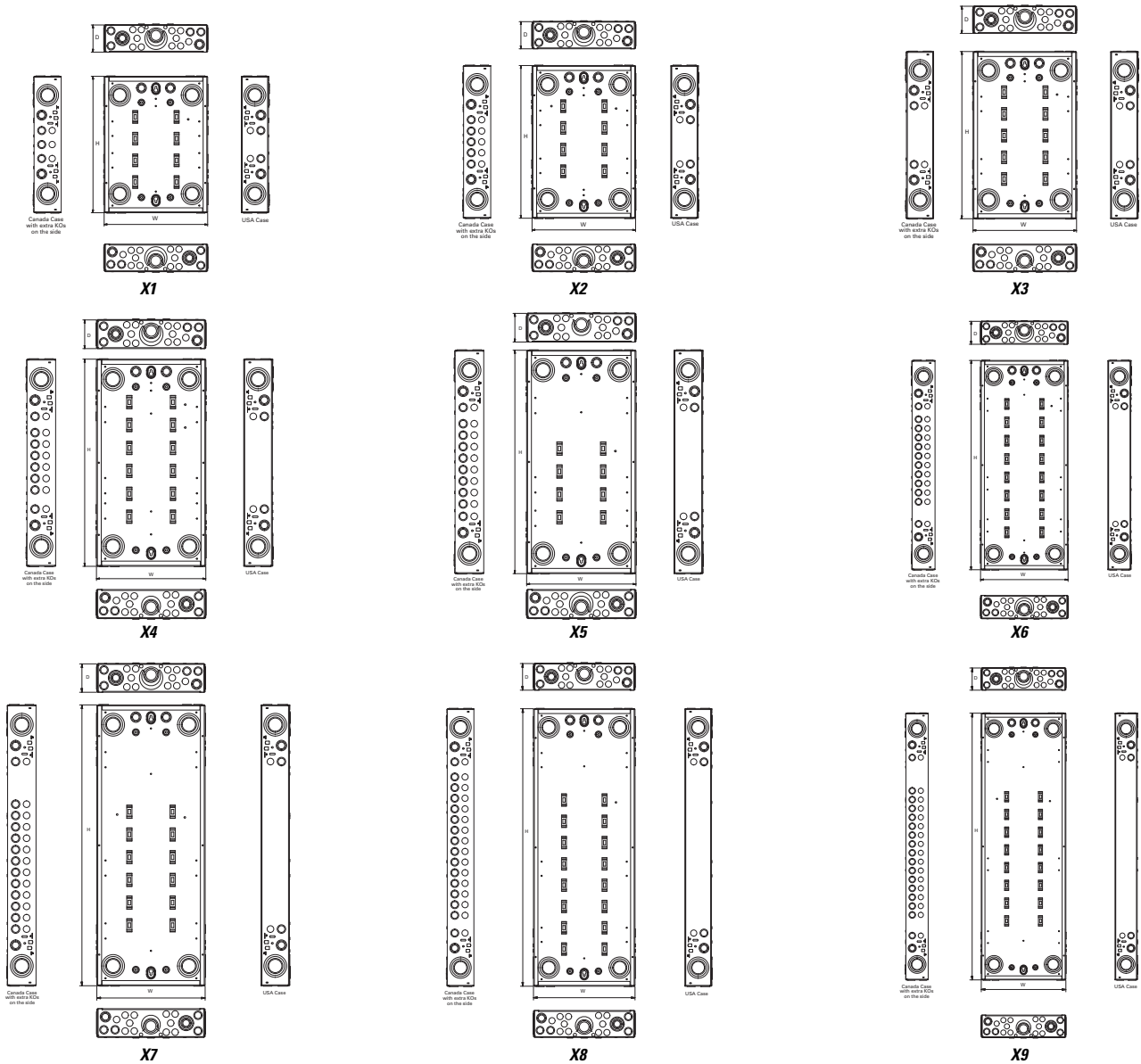
Approximate Dimensions in Inches (mm)

#### Plug-on Neutral Loadcenter

##### Box Sizes for X1–X9

Box Size	Height	Width	Depth
X1	18.90 (480.1)	14.30 (363.2)	3.80 (96.5)
X2	21.10 (535.9)	14.30 (363.2)	3.80 (96.5)
X3	23.10 (586.7)	14.30 (363.2)	3.80 (96.5)
X4	27.10 (688.3)	14.30 (363.2)	3.80 (96.5)
X5	29.20 (741.7)	14.30 (363.2)	3.80 (96.5)
X6	34.20 (868.7)	14.30 (363.2)	3.80 (96.5)
X7	37.10 (942.3)	14.30 (363.2)	3.80 (96.5)
X8	39.10 (993.1)	14.30 (363.2)	3.80 (96.5)
X9	45.10 (1145.5)	14.30 (363.2)	3.80 (96.5)

#### Knockout Positions



Approximate Dimensions in Inches (mm)

### Residential Loadcenter Knockout

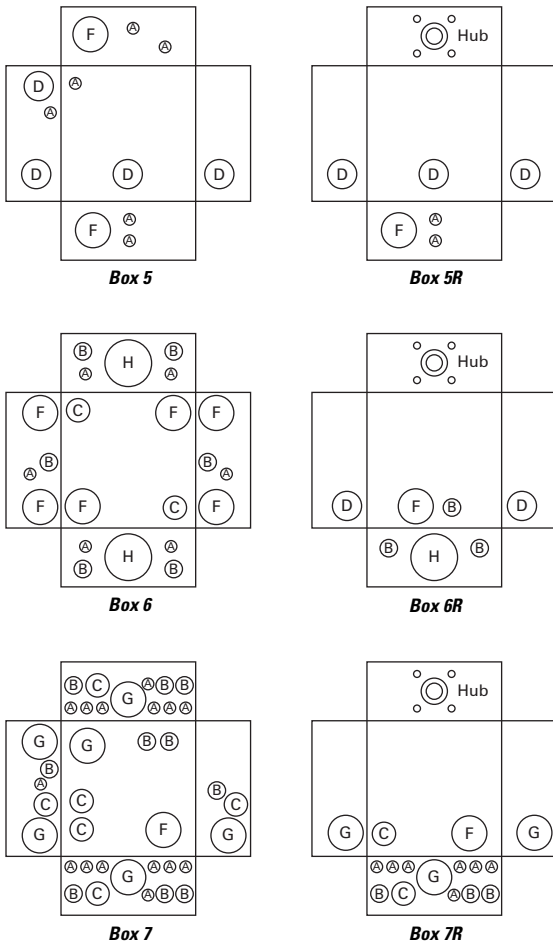
Residential NEMA Type 1 Indoor and NEMA Type 3R Outdoor Enclosures.

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

Code	Diameter	Additional KO	Additional KO	Additional KO
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)	—

**Note:** Additional KOs are placed concentrically.

#### Knockout Positions



### Residential and Commercial Loadcenter Knockout

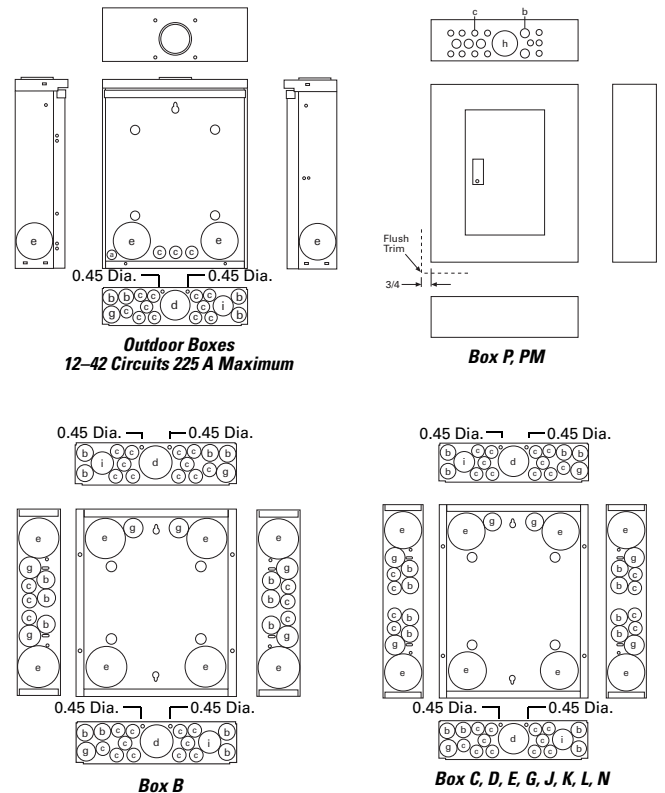
Residential NEMA Type 1 indoor and NEMA Type 3R outdoor enclosures.

#### 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	Additional KO	Additional KO	Additional KO	Additional KO
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)	—	—	—

**Note:** Additional KOs are placed concentrically.

#### Knockout Diagram



# 1.1

## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

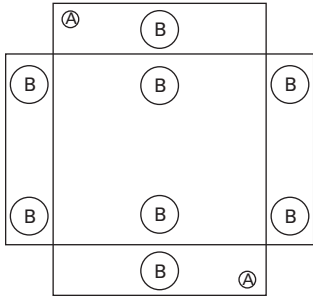
1

#### Type ECB and ECC Unit Enclosure Knockout

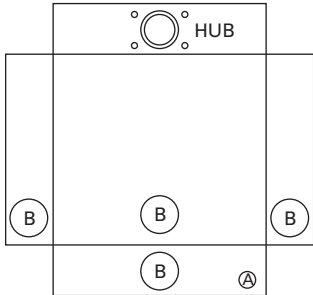
Code	Diameter	Additional KO	Additional KO	Additional KO	Additional KO
<b>NEMA Type 1 Indoor (Flush and Surface Trims)</b>					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)	2.50 (63.5)
<b>NEMA Type 3R Outdoor</b>					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)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

**Note:** Additional KOs are placed concentrically.

#### NEMA Type 1—Indoor



#### NEMA Type 3R—Outdoor





### Plug-on Circuit Breakers



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## CH 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 CHF family also includes a trip flag to differentiate between a trip and the breaker being turned off. 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 branch feeder type AFCI is required in the 1999 and 2002 National Electrical Code.

The combination type AFCI is required in all subsequent editions of the National Electrical Code.

#### Combination Type Arc Fault Circuit Breakers

A combination type arc fault circuit interrupter is a device that offers 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 A 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-T1-41 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.

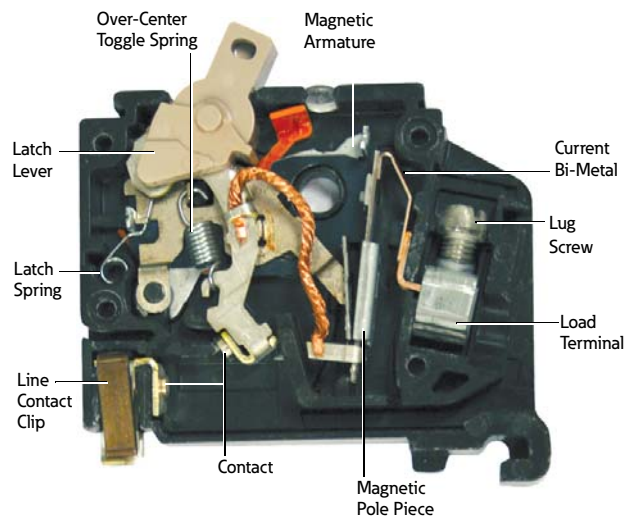
Diagrams on Page V1-T1-41 illustrate typical wiring configurations for 120/240 Vac multiwire circuits.

The diagram on Page V1-T1-41 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



# 1.1

## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

1




#### Product Selection

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

##### Type CH 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	 <b>CH110</b>	 <b>CH210</b>	 <b>CH310</b>
15	(2) #14–10 ①② (1) #14–6 ③	<b>CH115</b> ⑤⑥	<b>CH215</b> ⑥	<b>CH315</b> ⑥
20		<b>CH120</b> ⑤⑥	<b>CH220</b> ⑥	<b>CH320</b> ⑥
25		<b>CH125</b> ⑥	<b>CH225</b> ⑥	<b>CH325</b> ⑥
30		<b>CH130</b> ⑥	<b>CH230</b> ⑥	<b>CH330</b> ⑥
35	#14–2 ① #14–6 ③	<b>CH135</b> ⑥	<b>CH235</b> ⑥	<b>CH335</b> ⑥
40	#10–1/0 ④	<b>CH140</b> ⑥	<b>CH240</b> ⑥	<b>CH340</b> ⑥
45	#14–2 #3/0	<b>CH145</b> ⑥	<b>CH245</b> ⑥	<b>CH345</b> ⑥
50		<b>CH150</b> ⑥	<b>CH250</b> ⑥	<b>CH350</b> ⑥
60		<b>CH160</b>	<b>CH260</b>	<b>CH360</b>
70		<b>CH170</b>	<b>CH270</b>	<b>CH370</b>
80		—	<b>CH280</b>	<b>CH3080</b>
90		—	<b>CH290</b>	<b>CH3090</b>
100		—	<b>CH2100</b>	<b>CH3100</b>
110		—	<b>CH2110</b>	—
125		—	<b>CH2125</b>	—

##### Type CH Plug-on Circuit Breakers



#### CHF Breakers with Mechanical Trip Flag

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
10	(1) #14–8 ①	 <b>CHF110</b>	 <b>CHF210</b>
15	(2) #14–10 ①②	<b>CHF115</b> ⑤⑥	<b>CHF215</b> ⑥
20		<b>CHF120</b> ⑤⑥	<b>CHF220</b> ⑥
25		<b>CHF125</b> ⑥	<b>CHF225</b> ⑥
30		<b>CHF130</b> ⑥	<b>CHF230</b> ⑥
35	#14–2 ①	<b>CHF135</b> ⑥	<b>CHF235</b> ⑥
40	#14–4 ④	<b>CHF140</b> ⑥	<b>CHF240</b> ⑥
45		<b>CHF145</b> ⑥	<b>CHF245</b> ⑥
50		<b>CHF150</b> ⑥	<b>CHF250</b> ⑥

##### 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 and two-pole 40–50 A.
- ⑤ Switching duty rated.
- ⑥ HACR rated.

For factory-installed options, refer to **Page V1-T1-40**.

### Type CH AF/GF, Single-Pole Circuit Breaker

Type CH AFCI Single-Pole Circuit Breaker



### Dual Function Arc Fault/Ground Fault 3/4-Inch (19.1 mm) Wide Circuit Breakers, Type CH, 120 Vac, 10 kAIC <sup>①②</sup>

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	Dual function AFCI/GFCI, pigtail neutral	<b>CHF115DF</b>
	20	Dual function AFCI/GFCI, pigtail neutral	<b>CHF120DF</b>
Single-pole, plug-on neutral 10 kAIC	15	Dual function AFCI/GFCI, plug-on neutral	<b>CHFP115DF</b>
	20	Dual function AFCI/GFCI, plug-on neutral	<b>CHFP120DF</b>

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

Type CH AFCI Single-Pole Circuit Breaker



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

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	Combination AFCI, pigtail neutral	<b>CHF115AF</b>
	20	Combination AFCI, pigtail neutral	<b>CHF120AF</b>
	15	Combination AFCI, plug-on neutral	<b>CHFP115AF</b>
	20	Combination AFCI, plug-on neutral	<b>CHFP120AF</b>
Two-pole 10 kAIC	15	Combination AFCI, pigtail neutral	<b>CHN215CAF</b> <sup>③</sup>
	20	Combination AFCI, pigtail neutral	<b>CHN220CAF</b> <sup>③</sup>

**Notes**

- ① Breaker qualifies as combination arc fault, per UL 1699.
  - ② Breaker qualifies as personnel protection ground fault, (5 mA) per UL 943.
  - ③ "CHN" two-pole breakers are redesigned to fit into the plug-on neutral loadcenter without interfering with the neutral bar.
- Common trip refers to two-pole 240 V load application sourced by 120/240 Vac (see diagram on **Page V1-T1-41**).  
Independent trip refers to two-pole multi-wire, home run or shared neutral circuits (see diagrams on **Page V1-T1-41**).

# 1.1

## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

1

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

##### Type CH Single-Pole



#### Type CH Ground Fault Circuit Breakers (5 mA) 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 ①	Catalog Number—1 per Shelf Carton		
		Single-Pole 120 Vac, Pigtail Neutral Requires One 3/4-Inch (19.1 mm) Space	Single-Pole 120 Vac, Plug-on Neutral 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	CHFN115GF	CHFP115GF	CHN215GF ②
20	#14–6	CHFN120GF	CHFP120GF	CHN220GF ②
25	#14–6	CHFN125GF	—	CHN225GF ②
30	#14–6	CHFN130GF	—	CHN230GF ②
35	#14–6	—	—	CHN235GF ②
40	#14–6	—	—	CHN240GF ②
45	#14–6	—	—	CHN245GF ②
50	#14–6	—	—	CHN250GF ②
60	#14–6 ①	—	—	CHN260GF ②

##### Type CH Two-Pole



#### Type CH Ground Fault Equipment Protectors (30 mA) 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 ①	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	CHFEP115	CH215EPD
20	#14–6	CHFEP120	CH220EPD
25	#14–6	CHFEP125	CH225EPD
30	#14–6	CHFEP130	CH230EPD
40	#14–6	—	CH240EPD
50	#14–6	—	CH250EPD
60	#14–6 ①	—	CH260EPD

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

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	Three-Pole 120/240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces
15	#14–8	CH215SW ③	CH315SW ④
20	#14–8	CH220SW ③	CH320SW ④
30	#14–8	CH230SW ③	CH330SW ④
40	#14–8	CH240SW ③	CH340SW ④
50	#14–8	CH250SW ③	CH350SW ④




#### Notes

- ① 60 A breaker listed for 75 °C Cu wire only.
- ② “CHN” two-pole breakers are redesigned to fit into the plug-on neutral loadcenter without interfering with the neutral bar.
- ③ For circuit breakers with shunt trip, add ST suffix. Shunt trip requires one additional pole space.
- ④ Switching duty rated.

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

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

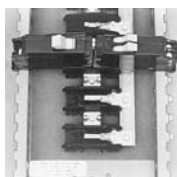
#### 3/4-Inch (19.1 mm) per Pole, 120 Vac, 120/240 Vac and 240 Vac, 10 kAIC

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 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 ①	CH315HID
20	#14–8	CH120HID	CH220HID	CH320HID
30	#14–8	CH130HID	CH230HID	CH330HID


### Type CHT Twin Universal CTL and Non-CTL Plug-on Circuit Breakers, 120 Vac, 10 kAIC

Suitable for CTL and non-CTL CH loadcenters.

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
		
15–15	#14–8	CHT1515 ②③
15–20	#14–8	CHT1520 ②③
20–20	#14–8	CHT2020 ②③

#### Notes

- ① CH215HID is rated for 120/240 V.
- ② Switching duty rated.
- ③ HACR rated.

# 1.1

## Loadcenters and Circuit Breakers




### Type CH Loadcenters and Circuit Breakers

1

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

**Note:** CHP breakers feature ON, OFF and TRIP positions for commercial applications. **Please note that these are not plug-on neutral circuit breakers.**

#### 3/4-Inch (19.1 mm) per Pole, 120 Vac, 120/240 Vac and 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 <sup>①</sup>	<b>CHP110</b>	<b>CHP210</b>	<b>CHP310</b>
15	(2) #14-10 <sup>①②</sup> (1) #14-6 <sup>③</sup>	<b>CHP115</b> <sup>⑥⑦</sup>	<b>CHP215</b> <sup>⑦</sup>	<b>CHP315</b> <sup>⑦</sup>
20		<b>CHP120</b> <sup>⑥⑦</sup>	<b>CHP220</b> <sup>⑦</sup>	<b>CHP320</b> <sup>⑦</sup>
25		<b>CHP125</b> <sup>⑦</sup>	<b>CHP225</b> <sup>⑦</sup>	<b>CHP325</b> <sup>⑦</sup>
30		<b>CHP130</b> <sup>⑦</sup>	<b>CHP230</b> <sup>⑦</sup>	<b>CHP330</b> <sup>⑦</sup>
35	#14-2 <sup>①</sup> #14-6 <sup>③</sup>	<b>CHP135</b> <sup>⑦</sup>	<b>CHP235</b> <sup>⑦</sup>	<b>CHP335</b> <sup>⑦</sup>
40	#10-1/0 <sup>④</sup>	<b>CHP140</b> <sup>⑦</sup>	<b>CHP240</b> <sup>⑦</sup>	<b>CHP340</b> <sup>⑦</sup>
45	#14-2 <sup>⑤</sup>	<b>CHP145</b> <sup>⑦</sup>	<b>CHP245</b> <sup>⑦</sup>	<b>CHP345</b> <sup>⑦</sup>
50		<b>CHP150</b> <sup>⑦</sup>	<b>CHP250</b> <sup>⑦</sup>	<b>CHP350</b> <sup>⑦</sup>
60		<b>CHP160</b> <sup>⑦</sup>	<b>CHP260</b> <sup>⑦</sup>	<b>CHP360</b> <sup>⑦</sup>
70		<b>CHP170</b>	<b>CHP270</b>	<b>CHP370</b>
80		—	<b>CHP280</b>	—
90		—	<b>CHP290</b>	—
100		—	<b>CHP2100</b>	<b>CHP3100</b>
110		—	<b>CHP2110</b>	—
125		—	<b>CHP2125</b>	—

#### Notes

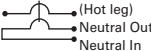
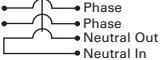
- ① For single- and two-pole breakers.
- ② Solid and stranded wire can be used together.
- ③ For three-pole breakers.
- ④ Single-pole 60–70 A, two-pole 80–125 A, three-pole 40–100 A.
- ⑤ Single-pole 40–50 A, two-pole 40–70 A.
- ⑥ Switching duty rated.
- ⑦ HACR rated.

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

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



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

#### 3/4-Inch (19.1 mm) per Pole, 120 Vac and 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 <sup>①</sup>	CHP315SW <sup>①</sup>
20	#14–8	CHP220SW <sup>①</sup>	CHP320SW <sup>①</sup>



### Type CH-M50 High-Ambient Breaker

#### 3/4-Inch (19.1 mm) per Pole, 120 Vac and 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	CH115M50	CH215M50
20	(2) #14–10	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 Vac 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	CH115HM	CH215HM
20	(2) #14–10	CH120HM	CH220HM
15	(1) #14–8	CHP115HM	CHP215HM
20	(2) #14–10	CHP120HM	CHP220HM

#### Note

<sup>①</sup> For circuit breakers with shunt trip, add ST suffix. Shunt trip requires one additional pole space, obtain pricing from **Page V1-T1-40**.

### Options and Accessories

#### CHHT



#### Field Installation Kits and Parts

##### Description

##### Handle Ties <sup>②</sup>

Description	Ordering Quantity <sup>①</sup>	Catalog Number
Handle tie bar for physically joining the handles of two adjacent single-pole Type CH circuit breakers (molded plastic handle cover)	25	CHHT
Padlockable device for locking the handle of CH AFGF, CAF and GFT breakers into the ON or OFF position.	25	CHFAFGFLOFF

##### Handle Lockoffs <sup>③④</sup>

Padlockable device for locking the handle of single-, two- or three-pole Type CH circuit breakers (escutcheon mounted) <sup>⑤</sup>	1	CHPL
Padlockable device for locking the handle of a single-pole Type CHGFI circuit breaker (escutcheon mounted) <sup>⑤</sup>	1	CHPLGF
Padlockable bracket for locking the handle of two-, three- and four-pole Type CH circuit breakers	10	CHPLOFF
Padlockable device for locking the handle of main circuit breaker Types CC and CCH into the ON or OFF position (screw mounted) <sup>⑥</sup>	1	CCPL
Padlockable device for locking the handle of main breaker Types BW and CSR into the ON or OFF position (escutcheon mounted) <sup>⑤</sup>	1	MCBPL

##### Handle Lockdogs <sup>④⑦</sup>

Device used to secure handle in ON or OFF position for single-pole Type CH circuit breakers (handle mounted) <sup>⑧</sup>	10	CHLO
---	----	------

##### Hold-Down Kits <sup>⑨</sup>

Hold-down retainer kit for single-, two-, three-pole Type CH circuit breakers. For 6–24 circuit 125 A single- and three-phase, 12–42 circuit single-phase 225 A and 24–42 circuit three-phase 225 A 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—70 A maximum	1	CH9MB270
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##### 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 Interlocks

Type CH for two-, three- and four-pole breakers	10	CHML <sup>⑩</sup>
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### Shunt Trip Options

Description Type	Volts	Catalog Number Suffix Adder <sup>⑩</sup>
CSR	12 DC	SR12
CSR	24 DC	SR24
CSR	120 AC	SR01
CH	120 AC	ST <sup>④</sup>
CC	12 DC	SR12
CC	24 DC	SR24
CC	120 AC	SR01
CC	208 AC	SR08
CC	240 AC	SR02

#### 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 408.36(D).
- ⑩ CHML not suitable to transfer emergency power.
- ⑪ Add suffix indicated to end of breaker catalog number.

### Handle Position Changeability Chart

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



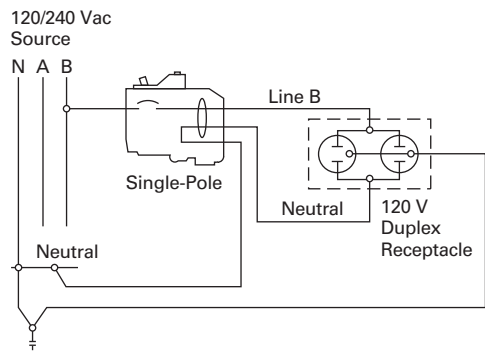
### Technical Data and Specifications

#### Ratings

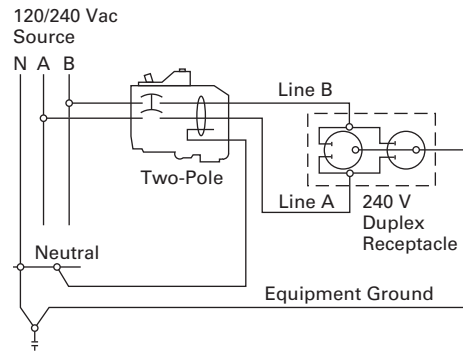
Single- and two-pole CH breakers rated 15 A and 20 A have low instantaneous magnetic trip levels. The 15 A and 20 A breakers with “HM” suffix have high magnetic trip settings recommended for circuits with inherently high inrush currents. All Type CH breakers are marked for heating, air conditioning and refrigeration (HACR) equipment application. Single-pole 15–20 A 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

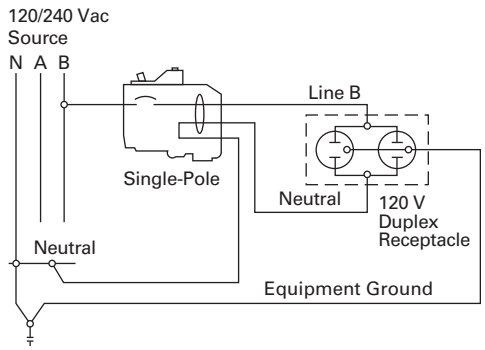
#### Typical Single-Pole



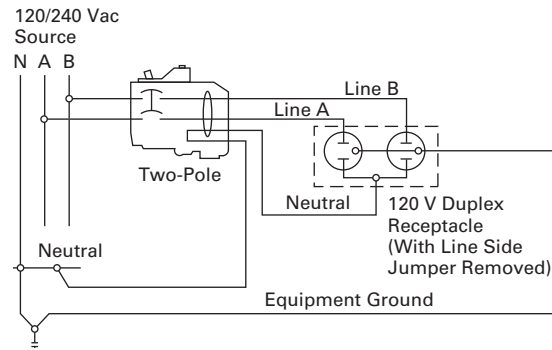
#### Two-Pole, 240 V Load Application Sourced by 120/240 Vac



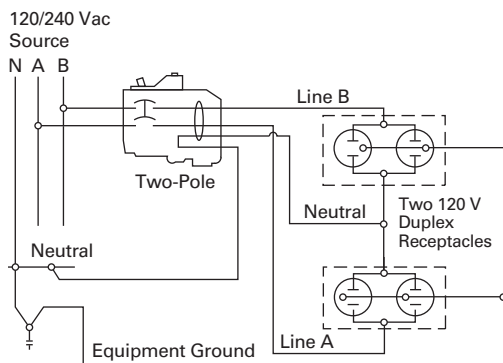
#### Single-Pole, 120 V Load Application Sourced by 120/240 Vac



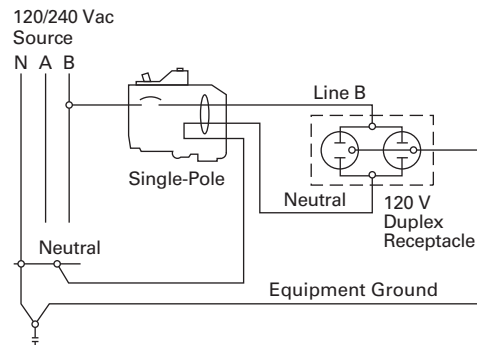
#### Two-Pole, Shared Neutral with Duplex Receptacle Application



#### Two-Pole, Shared Neutral with Multi-Duplex Receptacle Application



#### Single-Pole, 120 V Duplex Receptacle Application

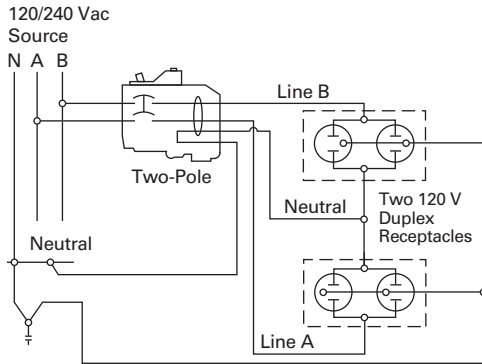


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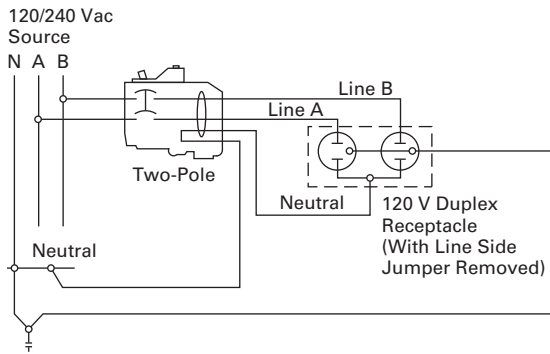
## Loadcenters and Circuit Breakers

### Type CH Loadcenters and Circuit Breakers

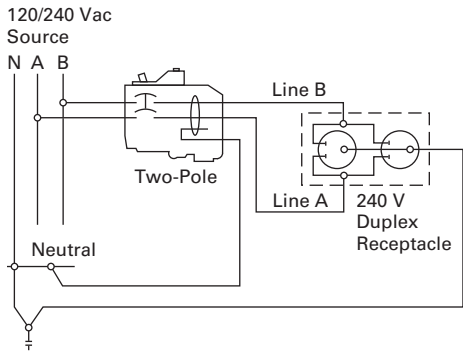
#### 1 Two-Pole, 120 V Multi-Duplex Receptacle Application



#### Two-Pole, 120 V Duplex Receptacle Application



#### Two-Pole, 240 V Duplex Receptacle Application



Type BR Loadcenters and Circuit Breakers



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Riser Panel . . . . .	<b>V1-T1-60</b>
Type BR Renovation Loadcenter . . . . .	<b>V1-T1-61</b>
BR Loadcenter Options and Accessories . . . . .	<b>V1-T1-62</b>
BR Circuit Breakers . . . . .	<b>V1-T1-78</b>

### Overview

#### General 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.

#### Plug-on Neutral Loadcenters

The BR Plug-on Neutral portfolio from Eaton offers a unique design that offers improved safety, ease of installation and leaves the end result with a clean and professional look and feel.

#### Features, Benefits and Functions

##### Plug-on Neutral Style Loadcenters

- The short-body BR electronic circuit breakers are optimized to save gutter space and installation time with an easier, more succinct installation process
- Unique self-leveling tabs to allow for quick drywall offset
- Added keyhole hanging feature on cover for ease of installation
- Common drive types on screw connections for added simplicity and convenience
- Inboard neutral to increase the gutter space for easier installation of conductors
- Backed-out neutral screws to allow for a quick connection of ground and neutral conductors
- Upgraded to embossed circuit numbers for a more clean and professional look

##### 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 150 A maximum on the 100 A and 125 A loadcenters, and 200 A on loadcenters with 150 A 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 BR loadcenters feature three types of neutrals:

##### 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.

##### Insulated/Bondable Split Neutral

Panels are supplied with split insulated neutrals with an insulated cross strap. For service entrance applications, the neutral must be bonded by using the bonding strap supplied with the panel.

For non-service entrance (sub-panel) applications, the panel may be installed with the bonding strap not connected to the neutral. Separate ground bars must be used on non-service entrance panels.

##### 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) applications, the panel may be installed with the 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-T1-67**.

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

**Bottom Fed Loadcenters**

For single-phase 225 A 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
- 25 kAIC

**Warranty Information**

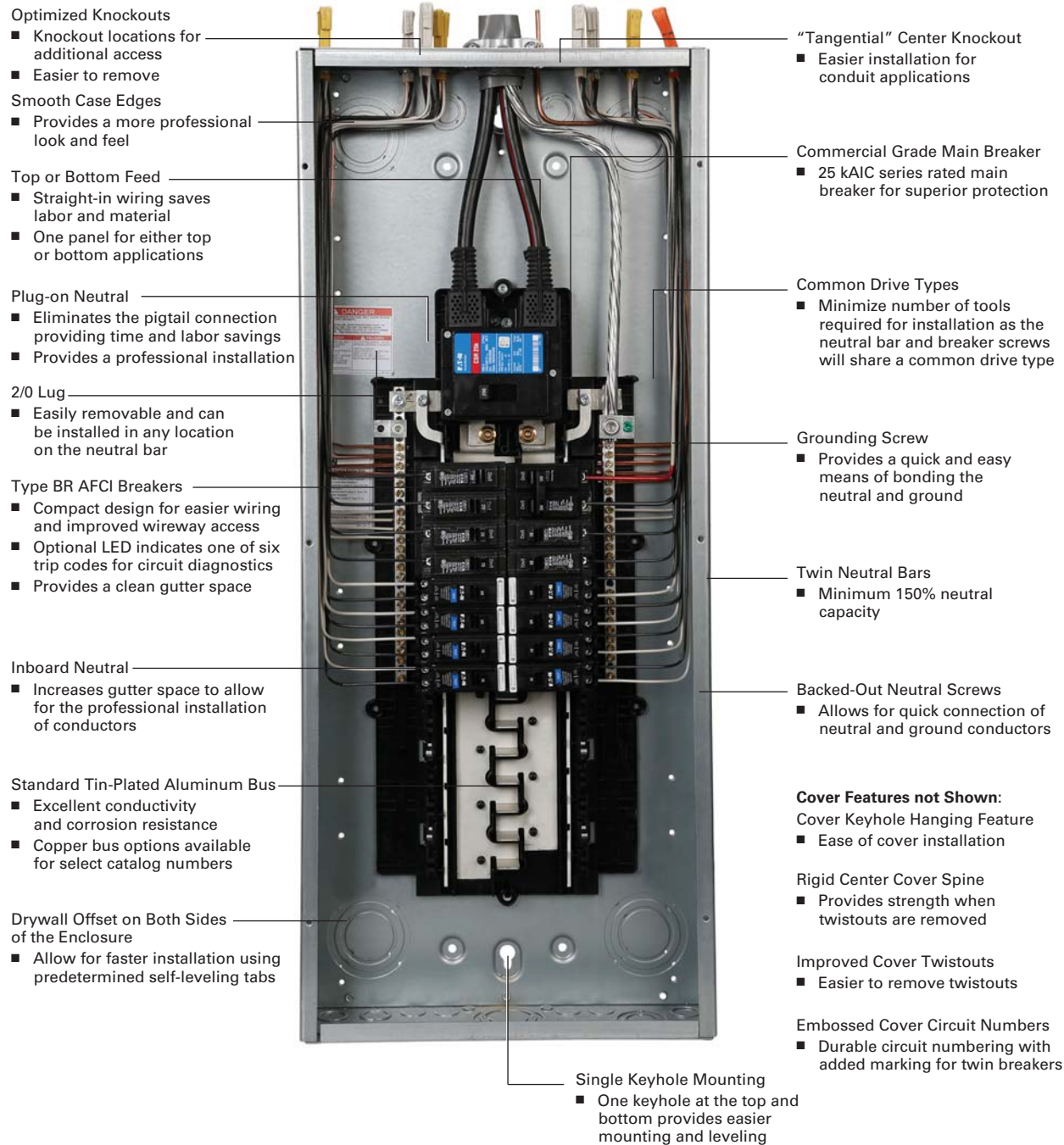
- 10-year limited loadcenter warranty
- 10-year limited branch breaker warranty

**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 125 A, which are listed under UL File E8741.



### Type BR Loadcenter



### Warranty

10-year warranty on all Type BR loadcenters and circuit breakers.

# 1.2

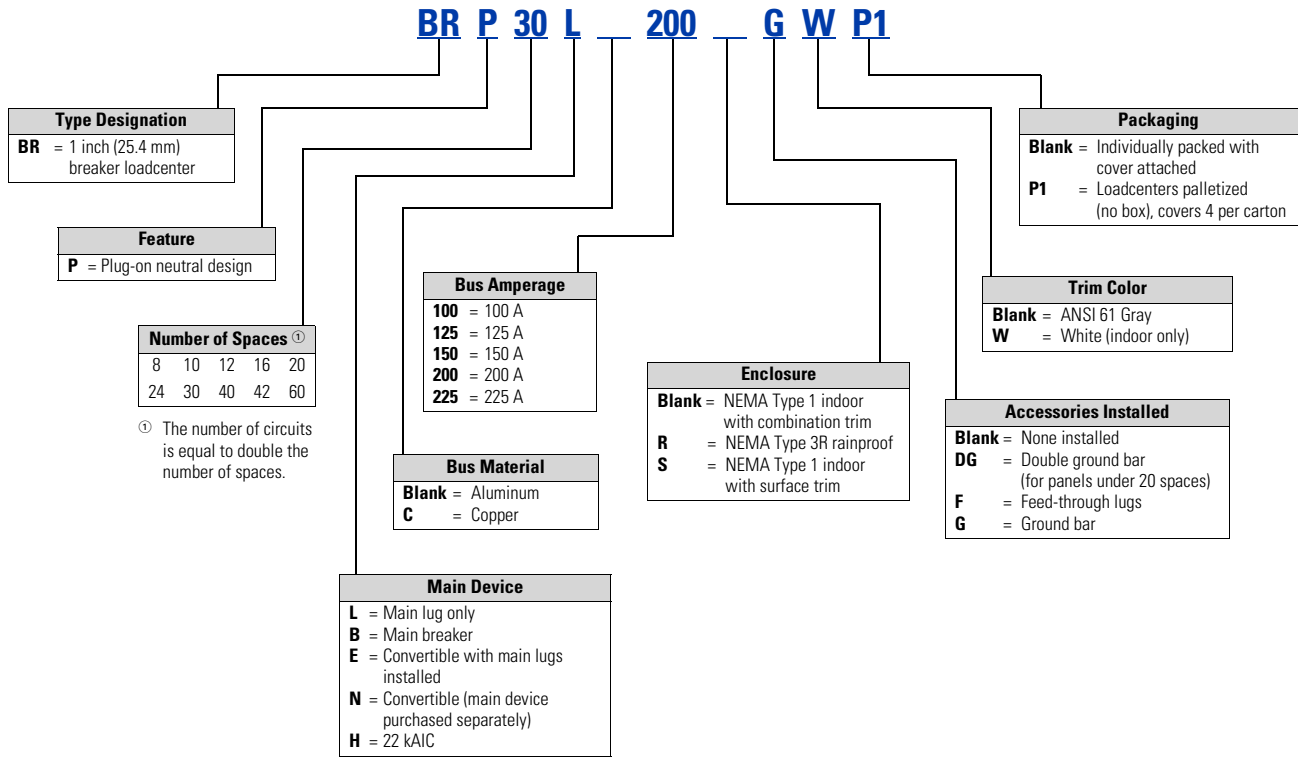
## Loadcenters and Circuit Breakers

### Type BR Loadcenters and Circuit Breakers

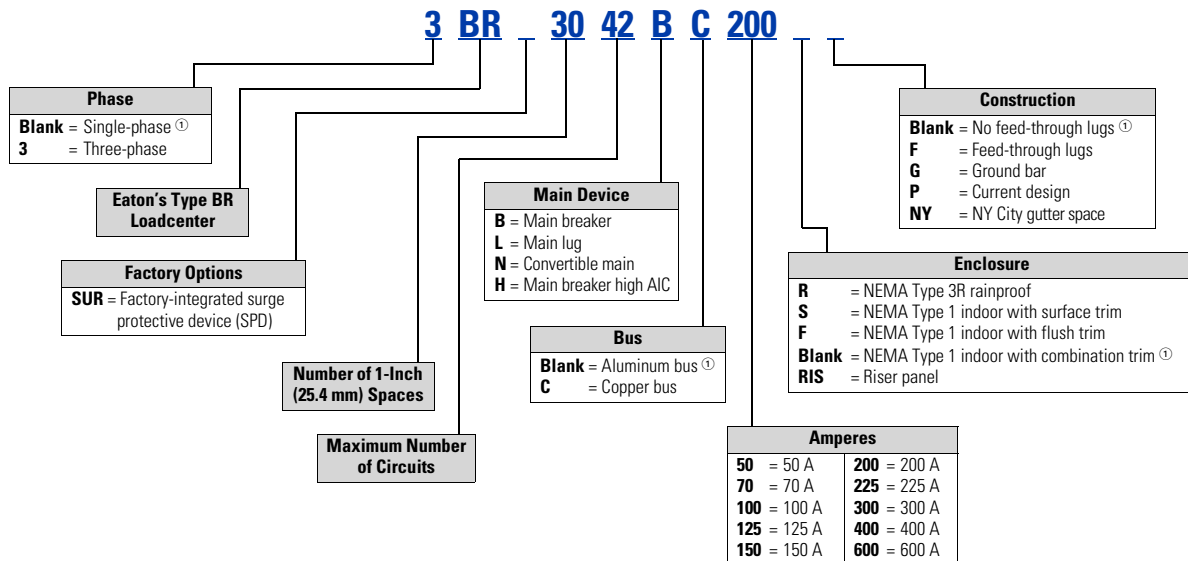
1

#### Catalog Number Selection

##### Single-Phase Plug-on Neutral Loadcenters



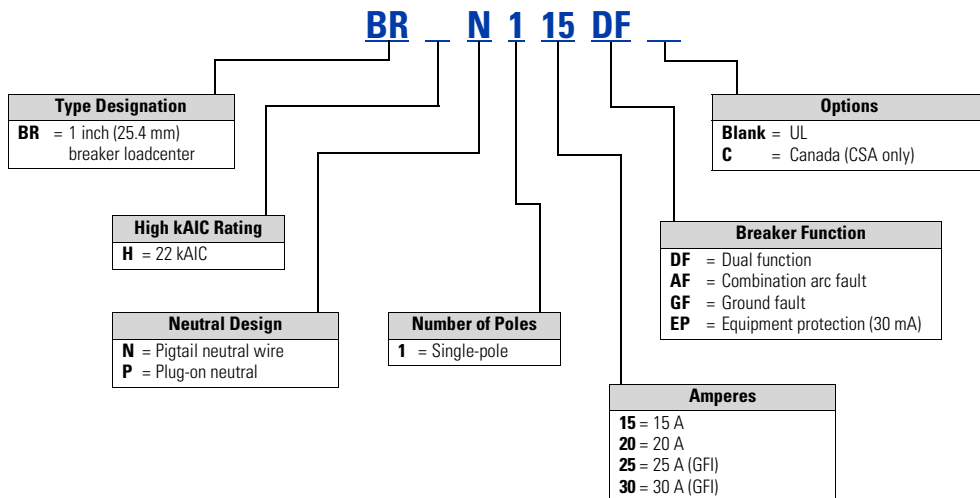
##### Single- and Three-Phase Legacy Loadcenters



**Note**

① No character space used.

### BR Electronic Circuit Breakers



#### 1

#### Product Selection

#### Single-Phase—Plug-on Neutral—Main Circuit Breaker Loadcenters—10/25 kAIC

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

BRP10B100



Main Breaker Type	Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of 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 <sup>①②</sup>
BR	100	10	20	Indoor	X0	#4–1/0 2	BRP10B100
		10	20	Outdoor	X1R		BRP10B100RF <sup>③④</sup>
		12	24	Indoor	X1		BRP12B100
		12	24	Outdoor	X1R		BRP12B100R <sup>④</sup>
		16	32	Indoor	X2		BRP16B100
		16	32	Outdoor	X2R		BRP16B100R <sup>④</sup>
		20	40	Outdoor	X11R		BRP20B100R <sup>④</sup>
		20	40	Indoor	X3		BRP20B100
		30	60	Indoor	X5		BRP30B100
		BRH <sup>⑤</sup>	125	16	32		Indoor
20	40			Indoor	X3	BRP20B125	
20	40			Outdoor	X11R	BRP20B125R <sup>④</sup>	
30	60			Indoor	X5	BRP30B125	
BRH <sup>⑤</sup>	100	12	24	Indoor	X1	#4–1/0	BRP12H100
		20	40	Indoor	X3		BRP20H100
CSR <sup>⑥</sup>	150	8	16	Outdoor	X11R	#2–300 kcmil	BRP08B150RF <sup>③④</sup>
		16	32	Indoor	X4		BRP12B150
		20	40	Indoor	X4		BRP20B150
		24	48	Indoor	X6		BRP24B150
		20	40	Outdoor	X5R		BRP20B150R <sup>④</sup>
		30	60	Indoor	X6		BRP30B150
	200	8	16	Outdoor	X11R		BRP08B200RF <sup>③④</sup>
		16	32	Indoor	X4		BRP16B200
		20	40	Outdoor	X5R		BRP20B200R <sup>④</sup>
		20	40	Indoor	X5		BRP20B200
		24	48	Indoor	X6		BRP24B200
		30	60	Indoor	X6		BRP30B200
		30	60	Indoor	X6		BRP30B200G
		30	60	Outdoor	X6R		BRP30B200R <sup>④</sup>
40	80	Indoor	X8	BRP40B200			
40	80	Outdoor	X8R	BRP40B200R <sup>④</sup>			
60	120	Indoor	X10	BRP60B200			
60	120	Outdoor	X10R	BRP60B200R <sup>④</sup>			

#### Notes

- ① Combination style covers may be used in surface or flush applications.
- ② All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with neutral bonding screw pre-attached. 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-T1-67**.
- 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-T1-67**.
- ⑤ 22 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and ETN01 10 kAIC branch breakers are used in series with Type BRH main breaker.
- ⑥ 25 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and ETN01 10 kAIC branch circuit breakers are used in series with Type CSR main breaker.



### Main Circuit Breaker Loadcenters—10/22 kAIC

BR4242B400F



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

Main Breaker Type	Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Commercial Loadcenter Catalog Number <sup>①②③</sup>	
							With Flush or NEMA Type 3R Cover	With Surface Cover
DK <sup>④</sup>	300	42	42	Indoor	24	(2) #3/0–250 kcmil	BR4242B300F	BR4242B300S
	400	42	42	Indoor	24	(2) #3/0–250 kcmil	BR4242B400F	BR4242B400S
		42	42	Outdoor	47	(2) #3/0–250 kcmil	BR4242B400R <sup>⑤</sup>	—
HLD <sup>⑥</sup>	600	42	42	Indoor	24	(2) #3/0–500 kcmil	—	BR4242B600S

#### Notes

- ① Ground bar kits priced separately. See **Page V1-T1-67**.
- ② The maximum rating of the panel is the main circuit breaker rating when used as service entrance equipment.
- 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 panel when Types BR, BD and BJ branch circuit breakers are used.
- ⑤ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-67**.
- ⑥ 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-T1-73 through V1-T1-77**.

Please contact the Lincoln Flex Center for any configurations not listed.

#### Single-Phase—Main Lug Loadcenters—Small Space

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

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of 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	<b>BR24L70SP</b> ①②	
			Indoor	Surface (no door)	5		<b>BR24L70SGP</b> ②③	
			Outdoor	—	5R		<b>BR24L70RP</b> ①②④	
			Indoor	Flush (no door)	5		<b>BR24L70FP</b> ①②	
			Indoor	Flush (no door)	5		<b>BR24L70FGP</b> ②⑤	
125	2	4	Indoor	Surface (no door)	6	#14–1/0	<b>BR24L125SP</b> ①②	
			Outdoor	—	6R		<b>BR2L125RP</b> ①②④	
			Outdoor	—	6R		<b>BR24L125RSEP</b> ②⑦⑧	
			Outdoor	—	6R		<b>BR24L125RSE2P</b> ②⑥⑦	
			Indoor	Flush (no door)	6		<b>BR24L125FP</b> ①②	
	4	8	8	Indoor	Surface (no door)	7	#14–1/0	<b>BR48L125SP</b> ①⑨
				Indoor	Surface (no door)	7		<b>BR48L125SGP</b> ③⑨
				Outdoor	—	6R		<b>BRC48L125RP</b> ①④⑨
				Indoor	Flush (no door)	7		<b>BR48L125FP</b> ①⑨
				Indoor	Flush (with door)	7		<b>BR48L125FDP</b> ①⑨
	4	8	8	Indoor	Flush (no door)	7	#14–#1	<b>BR48L125FGP</b> ③⑨
				Indoor	Surface (no door)	7		<b>BR612L125SP</b> ①⑩
				Indoor	Surface (no door)	7		<b>BR612L125SGP</b> ⑩⑪
				Indoor	Surface (with door)	7		<b>BR612L125SDP</b> ①⑩
				Indoor	Surface (with door)	7		<b>BR612L125SDGP</b> ⑩⑪
6	12	12	Indoor	—	7R	#14–#1	<b>BR612L125RP</b> ①④⑩	
			Indoor	Flush (no door)	7		<b>BR612L125FP</b> ①⑩	
			Indoor	Flush (no door)	7		<b>BR612L125FGP</b> ⑤⑩⑪	
			Indoor	Flush (with door)	7		<b>BR612L125FDP</b> ⑩	
			Indoor	Flush (with door)	7		<b>BR612L125FDGP</b> ⑤⑩⑪	
	8	16	16	Indoor	Surface (no door)	7	#14–#1	<b>BR816L125SP</b> ①⑩
				Indoor	Surface (no door)	7		<b>BR816L125SGP</b> ⑩⑪
				Indoor	Surface (with door)	7		<b>BR816L125SDP</b> ①⑩
				Indoor	Surface (with door)	7		<b>BR816L125SDGP</b> ⑩⑪
				Outdoor	—	7R		<b>BR816L125RP</b> ①④⑩
				Indoor	Flush (no door)	7		<b>BR816L125FP</b> ①⑩
				Indoor	Flush (no door)	7		<b>BR816L125FGP</b> ⑤⑩⑪
				Indoor	Flush (with door)	7		<b>BR816L125FDP</b> ①⑩
				Indoor	Flush (with door)	7		<b>BR816L125FDGP</b> ⑤⑩⑪
				Indoor	Flush (with door)	7		<b>BR816L125FDGP</b> ⑤⑩⑫






#### Notes

- ① Ground bar kits priced separately. See **Page V1-T1-67**.
  - 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.
- ③ Ground bar GBK5 is installed.
- ④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-67**.
- 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.
- 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.
- ⑪ Ground bar GBK10 is installed.
- ⑫ Ground bar GBK14 is installed.

Box sizes **Pages V1-T1-73 through V1-T1-77**.


### Single-Phase—Main Lug Loadcenters

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

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Lugs	Loadcenter Catalog Number <sup>①⑦</sup>		
BRP12L125		125	12	24	Indoor	X0	#6–2/0	BRP12L125 <sup>②③④</sup>
		125	12	24	Indoor	X0		BRP12L125G <sup>②③④</sup>
		125	12	24	Indoor	X0		BRP12L125DG <sup>②③④⑤</sup>
		125	12	24	Outdoor	X0R		BRP12L125R <sup>②④⑥</sup>
		125	16	32	Indoor	X1		BRP16L125 <sup>②③④</sup>
		125	16	32	Indoor	X1		BRP16L125G <sup>②③⑥</sup>
		125	16	32	Outdoor	X1R		BRP16L125R <sup>②⑥</sup>
		125	20	40	Indoor	X2		BRP20L125 <sup>②③④</sup>
		125	20	40	Indoor	X2		BRP20L125G <sup>②③⑥</sup>
		125	20	40	Outdoor	X2R		BRP20L125R <sup>②⑥</sup>
		125	24	48	Indoor	X3		BRP24L125 <sup>②③</sup>
		125	24	48	Indoor	X3		BRP24L125G <sup>②③⑥</sup>
		125	30	60	Indoor	X5		BRP30L125 <sup>②③</sup>
BRP12L200R		150	16	32	Indoor	X3	#1–300 kcmil	BRP16L150 <sup>③</sup>
		150	20	40	Indoor	X3		BRP20L150 <sup>③</sup>
		150	20	40	Indoor	X3		BRP20L150G <sup>③⑤</sup>
BRP12L200R		200	12	24	Outdoor	X1R		BRP12L200R <sup>④⑥</sup>
		200	20	40	Indoor	X3		BRP20L200 <sup>③</sup>
		200	20	40	Indoor	X3		BRP20L200G <sup>③⑤</sup>
		200	20	40	Outdoor	X11R		BRP20L200R <sup>⑥</sup>
		200	24	48	Indoor	X4		BRP24L200 <sup>③</sup>
		200	30	60	Indoor	X5		BRP30L200 <sup>③</sup>
		200	30	60	Indoor	X5		BRP30L200G <sup>③⑤</sup>
		200	30	60	Outdoor	X5R		BRP30L200R <sup>⑥</sup>
		200	40	80	Indoor	X6		BRP40L200 <sup>③</sup>
		200	40	80	Indoor	X6		BRP40L200G <sup>③⑤</sup>
		200	40	80	Outdoor	X6R		BRP40L200R <sup>⑥</sup>

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

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

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Lugs	Commercial Loadcenter Catalog Number <sup>①</sup>	With Flush or NEMA Type 3R Cover	With Surface Cover	
BR4242L400F		400	12	24	Outdoor	42	(2) #3/0–400 kcmil	BR1224L400R <sup>④⑤</sup>	—
		400	42	42	Indoor	22		BR4242L400F	BR4242L400S
		400	42	42	Outdoor	46		BR4242L400R <sup>④</sup>	—
600	42	42	Indoor	22	(2) #2–500 kcmil	—	—	BR4242L600S	

#### Notes

- ① Ground bar kits priced separately unless otherwise noted. See **Page V1-T1-67**.
- ② Has provision for BRPHD hold-down kit in 125 A and 200 A styles.
- ③ Combination cover style.
- ④ Suitable for use as service equipment when not more than six main disconnecting means are provided.
- ⑤ Ground bars installed.
- ⑥ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-67**.
- ⑦ Includes main lugs. Loadcenters can convert to main breaker using kit.

# 1.2

## Loadcenters and Circuit Breakers

### Type BR Loadcenters and Circuit Breakers

1

#### 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.

BRP12N125



#### Base Units—Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral (Unless Otherwise Noted)

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of 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 ①②③
125 ④⑥	12	24	Indoor	X1	See main breaker kit and main lug kit tables on Page V1-T1-53.	BRP12N125
	12	24	Indoor	X2		BRP12N125G ⑥
	12	24	Outdoor	X1R		BRP12N125R ⑦⑧
	16	32	Indoor	X2		BRP16N125
	16	32	Outdoor	X2R		BRP16N125R ⑦⑧
	20	40	Indoor	X3		BRP20N125G ⑥
	20	40	Outdoor	X11R		BRP20N125R ⑦⑧
200 ⑥	12	24	Indoor	X4	BRP12N200 ⑥	
	12	24	Outdoor	X11R	BRP12N200R ⑦⑧	
	20	40	Indoor	X5	BRP20N200 ⑥	
	20	40	Indoor	X5	BRP20N200G ⑥	
	20	40	Outdoor	X5R	BRP20N200R ⑦⑧	
	30	60	Indoor	X6	BRP30N200 ⑥	
	30	60	Indoor	X6	BRP30N200G ⑥	
	30	60	Outdoor	X6R	BRP30N200R ⑦⑧	
	40	80	Indoor	X8	BRP40N200	
	40	80	Outdoor	G1R	BRP40N200R ⑦⑧	
	40	80	Indoor	X8	BRP40N200G ⑥	

#### Convertible MLO Loadcenters—Factory Installed Lugs ⑥⑩

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

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al	Catalog Number
200	8	16	Outdoor	X11R	#1–300 kcmil	BRP08E200RF ⑦
200	30	60	Indoor	X6	#1–300 kcmil	BRP30E200G ⑥
200	40	80	Indoor	X8	#1–300 kcmil	BRP40E200G ⑥
200	60	120	Indoor	X10	#1–300 kcmil	BRP60E200

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

② 125 A and 200 A 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 408 of the NEC.

③ Ground bar kits priced separately except as noted, refer to Page V1-T1-67.

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

⑤ For main breaker, use Type BW or CSR. For main lug, use Type BRPL200.

⑥ Convertible to maximum of 125 A main circuit breaker and 125 A main lug. BRPHD comes with loadcenter for back-fed Types BR and BRH main circuit breakers.

⑦ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to Page V1-T1-67.

⑧ Includes through-feed lugs for both phase and neutral conductors.

⑨ Insulated/bondable single neutral for legacy styles only. Does not apply to plug-on neutral style loadcenter.

⑩ Includes ground bar.

⑪ Main lugs come installed.

**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
<b>Two-Pole</b>			
100	#4–1/0	BR2100	BRH2100
110	#4–1/0	BR2110	BRH2110
125	#4–2/0	BR2125	BRH2125
125	#2–300 kcmil	BW2125	CSR2125N
150	#2–300 kcmil	BW2150	CSR2150N
175	#2–300 kcmil	BW2175	CSR2175N
200	#2–300 kcmil	BW2200	CSR2200N
<b>Three-Pole</b>			
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
<b>Two-Pole</b>		
125	#6–2/0	BRSF125
150	#1–300 kcmil	BRL200
175	#1–300 kcmil	BRL200
200	#1–300 kcmil	BRL200
<b>Three-Pole</b>		
150	#6–3/0	3BRSF150

**Main Circuit Breaker with Accessory**

Example: BW22005R01 (Put description with catalog number on order. See **Page V1-T1-88.**)

**Main Circuit Breaker Loadcenters—Copper Bus 10/22/25 kAIC**

**BRP20BC100**



**Main Circuit Breaker Loadcenters—With Copper Bus—Single-Phase Three-Wire— 120/240 Vac—Insulated/Bondable Split Neutral**

Main Breaker Type	Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Loadcenter Catalog Number with Combination Cover ②③④
BR 10 kAIC	100	20	40	Indoor	X3	#4–1/0	BRP20BC100
		30	60	Indoor	X6	#4–1/0	BRP30BC100
		125	60	Indoor	X6	#4–1/0	BRP30BC125
BRH 22 kAIC ⑤	100	20	40	Indoor	X3	#4–1/0	BRP20HC100
		30	60	Indoor	X5	#4–1/0	BRP30HC100
CSR 25 kAIC	150	30	60	Indoor	X6	#2–300 kcmil	BRP30BC150
		200	40	Indoor	X3	#2–300 kcmil	BRP20BC200
	200	30	60	Indoor	X6	#2–300 kcmil	BRP30BC200
		40	80	Indoor	X8	#2–300 kcmil	BRP40BC200
	225	18	36	Outdoor	X5R	#2–300 kcmil	BRP18BC225R
		42	84	Indoor	X9	#2–300 kcmil	BRP42BC225

**Main Lug Only Loadcenters—Copper Bus**

**BRP42LC225**



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

Main Breaker Type	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Loadcenter Catalog Number with Combination Cover ②③
225	42	84	Indoor	X8	#1–300 kcmil	BRP42LC225 ④
	42	84	Indoor	X8	#1–300 kcmil	BRP42LC225G ⑥

**Notes**

- ① Series combination rating with Types BD, BR, BQ, BQC and ETN01 is 22 kAIC with BRH main and 25 kAIC with CSR main.
- ② All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with neutral bonding screw pre-attached.
- ③ The maximum rating of the panel is the main circuit breaker rating when used as service entrance equipment.
- ④ Ground bar kits priced separately. See **Page V1-T1-67.**
- ⑤ 22 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and ETN01 10 kAIC branch breakers are used in series with Type BRH main breaker.
- ⑥ Includes ground bar.

Box sizes **Pages V1-T1-73** through **V1-T1-77.**

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

BRP12NC125



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

Main Breaker Type	Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of 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) ①②③
10/22 kAIC ④⑤	125	12	24	Indoor	X1	See main breaker kit and main lug kit tables on <b>Page V1-T1-53</b>	<b>BRP12NC125</b>
		12	24	Outdoor	X1R		<b>BRP12NC125R</b> ⑥
		20	40	Indoor	X3		<b>BRP20NC125</b>
		20	40	Outdoor	X11R		<b>BRP20NC125R</b> ⑥
10/25 kAIC ⑥⑦	200	20	40	Indoor	X5	<b>BRP20NC200</b>	
		20	40	Outdoor	X5R	<b>BRP20NC200R</b> ⑥	
		30	60	Indoor	X6	<b>BRP30NC200</b>	
		30	60	Outdoor	X6R	<b>BRP30NC200R</b> ⑥	
		40	80	Indoor	X8	<b>BRP40NC200</b>	
		40	80	Outdoor	X8R	<b>BRP40NC200R</b> ⑥	
10/25 kAIC ⑥⑧	225	42	84	Outdoor	X10R	<b>BRP42NC225R</b> ⑥	

#### Notes

- ① 125 A and 200 A 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.
- ② Ground bar kits priced separately, refer to **Page V1-T1-67**.
- ③ Interrupting rating depends on main circuit breaker selected. **Page V1-T1-67** for mains.
- ④ Hold-down screw BRPHD comes with loadcenter for back-fed Types BR and BRH main circuit breakers.
- ⑤ For main breaker, use Type BR. For main lug, use Type BRPSF.
- ⑥ For main breaker, use Type BW or CSR. For main lug, use Type BRPL.
- ⑦ Suitable for use as service equipment when not more than six main disconnecting means are provided.
- ⑧ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-67**.

### Loadcenters with White Covers

**Note:** Keyhole hanging feature not included.

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

#### Plug-on Neutral—Main Circuit Loadcenters—10/25 kAIC

Main Breaker Type	Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Loadcenter Catalog Number with Combination Cover <sup>①②③</sup>
BR 10 kAIC	100	12	40	Indoor	X1	#4–1/0	BRP12B100WP1 <sup>④</sup>
		20	40	Indoor	X3		BRP20B100GW <sup>⑤</sup>
		30	60	Indoor	X5		BRP30B100GW <sup>⑤</sup>
	125	20	40	Indoor	X3	#4–2/0	BRP20B125GW <sup>⑤</sup>
		30	60	Indoor	X5		BRP30B125GW <sup>⑤</sup>
		40	60	Indoor	X8		BRP40B125GW <sup>⑤</sup>
CSR <sup>⑥</sup> 25 kAIC	150	30	60	Indoor	X6	#2–300 kcmil	BRP30B150GW <sup>⑤</sup>
	200	20	40	Indoor	X5		BRP20B200GW <sup>⑤</sup>
		20	40	Indoor	X5		BRP20B200WP1 <sup>④</sup>
		30	60	Indoor	X6		BRP30B200GW <sup>⑤</sup>
		40	60	Indoor	X8		BRP40B200WP1 <sup>④</sup>
		40	60	Indoor	X8		BRP40B200GW <sup>⑤</sup>

#### Plug-on Neutral—Convertible Loadcenters MCB or MLO—Base Units and Main Devices 10/22/25 kAIC

**Note:** Interrupting rating depends on main circuit breaker selected.

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Loadcenter Catalog Number with Combination Cover <sup>①②⑦⑧</sup>
125 <sup>⑨</sup>	12	24	Indoor	X1	See main breaker kit and main lug kit tables on Page V1-T1-63.	BRP12N125GW
	20	40	Indoor	X3		BRP20N125GW
200 <sup>⑨</sup>	20	40	Indoor	X5		BRP20N200GW
	30	60	Indoor	X6		BRP30N200GW
	40	80	Indoor	X8		BRP40N200GW
	40	80	Indoor	X8		BRP40N200GW

#### Plug-on Neutral—Main Lug Loadcenters

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Loadcenter Catalog Number with Combination Cover <sup>①②</sup>
125	24	48	Indoor	X3	#6–2/0	BRP24L125GW
	24	48	Indoor	X3		BRP24L125GWP1 <sup>④</sup>
	30	60	Indoor	X5		BRP30L125GW
200	20	40	Indoor	X3	#1–300 kcmil	BRP20L200GW <sup>⑤</sup>
	30	60	Indoor	X5		BRP30L200GW
	30	60	Indoor	X5		BRP30L200GWP1 <sup>④</sup>
	40	80	Indoor	X6		BRP40L200GW
225	42	84	Indoor	X8		BRP42LC225GW <sup>⑥⑩</sup>

#### Notes

- ① Combination style white cover.
- ② Ground bars installed.
- ③ All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with neutral bonding screw pre-attached. The maximum rating of the panel is the main circuit breaker rating when used as service entrance equipment.
- ④ Must order pallet quantities.
- ⑤ 25 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and ETN01 10 kAIC branch circuit breakers are used in series with Type CSR main breaker.
- ⑥ Minimum order quantity required.
- ⑦ The maximum rating of the loadcenter is the main circuit breaker rating when used as service entrance equipment.
- ⑧ 125 A and 200 A 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 408 of the NEC.
- ⑨ For main breaker use, Type BR. For main lug, use Type BRPSF.
- ⑩ For main breaker use, Type BW or CSR. For main lug, use Type BRPL200.
- ⑪ Copper bus.



#### Three-Phase—Type BR Circuit Breaker Loadcenters

##### Three-Phase, Four-Wire—Main Lug Loadcenters—Copper Bus—208Y/120 Vac or 240 Vac, Insulated/Bondable Split Neutral

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Loadcenter Catalog Number (With Combination or NEMA Type 3R Cover)
125	12	24	Indoor	C1	#6–3/0	3BR1224LC125
150	24	42	Indoor	D1	#4–300 kcmil	3BR2442LC150
200	30	42	Indoor	G1	#4–300 kcmil	3BR3042LC200
200	30	42	Outdoor	G1R	#4–300 kcmil	3BR3042LC200R
200	42	42	Indoor	L1	#4–300 kcmil	3BR4242LC200
200	42	42	Outdoor	L1R	#4–300 kcmil	3BR4242LC200R
225	30	42	Indoor	L1	#4–300 kcmil	3BR3042LC225
225	30	42	Outdoor	L1R	#4–300 kcmil	3BR3042LC225R
400	42	42	Indoor	22	(2) 3/0–250 kcmil	3BR4242LC400S
600	42	42	Indoor	24	(2) 3/0–500 kcmil	3BR4242LC600S

##### Three-Phase, Four-Wire—Main Circuit Breaker Loadcenters—Copper Bus—208Y/120 Vac or 240 Vac, Insulated/Bondable Split Neutral

Main Breaker Type	Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Loadcenter Catalog Number (With Combination or NEMA Type 3R Cover)
BR 10 kAIC	100	12	24	Outdoor	C1R	#14–1/0	3BR1224BC100R
CC 10 kAIC	200	42	42	Indoor	L2	2/0–300 kcmil	3BR4242BC200
	200	42	42	Outdoor	L2R	2/0–300 kcmil	3BR4242BC200R
	225	42	42	Indoor	L2	2/0–300 kcmil	3BR4242BC225
	225	42	42	Outdoor	L2R	2/0–300 kcmil	3BR4242BC225R
DK 22 kAIC	400	42	42	Indoor	24	(2) 3/0–250 kcmil	3BR4242BC400S <sup>⑥</sup>
		42	42	Outdoor	47		3BR4242BC400R
HLD 10 kAIC	600	42	42	Indoor	24	(2) 3/0–500 kcmil	3BR4242BC600S <sup>⑥</sup>

3BR4242B200



##### Three-Phase, Four-Wire—Main Circuit Breaker Loadcenters—Aluminum Bus—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral

Main Breaker Type	Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Loadcenter Catalog Number <sup>①②</sup> (With Combination or NEMA Type 3R Cover)
BR 10 kAIC	100	12	24	Outdoor	C1R	#14–1/0	3BR1224B100R <sup>③</sup>
CC 10 kAIC	125	30	42	Indoor	L1	#6–4/0	3BR3042B125
		30	42	Indoor	L1	#6–4/0	3BR3042B150
	200	30	42	Outdoor	L1R		3BR3042B150R <sup>③</sup>
		30	42	Indoor	L1	2/0–300 kcmil	3BR3042B200
		30	42	Outdoor	L1R		3BR3042B200R <sup>③</sup>
	42	42	42	Indoor	L2		3BR4242B200
		42	42	Outdoor	L2R		3BR4242B200R <sup>③</sup>
CC 10 kAIC	225	42	42	Indoor	L2	2/0–300 kcmil	3BR4242B225
		42	42	Outdoor	L2R		3BR4242B225R <sup>③</sup>
DK <sup>④</sup> 22 kAIC	400	42	42	Indoor	24	(2) #3/0–250 kcmil	3BR4242B400S <sup>⑥</sup>
		42	42	Indoor	24		3BR4242B400F
		42	42	Outdoor	47		3BR4242B400R <sup>⑥</sup>
LD <sup>⑤</sup>	600	42	42	Indoor	24	(2) #3/0–500 kcmil	3BR4242B600F

**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-T1-67**.
- ③ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-67**.
- 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 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.
- ⑥ Includes CHH 100 kAIC rated main circuit breaker. 100 kAIC series rating combination is obtained when types BD, BR, BQ, BQC and GFGB branch breakers are used with CHH main.



### 3BR1224L125



### Three-Phase, Four-Wire—Main Lug Loadcenters—Aluminum Bus—208Y/120 Vac or 240 Vac, Insulated/Bondable (Unless Otherwise Noted)

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Lugs	Loadcenter Catalog Number <sup>①</sup> (With Combination or NEMA Type 3R Cover)
100	3	3	Indoor	6	#6-1/0	<b>3BR3L100S</b> <sup>②③</sup>
	3	3	Outdoor	6R		<b>3BR3L100R</b> <sup>③④</sup>
125	12	24	Indoor	C1	#6-3/0	<b>3BR1224L125</b> <sup>⑤⑥</sup>
	12	24	Outdoor	C1R		<b>3BR1224L125R</b> <sup>④⑤⑥</sup>
150	18	36	Indoor	C2	#6-4/0	<b>3BR1836L150</b>
	18	36	Outdoor	C3R		<b>3BR1836L150R</b>
	24	42	Indoor	D1	#4-300 kcmil	<b>3BR2442L150</b>
	24	42	Outdoor	D1R		<b>3BR2442L150R</b> <sup>④</sup>
200	12	24	Indoor	C4	#4-300 kcmil	<b>3BR1224L200</b> <sup>⑥</sup>
	12	24	Outdoor	C3R		<b>3BR1224L200R</b> <sup>④⑥</sup>
	18	36	Indoor	C4	#4-300 kcmil	<b>3BR1836L200</b>
	18	36	Outdoor	C3R		<b>3BR1836L200R</b>
	30	42	Indoor	G1	#4-300 kcmil	<b>3BR3042L200</b>
	30	42	Outdoor	G1R		<b>3BR3042L200R</b> <sup>④</sup>
	42	42	Indoor	L1	#4-300 kcmil	<b>3BR4242L200</b>
	42	42	Outdoor	L1R		<b>3BR4242L200R</b> <sup>④</sup>
225	42	42	Indoor	L1	#4-300 kcmil	<b>3BR4242L225</b>
	42	42	Outdoor	L1R		<b>3BR4242L225R</b> <sup>④</sup>

### 3BR4242L400F



### Three-Phase, Four-Wire—Main Lug Loadcenters—Aluminum Bus—208Y/120 Vac or 240 Vac, Insulated/Bondable Split Neutral

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Lugs	Commercial Loadcenter Catalog Number <sup>⑦</sup>	
						With Flush or NEMA Type 3R Cover	With Surface Cover
400	42	42	Indoor	22	(1) 250-750 kcmil	<b>3BR4242L400F</b>	<b>3BR4242L400S</b>
	42	42	Outdoor	46	or (2) #3/0-250 kcmil	<b>3BR4242L400R</b> <sup>④</sup>	—
600	42	42	Indoor	22	(2) #2-500 kcmil	—	<b>3BR4242L600S</b>

#### Notes

- ① Ground bar kits priced separately. See **Page V1-T1-67**.
- ② Surface cover only.
- ③ Insulated/bondable single neutral.
- ④ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-67**.
- ⑤ Has notch for BREQS125 hold-down kit.
- ⑥ 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.
- ⑦ Door lock and key included with loadcenter.

Box sizes **Pages V1-T1-73** through **V1-T1-77**.

# 1.2

## Loadcenters and Circuit Breakers

### Type BR Loadcenters and Circuit Breakers

1

3BR3030N100



3BR4242N225NY



### Three-Phase, Four-Wire—Convertible Loadcenters—Aluminum Bus—208Y/120 Vac or 240 Vac, Insulated/Bondable Split Neutral

Main Ampere Rating <sup>①</sup>	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of Circuits	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Breaker	Loadcenter Catalog Number <sup>②③</sup> (With Combination or NEMA Type 3R Cover)
100 <sup>④</sup>	30	30	Indoor	D1	See main breaker kit and main lug kit tables on Page V1-T1-63	3BR3030N100 <sup>⑤</sup>
	30	30	Outdoor	D1R		3BR3030N100R <sup>⑤⑥</sup>
125 <sup>④</sup>	12	24	Indoor	C1		3BR1224N125 <sup>⑤⑥⑦</sup>
	12	24	Outdoor	C1R		3BR1224N125R <sup>⑤⑥⑦⑧</sup>
200	30	42	Indoor	L1		3BR3042N200
225	42	42	Indoor	L2		3BR4242N225
	42	42	Indoor	B		3BR4242B225NY <sup>⑤</sup>

#### Notes

- ① The maximum rating of the loadcenter is the main circuit breaker rating when used as service entrance equipment.
- ② 100 A, 125 A and 200 A 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. See Page V1-T1-67.
- 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-T1-67.
- ⑦ Convertible to maximum of 100 A main circuit breaker and 125 A 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.
- ⑨ Order 3BR42FTNY or 3BR42STNY cover separately.

Box sizes Pages V1-T1-73 through V1-T1-77.

### Spa Panels



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## Spa Panels

### Product Description

Eaton's BR Spa Panels distribute power to outdoor loads and provide protection for people from electric shock. Save time and money with streamlined installation procedures and easy-access features. Spa panels meet NEC requirements by providing a ground fault circuit interruption device and a disconnect switch in a single simple device. Ships assembled prewired, factory tested and ready to install.

### Features

- 10-year warranty
- UL Listed
- Factory-installed two-pole ground fault circuit interrupter (GFCI)

### Product Selection

#### BR Spa Panel



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

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60 °C or 75 °C for Main Lugs	Catalog Number
	Space	Poles				
40	—	—	Outdoor	5R	#8-#2	<b>BR40SPAST</b> ①
50	—	—	Outdoor	5R	#8-#2	<b>BR50SPAST</b> ②

#### Notes

- ① Includes a GFTCB240 breaker, factory installed.
- ② Includes a GFTCB250 breaker, factory installed.

#### Riser Panel



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### 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.

#### Product Selection

##### BR1224L125RIS



#### Riser Panel

Main Ampere Rating	Number of 1-Inch (25.4 mm) Spaces	Maximum Number of 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	<b>BR1224L125RIS</b>
125	12	24	Indoor	C4	#6-2/0	<b>BR1224L125RISBP</b> ①
125	20	24	Indoor	C4	#6-2/0	<b>BR2024L125RIS</b>
125	20	24	Indoor	C4	#6-2/0	<b>BR2024L125RISBP</b> ①
125	20	30	Indoor	C2	#6-2/0	<b>BR2030L125RIS</b>
200	30	40	Indoor	D1	#1-300	<b>BR3040L200RIS</b>

##### BRGUTTER (Shown with Loadcenter)



#### Riser Panel Accessories

##### Catalog Number

**BRGUTTER** ②

**GTAP250**

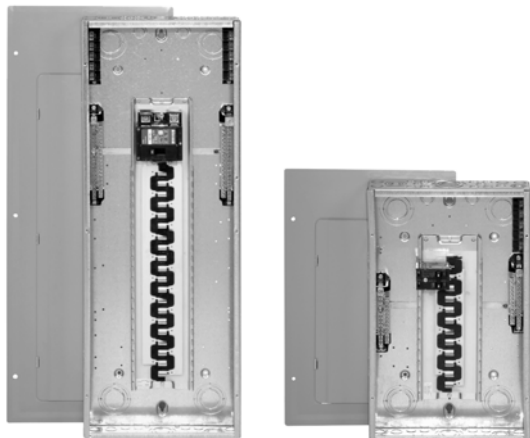
#### Notes

- ① Bulk-packaged loadcenter without carton. Must be ordered in multiples of 16.
- ② Refer to **Page V1-T1-74** for dimensions. BRGUTTER is box size C2.

#### Accessories

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

### BR Renovation Loadcenters



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## Type BR Renovation Loadcenter

### 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

### 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
- Single-pole and two-pole breakers included
- 10-year warranty on loadcenter and breakers

## Product Selection

### BR2020B100RN



### BR Value Packs <sup>①</sup>

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 100 A 10k main breaker 10/20 circuit surface-mount box is 11.75" wide x 13" tall	#6-1/0	0	(2) BR115	(1) BR230	<b>BR1020B100SRNV</b>
	Single-phase 100 A 10k main breaker 10/20 circuit flush-mount box is 11.75" wide x 13" tall		0	(2) BR115	(1) BR230	<b>BR1020B100FRNV</b>

### Note

<sup>①</sup> Indoor enclosure type.

**Options and Accessories—Mechanical Interlocks**



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**BR Loadcenter Options and Accessories**

**Product Selection**

**Plug-on Neutral Installation Kits and Parts**

**Plug-on Neutral Installation and Parts**

Description	Ordering Quantity <sup>①</sup>	Catalog Number
Bonding kit for bonding the neutral bus to the loadcenter	1	<b>BONDKITP</b>
Cover replacement latch—indoor loadcenters (white)	1	<b>LATCHPW</b>
Door replacement latch—outdoor loadcenters	1	<b>CH3RLATCH</b>
Incoming 2/0 neutral lug	1	<b>NLP20</b>
Incoming 300 kcmil neutral lug	1	<b>NLP300</b>
Screws used to mount loadcenter cover	25	<b>LCCS</b>
Screws used to mount loadcenter cover (white)	25	<b>LCCSW</b>
Spray paint—12 oz can (white)	1	<b>SPCWH</b>
Series rating caution label	25	<b>SRL</b>
Circuit directory (2) 42 Ckt cards, (2) adhesive plastic sleeves	12	<b>CKTDIR</b>
Circuit directory—adhesive backed	10	<b>TCD</b>
Keyed door lock for loadcenter trim door	1	<b>TDL</b>
Terminal insulator kit—Type CSR, CSH, BW, BWH mains	10	<b>TICSR300</b>
Terminal insulator kit—Type CH, BR, BRH, BRHH, BRX mains	10	<b>TIMCB3/0</b>
Five-circuit terminal block for renovation	1	<b>RN5TB</b>
Retaining bracket for backfed main breaker—BR	1	<b>BRPHD</b>
Mechanical interlock kit for BR loadcenters with backfed main breaker	1	<b>BRPMIKBR</b> <sup>②</sup>
Bulk pack—mechanical interlock kit for BR loadcenters with backfed main breaker	10	<b>BRPMIKBRP</b> <sup>②</sup>
Mechanical interlock kit for BR loadcenters with Type CSR main breaker	1	<b>BRPMIKCSR</b> <sup>②</sup>
Bulk pack—mechanical interlock kit for BR loadcenters with Type CSR main breaker	10	<b>BRPMIKCSR</b> <sup>②</sup>
Gutter tap kit for riser panels (250 mcm)	1	<b>GTAP250</b>
Replacement main lugs for 200 A/225 A MLO or convertible panels (#1–300 kcmil)	1	<b>BRPL200</b>
1-inch filler plates for branch breakers slot in BR loadcenter	25	<b>BRFP</b>
Multipack—1-inch filler plates for branch breakers slot in BR loadcenter (5 pieces)	1	<b>BRFPP</b>
Circuit marking strip for BR loadcenter cover/ door	1	<b>BRMS</b>
CSR main breaker filler plate (gray)	1	<b>CSRFPG</b>
Cover replacement latch—indoor loadcenters (gray)	1	<b>LATCHPG</b>
Spray paint—12 oz can (ANSI 61 light gray)	1	<b>SPC61</b>

**Notes**

- ① Must be purchased in multiples of ordering quantities indicated.
- ② Not compatible with legacy style BR loadcenters.

**BRSF125**



**3BRS225**



**BRL200**



**TDL**



### Legacy 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 <sup>①</sup>	Catalog Number
<b>Main and Sub-Feed Lug Blocks</b>					
2	125	2	#8–2/0	1	<b>BRSF125</b>
	150	2	#8–2/0	1	<b>BRSF150</b> <sup>②</sup>
	225	4	#2–300 kcmil	1	<b>BRPSF225</b>
3	150	3	#8–2/0	1	<b>3BRSF150</b> <sup>②</sup>
	225	6	#2–300 kcmil	1	<b>3BRS225</b>
<b>Main Lugs</b>					
Two-pole, 200 A stud mounted (includes deadfront filler plate)			#1–300 kcmil	1	<b>BRL200</b>
Neutral/ground lug			#2/0 maximum	1	<b>NL20</b>
Add-on neutral or ground lug			#3/0 maximum	1	<b>NL30</b>
			300 kcmil maximum	1	<b>NL300</b>
<b>Filler Plates</b>					
1-inch (25.4 mm) circuit breaker space				25	<b>BRFP</b>
BW main circuit breaker space (with hardware)				1	<b>BWFP</b>
Door lock—12–42 circuits, and 100–225 A				1	<b>TDL</b>
Door lock—4–8 circuits, 125 A				1	<b>CH9FL</b>
ANSI-61 light gray touchup paint for current loadcenters				1	<b>SPC61</b>
Isolated neutral assembly (computer circuits)				1	<b>BINA</b>
Circuit directory—adhesive backed				10	<b>TCD</b>
Cover screws				25	<b>LCCS</b>
Cover replacement latch (gray) 14-5/16 (363.5 mm) wide loadcenters only				1	<b>BRRL</b>
Circuit marking strip (next to breaker)				10	<b>BRMS</b>
Circuit identification label (preprinted breaker labels)				25	<b>CHBL</b>
Series rated caution label				25	<b>SRL</b>
Bonding strip with screw				1	<b>BSSUSE</b>

### Three-Phase Accessories

#### Three-Phase Main Breaker Kits—10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Catalog Number
100	#6–4/0	<b>CC3100N</b>
125	#6–4/0	<b>CC3125N</b>
150	#6–4/0	<b>CC3150N</b>
175	#2/0–300 kcmil	<b>CC3175N</b>
200	#2/0–300 kcmil	<b>CC3200N</b>
225	#2/0–300 kcmil	<b>CC3225N</b>

#### Three-Phase Main Lugs Kit for Convertible Loadcenters

Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Catalog Number
225	#1–300 kcmil	<b>3BRL225</b>
225	#1–300 kcmil	<b>3BRS225</b> <sup>③</sup>

#### Notes

<sup>①</sup> Must be purchased in multiples of ordering quantities indicated.

<sup>②</sup> #8–2/0 wire size range is 75 °C rated only.

<sup>③</sup> For subfeed.

Box sizes **Pages V1-T1-73** through **V1-T1-77**.

#### Type BR Mechanical Interlock Kits



**Type BR Loadcenter with Mechanical Interlock Kit**

### Type BR Mechanical Interlock Kits

#### Product Description

With the aging electrical infrastructure and frequent severe storms, power outages are becoming more and more frequent, affecting thousands of people nationwide. Eaton mechanical interlock kit provides an easy and cost-effective solution when using backup emergency power.

This solution expands the robust line of emergency power products and accessories.

#### Features and Benefits

- Prevents utility and generator supplies from being on at the same time
- Protects utility linemen from dangerous generator backfeed
- Robust interlock design
- Offered in two unique styles for almost any BR loadcenter, which can reduce inventory levels
- Quick and easy installation—drill points or fixtures for pilot holes are provided on all applicable BR loadcenters; no additional assembly is required

### Contents

#### Description

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#### Standards and Certifications

- UL 67 Listed—For use with BR loadcenters
- Meets NEC Article 702



#### Product Selection



Each mechanical interlock kit includes:

- Interlock assembly
- Hold down kit ①
- New labels
- Necessary screws

Warranty information:

- 10-year warranty on all Type BR circuit breakers and loadcenters
- Refer to Eaton for complete warranty details

#### Mechanical Interlock Kits ②

	Description	Legacy Style Loadcenters Catalog Number	Plug-On Neutral Style Loadcenters Catalog Number
 <b>BRMIKBR</b>	Single	<b>BRMIKBR</b>	<b>BRPMIKBR</b>
	Bulk pack ③	<b>BRMIKBRBP</b>	<b>BRPMIKBRBP</b>
 <b>BRMIKCSR</b>	Single	<b>BRMIKCSR</b>	<b>BRPMIKCSR</b>
	Bulk pack ③	<b>BRMIKCSRBP</b>	<b>BRPMIKCSRBP</b>

#### Notes

- ① For breakers under 70 A used in backfed applications, add "B" to the end of the catalog string to get the appropriate "hold-down" version.
- ② Clamshell packaged.
- ③ Bulk pack contains 10 units, individually packaged.



### Mechanical Interlock Cover

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

### Mechanical Interlock Cover

Fits Loadcenter Catalog Numbers	Mechanical Interlock Trim/Deadfront Catalog Numbers	Mechanical Interlock Kit Catalog Numbers
<b>Indoor</b>		
BR816B100	BRCOVC10M	BRMIKBR
BR816N100		
BR1212B100	BRCOVC12M	
BR1220B100		
BR1220H100		
BR1224N125	BRCOVC13M	
BR1616B100	BRCOVC16M	
BR1620B100		
BR1624B100		
BR1624B125	BRCOVC17M	
BR1624N125		
BR2020B100, BR2020BC100, BR2020H100, BR2020HC100	BRCOVC22M	
BR2024H100		
BR2020HC100		
BR2030B100		
BR2040B100		
BR2024B125	BRCOVC23M	
BR2024N125, BR2024NC125		
BR3030B100, BR3030BC100	BRCOVC59M	
BR3030H100, BR3030HC100		
<b>Raintight</b>		
BR1020B100R	BR3RDF1M	Field-installed interlock kits not available for these catalog numbers.
BR1224B100R		
BR1224N125R, BR1224NC125R		
BR1624B100R	BR3RDF2M	
BR1624N125R		
BR2024B100R, BR2024B125R	BR3RDF4M	
BR2024N125R, BR2024NC125R		



## Mechanical Interlock Cover, continued

Fits Loadcenter Catalog Numbers	Mechanical Interlock Trim/Deadfront Catalog Numbers	Mechanical Interlock Kit Catalog Numbers
<b>Indoor</b>		
BR1630B150	BRCOV16C4FM	BRMIKCSR
BR1224N200		
BR1632B200		
BR1632N200		
BR2030B150	BRCOV20C4FM	
BR2030H150		
BR2040B150		
BR2040B200, BR2040BC200	BRCOV20D1FM	
BR2040H200		
BR2040N200, BR2040NC200		
BR2430B150, BR2430BC150	BRCOV30G1FM	
BR3030B150		
BR3030H150		
BR3040B150		
BR2440B200		
BR2440N200		
BR3040BC200		
BR3040N200, BR3040NC200		
BR4040BC200	BRCOV40L1FM	
BR4040N200, BR4040NC200		
BR4242B225	BRCOV42L2FM	
<b>Raintight</b>		
BR816B150RF	BR3RDF5M ①	
BR816B200RF		
BR816N200RF		
BR1224N200R		
BR2030B150R	BR3RDF11M ①	
BR2040B150R		
BR2040B200R		
BR2040B225R		
BR2040N200R		
BR3030B150R	BR3RDF12M ①	
BR3040B200R		
BR3040N200R		
BR4040B200R	BR3RDF13M ①	
BR4040N200R		
BR48B200RF	BR3RDF14M	
BR4242B225R	BR3RDF15M ①	
<b>Mechanical Interlock Loadcenter Replacement Covers ②</b>		
BR2020B100M, BR2020BC100M	BRCOV20C2FM	Field-installed interlock kits not available for these catalog numbers.
BR2024H100M		
BR3030BC100M	BRCOV30D1FM	

**Notes**

① Deadfront only.

② Can only be provided as replacement covers for factory-installed mechanically interlock loadcenters.

### Field-Installable Rainproof Conduit Hubs

Description	Conduit Size— Inches (mm)	Ordering Quantity <sup>①</sup>	Catalog Number
Group 1—for use with 70, 100 and 125 A MLO and MCB loadcenters and circuit breaker enclosures and the following 150 and 200 A 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 225 A MLO and MCB loadcenters and circuit breaker enclosures except for the following 200 A loadcenters: BR48B200RF. Also for use with 400 and 600 A 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

### GBKP1420

### Plug-on Neutral Ground Bar Kits



Description (See Legend)	Length Inches (mm)	Ordering Quantity <sup>①</sup>	Catalog Number
●○○○○○●○○○○○	4.05	1	GBKP10 <sup>②</sup>
●○○○○○●○○○○○	5.05	1	GBKP1020 <sup>②</sup>
●○○○○○●○○○○○■	4.05	1	GBKP10P <sup>②③</sup>
●○○○○○●○○○○○	5.39	1	GBKP14 <sup>②</sup>
●○○○○○●○○○○○	6.39	1	GBKP1420 <sup>②</sup>
●○○○○○●○○○○○	5.39	1	GBKP14P <sup>②③</sup>
●○○○○○●○○○○○	7.72	1	GBKP21 <sup>②</sup>
●○○○○○●○○○○○	8.72	1	GBKP2120 <sup>②</sup>
●○○○○○●○○○○○	7.72	1	GBKP21P <sup>②③</sup>
●○○○○○●	2.39	1	GBKP5 <sup>②</sup>
●○○○○○■	3.39	1	GBKP520 <sup>②</sup>
●○○○○○●	2.39	1	GBKP5P <sup>②③</sup>

### GBK14

### Legacy Ground Bar Kits



### BRGBK39512



Description (See Legend)	Length Inches (mm)	Ordering Quantity <sup>①</sup>	Catalog Number
●○○○○○●	2.54 (64.5)	1	GBK5 <sup>④</sup>
●○○○○○■	3.59 (91.2)	1	GBK520 <sup>④</sup>
●○○○○○●○○○○○	4.29 (109.0)	1	GBK10 <sup>④</sup>
●○○○○○●○○○○○■	5.34 (135.6)	1	GBK1020 <sup>④</sup>
●○○○○○●○○○○○	5.69 (144.5)	1	GBK14 <sup>④</sup>
●○○○○○●○○○○○■	6.74 (171.2)	1	GBK1420 <sup>④</sup>
●○○○○○●○○○○○	8.14 (206.8)	1	GBK21 <sup>④</sup>
●○○○○○●○○○○○■	9.19 (233.4)	1	GBK2120 <sup>③④</sup>

#### Ground Bar Legend

- = (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al
- = (1) #6–2/0 Cu/Al
- = Mounting hole

#### Notes

- ① Must be purchased in multiples of ordering quantities indicated
- ② Distance between mounting holes is 2 inches (50.8 mm).
- ③ Individually packaged.
- ④ Distance between mounting holes is 1-3/4 inches (44.5 mm).



# 1.2

## Loadcenters and Circuit Breakers

### Type BR Loadcenters and Circuit Breakers

1

#### 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.



Before



After

#### BR Goof Collars

Inches (mm) Height	Width	Catalog Number	
		BR Box Size	Goof Collar
21.00 (533.4)	19.00 (482.6)	X0	<b>BRPX0GC2119</b>
23.00 (584.2)	19.00 (482.6)	X1	<b>BRPX1GC2319</b>
25.00 (635.0)	19.00 (482.6)	X2	<b>BRPX2GC2519</b>
27.00 (685.8)	19.00 (482.6)	X3	<b>BRPX3GC2719</b>
31.00 (787.4)	19.00 (482.6)	X4	<b>BRPX4GC3119</b>
34.00 (863.6)	19.00 (482.6)	X5	<b>BRPX5GC3419</b>
39.00 (965.2)	19.00 (482.6)	X6	<b>BRPX6GC3919</b>
41.00 (1041.4)	19.00 (482.6)	X7	<b>BRPX7GC4119</b>
43.00 (1092.2)	19.00 (482.6)	X8	<b>BRPX8GC4319</b>
48.00 (1219.2)	19.00 (482.6)	X9	<b>BRPX9GC4819</b>

#### Note

Type BD Duplex, BQ and BQC Quadplex circuit breakers can be installed in Circuit Limiting (CTL) listed BR loadcenters. Type BR twin breakers can be installed in Non-CTL BR loadcenters.

**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 A rms symmetrical.
- B. Circuit breakers shall be a minimum of 125 A frame. Circuit breakers 15 A through 125 A 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. Busbars 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.
- 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 20 A 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 Volume 1, Tab 2 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.

### 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 70–225 A, 8 to 42 circuits  
22 kAIC: All convertible loadcenters using 125 A rated Type BRH main breakers or selected factory-installed 125 A rated Type BRH main breaker

25 kAIC: All convertible and factory-installed single-phase loadcenters rated 150 and 200 A using Type CSR main breakers

#### Main Breaker/Main Lug Loadcenters

Single-phase  
Main breaker: 100, 125, 150, 200, 225, 400, 600 A  
Main lugs: 70, 125, 150, 200, 225, 400, 600 A

Three-phase  
Main breaker: 100, 125, 150, 200, 225, 400, 600 A  
Main lugs: 100, 125, 150, 200, 225, 400, 600 A

#### Convertible Loadcenters

Main breaker: single-phase up to 200 A and three-phase up to 225 A

Main lugs: single-phase up to 200 A and three-phase up to 150 A

#### Branch Breakers

Types BR, BRH and BRHH: 10–150 A, single-, two- and three-pole; selected amperage available in switching duty, HACR, shunt trip and high magnetic setting  
Type GFTCB: 15–60 A  
Types BJ and BJH: 125–225 A; two- and three-pole  
Type BD Twin: 10–50 A; two of one-pole; take one 1-inch (25.4 mm) space

Type BQ and BQC Multibreaker: 15–30 A. Two of two-pole or one two-pole and two one-pole; takes two 1-inch (25.4 mm) spaces  
Type BRW: 15–30 A; two-pole water heater breakers  
Type BRSN: 15–30 A; two-pole switching neutral breakers  
Type BR 15–100 A; two-pole, 240 Vac delta breakers  
BR-AFCl 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, 225 A—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

## BR Series Short Circuit Ratings

Main Module Breaker Family or Class Fuse	System AIC Rating at 240 Vac Maximum	Meter Module Tenant Breaker or Loadcenter Main Breaker Family	M.M. Tenant Breaker or Loadcenter Main Breaker Short Circuit Rating	Loadcenter Branch Breaker (Single-, Two- or Three-Pole) <sup>①②</sup>
None	10,000	None	N/A	③, BRCAF, GFTCB
Without Main Disconnect	10,000	BR, CC, BW, CCV	10,000	③, BRCAF, GFTCB
Cable Tap Box Family	22,000	BRH	22,000	③, BRCAF, GFTCB
Type 1MTB, 3MTB	22,000	QBHW	22,000	③, BRCAF
Main Switch Module Family	25,000	CSR, CCVH <sup>④</sup>	25,000	③, BRCAF, GFTCB
Type 1MFS, 3MFS Type 1BS, 3BPS	42,000	BRHH, CVS	42,000	③, BRCAF, GFTCB
Main Breaker Module Family	65,000	BRX	65,000	③, BRCAF, GFTCB
Type 1MCB, 3MCB	65,000	CV <sup>⑤</sup>	65,000	BR, BD, BRD, BQ, BQC, GFTCB
	65,000	ED, GHB	65,000	④, BRCAF, GFTCB
	65,000	FD <sup>⑥</sup>	65,000	④, GFTCB
	65,000	KD, HKD	100,000	BR
	100,000	KDC	100,000	BR
	100,000	CVH	100,000	BR, BD, BRD, BQ, BQC, GFTCB
	65,000	T-/J-fuse (200 A max.)	100,000	③, BRH
Main Breaker Module Family	65,000	BRHX	22,000	③, BRCAF, GFTCB
Type 1MCB, 3MCB RGH 2000 A, NGS 1200 A MDL 800 A, LGS/LD 600 A, KD 400 A	100,000	BRHX <sup>⑦</sup>	22,000	BR <sup>⑦</sup> , ETN01, BRAFGF, BRCAF, GFTCB
Type 1MCB, 3MCB RGH 2000 A, NGS 1200 A MDL 800 A, LGS/LD 600 A, KD 400 A				
Main Switch Module Family Type 1MFS, 3MFS				
with Class T fuse 600 A maximum	100,000	BRH	22,000	③, BRCAF, GFTCB
with Class T fuse 1200 A maximum	100,000	BRHH, CVS	42,000	③, BRCAF, GFTCB

**Notes**

- ① Breakers in this column may not fit in this loadcenter, see breaker info to left.  
 ② GFTCB/GFCB: 50 A maximum unless otherwise noted.  
 ③ Also includes these branch breaker families: BR, BD, BRD, BQ, BQC, BRAFGF, ETN01.  
 ④ GFTCB: 30 A maximum.  
 ⑤ GFTCB: single-pole, 40 A maximum.  
 ⑥ FD: 150 A only with ETN01.  
 ⑦ BR: 110 A maximum.



### Dimensions

Approximate Dimensions in Inches (mm)

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

**Note:** Box sizes do not include covers/fronts.

#### Plug-on Neutral Residential Loadcenters—NEMA Type 1 Indoor

Box Size	Height	Width	Depth
X0	16.75 (425.5)	14.30 (363.2)	3.80 (96.5)
X1	18.75 (476.3)	14.30 (363.2)	3.80 (96.5)
X2	21.00 (533.4)	14.30 (363.2)	3.80 (96.5)
X3	23.00 (584.2)	14.30 (363.2)	3.80 (96.5)
X4	27.00 (685.8)	14.30 (363.2)	3.80 (96.5)
X5	29.13 (739.9)	14.30 (363.2)	3.80 (96.5)
X6	34.13 (866.9)	14.30 (363.2)	3.80 (96.5)
X7	37.00 (939.8)	14.30 (363.2)	3.80 (96.5)
X8	39.00 (990.6)	14.30 (363.2)	3.80 (96.5)
X9	45.00 (1,143.0)	14.30 (363.2)	3.80 (96.5)
X10	48.38 (1,228.9)	14.30 (363.2)	3.80 (96.5)

#### Legacy 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)
L3	48.38 (1228.3)	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)

#### Plug-on Neutral Residential Loadcenters—NEMA Type 3R Outdoor

Box Size	Height	Width	Depth
X0R	16.75 (425.5)	14.31 (363.5)	5.19 (131.8)
X1R	18.75 (476.3)	14.31 (363.5)	5.19 (131.8)
X2R	21.00 (533.4)	14.31 (363.5)	5.19 (131.8)
X11R	25.00 (635.0)	14.31 (363.5)	5.19 (131.8)
X5R	29.13 (739.8)	14.31 (363.5)	5.19 (131.8)
X6R	34.13 (866.8)	14.31 (363.5)	5.19 (131.8)
X7R	37.00 (939.8)	14.31 (363.5)	5.19 (131.8)
X8R	39.00 (990.6)	14.31 (363.5)	5.19 (131.8)
X10R	48.75 (1238.2)	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)

#### Legacy 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)
L3R	48.75 (1238.2)	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)

# 1.2

## Loadcenters and Circuit Breakers

### Type BR Loadcenters and Circuit Breakers

1

Approximate Dimensions in Inches (mm)

#### 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)

#### ECC Unit Enclosures—NEMA Type 1 Indoor

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

#### ECC Unit Enclosures—NEMA Type 3R Outdoor

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

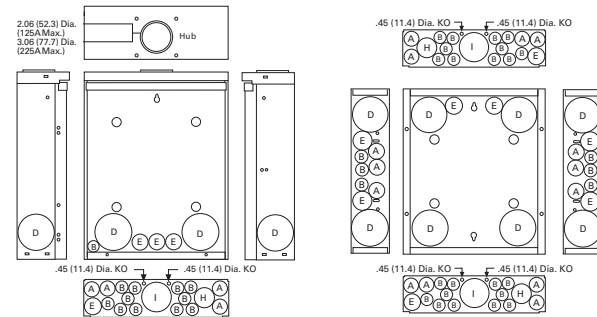
#### Residential Loadcenter Knockouts

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

Code	Diameter	Additional KO	Additional KO	Additional KO	Additional KO
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)	—	—

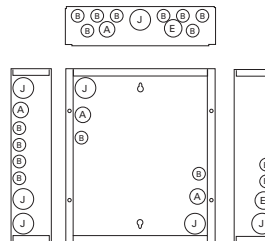
Note: Additional KOs are placed concentrically.

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

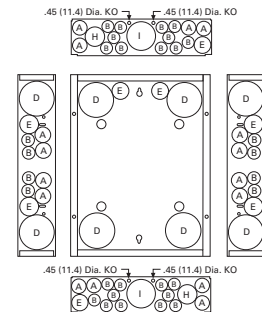


**Outdoor Boxes**  
**B1R, B2R, C1R, C3R, D1R, G1R,**  
**L1R, L2R, X0R, X1R, X2R, X5R,**  
**X6R, X7R, X8R, X10R, X11R**

**Indoor Boxes**  
**B1, B2**



**Indoor Boxes**  
**A1**



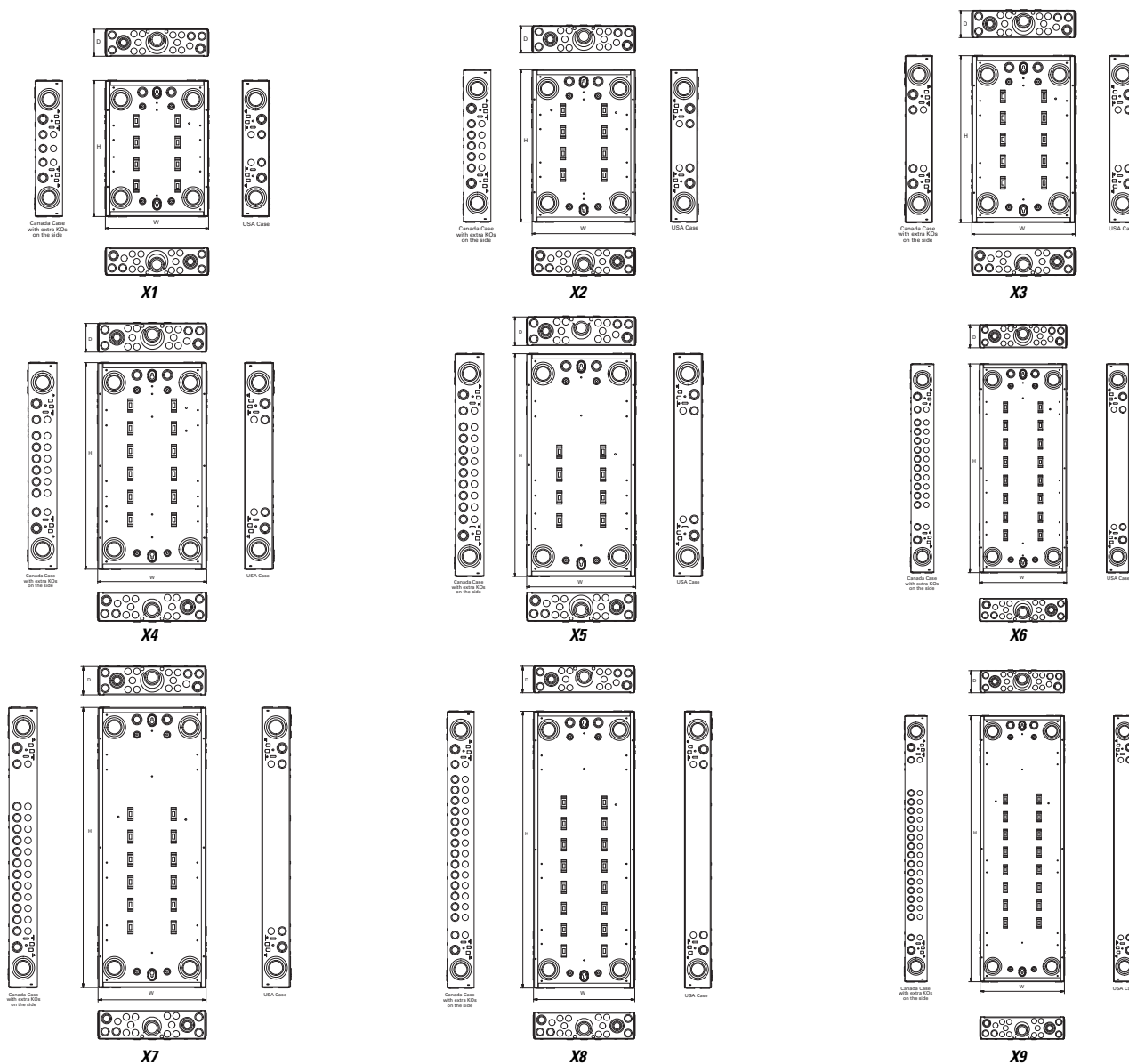
**Indoor Boxes**  
**C1, C2, C4, D1, G1, L1, L2**

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

#### Box Sizes for X1–X9

Box Size	Height	Width	Depth
X1	18.90 (480.1)	14.30 (363.2)	3.80 (96.5)
X2	21.10 (535.9)	14.30 (363.2)	3.80 (96.5)
X3	23.10 (586.7)	14.30 (363.2)	3.80 (96.5)
X4	27.10 (688.3)	14.30 (363.2)	3.80 (96.5)
X5	29.20 (741.7)	14.30 (363.2)	3.80 (96.5)
X6	34.20 (868.7)	14.30 (363.2)	3.80 (96.5)
X7	37.10 (942.3)	14.30 (363.2)	3.80 (96.5)
X8	39.10 (993.1)	14.30 (363.2)	3.80 (96.5)
X9	45.10 (1145.5)	14.30 (363.2)	3.80 (96.5)

#### Knockout Positions



# 1.2

## Loadcenters and Circuit Breakers

### Type BR Loadcenters and Circuit Breakers

1

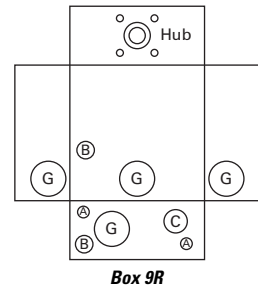
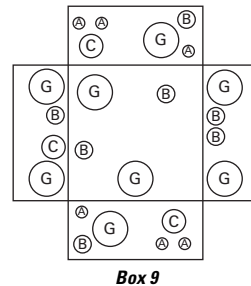
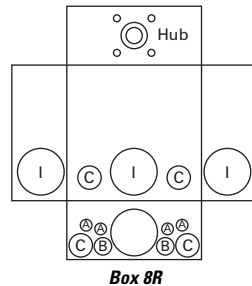
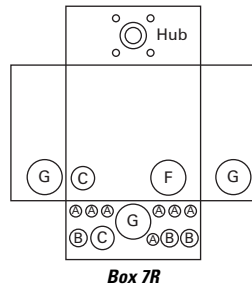
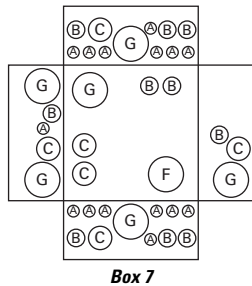
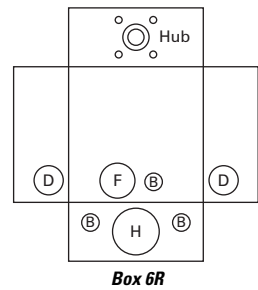
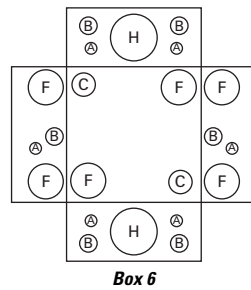
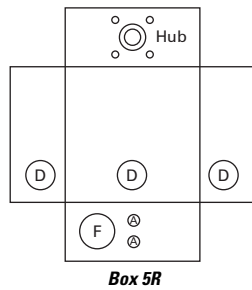
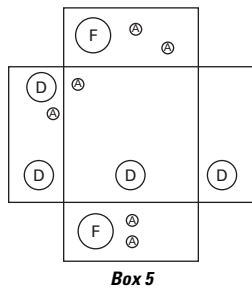
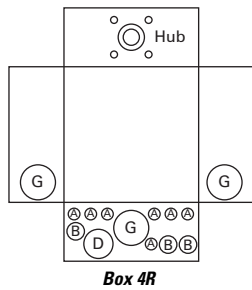
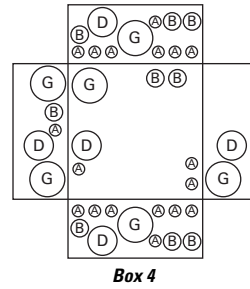
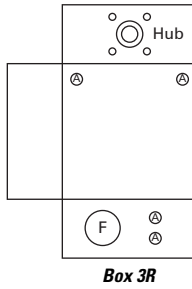
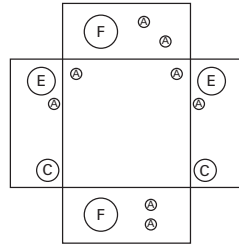
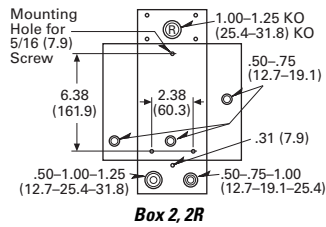
Approximate Dimensions in Inches (mm)

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

Code	Diameter	Additional KO	Additional KO	Additional KO
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)	—

**Note:** Additional KOs are placed concentrically.

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



Approximate Dimensions in Inches (mm)

### Commercial Loadcenter Knockouts

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

Code	Diameter	Additional KO	Additional KO	Additional KO
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)	—

**Note:** Additional KOs are placed concentrically.

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

Code	Diameter	Additional KO	Additional KO	Additional KO
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.	—	—	—

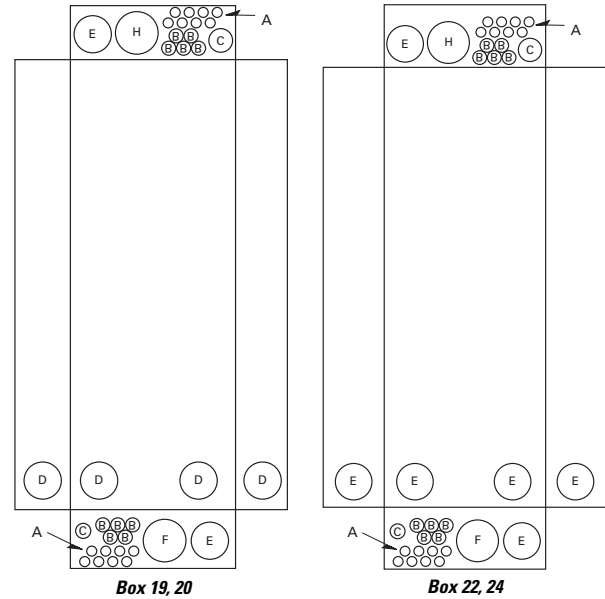
**Note:** Additional KOs are placed concentrically.

### Unit Enclosure Knockouts, Types ECB and ECC Knockouts

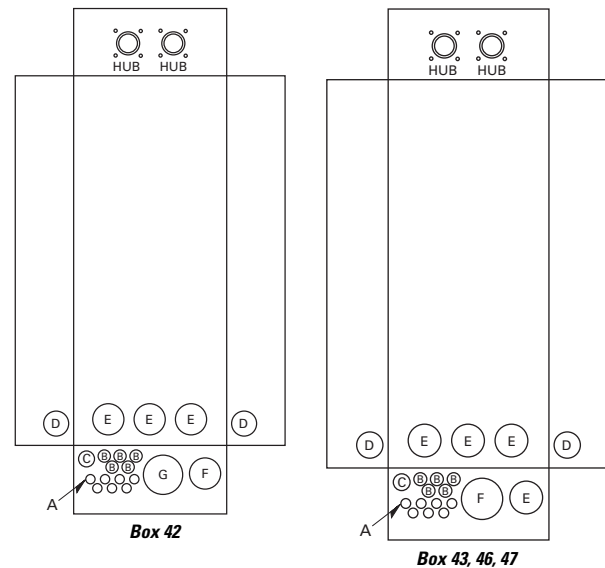
Code	Diameter	Additional KO	Additional KO	Additional KO	Additional KO
<b>NEMA Type 1 Indoor (Flush and Surface Trims)</b>					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)	2.50 (63.5)
<b>NEMA Type 3R Outdoor</b>					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)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

**Note:** Additional KOs are placed concentrically.

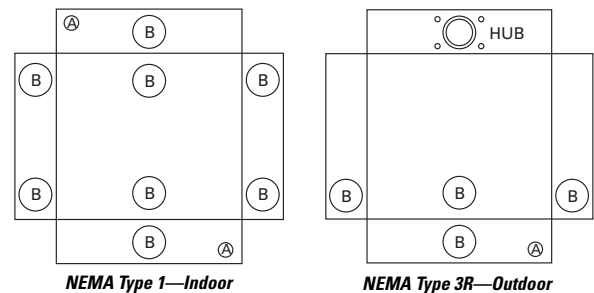
### Indoor Commercial Enclosures



### Outdoor Commercial Enclosures



### Unit Enclosure Knockouts



BR Circuit Breakers



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## BR 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, 2008 and 2011 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 A 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 GFTCB and GFEP—10/22 kAIC, 120 Vac and 120/240 Vac**

**Ground Fault Application Notes**

Single-pole GFTCBs are designed for use in two-wire, 120 Vac circuits. See **Page V1-T1-88** for a typical wiring configuration.

Two-pole GFTCBs 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-T1-88** 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 GFTCB 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



#### BRX2125



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

Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Single-Pole 120/240 Vac Requires One 1-Inch (25.4 mm) Space		Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces					
		10 per Shelf Carton		5 per Shelf Carton			22 kAIC	42 kAIC	65 kAIC
		10 kAIC Catalog Number	22 kAIC Catalog Number	10 kAIC Catalog Number	22 kAIC Catalog Number	22 kAIC Catalog Number ⑤	42 kAIC Catalog Number	65 kAIC 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	BR155	BRH155	BR255	BRH255	—	—	—	
60	#8-1/0	BR160	BRH160	BR260	BRH260	BRHX260	BRHH260	BRX260	
70	#8-1/0	BR170	BRH170	BR270	BRH270	BRHX270	BRHH270	BRX270	
80	#8-1/0	—	—	BR280	BRH280	BRHX280	BRHH280	BRX280	
90	#8-1/0	—	—	BR290	BRH290	BRHX290	BRHH290	BRX290	
100	#8-1/0	—	—	BR2100	BRH2100	BRHX2100	BRHH2100	BRX2100	
110	#8-1/0	—	—	BR2110	BRH2110	BRHX2110	BRHH2110	BRX2110	
125	#4-2/0	—	—	BR2125	BRH2125	BRHX2125	BRHH2125	BRX2125	

#### Notes

- ① Single-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 A and 600 A panels only.
  - ⑤ System series rating of 65 kAIC upstream when used in series with 22 kAIC BRHX breakers.
- 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.

BR Breakers



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

Three-Pole 240 Vac  
Common Trip Requires Three  
1-Inch (25.4 mm) Spaces  
5 per Shelf Carton



Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	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, Dual Function Arc Fault / Ground Fault Circuit Breakers, Type BR—10 kAIC, 120 Vac**

BRP120DF



**Type BR, 1-Inch (25.4 mm) Dual Function Type AFCI Circuit Breakers ②③**

Poles	Ampere Rating	Wire Size	Breaker Type	UL Type Designation for Series Ratings	Pigtail Catalog Number	Plug-on Neutral Catalog Number
Single-pole, 10 kAIC	15	#14-4	Dual Function AFCI/GFCI	ETN01	BRN115DF	BRP115DF
	20	#14-4	Dual Function AFCI/GFCI	ETN01	BRN120DF	BRP120DF

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

BRP120AF



**Type BR, 1-Inch (25.4 mm) Wide Combination Type AFCI Circuit Breakers**

Poles	Ampere Rating	Wire Size	Breaker Type	UL Type Designation for Series Ratings	Pigtail Catalog Number	Plug-on Neutral Catalog Number
Single-pole, 10 kAIC	15	#14-4	Combination AFCI	ETN01	BRN115AF ④	BRP115AF ④
	20	#14-4	Combination AFCI	ETN01	BRN120AF ④	BRP120AF ④
Two-pole, 10 kAIC	15	—	Combination AFCI	BRCAF	BRL215CAF	—
	20	—	Combination AFCI	BRCAF	BRL220CAF	—

**Notes**

- ① Single-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 Breaker qualifies as combination arc fault, per UL 1699.
- ③ Breaker qualifies as personnel protection ground fault, (5 mA) per UL 943.
- ④ Clamshell packaging available with CS modification code on the end of catalog number.

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. See **Volume 4** for bolt-on AF/GF breakers; QB1015AFGF, QB1020AFGF, QBH1015AFGF and QBH1020AFGF.

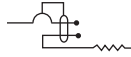


### Plug-on Ground Fault Circuit Breakers, Type GFTCB and GFEP—10/22 kAIC, 120 Vac and 120/240 Vac

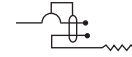
GFTCB220



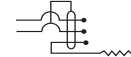
#### Type GFTCB Ground Fault Personnel Protection Circuit Breakers—5 mA—1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 10 kAIC



Single-Pole 120 Vac  
Requires One  
1-Inch (25.4 mm) Space  
1 per Shelf Carton



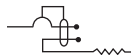
Single-Pole 120 Vac  
Requires One  
1-Inch (25.4 mm) Space  
1 per Shelf Carton



Two-Pole 120/240 Vac  
Common Trip Requires Two  
1-Inch (25.4 mm) Spaces  
1 per Shelf Carton

Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Plug-on Neutral Catalog Number	Pigtail Catalog Number	Catalog Number
15	#14–4	BRP115GF	BRN115GF	GFTCB215
20	#14–4	BRP120GF	BRN120GF	GFTCB220
25	#14–4	—	BRN125GF	GFTCB225
30	#14–4	—	BRN130GF	GFTCB230
35	#14–4	—	—	GFTCB235
40	#14–4	—	—	GFTCB240
45	#14–4	—	—	GFTCB245
50	#14–4	—	—	GFTCB250 ①
60	#14–6	—	—	GFTCB260

#### Type GFTCBH Ground Fault Personnel Protection Circuit Breakers—5 mA—1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 22 kAIC



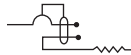
Single-Pole 120 Vac  
Requires One  
1-Inch (25.4 mm) Space  
1 per Shelf Carton



Two-Pole 120/240 Vac  
Common Trip Requires Two  
1-Inch (25.4 mm) Spaces  
1 per Shelf Carton

Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Pigtail Catalog Number	Catalog Number
15	#14–4	BRHN115GF	GFTCBH215
20	#14–4	BRHN120GF	GFTCBH220
25	#14–4	BRHN125GF	GFTCBH225
30	#14–4	BRHN130GF	GFTCBH230

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



Single-Pole 120 Vac  
Requires One  
1-Inch (25.4 mm) Space  
1 per Shelf Carton



Single-Pole 120 Vac  
Requires One  
1-Inch (25.4 mm) Space  
1 per Shelf Carton



Two-Pole 120/240 Vac  
Common Trip Requires Two  
1-Inch (25.4 mm) Space  
1 per Shelf Carton

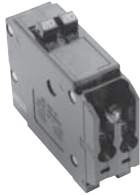
Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Plug-on Neutral Catalog Number	Pigtail Catalog Number	Catalog Number
15	#14–4	BRP115EP	BRN115EP	GFEP215
20	#14–4	BRP120EP	BRN120EP	GFEP220
25	#14–4	BRP125EP	BRN125EP	GFEP225
30	#14–4	BRP130EP	BRN130EP	GFEP230
40	#14–4	—	—	GFEP240
50	#14–4	—	—	GFEP250 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**

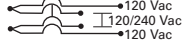


**Type BD Duplex  
(UL Type BRD)**



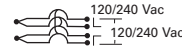
**Single-Pole ②**  
Requires One 1-Inch  
(25.4 mm) Space  
10 per Shelf Carton

**Type BQ Quadplex Independent Trip  
(UL Type BRD)**



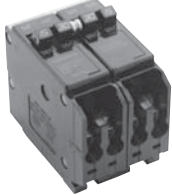
**Two-Pole ③ and Single-Pole ②**  
Requires Two 1-Inch  
(25.4 mm) Spaces  
5 per Shelf Carton

**Type BQ Quadplex Independent Trip  
(UL Type BRD)**

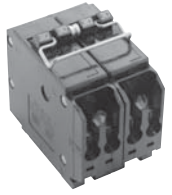


**Two-Pole**  
Requires Two 1-Inch  
(25.4 mm) Spaces  
5 per Shelf Carton  
120/240 Vac

**BQ2302115**



**BQ230230**



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

**Notes**

- ① Not suitable for use in plug-on neutral style loadcenters.
- ② All 15 and 20 A single poles are switch-duty rated.
- ③ All Type BD duplex and BQ quadplex circuit breakers carry listing for HACR applications.

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

BR2020



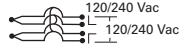
### Class Non-CTL, 1-Inch (25.4 mm) per Pole 10 kAIC—Breakers Do Not Have Rejection Tab Feature ①

#### Type BR Duplex



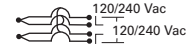
Single-Pole Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton

#### Type Brand BRD Quadplex Independent Trip



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

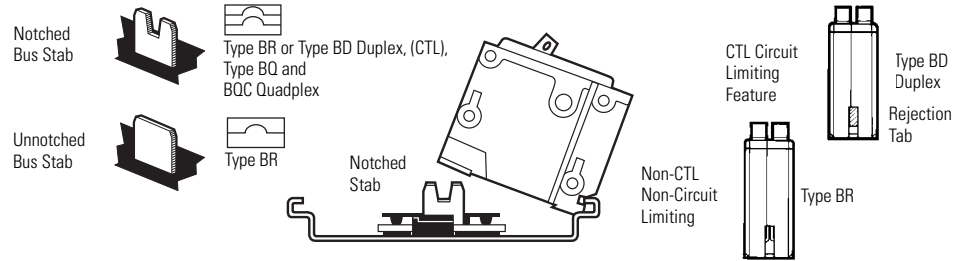
#### Type BRD Quadplex Common Trip Center and Outer Poles



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

Ampere Rating	120 Vac		120/240 Vac		Catalog Number	120/240 Vac		Catalog Number
	Catalog Number	Wire Size Range Cu/Al 65 °C or 75 °C	Outer Two-Pole Independent Trip	Center Two-Pole Independent Trip		Outer Two-Pole Common Trip	Center Two-Pole Common Trip	
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



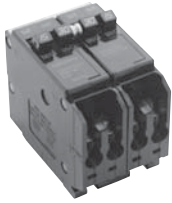
#### Note

① Suitable for use in plug-on neutral style loadcenters.

#### 1

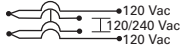
#### Common Trip Quadplex Breakers

BQC2302115



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

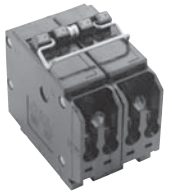
Type BQC Quadplex Common Trip Center Poles (UL Type BRD)



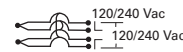
Two-Pole ② and Single-Pole ③  
Requires Two 1-Inch (25.4 mm) Spaces  
5 per Shelf Carton

120 Vac      120/240 Vac      120 Vac

BQC2302115



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



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

120/240 Vac

Ampere Rating		Ampere Rating			Ampere Rating		
Outer Left Single-Pole	Center Two-Pole Common Trip	Outer Right Single-Pole	Catalog Number	Wire Size Range 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 Not suitable for use in plug-on neutral style loadcenters.
- ② All Type BQC quadplex circuit breakers carry listing for HACR applications.
- ③ All 15 A and 20 A single poles are switch-duty rated.



## Options and Accessories

**THS1**



**BHLW2**



**BRQLW**



**MCBPL (Installed)**



**BHLW**



**BRLW2**



### Field Installation Kits and Parts

#### Description

Ordering  
Quantity <sup>①</sup>      Catalog  
Number

#### New Products

Padlockable device for locking the handle of BR long body AF/GF breaker into the ON or OFF position		<b>BRLAFGFLOFF</b>
Padlockable device for locking the handle of BR short body BRCAF, BRAFGF, QBCAF, QBAFGF breakers into the ON or OFF position		<b>BRCAFLOFF</b>

#### Handle Ties <sup>②</sup>

Handle tie bar for physically joining the handles of two adjacent single-pole Type BR circuit breakers (metal cylinder pin type)	10	<b>BHT</b>
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	<b>THOW</b>

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	<b>THS1</b>
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#### Handle Lockoffs <sup>③④</sup>

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) <sup>⑤</sup>	10	<b>BRLW</b>
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Padlockable device for locking the handle of a single-pole Type BR circuit breaker (handle mounted) <sup>⑥</sup>	10	<b>BRLW1</b>
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Padlockable device for locking the handle of a two- and three-pole Type BR circuit breaker (handle mounted) <sup>⑥</sup>	10	<b>BRLW2</b>
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Padlockable device for locking the handle of a single-pole Type BD Duplex, BQ or BQC Quadplex breaker (handle mounted) <sup>⑥</sup>	10	<b>BRDL1</b>
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Padlockable device for locking the handle of the two center poles and the two outer poles of two-pole Types BQ and BQC quadplex circuit breakers (escutcheon mounted) <sup>⑤</sup>	10	<b>BRQLW</b>
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Padlockable device for locking the handle of main circuit breaker Types CC and CHH into the ON or OFF position (screw mounted) <sup>⑦</sup>	1	<b>CCPL</b>
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Padlockable device for locking the handle of main breaker Types BW and CSR into the ON or OFF position (escutcheon mounted) <sup>⑤</sup>	1	<b>MCBPL</b>
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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) <sup>⑤</sup>	10	<b>BHLW</b>
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Device used to secure handle in ON or OFF position for single-pole Type BR circuit breakers (handle mounted) <sup>⑥</sup>	10	<b>BHLW1</b>
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Device used to secure handle in ON or OFF position for two- and three-pole Type BR circuit breakers (handle mounted) <sup>⑥</sup>	10	<b>BHLW2</b>
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Device used to secure handle in ON or OFF position for single-pole Type GFTCB ground fault circuit breakers (handle mounted) <sup>⑥</sup>	10	<b>BHGW</b>
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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) <sup>⑥</sup>	10	<b>HLW1</b>
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#### 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-T1-87** 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.

BRQS125



BRHDK125



BRML



### Field Installation Kits and Parts, continued

Description	Ordering Quantity <sup>①</sup>	Catalog Number
<b>Hold-Down Kits <sup>②</sup></b>		
Hold-down retainer kit for three-pole Type BR circuit breakers in S3100 and 3100R loadcenters only	1	<b>BRHDB</b>
Hold-down screw kit for two- and three-pole Type BR circuit breakers in single-phase MLO loadcenters through 100–125 A	1	<b>BRQS125</b>
Hold-down screw kit for two- and three-pole Type BR circuit breakers in MLO loadcenters 150–200 A	1	<b>BRHDK125</b>
Hold-down screw kit for two-pole Types BJ and BJH circuit breakers in MLO loadcenters 125–225 A	1	<b>BJHDS</b>
Hold-down screw kit for three-pole Types BJ and BJH circuit breakers in MLO loadcenters 125–225 A	1	<b>BJHDS3P</b>
<b>Main Breaker Lug Kits</b>		
Types CC and CHH main breaker lug kit (2) 300 kcmil	1	<b>CCL300</b>
Types BW/CSR main breaker lug kit (2) 300 kcmil	1	<b>MCBL300</b>
<b>Mechanical Interlocks</b>		
Types BR for two-, three- and four-pole breakers	10	<b>BRML</b>
<b>Padlock Brackets</b>		
BR padlock mounting bracket	10	<b>BRPLOFF</b>
BR three-pole lock-off bracket	10	<b>BRPLOFF3P</b>
BJ two-pole lock-off bracket	10	<b>BJL2P</b>
BJ three-pole lock-off bracket	10	<b>BJL3P</b>

### Shunt Trips, Auxiliary and Alarm Contacts

Description	Catalog Number <sup>③</sup> Suffix Adder
<b>Shunt Trip for Types BW/CSR</b>	
12 Volts	<b>SR12</b>
24 Volts	<b>SR24</b>
120 Volts	<b>SR01</b>
<b>Shunt Trip for Types BR</b>	
120 Volts	<b>ST</b>
<b>Auxiliary Contact for Types BW/CSR</b>	
1NO and 1NC	<b>AL1</b>
2NO and 2NC	<b>AL2</b>
<b>Alarm Contacts for Types BW/CSR</b>	
Types BW/CSR	<b>CR1</b>
<b>Alarm Contacts for Type GFTCB (Single-Pole)</b>	
Alarm contact for GFTCB (single-pole)	<b>W1</b>
1NO and 1NC	<b>W2</b>

### Handle Position Changeability Chart

Handle Lockoff and Lockdog Types	To Change Handle Position from ON to OFF, or OFF to ON You Must...		
	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 Hold-down kits: devices used to secure the circuit breaker to the loadcenter for back-feed main application. See NEC Article 408.36(D). Add "B" suffix to two-pole breaker for tapped hole for hold-down kit (ex. BR230B) for BR breakers below 60 A.
- ③ Add suffix indicated to end of breaker catalog number.

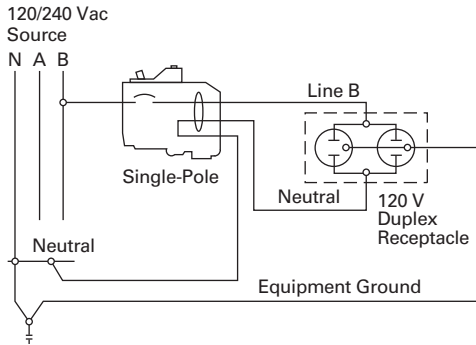
# 1.2

## Loadcenters and Circuit Breakers

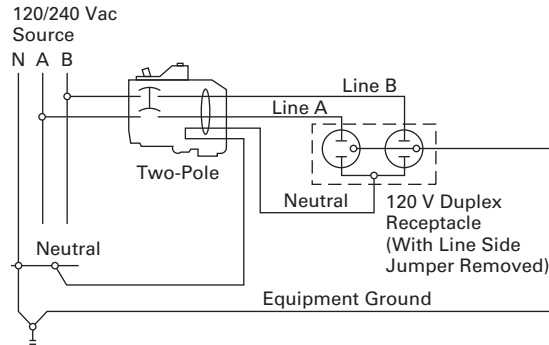
### Type BR Loadcenters and Circuit Breakers

#### 1 Wiring Diagrams

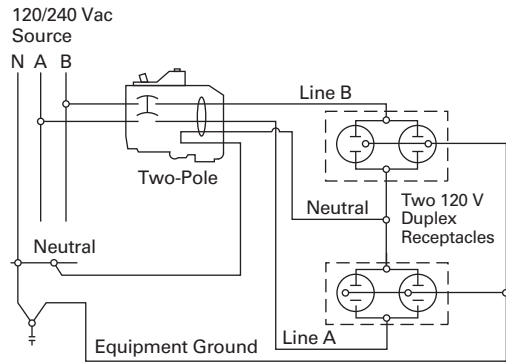
##### Single-Pole 120 V Load Application Sourced by 120/240 Vac



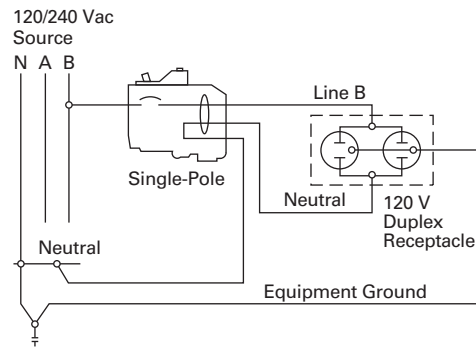
##### Two-Pole Shared Neutral with Duplex Receptacle Application



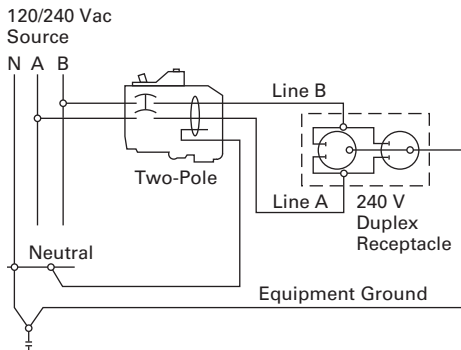
##### Two-Pole Shared Neutral with Multi-Duplex Receptacle Application



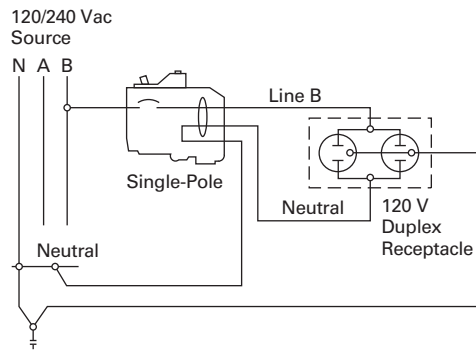
##### Single-Pole 120 V Load Application Sourced by 120/240 Vac



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

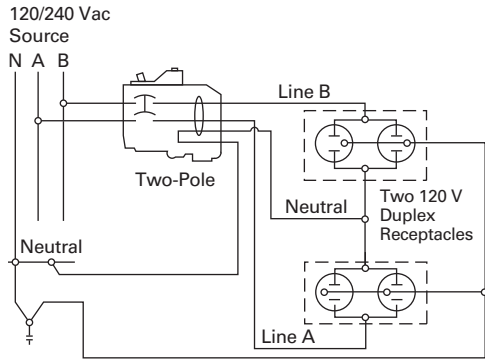


##### Single-Pole 120 V Duplex Receptacle Application

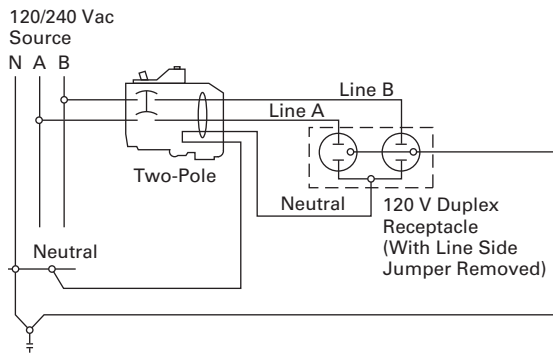




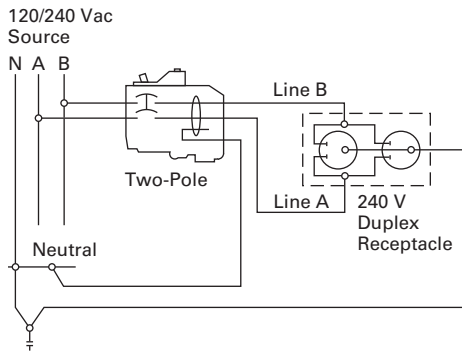
### Two-Pole 120 V Multi-Duplex Receptacle Application



### Two-Pole 120 V Duplex Receptacle Application



### Two-Pole 240 V Duplex Receptacle Application





### OEM Loadcenters

#### 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 225 A.

#### 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.

### Contents

#### Description

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Product Selection . . . . .	<b>V1-T1-91</b>
Type CH Retrofit Interior Kits . . . . .	<b>V1-T1-95</b>
Type BR Retrofit Interior Kits . . . . .	<b>V1-T1-97</b>

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 busbar 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 140 A maximum meaning that the handle rating of breakers mounted across from one another may not exceed 140 A.

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

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.

### 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 CHT) 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 120/240 V 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, 120/240 V breakers, both 1-inch (25.4 mm), 1/2-inch (12.7 mm) and 3/4-inch (19.1 mm) per pole, 225 A 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 10 A 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 60/75 °C rated wire, unless otherwise specified.

All devices comply with the 22 kAIC–10 kAIC UL series connected components File DKS2 of the Recognized Components Index.

#### Lighting and Appliance Panelboards

Lighting and appliance branch circuit panelboards are defined in NEC (Article 408) as "One having more than 10 percent of its overcurrent devices rated 30 A or less for which neutral connections are provided." Article 408 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.



### Product Selection

#### Type CH Loadcenter Interior Assemblies—Copper Bus

Ampere Rating	Number of 1-Inch (24.5 mm) Spaces	Maximum Number of Single Poles	UL File Reference	Main Terminal Size (Per Phase)	Standard Package Quantity	Catalog Number
<b>Single-Phase Single-Row Breaker Mounting – 120/240 Vac, Three-Wire</b>						
70	2	2	E8741	(1) #8–#2 AWG Cu/Al	1	CH9MB270
125	2	2	E8741	(1) 2/0–#6 AWG Cu/Al	20	CH2L125INT
<b>Single-Phase Double-Row Breaker Mounting – 120/240 Vac, Three-Wire</b>						
125	4	4	E8741	(1) 2/0–#14 AWG Cu/Al	20	CH4L125INT
125	8	8	E8741	(1) 2/0–#6 AWG Cu/Al	20	CH8L125INT
125	12	12	E8741	(1) 2/0–#6 AWG Cu/Al	20	CH12L125INT
125	16	16	E8741	(1) 2/0–#6 AWG Cu/Al	20	CH16L125INT
200	12	12	E8741	(1) 300 kcmil–#4 AWG Cu/Al	20	CH12L200INT
200	16	16	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH16L200INT
225	24	24	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH24L225INT
225	32	32	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH32L225INT
225	42	42	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH42L225INT
<b>Three-Phase Double-Row Breaker Mounting – 208Y/120 Vac, Four-Wire – 240 Vac, Three-Wire – 120/240 Vac, Four-Wire Delta</b>						
125	12	12	E8741	(1) 2/0–#6 AWG Cu/Al	10	CH12L3125INT
125	18	18	E8741	(1) 2/0–#6 AWG Cu/Al	10	CH18L3125INT
125	24	24	E8741	(1) 2/0–#6 AWG Cu/Al	10	CH24L3125INT
225	24	24	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH24L3225INT
225	30	30	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH30L3225INT
225	42	42	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH42L3225INT

BR Loadcenter Interior Assembly



#### Type BR Loadcenter Interior Assemblies—Aluminum Bus

Ampere Rating	Number of 1-Inch (24.5 mm) Spaces	Maximum Number of Single Poles	UL File Reference	Main Terminal Size (Per Phase)	Standard Package Quantity	Catalog Number
<b>Single-Phase Single-Row Breaker Mounting—120/240 Vac, Three-Wire</b>						
70	2	4	E8741	(1) #8-#2 AWG Cu/Al	20	24INT70B
125	2	4	E8741	(1) 1/0-#14 AWG Cu 2/0-12 AWG Al	20	24INT125B
125	6	12	E52977	(1) 2/0-#14 AWG Cu/Al	20	612INT125SRB
<b>Single-Phase Double-Row Breaker Mounting—120/240 Vac, Three-Wire</b>						
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	12	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
225	42	42	E52977	(1) 300 kcmil-#1 AWG Cu/Al	10	4242INT225B
<b>Three-Phase Double-Row Breaker Mounting—208Y/120 Vac, Four-Wire—240 Vac, Three-Wire—120/240 Vac, Four-Wire Delta</b>						
125	12	24	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

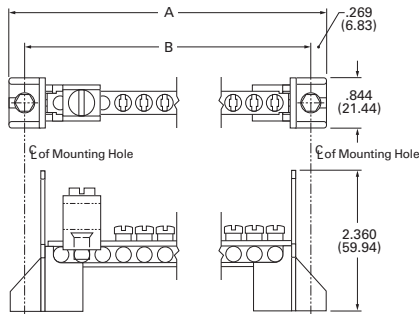
#### Type BR Loadcenter Interior Assemblies—Copper Bus

Ampere Rating	Number of 1-Inch (24.5 mm) Spaces	Maximum Number of Single Poles	UL File Reference	Main Terminal Size (Per Phase)	Standard Package Quantity	Catalog Number
<b>Single-Phase Double-Row Breaker Mounting—120/240 Vac, Three-Wire</b>						
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
<b>Three-Phase Double-Row Breaker Mounting—208Y/120 Vac, Four-Wire—240 Vac, Three-Wire—120/240 Vac, Four-Wire Delta</b>						
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

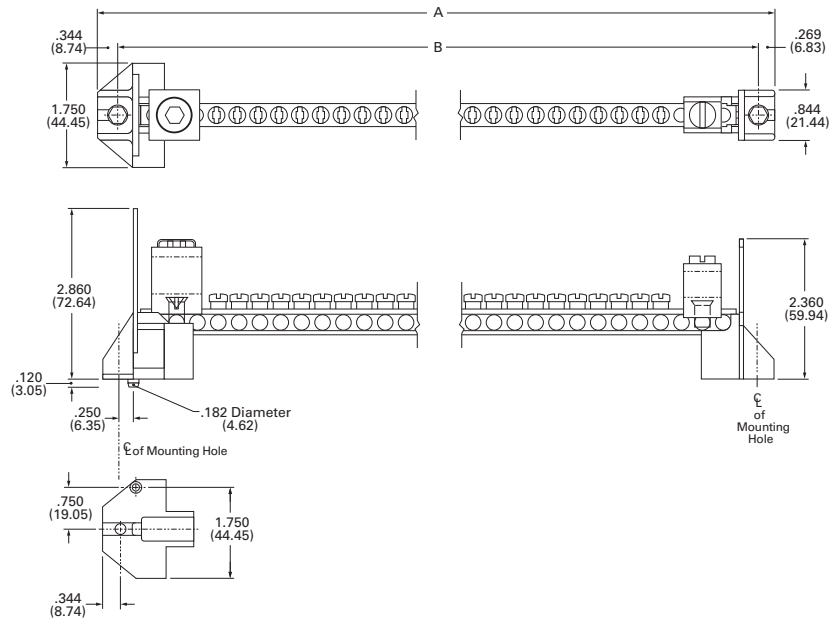
### Neutral Assemblies

Ampere Rating	UL File Rating	Main Incoming Terminal Wire Size Range 60 °C or 75 °C	Number of Terminals		Standard Package Quantity	Figure	Dimensions—Inches (mm)		Catalog Number
			#14–4 AWG Cu/Al	#6–1/0 AWG Cu #6–2/0 AWG Al			Overall Length A	Mounting B	
125	E52977	#6–1/0 AWG Cu #6–2/0 AWG Al	10	—	20	1	5.938 (150.83)	5.400 (137.16)	10NEU125B
125	E52977	#6–1/0 AWG Cu #6–2/0 AWG Al	17	—	20	1	8.388 (213.06)	7.850 (199.40)	17NEU125B
125	E52977	#6–1/0 AWG Cu #6–2/0 AWG Al	20	—	20	1	9.438 (239.73)	8.900 (226.06)	20NEU125B
225	E52977	#1–300 kcmil Cu/Al	24	1	20	2	10.913 (277.19)	10.300 (261.62)	24NEU225B
225	E52977	#1–300 kcmil Cu/Al	35	1	20	2	15.813 (401.65)	15.200 (386.08)	35NEU225B
125	—	—	4	2	1	3	2.266 (57.56)	0.594 (15.09)	BINA

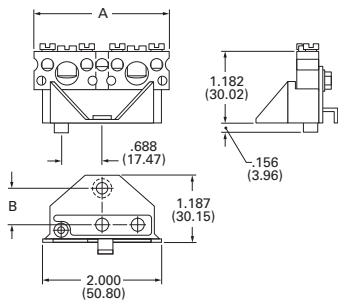
**Figure 1**



**Figure 2**



**Figure 3**



#### Add-on Lugs for Neutral Assemblies

Description	Wire Size Range Cu/Al 60 °C or 75 °C	Ordering Quantity <sup>①</sup>	Catalog Number
Neutral/ground lug	#2/0 maximum	1	NL20
Add-on neutral or ground lug	#3/0 maximum	1	NL30
	300 kcmil maximum	1	NL300

#### GBK14



#### BRGBK39512



#### Ground Bar Kits

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

#### 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

#### 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 A and 600 A applications.
- ④ Distance between mounting holes is 2.34 inches (59.5 mm).

Type CH Retrofit Interior



Type CH Retrofit Adjustable Interior



Type CH Retrofit Interior Collar and Assembly with Trim

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Type CH Retrofit Interior Kits	
Type BR Retrofit Interior Kits .....	<b>V1-T1-97</b>

## Type CH Retrofit Interior Kits

### Product Description

Eaton’s unique Retrofit Interior allows the customer to cost-effectively and safely upgrade an electrical service without removing the existing enclosure from the wall.

### Application Description

The Retrofit Interior is designed and tested specifically for renovating an outdated electrical panel in an apartment, a condominium or a single family home. These outdated panels are being recognized by local inspectors and other authorities as a possible hazard.

#### Opportunities to Retrofit

- Single- or three-phase
- Main lug only or main breaker
- Up to 42 circuits
- Up to 225 A interiors, 400 A available upon request
- Available with CH breakers (3/4-inch) with copper bus or BR breakers (1-inch) with aluminum bus
- The minimum lifetime warranty for residential breakers shall be as follows:
  - Limited lifetime warranty on all CH branch breakers and loadcenters
  - Refer to Eaton for complete warranty details

### Features and Benefits

#### Upgrading Existing Electrical Infrastructure Is Simple

- Replaces vintage brands that have hard-to-find, expensive replacement breakers
- Safely upgrade to arc fault and ground fault breakers to meet current electrical codes
- Maximizes number of circuits available with compact design
- Eco-friendly in asbestos-filled environments
- Exclusive design

#### Save Time and Money Throughout the Installation

- Uses existing panel box and wires
- Eliminates expensive and time-consuming drywall/paint repair
- Saves 2–3 hours of installation time compared to a complete panel changeout
- Eliminates precise measurements with field-adjustable kit

### Standards and Certifications

Meets 2017 NEC wire bending requirements.

**CH Specialty Product Selection****How to Order:**

1. Measure the existing panel enclosure to determine appropriate kits for your project.
2. Submit the measurements to the Flex Center for quote.
3. Order your retrofit kit from a local Eaton authorized distributor.

Need assistance or can't find retrofit to fit existing enclosure?

Phone: 800-330-6479

Email: FlexCenterLincoln@Eaton.com

Locate an Eaton Certified Contractor at EatonCertified.com

**Complete Assembly**

**Note:** For complete assembly, interior and cover need to be ordered separately.

**Adjustable Interior**

- Factory-installed ground and neutral bars positioned to accept existing wires
- Field adjustable depth matches existing panel box
- Adjustable height enables optional placement of the interior
- Field bondable for service entrance options



**Adjustable Interior**

**Standard Trim and Collar**

- Standard trim matches new interior
- New circuit directory for updated labeling
- Oversized collar eliminates expensive wall/paint repair



**Collar and Assembly with Trim**



Type BR Retrofit Interior



Type BR Retrofit Adjustable Interior



Type BR Retrofit Interior Collar and Assembly with Trim

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#### Page

## Type BR Retrofit Interior Kits

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### Opportunities to Retrofit

- Single- or three-phase
- Main lug only or main breaker
- Up to 42 circuits
- Up to 225 A interiors, 400 A available upon request
- Available with CH breakers (3/4-inch) with copper bus or BR breakers (1-inch) with aluminum bus
- The minimum lifetime warranty for residential breakers shall be as follows:
  - 10-year warranty on all BR branch breakers and loadcenters
  - Refer to Eaton for complete warranty details

### Features and Benefits

#### Upgrading Existing Electrical Infrastructure Is Simple

- Replaces vintage brands that have hard to find, expensive replacement breakers
- Safety upgrade to arc fault and ground fault breakers to meet current electrical codes
- Maximizes number of circuits available with compact design
- Eco-friendly in asbestos-filled environments
- Exclusive design

#### Save Time and Money Throughout the Installation

- Uses existing panel box and wires
- Eliminates expensive and time-consuming drywall/paint repair
- Saves 2–3 hours of installation time compared to a complete panel changeout
- Eliminates precise measurements with field-adjustable kit

### Standards and Certifications

- Meets 2017 NEC wire bending requirements
- UL 67 Listed (for UL listings for specific part numbers, see the table on the following page.)



**BR Specialty Product Selection****How to Order:**

1. Measure the existing panel enclosure.
2. Submit the measurements to the Flex Center for quote.
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Need assistance or can't find retrofit to fit existing enclosure?

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*Adjustable Interior*

**Standard Trim and Collar**

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- New circuit directory for updated labeling
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*Collar and Assembly with Trim*

### Enclosed Breakers



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## Enclosed Breakers

### Product Overview

Eaton enclosed breakers offer all the advantages of circuit breakers packed in an enclosure for 240 Vac applications and include a wide range of accessories.

### Product Description

- 100–225 A, 240 Vac maximum
- NEMA 1 general purpose—surface or flush mounting
- NEMA 3R rainproof surface mounting

### Standards and Certifications

- UL 489
- CSA 22.2
- NEMA 250



# 1.4

## Loadcenters and Circuit Breakers

### Enclosed Breakers

#### 1

#### Product Selection

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

##### ECC225R



#### Type ECC Circuit Breaker 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
<b>Single- and Three-Phase—240 Vac Maximum</b>					
100	Indoor	Surface	CCVH factory installed (25 kAIC)	#4–4/0	<b>ECCVH100S</b> ①②③
150	Indoor	Surface	CCVH factory installed (25 kAIC)	#4–4/0	<b>ECCVH150S</b> ①②③
200	Indoor	Surface	CCVH factory installed (25 kAIC)	#2/0–300 kcmil	<b>ECCVH200S</b> ①②③
100	Outdoor	—	CCVH factory installed (25 kAIC)	#4–4/0	<b>ECCVH100R</b> ①②④
150	Outdoor	—	CCVH factory installed (25 kAIC)	#4–4/0	<b>ECCVH150R</b> ①②④
200	Outdoor	—	CCVH factory installed (25 kAIC)	#2/0–300 kcmil	<b>ECCVH200R</b> ①②④
225	Indoor	Flush	CC/CCV/CCH	⑥	<b>ECC225F</b> ②③⑥
225	Indoor	Surface	CC/CCV/CCH	⑥	<b>ECC225S</b> ②③⑥
225	Outdoor	—	CC/CCV/CCH	⑥	<b>ECC225R</b> ②③④⑥

##### CCV2200



#### Circuit Breaker 240 Vac for Use in Type ECC Enclosures

Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C for Line Terminals	Type CCV and CC 10 kAIC Catalog Number	Type CCVH/CCH 25 kAIC Catalog Number
<b>Two-Pole</b>			
60	#2–300 kcmil	<b>CCV2060</b>	<b>CCVH2060</b>
70		<b>CCV2070</b>	<b>CCVH2070</b>
80		<b>CCV2080</b>	<b>CCVH2080</b>
90		<b>CCV2090</b>	<b>CCVH2090</b>
100		<b>CCV2100</b>	<b>CCVH2100</b>
125		<b>CCV2125</b>	<b>CCVH2125</b>
150		<b>CCV2150</b>	<b>CCVH2150</b>
175		<b>CCV2175</b>	<b>CCVH2175</b>
200		<b>CCV2200</b>	<b>CCVH2200</b>
225		<b>CCV2225</b>	<b>CCVH2225</b>
<b>Three-Pole</b>			
100	#2–300 kcmil	<b>CC3100</b>	<b>CCH3100</b>
125		<b>CC3125</b>	<b>CCH3125</b>
150		<b>CC3150</b>	<b>CCH3150</b>
175		<b>CC3175</b>	<b>CCH3175</b>
200		<b>CC3200</b>	<b>CCH3200</b>
225		<b>CC3225</b>	<b>CCH3225</b>

#### Shunt Trips and Auxiliary Contacts

Description Type	Volts	Catalog Number Suffix Adder ⑦
<b>Shunt Trip</b>		
CC	12 DC	<b>SR12</b>
CC	24 DC	<b>SR24</b>
CC	120 AC	<b>SR01</b>
CC	208 AC	<b>SR08</b>
CC	240 AC	<b>SR02</b>
CCV	48–127 AC/48–60 DC	<b>SR01</b>
CCV	9–24 AC/12–24 DC	<b>SR02</b>
CCV	208–380 AC/100–127 DC	<b>SR04</b>
<b>Auxiliary Contact</b>		
CC 1N0 and 1N1	—	<b>AL1</b>

#### Dimensions

Approximate Dimensions in Inches (mm)

#### ECC Unit Enclosures—NEMA Type 1 Indoor

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

#### ECC Unit Enclosures—NEMA Type 3R Outdoor

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

#### Notes

- ① Factory-installed CCVH breaker.
- ② Approved for service entrance.
- ③ One ground lug accepting (1) #14–#2 is factory installed. Also, there are pre-drilled holes to accept a GBK5 ground bar.
- ④ Rainproof panels are furnished with hub closures plates. For rainproof hubs, refer to **Page V1-T1-67**.
- ⑤ Order circuit breaker separately.
- ⑥ Wire size is determined by the circuit breaker installed in enclosure.
- ⑦ Add suffix indicated to end of breaker catalog number.

### Classified Breakers



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Wiring Diagrams . . . . .	V1-T1-105

## Classified Breakers

### 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 UL. 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 UL 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.

#### 1

#### 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



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

Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Catalog Number	Catalog Number
15	(1) #14–8	CHQ115	CHQ215
20	(2) #14–10	CHQ120	CHQ220
25		CHQ125	CHQ225
30		CHQ130	CHQ230
35		CHQ135	CHQ235
40		CHQ140	CHQ240
45		CHQ145	CHQ245
50		CHQ150	CHQ250
60		—	CHQ260

#### Type CHQ Surge Arrester

Catalog Number



CHQSA

**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**

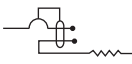


Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	 Single-Pole 120/240 V Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton Catalog Number		 Two-Pole 120/240 V Common Trip Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton Catalog Number	
15	#14-4	CL115		CL215	
20	#14-4	CL120		CL220	
25	#14-4	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 mA), 1-Inch (25.4 mm) per Pole, 10 kAIC**





Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	 Single-Pole 120/240 V Requires One 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number	
<b>Arc Fault Breakers</b>			
15	#14-4	—	
15	#14-4	CLCAF115	
20	#14-4	—	
20	#14-4	CLCAF120	
<b>Ground Fault Breakers</b>			
15	#14-4	CLGF115	
20	#14-4	CLGF120	
30	#14-4	CLGF130	

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 120 V Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton Catalog Number		 Two-Pole 120/240 V 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	

#### 1

#### 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 125 V, single-phase, 15 and 20 A 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 GFTCBs are designed for use in two-wire, 120 Vac circuits. Drawing on **Page V1-T1-105** shows a typical wiring configuration.

Two-pole GFTCBs 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-T1-105** illustrate typical wiring configurations for 120/240 Vac multiwire circuits.

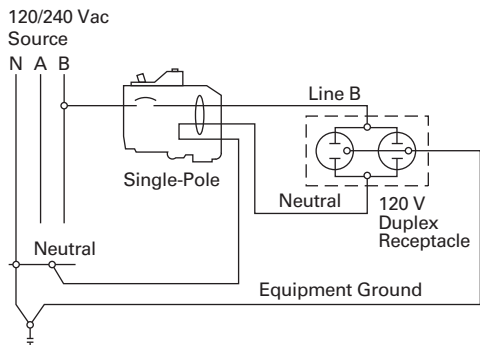
Drawing on **Page V1-T1-105** depicts a 240 Vac, two-wire circuit. Note the “panel neutral” conductor connects to the neutral bar, even though the neutral is not included in the load circuit. This connection is necessary to supply a 120 Vac power source to the ground fault sensing circuit.

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 GFTCB is not affected by the equipment ground.

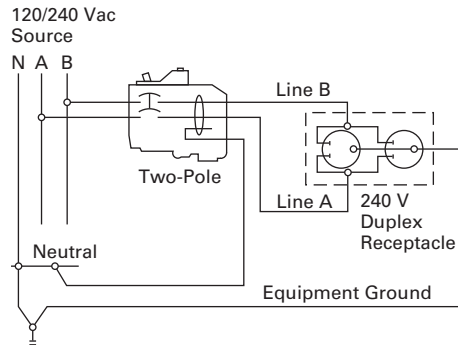


### Wiring Diagrams

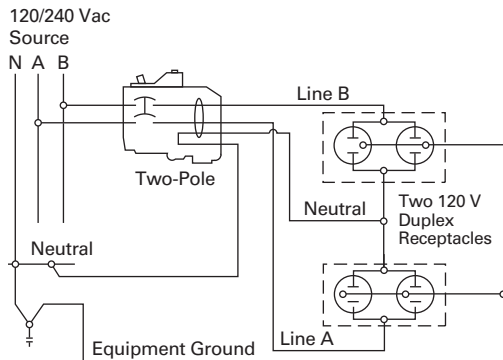
**Single-Pole 120 V Load Application Sourced by 120/240 Vac**



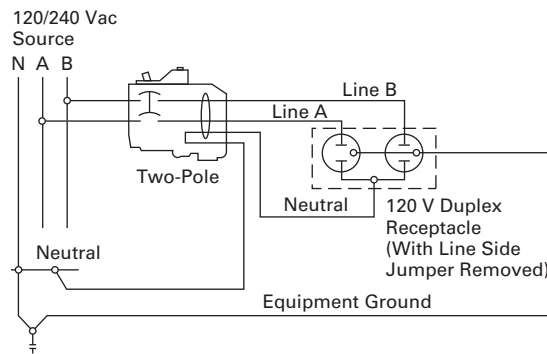
**Two-Pole 240 V Load Application Sourced by 120/240 Vac**



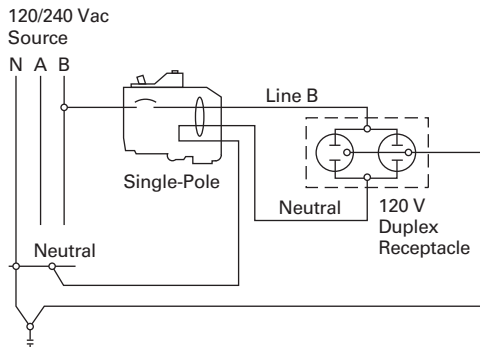
**Two-Pole Shared Neutral with Multi-Duplex Receptacle Application**



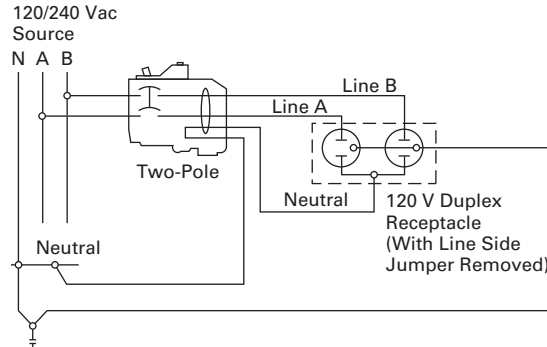
**Two-Pole Shared Neutral with Duplex Receptacle Application**



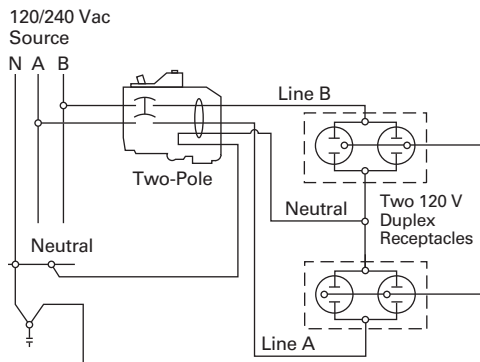
**Single-Pole 120 V Duplex Receptacle Application**



**Two-Pole 120 V Duplex Receptacle Application**



**Two-Pole 120 V Multi-Duplex Receptacle Application**



**Two-Pole 240 V Duplex Receptacle Application**

