

Product Line Description

Cutler-Hammer Molded Case Circuit Breakers are designed to provide circuit protection for low voltage distribution systems. They are described by NEMA as, "... a device for closing and interrupting a circuit between separable contacts under both normal and abnormal conditions," and furthermore as, "... a breaker assembled as an integral unit in a supporting and enclosing housing of insulating material." The NEC describes them as, "A device designed to open and close a circuit by non-automatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating."

So designed, Cutler-Hammer circuit breakers protect conductors against overloads and conductors and connected apparatus, such as motors and motor starters, against short circuits.

In low voltage distribution systems, there are many varied applications of molded case circuit breakers. Cutler-Hammer offers the most comprehensive family of molded case circuit breakers in the industry.

This family of circuit breakers includes:

- Thermal Magnetic Trip Breakers
- Electronic rms Trip Breakers
- Molded Case Switches
- Motor Circuit Protectors
- Current Limiting Breakers
- Special Application Breakers
- World Breakers

Special Calibration

Special non-UL-listed calibrations are available for certain ambient temperatures other than 40°C and for frequencies other than 50/60 Hz or DC. Reduced interrupting ratings will apply for 400 Hz applications. Maximum thermal calibration is limited to 135A at 400 Hz.

Suffix H01 400 Hz	20% Adder
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50°C Calibration

Add suffix **V** to Catalog Number for complete breaker, listed above, when ordering listed ampere ratings for breakers to be used in 50°C ambients.

Moisture-Fungus Treatment

All circuit breaker cases are molded from glass-polyester which does not support the growth of fungus. Any parts which are susceptible to the growth of fungus will require special treatment.

Suffix J01 Fungus Treated	\$325. + 20% Adder
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Freeze-Tested Circuit Breakers

The circuit breakers may be ordered with freeze testing. This option uses special lubrication and mechanical operation is verified at -40°C.

Suffix F01 Freeze Tested	20% Adder
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Marine Applications

F-Frame circuit breakers can be supplied to meet the following marine specifications:

- U.S. Coast Guard CFR 46 ABS — American Bureau of Shipping IEEE 45

These specifications generally require molded case circuit breakers to be supplied with 50°C ambient calibration, special nameplating, and plug-in adapter kits. When plug-in adapter kits are used, no terminals need be supplied.

Circuit breakers can also be supplied to meet UL489 Supplement SA (Marine Use) and UL489 Supplement SB (Naval Use).

UL489 Supplement SA applies to vessels over 65 feet in length. Requirements include 40°C ambient calibration, special labeling, and no use of aluminum conductors or terminals.

Suffix H08 "Marine"	10% Adder
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UL 489 Supplement SB requires 50°C ambient calibration, vibration testings, special nameplating and no use of aluminum conductors or terminals.

Suffix H09 "Naval"	10% Adder
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Standards and Certifications

Molded case circuit breakers are designed to conform with the following standards:

- Underwriters Laboratories, Inc., Standard UL489, Molded Case Circuit Breakers and Circuit Breaker Enclosures
- National Electrical Manufacturers Association Standards Publication No. AB1-1993, Molded Case Circuit Breakers
- Australian Standard AS 2184, Molded Case Circuit Breakers
- British Standards Institution Standard BS 4752: Part 1, Switchgear and Control Gear Part 1: Circuit Breakers
- Canadian Standards Association Standard C22.2 No. 5, Service Entrance and Branch Circuit Breakers
- International Electrotechnical Commission Recommendations IEC 157-1, Circuit Breakers
- Japanese T-Mark Standard Molded Case Circuit Breakers
- South African Bureau of Standards, Standard SABS 156, Standard Specification for Molded Case Circuit Breakers
- Swiss Electro-Technical Association Standard SEV 157-1, Safety Regulations for Circuit Breakers
- Union Technique de l'Electricite Standard NF C 63-120, Low Voltage Switchgear and Control Gear Circuit Breaker Requirements
- Verband Deutscher Elektrotechniker (Association of German Electrical Engineers) Standard VDE 0660, Low Voltage Switchgear and Control Gear, Circuit Breakers

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

Note: For further information, see Circuit Breaker, CD-ROM SA.74A.01.T.E.

G-Frame

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Product Description

- All two- and three-pole circuit breakers are of the common trip type. On all 3-phase Delta (240V) Grounded B phase applications, refer to Cutler-Hammer.
- Single-pole circuit breakers, 15 and 20 amperes. Switching duty rated (SWD) for fluorescent lighting applications.
- All G-Frame circuit breakers are suitable for reverse feed use.
- HACR rated.

Technical Data and Specifications

Interrupting Capacity Ratings

Table 12-2. UL489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA)					
		Volts AC (50/60 Hz)				Volts DC	
		120	240	277	480	125/250 ②	250 ①②
GD	2	—	65	—	14	10	—
	3	—	65	—	22	—	10

① Two poles of 3-pole circuit breaker.

② Time constant is 8 milliseconds minimum.

Table 12-3. UL489 Interrupting Capacity Ratings (Continued)

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA)					
		Volts AC (50/60 Hz)				Volts DC	
		120	240	277	480Y/277	125	125/250
GB	1	65	—	—	—	14 ③	—
	2, 3	—	65	—	—	—	14
GQ							
GHB	1	65	—	14	—	14 ③	—
	2, 3	—	65	—	14	—	14
HGHB	1	65	—	25	—	14	—
GC	1	65	—	—	—	14 ③	—
	2, 3	—	65	—	—	—	14
GHC	1	65	—	14	—	14 ③	—
	2, 3	—	65	—	14	—	14
HGHC	1	65	—	25	—	14	—

③ 15 through 70A breakers only.

Terminal Types

For line and load-side. Terminals are UL listed as suitable for wire type and size given below.

Table 12-4. Terminal Types

Circuit Breaker Amperes	Terminal Type Material	Screw Head Type	Wire Type	AWG Wire Range	Metric Wire ④ Range (mm²)
Standard					
15 – 20	Clamp (Plated Steel)	Slotted	Cu/Al	14 – 10	2.5 – 4
25 – 100	Pressure (Aluminum Body)	Slotted	Cu/Al	10 – 1/0	4 – 50
Optional — GD Only					
15 – 100	Pressure (Steel Body)	Slotted	Cu	14 – 3	—

④ Not UL listed sizes.

**Types GB, GHB and
HGHB Bolt-On Panelboard
Circuit Breakers***Typical GB***Standards and Certifications**

These breakers meet the requirements of Federal Specification W-C-375b as follows:

- Types GB, GHB, 120 and 240V:
 - 1 Pole: Class 11a
 - 2, 3 Poles: Classes 10b, 11b, 12b, 14b, 15b
- Type GHB, 277 and 480Y/277V:
 - 1 Pole: Classes 12c, 13a
 - 2, 3 Poles: Class 13b
- Type HGHB 277V
- Type GQ 277V

Product Selection**Table 12-8. Type GB Thermal-Magnetic Circuit Breakers with Non-interchangeable Trip Units**

Continuous Ampere Rating @ 40°C	120V AC Maximum, 125V DC Maximum ①		240V AC Maximum, 125/250V DC Maximum		240V AC Maximum, 125/250V DC Maximum ②	
	1-Pole		2-Pole		3-Pole	
	Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
15	GB1015 ③	77.50	GB2015 ③	199.00	GB3015 ③	304.00
20	GB1020 ③	77.50	GB2020 ③	199.00	GB3020 ③	304.00
25	GB1025	77.50	GB2025	199.00	GB3025	304.00
30	GB1030	77.50	GB2030	199.00	GB3030	304.00
35	GB1035	77.50	GB2035	199.00	GB3035	304.00
40	GB1040	77.50	GB2040	199.00	GB3040	304.00
45	GB1045	77.50	GB2045	199.00	GB3045	271.00
50	GB1050	77.50	GB2050	199.00	GB3050	304.00
60	GB1060	77.50	GB2060	199.00	GB3060	304.00
70	GB1070	157.00	GB2070	316.00	GB3070	430.00
80	GB1080	157.00	GB2080	316.00	GB3080	430.00
90	GB1090	157.00	GB2090	316.00	GB3090	430.00
100	GB1100	157.00	GB2100	316.00	GB3100	430.00

① 15 through 70 ampere circuit breakers only.

② Use (2) outside poles.

③ Uses .190-32 screw type clamp terminals.

Table 12-9. Type GHB Thermal-Magnetic Circuit Breakers with Non-interchangeable Trip Units ⑦

Continuous Ampere Rating @ 40°C	277/480V AC Maximum, 125V DC Maximum ④		277/480V AC Maximum, 125/250V DC Maximum		277/480V AC Maximum, 125/250V DC Maximum ⑤	
	1-Pole		2-Pole		3-Pole	
	Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
15	GHB1015 ⑥	93.00	GHB2015 ⑥	232.00	GHB3015 ⑥	409.00
20	GHB1020 ⑥	93.00	GHB2020 ⑥	232.00	GHB3020 ⑥	409.00
25	GHB1025	93.00	GHB2025	232.00	GHB3025	409.00
30	GHB1030	93.00	GHB2030	232.00	GHB3030	409.00
35	GHB1035	94.00	GHB2035	232.00	GHB3035	409.00
40	GHB1040	94.00	GHB2040	232.00	GHB3040	409.00
45	GHB1045	94.00	GHB2045	232.00	GHB3045	409.00
50	GHB1050	94.00	GHB2050	232.00	GHB3050	409.00
60	GHB1060	94.00	GHB2060	232.00	GHB3060	409.00
70	GHB1070	196.00	GHB2070	463.00	GHB3070	560.00
80	GHB1080	196.00	GHB2080	463.00	GHB3080	560.00
90	GHB1090	196.00	GHB2090	463.00	GHB3090	560.00
100	GHB1100	196.00	GHB2100	463.00	GHB3100	560.00

④ 15 through 70 ampere circuit breakers only.

⑤ Use (2) outside poles.

⑥ Uses .190 (4.83) -32 screw type clamp terminals.

⑦ 480Y/277V, circuit breakers (Type GHB) not suitable for 3-phase Delta (480V).

Note: Instruction Leaflet/FRED Number 15547**Table 12-10. Type HGHB Thermal-Magnetic Circuit Breakers with Non-interchangeable Trip Units**

Continuous Ampere Rating @ 40°C	277V AC Maximum, 125V DC Maximum	
	1-Pole	
	Catalog Number	Price U.S. \$
15	HGHB1015	116.00
20	HGHB1020	116.00
25	HGHB1025	116.00
30	HGHB1030	116.00

Note: Instruction Leaflet/FRED Number 15547**Table 12-11. Type GQ Thermal-Magnetic Circuit Breakers with Non-interchangeable Trip Units**

Continuous Ampere Rating @ 40°C	277V AC Maximum, No DC Rating	
	1-Pole	
	Catalog Number	Price U.S. \$
15	GQ1015	⑧ 93.00
20	GQ1020	⑧ 93.00

⑧ Contact factory for availability.

Discount Symbol **CB-2**