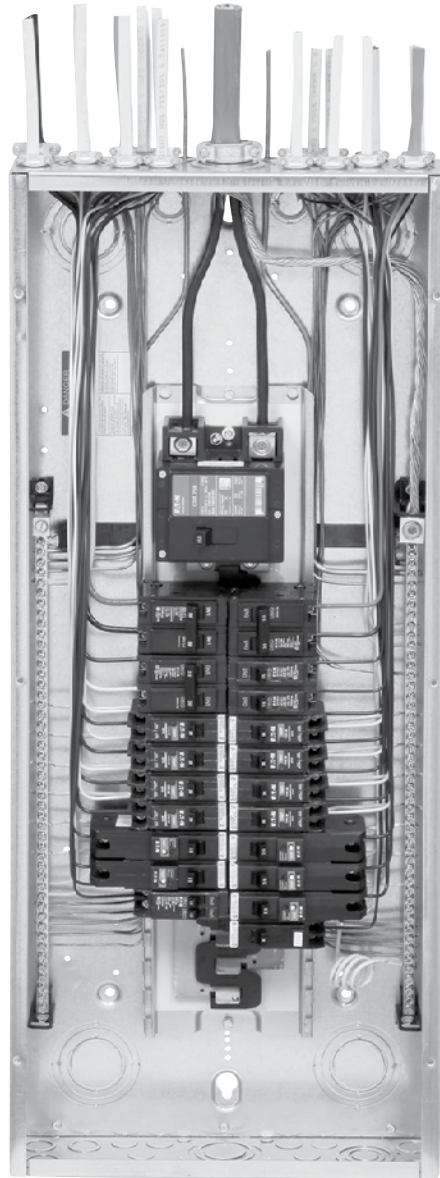


Type BR Quick Connect Neutral loadcenters and electronic breakers



Contents

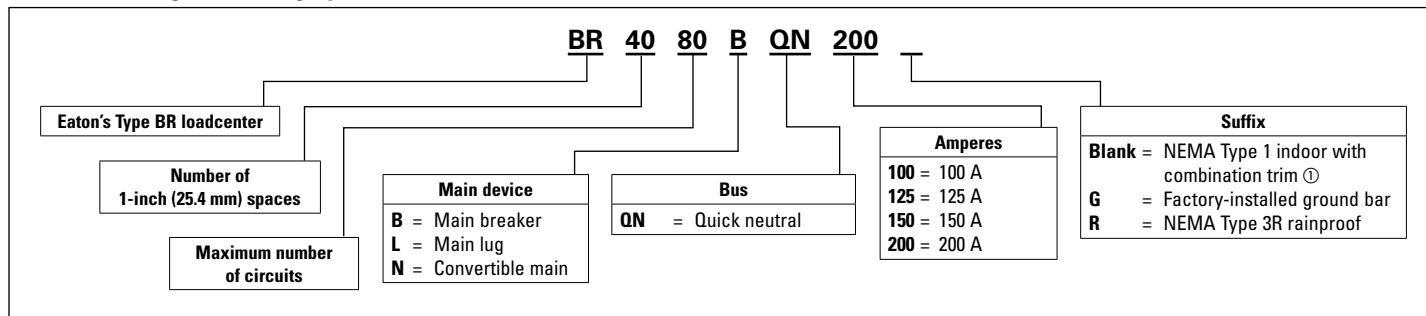
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Powering Business Worldwide

Product selection

Table 1. Catalog numbering system



① No character space used.

Table 2. BR Quick Connect Neutral™ loadcenters ①

Main device	Ampere rating	Spaces	Circuits ②	Incoming lug size	Enclosure type ③	Box size	Ground bar	Number of neutral terminations	Catalog number
BR 10 kAIC	100	30	60	#4-1/0	Indoor	D1	④	96	BR3060BQN100
CSR 25 kAIC	150	30	60	#2-300 kcmil	Indoor	G1	④	102	BR3060BQN150
CSR 25 kAIC	200	30	60	#2-300 kcmil	Indoor	G1	④	102	BR3060BQN200
CSR 25 kAIC	200	40	80	#2-300 kcmil	Indoor	L1	④	128	BR4080BQN200
CSR 25 kAIC	200	30	60	#2-300 kcmil	Outdoor	L1R	④	94	BR3060BQN200R
CSR 25 kAIC	200	40	80	#2-300 kcmil	Outdoor	G1R	④	128	BR4080BQN200R
Main lug only	125	24	48	#6-2/0	Indoor	C2	GBK14	80	BR2448LQN125G
Main lug only	125	30	60	#6-2/0	Indoor	D1	GBK10	96	BR3060LQN125G
Main lug only	200	30	60	#1-300 kcmil	Indoor	D1	GBK1020 + GBK10	96	BR3060LQN200G
Main lug only	200	40	80	#1-300 kcmil	Indoor	G1	GBK1020 + GBK10	122	BR4080LQN200G
Main lug only	125	20	40	#6-2/0	Outdoor	C1R	GBK14	68	BR2040LQN125RG
Main lug only	200	30	60	#1-300 kcmil	Outdoor	D1R	GBK1420	94	BR3060LQN200RG
Convertible	200	30	60	—	Indoor	G1	④	102	BR3060NQN200
Convertible	200	40	80	—	Indoor	L1	④	128	BR4080NQN200
Convertible	200	30	60	—	Outdoor	G1R	④	94	BR3060NQN200R
Convertible	200	40	80	—	Outdoor	L1R	④	128	BR4080NQN200R

① BR Quick Connect Neutral loadcenters accept both standard and Quick Connect Neutral breakers.

② Loadcenters accept Type BR twin breakers.

③ Combination cover included with every indoor loadcenter.

④ Ground bar kit not included. Purchase separately.

Table 3. BR Quick Connect Neutral electronic breakers

Ampere rating	Poles	Wire size	Breaker type	LED diagnostics included	Catalog number
15	Single-pole 10 kAIC	#14-4	Combination AFCI	Yes	BRCAF115QN
20	Single-pole 10 kAIC	#14-4	Combination AFCI	Yes	BRCAF120QN
15	Single-pole 10 kAIC	#14-4	Arc fault/ground fault	Yes	BRLAFGF115QN
20	Single-pole 10 kAIC	#14-4	Arc fault/ground fault	Yes	BRLAFGF120QN

Table 4. Type BR Quick Connect Neutral loadcenter specifications

Description	Specifications
Service	
Single-phase, three-wire	120/240 Vac
Short circuit rating	
Main breaker loadcenters	10 kAIC using BR main breaker 25 kAIC using CSR main breaker
Main lug loadcenters	Up to 100 kAIC using series ratings The rating of main lug only loadcenter is dependent on the lowest branch breaker AIC rating
Convertible loadcenters	10 kAIC using BR main breakers 25 kAIC using CSR main breaker
Branch breakers	Types BR, BRH, BRHH: 10–150 A single-, two-, and three-pole; selected amperage available in switching duty, HACR, shunt trip, and high magnetic settings Type GFCB ground fault circuit interrupter: 15–60 A single- and two-pole Type AFCI arc fault circuit interrupter: 15–20 A single-pole Types BJ and BJH: 125–225 A; two-pole sub-feed breaker Type BR twin: 10–50 A; two of one-pole; takes one 1-inch (25.4 mm) space Type BQ and BQC multi-breaker: 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
Enclosures	NEMA® Type 1 indoor / NEMA Type 3R outdoor NEMA 4X (available via Flex Center at 800-330-6479)
Bussing	Tin-plated aluminum
Standards	UL® 67
Warranty	10 years

Options and accessories

Table 5. Field installation rainproof conduit hubs

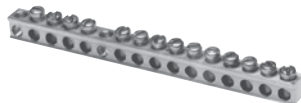


DS00H2

Description	Conduit size in inches (mm)	Ordering quantity ①	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.	2.00 (50.8)	1	DS200H2
	2.50 (63.5)	1	DS250H2
	3.00 (76.2)	1	DS300H2
Adapter kit—allows installing a Group 1 hub on devices arranged for Group 2 hubs	—	1	DS900AP
Group 1 small blank hub plate with bump	—	1	DS900CP1
Group 2 large blank hub plate with bump	—	1	DS900CP2

① Must be purchased in multiples of ordering quantities indicated.

Table 6. Ground bar kits



GBK14

Description (see legend)	Length in inches (mm)	Ordering quantity ①	Catalog number ②
●○○○○●○	2.54 (64.5)	1	GBK5
●○○○○●■	3.59 (91.2)	1	GBK520
●○○○○●○○○○○	4.29 (109.0)	1	GBK10
●○○○○●○○○○○■	5.34 (135.6)	1	GBK1020
●●○○○○■●●○○○○	4.61 (117.1)	1	GBK13
●○○○○●○○○○○○○○○○	5.69 (144.5)	1	GBK14
●○○○○●○○○○○○○○○○■	6.74 (171.2)	1	GBK1420
●○○○○●○○○○○○○○○○○○○○○○○○	8.14 (206.8)	1	GBK21
●○○○○●○○○○○○○○○○○○○○○○○○■	9.19 (233.4)	1	GBK2120

① Must be purchased in multiples of ordering quantities indicated.

② Distance between mounting holes is 1.75 inches (44.5 mm).

Ground bar legend

- (3) #14–10 Cu/Al or (1) #14–4 Cu/Al
- (1) #6–2/0 Cu/Al
- (1) #14–1/0 Cu/Al or (3) #14–10 Cu/Al
- #14–6 Cu/Al or (2) #14–12 Cu/Al
- Mounting hole

Table 7. Field installation kits and parts



BRSF125



BRL200



TDL



BRMIKBR



BRMIKCSR

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

① Must be purchased in multiples of ordering quantities indicated.

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

Table 8. Mechanical interlock kits ①

Description	Catalog number
Mechanical interlock for Type BR main breaker	BRMIKBR
Mechanical interlock for Type CSR main breaker	BRMIKCSR

① Clamshell packaged.

Each mechanical interlock kit includes:

- Interlock assembly

- Hold down kit

Note: 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.

- New labels
- Necessary screws

Warranty information:

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

Circuit breaker accessories

Table 9. Field installation kits and parts

Description	Ordering quantity ①	Catalog number
Handle ties ②		
Handle tie bar for physically joining the handles of two adjacent single-pole Type BR circuit breakers (metal cylinder pin type)	10	BHT
Handle tie bar for joining two independent outside poles of Types BQ and BQC Quadplex and outside poles of two Type BD duplex circuit breakers	10	THOW
Handle tie bar for joining two adjacent outside poles of Types BQ and BQC Quadplex and outside poles of two Type BD duplex circuit breakers	10	THS1
Handle lockoffs ③		
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) ④	10	BRLW
Padlockable device for locking the handle of a single-pole Type BR circuit breaker (handle mounted) ⑤	10	BRLW1
Padlockable device for locking the handle of a two- and three-pole Type BR circuit breaker (handle mounted) ⑤	10	BRLW2
Padlockable device for locking the handle of a single-pole Type BD Duplex, BQ or BQC Quadplex breaker (handle mounted) ⑤	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) ④	10	BRQLW
Padlockable device for locking the handle of main circuit breaker Types CC and CHH into the ON or OFF position (screw mounted) ④	1	CCPL
Padlockable device for locking the handle of main breaker Types BW and CSR into the ON or OFF position (escutcheon mounted) ④	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) ④	10	BHLW
Device used to secure handle in ON or OFF position for single-pole Type BR circuit breakers (handle mounted) ⑤	10	BHLW1
Device used to secure handle in ON or OFF position for two- and three-pole Type BR circuit breakers (handle mounted) ⑤	10	BHLW2
Device used to secure handle in ON or OFF position for single-pole Type GFCB ground fault circuit breakers (handle mounted) ⑤	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) ⑤	10	HLW1
Hold-down kits ⑦		
Hold-down retainer kit for three-pole Type BR circuit breakers in S3100 and 3100R loadcenters only	1	BRHDB
Hold-down screw kit for two- and three-pole Type BR circuit breakers in single-phase MLO loadcenters through 100–125 A	1	BREQS125
Hold-down screw kit for two- and three-pole Type BR circuit breakers in MLO loadcenters 150–225 A	1	BRHDK125
Hold-down screw kit for two-pole Types BJ and BJH circuit breakers in MLO loadcenters 125–225 A	1	BJHDS
Hold-down screw kit for three-pole Types BJ and BJH circuit breakers in MLO loadcenters 125–225 A	1	BJHDS3P
Main breaker lug kits		
Types CC and CHH main breaker lug kit (2) 300 kcmil	1	CCL300
Types BW/CSR main breaker lug kit (2) 300 kcmil	1	MCBL300

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.

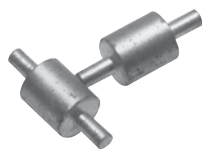
③ Handle lockoffs: devices that use a padlock to lock the circuit breaker's handle in the ON or OFF position.

④ Escutcheon mounted: device mounted semipermanently to the face of the circuit breaker and secured by the loadcenter deadfront.

⑤ Handle mounted: device mounted directly to the handle by the use of a set screw.

⑥ Screw mounted: device permanently mounted to the face of the circuit breaker by the use of a non-removable screw.

⑦ Hold-down kits: devices used to secure the circuit breaker to the loadcenter for back-feed main application. See NEC® Article 408.36 (D).



THS1



BHLW2



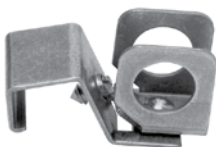
BRQLW



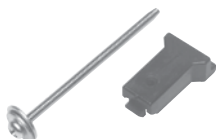
MCBPL (installed)



BHLW



BRLW2



BREQS125



BRHDK125

Technical data and dimensions

Commercial loadcenter unit enclosures—box sizes

Note: Approximate dimensions in inches (mm). Box sizes do not include covers/fronts.

Table 10. Loadcenters—NEMA Type 1 indoor

Box size	Height	Width	Depth
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)
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)
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)

Table 11. Loadcenters—NEMA Type 3R outdoor

Box size	Height	Width	Depth
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)
C1R	21.00 (533.4)	14.31 (363.5)	5.19 (131.8)
C3R	25.00 (635.0)	14.31 (363.5)	5.19 (131.8)
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)

Residential loadcenter knockouts

Table 12. Knockouts for box sizes C4, D1, G1, L1, L2, C1R, C3R, D1R, G1R, L1R, L2R

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

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

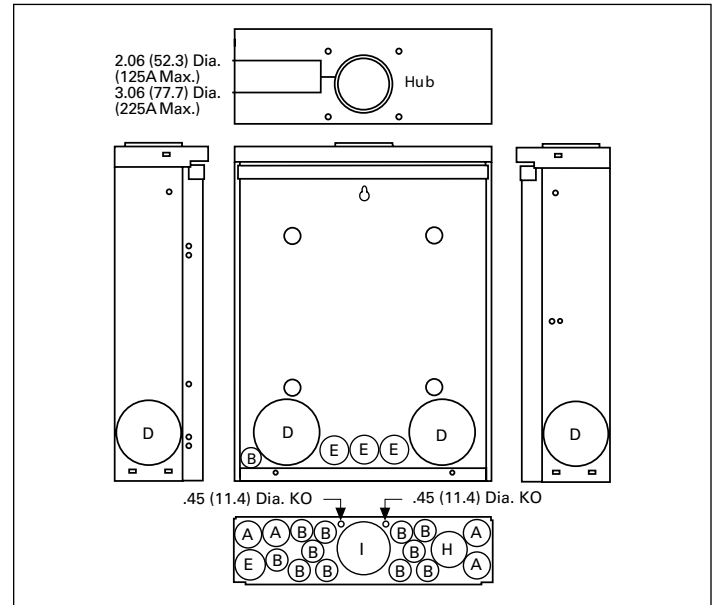


Figure 1. Outdoor boxes B1R, B2R, C1R, C3R, D1R, G1R, L1R, L2R

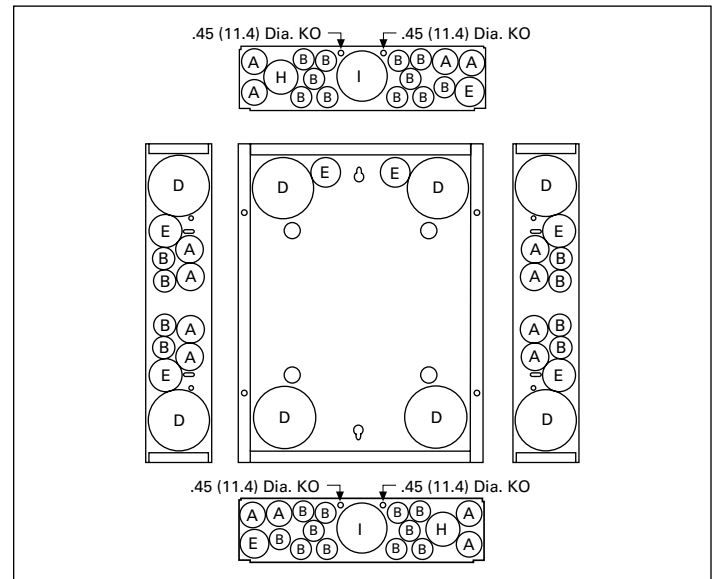


Figure 2. Indoor boxes C1, C2, C4, D1, G1, L1, L2

Determine the cause of a tripped breaker

If the breaker unexpectedly trips, follow this procedure to determine the cause of the trip.

⚠ CAUTION

IMMEDIATE TRIPPING WHEN RESETTING THE BREAKER INDICATES THE PRESENCE OF A FAULT.

BR Quick Connect Neutral breakers are equipped with a red diagnostic LED that blinks a repeating pattern from 1 to 6 blinks, which indicates the cause of trip. This pattern is the “trip code.”

To obtain the trip code

Turn on the tripped breaker. The breaker will display a blinking red LED. The LED will blink the trip code for 30 iterations after being turned back on. See **Table 13** for the code descriptions.

If you miss the code when the breaker is turned on after a trip, you can recall the last trip code that the breaker displayed.

1. Turn the breaker handle to the OFF position.
2. Depress and hold the TEST button.
3. Turn the breaker handle to the ON position.
4. Release the TEST button.
5. The red LED will blink the trip code for 30 iterations.

Table 13. Trip code descriptions

Trip code	Description
No code recorded	<p>Thermal/short circuit/TEST/manual disconnect Note: The breaker does not record trip codes for the conditions listed below. If the breaker is tripped by one of these conditions, the LED will display the most recent recorded trip code.</p> <ul style="list-style-type: none"> • Thermal overload detected by the mechanical portion of the breaker • Short-circuit detection by the mechanical portion of the breaker • Pressing the TEST button • Manually switching the breaker off <p>Upon installation, if the breaker has not experienced a trip that records a code, it will display the last trip code recorded from tests performed at the factory.</p>
1	<p>Series arc Description: A low current arc has been detected within one of the current pathways. Low current arcs are typically series arcs, and are typically found in worn or degraded appliance and extension cords, poor connections in appliances or fixtures, or in contacts within equipment. Resolution: Identify the equipment causing the tripping, and repair or replace.</p>
2	<p>Parallel arc Description: A high current arc has been detected between two conductors. High current arcs are typically parallel arcs, and are usually found in installed wiring where the wire has been compromised by a nail or screw, tight staple, and damaged insulation. Resolution: Locate fault location and replace wire.</p>
3	<p>Short delay Description: Short delay is an electronic backup to the short-circuit mechanism. Resolution: Identify the location of the short circuit and repair.</p>
4	<p>Overvoltage Description: The breaker will trip if it experiences voltage of 160 V rms or greater. The breaker can be reset and the TEST button can be pushed to verify that the breaker is working properly. Resolution: Investigate utility power for imbalance in the phases or loss of neutral.</p>
5	<p>Ground fault Description: Current has found an alternate path to ground, which could cause harm to people or property. Resolution: Determine the location of leakage current and repair.</p>
6	<p>Self test failure Description: The breaker continually tests the internal electronics and software to ensure that the arc fault detection technology is working properly. If the self-diagnostics fail, the breaker will trip. The built-in self test features will not allow the AG/GF breaker to re-latch if it detects a malfunction in the AG/GF detection circuit. Resolution: Replace the breaker.</p>

General troubleshooting guidelines

Visit www.eaton.com/troubleshooting for detailed troubleshooting instructions.

Contact the Eaton Technical Resource Center at
1-800-326-9513 for further assistance.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

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