

### 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 amps with associated mitigation of fire hazards in the cords connected to the outlets. High current arcing faults can occur from line to neutral or line to ground. These arcing faults are in parallel with the load and produce the most energy of all arcing faults. The current level of low current arcing faults is limited by the load.

#### **Plug-on Ground Fault Circuit Breakers, Type 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-T1-93** 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-T1-93** 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.

# 1.2

## Loadcenters and Circuit Breakers

### Type BR Loadcenters and Circuit Breakers

1

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

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

##### Type BJ



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



**Two-Pole 120/240 Vac**  
Common Trip Requires Four  
1-Inch (25.4 mm) Spaces <sup>①</sup>  
10 per Shelf Carton



**Three-Pole 240 Vac**  
Common Trip Requires Six  
1-Inch (25.4 mm) Spaces <sup>②</sup>  
5 per Shelf Carton

| Ampere Rating | 10 kAIC        |                | Wire Size Range<br>Cu/Al 60 °C or 75 °C | 22 kAIC        |                |
|---------------|----------------|----------------|---|----------------|----------------|
|               | Catalog Number | Catalog Number |   | Catalog Number | Catalog Number |
| 125           | BJ2125         | BJH2125        | #2–300 kcmil                            | BJ3125         | BJH3125        |
| 150           | BJ2150         | BJH2150        | #2–300 kcmil                            | BJ3150         | BJH3150        |
| 175           | BJ2175         | BJH2175        | #2–300 kcmil                            | BJ3175         | BJH3175        |
| 200           | BJ2200         | BJH2200        | #2–300 kcmil                            | BJ3200         | BJH3200        |
| 225           | BJ2225         | BJH2225        | #2–300 kcmil                            | BJ3225         | BJH3225        |

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

##### BRWH215

Water Heater Breaker



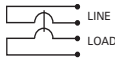
##### BRSN220

Switching Neutral Breaker



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

##### Water Heater Breakers



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

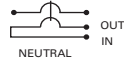
With Isolated Line Terminals  
for Separately Metered  
Water Heaters

5 per Shelf Carton

10 kAIC

Ampere Rating      Catalog Number

##### Switching Neutral Breakers



**Two-Pole 120 Vac**  
Common Trip Requires Two  
1-Inch (25.4 mm) Spaces

With Switching Neutral Pole  
for Gasoline Pump Applications

5 per Shelf Carton

10 kAIC

Ampere Rating      Catalog Number

##### 240 V Breakers



**Two-Pole 240 Vac**  
Common Trip Requires Two  
1-Inch (25.4 mm) Spaces

Where Voltage to  
Ground is 240 Vac

5 per Shelf Carton

10 kAIC

Ampere Rating      Catalog Number

##### Non-Automatic Molded Case Switches



**Two-Pole 240 Vac**  
Requires Two  
1-Inch (25.4 mm) Spaces

For Use as Disconnect Contains No  
Magnetic or Thermal Trip Properties

5 per Shelf Carton

5 kAIC

Ampere Rating      Catalog Number

|    |         |    |         |        |     |         |     |          |
|----|---------|----|---------|--------|-----|---------|-----|----------|
| 15 | BRWH215 | 15 | BRSN215 | #14–4  | 10  | BR210H  | —   | —        |
| 20 | BRWH220 | 20 | BRSN220 | #14–4  | 15  | BR215H  | —   | —        |
| 30 | BRWH230 | 25 | BRSN225 | #14–4  | 20  | BR220H  | —   | —        |
| —  | —       | 30 | BRSN230 | #14–4  | 25  | BR225H  | —   | —        |
| —  | —       | —  | —       | #14–4  | 30  | BR230H  | —   | —        |
| —  | —       | —  | —       | #14–4  | 35  | BR235H  | —   | —        |
| —  | —       | —  | —       | #14–4  | 40  | BR240H  | —   | —        |
| —  | —       | —  | —       | #14–4  | 45  | BR245H  | —   | —        |
| —  | —       | —  | —       | #14–4  | 50  | BR250H  | 50  | BR250NA  |
| —  | —       | —  | —       | #14–4  | 55  | BR255H  | —   | —        |
| —  | —       | —  | —       | #4–1/0 | 60  | BR260H  | 60  | BR260NA  |
| —  | —       | —  | —       | #4–1/0 | 70  | BR270H  | —   | —        |
| —  | —       | —  | —       | #4–1/0 | 80  | BR280H  | —   | —        |
| —  | —       | —  | —       | #4–1/0 | 90  | BR290H  | —   | —        |
| —  | —       | —  | —       | #4–1/0 | 100 | BR2100H | 100 | BR2100NA |

##### Notes

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

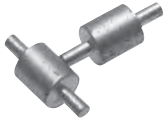
<sup>②</sup> Breaker uses three 1-inch (25.4 mm) pole spaces on left side and three 1-inch (25.4 mm) pole spaces on right side of loadcenter.

If BJ or BJH breakers are used as a main or a back feed device, a hold-down kit is required. See **Page V1-T1-91**.

### Options and Accessories

#### Field Installation Kits and Parts

THS1



BHLW2



BRQLW



MCBPL (Installed)



BHLW



BRLW2



#### 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

**BRLAFGFLOFF**

Padlockable device for locking the handle of BR short body BRCAF, BRAFGF, QBCAF, QBAFGF breakers into the ON or OFF position

**BRCAFLOFF**

#### 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)

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**BHT**

Handle tie bar for joining two independent outside poles of Types BQ and BQC Quadplex and outside poles of two Type BD duplex circuit breakers

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**THOW**

Handle tie bar for joining two adjacent outside poles of Types BQ and BQC Quadplex and outside poles of two Type BD duplex circuit breakers

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**THS1**

#### 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>

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**BRLW**

Padlockable device for locking the handle of a single-pole Type BR circuit breaker (handle mounted) <sup>⑥</sup>

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**BRLW1**

Padlockable device for locking the handle of a two- and three-pole Type BR circuit breaker (handle mounted) <sup>⑥</sup>

10

**BRLW2**

Padlockable device for locking the handle of a single-pole Type BD Duplex, BQ or BQC Quadplex breaker (handle mounted) <sup>⑥</sup>

10

**BRDL1**

Padlockable device for locking the handle of the two center poles and the two outer poles of a two-pole Types BQ and BQC quadplex circuit breakers (escutcheon mounted) <sup>⑤</sup>

10

**BRQLW**

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

**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**

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>

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**BHLW**

Device used to secure handle in ON or OFF position for single-pole Type BR circuit breakers (handle mounted) <sup>⑥</sup>

10

**BHLW1**

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

**BHLW2**

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

**BHGW**

Device used to secure handle in ON or OFF position for one independent outside pole of Types BQ and BQC Quadplex or single-pole Type BD duplex circuit breakers (handle mounted) <sup>⑥</sup>

10

**HLW1**

#### 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-T1-92** 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.