

Plug-on Circuit Breakers, Types BR
10,000/22,000/42,000 Amperes
Interrupting Capacity 120 Vac, 120/240 Vac and 240 Vac



BR120





BR215



BR320

Table 3-112. Type BR Breakers, 1-Inch (25.4 mm) per Pole 120/240, 10,000, 22,000 and 42,000 AIC


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

- ① One pole, 1-inch (25.4 mm) per pole circuit breakers are available with high magnetic setting for switching large tungsten lamp loads. Add suffix H to catalog number.
- ② Switching duty rated.
- ③ On the black handle breaker, add suffix "B" to the catalog number and \$4.00 to the list price to obtain a tapped molded opening for proper use with hold-down kits.
- ④ For use as a branch circuit breaker in 400 and 600 ampere panels only.

Note: All Type BR 1-, 2-, and 3-pole circuit breakers carry listing for HACR application.
 For circuit breakers with a shunt trip, add ST suffix and obtain pricing from table on **Page 3-76**.

Circuit Breaker Product Selection

Table 3-113. Type BR Breakers, 1-Inch (25.4 mm) per Pole 240 Vac, 10,000, 22,000 and 42,000 AIC

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

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

Note: All Type BR 1-, 2- and 3-pole circuit breakers carry listing for HACR application. For circuit breakers with a shunt trip, add ST suffix and obtain pricing from table on **Page 3-76**.

Plug-on Branch Feeder Type Arc Fault Circuit Breakers, Type BR 10,000 Amperes Interrupting Capacity 120 Vac and 120/240 Vac



Type BR AFCI Circuit Breaker

A Branch Feeder Type Arc Fault Circuit Interrupter is a device intended to mitigate parallel arcing faults in the complete circuit, including connected cords. Parallel 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, 2002 and 2005 National Electrical Code.

As of January 1, 2008, the Combination Type AFCI is required.

Product Selection

Table 3-114. Type BR, 1-Inch (25.4 mm) wide FIRE-GUARD™ AFCI Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number	Price U.S. \$
Single-Pole 10 kAIC	15	AFCI AFCI with GFCI	BR115AF ① BR115AFGF	
	20	AFCI AFCI with GFCI	BR120AF ① BR120AFGF	
Single-Pole 22 kAIC	15	AFCI	BRH115AF	
	20	AFCI	BRH120AF	
Double-Pole 10 kAIC ②③	15	AFCI Common Trip AFCI Independent Trip AFCI Common Trip with GFCI	BR215AF BR215AFIT BR215AFGF	
	20	AFCI Common Trip AFCI Independent Trip AFCI Common Trip with GFCI	BR220AF BR220AFIT BR220AFGF	

- ① Clamshell packaging available with CS modification code on the end of catalog number.
- ② Common trip refers to 2-pole 240 volt load application sourced by 120/240 Vac (see **Figure 3-19**).
- ③ Independent trip refers to 2-pole multi-wire, home run or shared neutral circuits (see **Figure 3-18** and **Figure 3-20**).

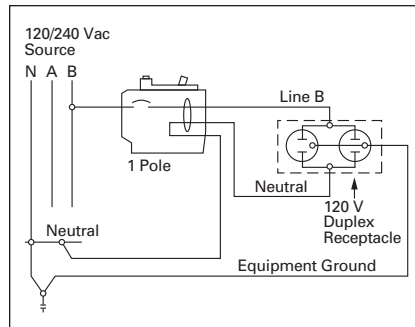


Figure 3-17. 1-Pole 120 Volt Load Application Sourced by 120/240 Vac

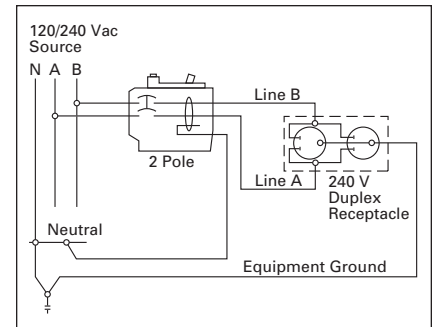


Figure 3-19. 2-Pole 240 Volt Load Application Sourced by 120/240 Vac

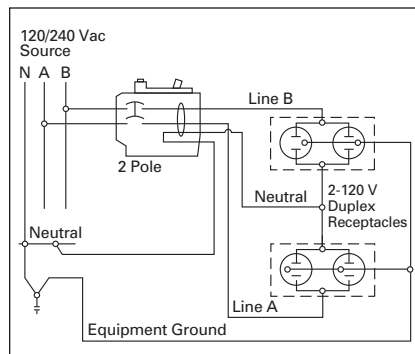


Figure 3-18. 2-Pole Shared Neutral with Multi-Duplex Receptacle Application

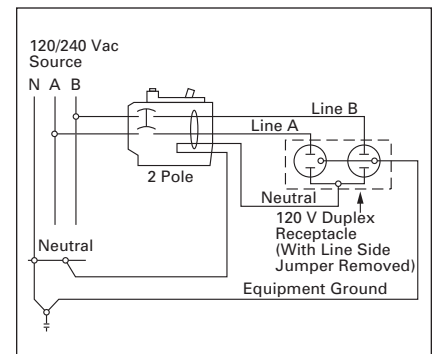


Figure 3-20. 2-Pole Shared Neutral with Duplex Receptacle Application

Discount Symbol **22CD**

Plug-on Combination Type Arc Fault Circuit Breakers, Type BR 10,000 Amperes Interrupting Capacity 120 Vac and 120/240 Vac

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Type BR AF CI Circuit Breaker

A Combination Type Arc Fault Circuit Interrupter is a device that includes all of the protection offered by the Branch Feeder AFCI (mitigation of parallel 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. Parallel 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.

Product Selection

Table 3-115. Type BR, 1-Inch (25.4 mm) wide FIRE-GUARD™ Combination Type AFCI Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number	Price U.S. \$
Single-Pole 10 kAIC	15	AFCI	BR115CAF ①	
	20	AFCI	BR120CAF ①	

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

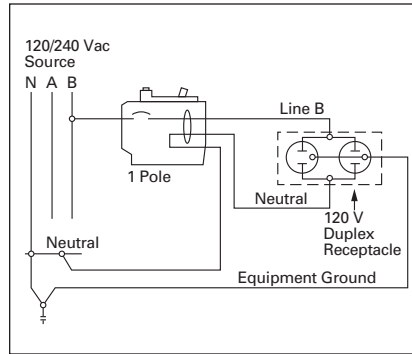


Figure 3-21. 1-Pole 120 Volt Load Application Sourced by 120/240 Vac

Plug-on Ground Fault Circuit Breakers, Type GFCB and GFEP
10,000/22,000 Amperes Interrupting Capacity
120 Vac and 120/240 Vac

Table 3-116. Type GFCB Ground Fault Circuit Breakers — 5 Milliampere —
1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 10,000 AIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	1-Pole 120 Vac Requires One 1-Inch (25.4 mm) Space		2-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces	
		1 per Shelf Carton		1 per Shelf Carton	
		10,000 AIC		10,000 AIC	
		Catalog Number ①	Price U.S. \$	Catalog Number	Price U.S. \$
15 20 25 30 40 50	#14 – 4	GFCB115 GFCB120 GFCB125 GFCB130 GFCB140 —		GFCB215 GFCB220 GFCB225 GFCB230 GFCB240 GFCB250 ②	



Type GFCB 1-Pole



Type GFCB 2-Pole

① Available with bell alarm or auxiliary switch. See circuit breaker accessories on Page 3-75.
 ② For use with copper wire only.

Table 3-117. Type GFCBH Ground Fault Breakers — 5 Milliampere —
1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 22,000 AIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	1-Pole 120 Vac Requires One 1-Inch (25.4 mm) Space		2-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces	
		1 per Shelf Carton		1 per Shelf Carton	
		22,000 AIC		22,000 AIC	
		Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
15 20 25 30	#14 – 4	GFCBH115 GFCBH120 GFCBH125 GFCBH130		GFCBH215 GFCBH220 GFCBH225 GFCBH230	

Table 3-118. Type GFEP Ground Fault Equipment Protectors — 30 Milliampere —
1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 10,000 AIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	1-Pole 120 Vac Requires One 1-Inch Space		2-Pole 120/240 Vac Common Trip Requires Two 1-Inch Spaces	
		1 per Shelf Carton		1 per Shelf Carton	
		10,000 AIC		10,000 AIC	
		Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
15 20 25 30 40 50	#14 – 4	GFEP115 GFEP120 GFEP125 GFEP130 — —		GFEP215 GFEP220 GFEP225 GFEP230 GFEP240 GFEP250 ③	

③ For use with copper wire only.

Special Application Circuit Breaker Product Selection

Ground Fault Application Notes

Single-pole GFCBs are designed for use in 2-wire, 120 Vac circuits.

Figure 3-22 shows a typical wiring configuration.

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

Figure 3-23 and **Figure 3-24** illustrate typical wiring configurations for a 120/240 Vac multiwire circuits.

Figure 3-25 depicts a 240 Vac, 2-wire circuit. Note the “panel neutral” conductor connects to the neutral bar, even though the neutral is not included in the load circuit. This connection is necessary to supply a 120 Vac power source to the ground fault sensing circuit.

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

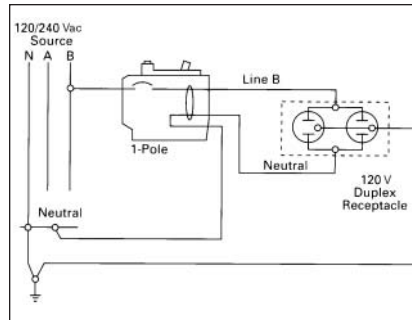


Figure 3-22. 1-Pole 120 Volt Duplex Receptacle Application

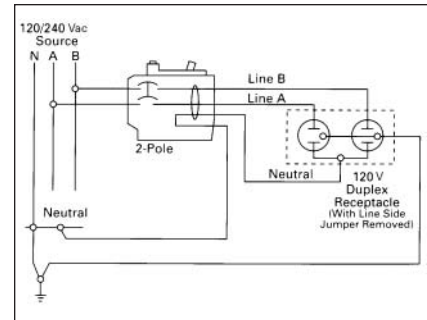


Figure 3-24. 2-Pole 120 Volt Duplex Receptacle Application

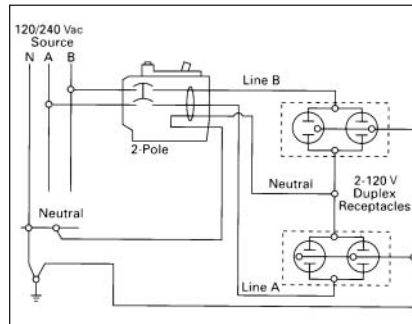


Figure 3-23. 2-Pole 120 Volt Multi-Duplex Receptacle Application

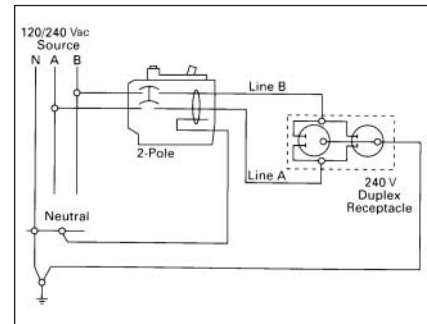


Figure 3-25. 2-Pole 240 Volt Duplex Receptacle Application

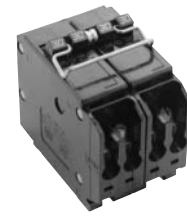
CTL Plug-on Circuit Breakers, Type BD Duplex, BQ and BQC Quadplex
10,000 Amperes Interrupting Capacity 120/240 Vac



BD2020



BQ2302115



BQ230230

3

Duplex and Independent Trip Quadplex Breakers

Table 3-119. Class CTL, 1-Inch (25.4 mm) per Pole 10,000 AIC — All Circuit Breakers Have Rejection Tab Feature

Type BD Duplex (UL Type BRD)			Wire Size Range Cu/Al 65°C or 75°C	Type BQ Quadplex Independent Trip (UL Type BRD)					Type BQ Quadplex Independent Trip (UL Type BRD)			
1-Pole ②				2-Pole ① and 1-Pole ②					2-Pole			
Requires One 1-Inch (25.4 mm) Space			Requires Two 1-Inch (25.4 mm) Spaces					Requires Two 1-Inch (25.4 mm) Spaces				
10 per Shelf Carton			5 per Shelf Carton					5 per Shelf Carton				
Ampere Rating	10,000 AIC		10,000 AIC					10,000 AIC				
	120 Vac		120 Vac	120/240 Vac	120 Vac	Catalog Number	Price U.S. \$	120/240 Vac		Catalog Number	Price U.S. \$	
Catalog Number		Ampere Rating		Ampere Rating				Ampere Rating				
Price U.S. \$		Outer Left 1-Pole	Center 2-Poles Independent Trip	Outer Right 1-Pole			Outer 2-Poles Independent Trip	Center 2-Poles Independent Trip				
10 – 10	BD1010		#14 – 4	15	20	15	BQ2202115		15	15	BQ215215	
15 – 15	BD1515			20	20	20	BQ2202120		15	20	BQ215220	
15 – 20	BD1520			15	30	15	BQ2302115		15	30	BQ215230	
15 – 30	BD1530			20	30	20	BQ2302120		15	40	BQ215240	
20 – 15	BD2015			15	40	15	BQ2402115		15	50	BQ215250	
20 – 20	BD2020			20	40	20	BQ2402120		20	20	BQ220220	
20 – 30	BD2030			15	50	15	BQ2502115		20	30	BQ220230	
25 – 25	BD2525			20	50	20	BQ2502120		20	40	BQ220240	
30 – 15	BD3015			—	—	—	—		20	50	BQ220250	
30 – 20	BD3020			—	—	—	—		25	25	BQ225225	
30 – 30	BD3030			—	—	—	—		30	30	BQ230230	
30 – 40	BD3040			—	—	—	—		30	40	BQ230240	
30 – 50	BD3050			—	—	—	—		30	50	BQ230250	
50 – 30	BD5030			—	—	—	—		40	40	BQ240240	
50 – 50	BD5050			—	—	—	—		40	50	BQ240250	
—	—			—	—	—	—		50	50	BQ250250	
—	—			—	—	—	—		—	—	—	
—	—			—	—	—	—		—	—	—	

① All Type BD Duplex and BQ Quadplex circuit breakers carry listing for HACR applications.

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

Special Application Circuit Breaker Product Selection

**Non-CTL Plug-on Replacement
 Circuit Breakers, Type BRD
 10,000 Amperes Interrupting
 Capacity 120/240 Vac**

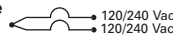
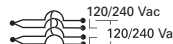

**Non-CTL 10,000 AIC for
 Replacement Purposes Only**

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



BR1515

Table 3-120. Class Non-CTL, 1-Inch (25.4 mm) per Pole 10,000 AIC — Breakers Do Not Have Rejection Tab Feature

Type BR Duplex			Wire Size Range Cu/Al 65°C or 75°C	Type Brand BRD Quadplex Independent Trip				Type BRD Quadplex Common Trip center and Outer Poles			
1-Pole  120/240 Vac 120/240 Vac				2-Pole  120/240 Vac 120/240 Vac				2-Pole  120/240 Vac 120/240 Vac			
Requires One 1-Inch (25.4 mm) Space			Requires Two 1-Inch (25.4 mm) Spaces				Requires Two 1-Inch (25.4 mm) Spaces				
10 per Shelf Carton			5 per Shelf Carton				5 per Shelf Carton				
Ampere Rating	10,000 AIC		10,000 AIC				10,000 AIC				
	120 Vac		120/240 Vac	120/240 Vac	Catalog Number	Price U.S. \$	120/240 Vac	Center 2-Poles Common Trip	Catalog Number	Price U.S. \$	
	Catalog Number	Price U.S. \$	Ampere Rating	Outer 2-Poles Independent Trip			Ampere Rating				Outer 2-Poles Common Trip
15 – 15	BR1515		#14 – 4	15	15	BR415		15	15	BRDC215215	
15 – 20	BR1520			20	20	BR420		30	30	BRDC230230	
20 – 15	BR2015			30	30	BR430		30	40	BRDC230240	
20 – 20	BR2020			20	30	BRD220230		30	50	BRDC230250	
30 – 30	BR3030			30	40	BRD230240		—	—	—	
30 – 50	BR3050			30	50	BRD230250		—	—	—	

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

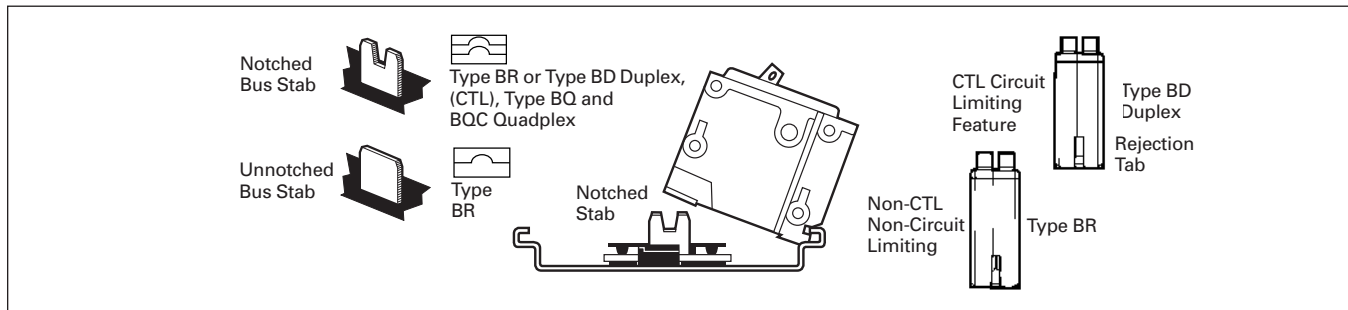


Figure 3-26. CTL and Non-CTL Breakers

Common Trip Quadplex Breakers

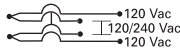
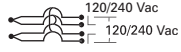


BQC2302115



BQC230230

Table 3-121. Class CTL, 1-Inch (25.4 mm) per Pole 10,000 AIC — All Circuit Breakers Have Rejection Tab Feature

Type BQC Quadplex Common Trip Center Poles (UL Type BRD)					Wire Size Range Cu/Al 65°C or 75°C	Type BQC Quadplex Common Trip Center and Outer Poles (UL Type BRD)				
2-Pole ① and 1-Pole ②						2-Pole ①				
Requires Two 1-Inch (25.4 mm) Spaces					Requires Two 1-Inch (25.4 mm) Spaces					
5 per Shelf Carton					5 per Shelf Carton					
10,000 AIC					10,000 AIC					
120 Vac	120/240 Vac	120 Vac	Catalog Number	Price U.S. \$	120/240 Vac		Catalog Number	Price U.S. \$		
Ampere Rating			Outer Left 1-Pole	Center 2-Poles Common Trip	Outer Right 1-Pole	Ampere Rating		Outer 2-Poles Common Trip	Center 2-Poles Common Trip	
Outer Left 1-Pole	Center 2-Poles Common Trip	Outer Right 1-Pole				Outer 2-Poles Common Trip	Center 2-Poles Common Trip			
15	20	15	BQC2202115		#14 - 4	15	15	BQC215215		
15	25	15	BQC2252115			15	20	BQC215220		
15	30	15	BQC2302115			15	30	BQC215230		
15	40	15	BQC2402115			20	15	BQC220215		
15	50	15	BQC2502115			20	20	BQC220220		
—	—	—	—		20	30	BQC220230			
—	—	—	—		20	40	BQC220240			
—	—	—	—		20	50	BQC220250			
20	15	20	BQC2152120		#14 - 4	25	25	BQC225225		
20	20	20	BQC2202120			25	30	BQC225230		
20	25	20	BQC2252120			30	15	BQC230215		
20	30	20	BQC2302120			30	30	BQC230230		
20	40	20	BQC2402120			30	40	BQC230240		
20	50	20	BQC2502120		30	50	BQC230250			
30	50	20	BQC2502030		#14 - 4	40	30	BQC240230		
—	—	—	—			40	40	BQC240240		
—	—	—	—			40	50	BQC240250		
—	—	—	—			50	20	BQC250220		
—	—	—	—			50	50	BQC250250		

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

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

Circuit Breaker Product Selection

Plug-on Circuit Breakers, Types BJ and BJH
10,000/22,000 Amperes Interrupting Capacity
120/240 Vac and 240 Vac

For Use in Single-Phase and 3-Phase Loadcenters
 150 Amperes and Above



Type BJ

Table 3-122. Types BJ and BJH Breakers, 1-Inch (25.4 mm) per Pole, 120/240 or 240 Vac, 10,000, 22,000 AIC

Ampere Rating	2-Pole 120/240 Vac Common Trip Requires Four 1-Inch (25.4 mm) Spaces ①				Wire Size Range Cu/Al 60°C or 75°C	3-Pole 240 Vac Common Trip Requires Six 1-Inch (25.4 mm) Spaces ②			
	10 per Shelf Carton					5 per Shelf Carton			
	10,000 AIC		22,000 AIC			10,000 AIC		22,000 AIC	
	Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$		Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
125	BJ2125		BJH2125		#2 – 300 kcmil	BJ3125		BJH3125	
150	BJ2150		BJH2150			BJ3150		BJH3150	
175	BJ2175		BJH2175			BJ3175		BJH3175	
200	BJ2200		BJH2200			BJ3200		BJH3200	
225	BJ2225		BJH2225			BJ3225		BJH3225	

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

Note: If BJ or BJH breakers are used as a main or a back feed device, a hold-down kit is required. See Page 3-75.

Plug-on Special Application Circuit Breakers
10,000 Amperes Interrupting Capacity
120 Vac, 120/240 Vac and 240 Vac



BRWH215
Water Heater Breaker



BRSN220
Switching Neutral Breaker

Table 3-123. Special Application Circuit Breakers, 1-Inch (25.4 mm) per Pole

Water Heater Breakers			Switching Neutral Breakers			Wire Size Range Cu/Al 60°C or 75°C	240 V Breakers			Non-Automatic Molded Case Switches		
2-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces			2-Pole 120 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces				2-Pole 240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces			2-Pole 240 Vac Requires Two 1-Inch (25.4 mm) Spaces		
With Isolated Line Terminals for Separately Metered Water Heaters			With Switching Neutral Pole for Gasoline Pump Applications				Where Voltage to Ground is 240 Vac			For Use as Disconnect Contains No Magnetic or Thermal Trip Properties		
5 per Shelf Carton			5 per Shelf Carton			5 per Shelf Carton			5 per Shelf Carton			
10,000 AIC			10,000 AIC			10,000 AIC			5,000 AIC			
Ampere Rating	Catalog Number	Price U.S. \$	Ampere Rating	Catalog Number	Price U.S. \$	Ampere Rating	Catalog Number	Price U.S. \$	Ampere Rating	Catalog Number	Price U.S. \$	
15	BRWH215		15	BRSN215		#14 – 4	10	BR210H		—	—	
20	BRWH220		20	BRSN220			15	BR215H		—	—	
30	BRWH230		25	BRSN225			20	BR220H		—	—	
—	—		30	BRSN230			25	BR225H		—	—	
—	—		—	—			30	BR230H		—	—	
—	—		—	—			35	BR235H		—	—	
—	—		—	—			40	BR240H		—	—	
—	—		—	—			45	BR245H		—	—	
—	—		—	—			50	BR250H		50	BR250NA	
—	—		—	—			55	BR255H		—	—	
—	—		—	—		#4 – 1/0	60	BR260H		60	BR260NA	
—	—		—	—			70	BR270H		—	—	
—	—		—	—			80	BR280H		—	—	
—	—		—	—			90	BR290H		—	—	
—	—		—	—			100	BR2100H		100	BR2100NA	

Discount Symbol 22CD