Moulded Case Circuit Breaker Family

Series C Moulded Case Circuit Breakers

Special Application Moulded Case Circuit Breakers

Product Line Description

Eaton's Moulded 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, Eaton 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 moulded case circuit breakers. Eaton offers the most comprehensive family of moulded case circuit breakers in the industry.

This section of circuit breakers includes:

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

Modified Breakers

Eaton breakers can be ordered with internal accessories installed. These modified breakers will be subject to an additional charge.

Special Calibration

Special non-CSA/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. Please refer to Eaton's Consulting Application Guide, (CA08104001E) pages 28.2 - 16 for details.

Suffix **H01** 400 Hz ①

50°C Calibration

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

Suffix **V** 50°C Calibration ①

Moisture-Fungus Treatment

All circuit breaker cases are moulded 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 ①

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 ①

Marine Applications

F- to R-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; DNV; Lloyds; and ABS/NVR

These specifications generally require moulded case circuit breakers to be supplied with 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 (19.8 m) in length. Requirements include 40°C ambient calibration, special labeling, and no use of aluminum conductors or terminals.

Suffix **H08** "Marine"

Or you can choose to add 50ºC ambient but then there is no "UL" mark.

Suffix **VH08** "Marine" with 50ºC ambient calibration

UL 489 Supplement SB requires partial 50ºC ambient calibration, vibration testings, special nameplating and no use of aluminum conductors or terminals. Eaton chooses to always fully calibrate to 50ºC ambient. ("Naval" labelled per UL and UL now allows 50°C label here).

Suffix **VH09** "Naval" with 50ºC ambient calibration

Certified Test Reports

Eaton breakers can be ordered with certified test reports at the time of order entry for an additional charge. Test report documents the thermal and magnetic or electronic tripping characteristics of the individual breaker. Breaker and test reports must be ordered together.

Add suffix 12 to breaker catalogue number and enter separate line item on order for certified test report.

Standards and Certifications

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

- Underwriters Laboratories, Inc., Standard UL489, Moulded Case Circuit Breakers and Circuit Breaker Enclosures
- National Electrical Manufacturers Association Standards Publication No. AB1-1993, Moulded Case Circuit Breakers
- Australian Standard AS 2184, Moulded 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, Moulded Case Circuit Breakers and Circuit Breaker Enclosures.
- International Electrotechnical Commission Recommendations IEC 60947-2, Circuit Breakers
- Japanese T-Mark Standard Moulded Case Circuit Breakers
- South African Bureau of Standards, Standard SABS 156, Standard Specification for Moulded 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.

Moulded 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.

Open breakers do not have service entrance ratings. Service entrance rating is part of the enclosure.

① Circuit breaker manufactured with this option will be supplied without the CSA/UL certification label.

Quick Reference

Industrial Circuit Breakers

Circuit Breaker Type	Cont. Amp. Rating @ 40°C	No. Poles	Volts AC	Volts DC	Type of Trip ①	CSA/UL Listed Interrupting Ratings rms Symmetrical Amperes (kA) AC Ratings Volts 120	120/240	240	277	347	480Y/277	480	600Y/347	600	DC ② 125	250	125/250	Section Page Number
G-Frame																		
GHQ	15 – 30	1	277	—	N.I.T.	—	—	—	14	—	—	—	—	—	—	—	—	**G-3**
HGHB	15 – 30	1	277	125	N.I.T.	—	—	—	14	—	—	—	—	—	14	—	—	**G-3**
GHB	15 – 100	1	277	125	N.I.T.	65	—	—	14	—	—	—	—	—	14	—	—	**G-3**
GHB	15 – 100	2, 3	480Y/277	125/250	N.I.T.	—	—	65	—	—	14	—	—	—	—	—	14	**G-3**
GBH ③	15 – 100	1	347	125	N.I.T.	65	—	—	14	10	—	—	—	—	14	—	—	**G-3**
GBH ③	15 – 100	2, 3	600Y/347	125/250	N.I.T.	—	—	65	—	—	14	—	10	—	—	—	14	**G-3**
HGHC	15 – 30	1	277	125	N.I.T.	—	—	—	14	—	—	—	—	—	14	—	—	**G-4**
GHC	15 – 100	1	277	125	N.I.T.	65	—	—	14	—	—	—	—	—	14	—	—	**G-4,5**
GHC	15 – 100	2, 3	480Y/277	125/250	N.I.T.	—	—	65	—	—	14	—	—	—	—	—	14	**G-4,5**
GCH ③	15 – 100	1	347	125	N.I.T.	65	—	—	14	10	—	—	—	—	14	—	—	**G-4**
GCH ③	15 – 100	2, 3	600Y/347	125/250	N.I.T.	—	—	65	—	—	14	—	10	—	—	—	14	**G-4**
GD	15 – 50	2	480	125/250	N.I.T.	—	—	65	—	—	—	14	—	—	—	—	10	**G-2**
GD	15 – 100	3	480	250	N.I.T.	—	—	65	—	—	—	22	—	—	—	10	—	**G-2**
GHBGFEP ④	15 – 60	1	277	—	N.I.T.	—	—	—	14	—	—	—	—	—	—	—	—	**G-6**
GHCGFEP ④	15 – 60	1	277	—	N.I.T.	—	—	—	14	—	—	—	—	—	—	—	—	**G-6**
F-Frame																		
ED	100 – 225	2, 3	240	125	N.I.T.	—	—	65	—	—	—	—	—	—	10	—	—	**F-4**
EDH	100 – 225	2, 3	240	125	N.I.T.	—	—	100	—	—	—	—	—	—	10	—	—	**F-4**
EDC	100 – 225	2, 3	240	125	N.I.T.	—	—	200	—	—	—	—	—	—	10	—	—	**F-4**
EHD	15 – 100	1	277	125	N.I.T.	—	—	—	14	—	—	—	—	—	10	—	—	**F-4**
EHD	15 – 100	2, 3	480	250	N.I.T.	—	—	18	—	—	—	14	—	—	—	10	—	**F-4**
FDB ③	15 – 150	1	347	125	N.I.T.	—	—	—	—	14	—	—	—	—	10	—	—	**F-4**
FDB ⑥	15 – 225	2, 3	600	250	N.I.T.	—	—	18	—	—	—	14	—	14	—	10	—	**F-4**
FDB ⑥	15 – 225	4	600	250	N.I.T.	—	—	18	—	—	—	14	—	14	—	10	—	**F-4**
FD	15 – 150	1	347	125	N.I.T.	—	—	—	35	18	—	—	—	—	10	—	—	**F-4**
FD	15 – 225	2, 3	600	250	N.I.T.	—	—	65	—	—	—	35	—	18	—	10	—	**F-4**
FD	15 – 225	4	600	250	N.I.T.	—	—	65	—	—	—	35	—	18	—	10	—	**F-4**
FDE	15 – 225	3	600	—	N.I.T.	—	—	65	—	—	—	35	—	18	—	—	—	**F-5**
HFD	15 – 30	1	347	125	N.I.T.	—	—	—	65	25③	—	—	—	—	10	—	—	**F-5**
HFD	15 – 225	2,3	600	250	N.I.T.	—	—	100	—	—	—	65	—	25	—	22	—	**F-5**
HFD	15 – 225	4	600	250	N.I.T.	—	—	100	—	—	—	65	—	25	—	22	—	**F-5**
HFDE	15 – 225	3	600	—	N.I.T.	—	—	100	—	—	—	65	—	25	—	—	—	**F-5**
FDC ⑤	15 – 30	1	347	125	N.I.T.	—	—	—	—	30③	—	—	—	—	10③	—	—	**F-5**
FDC ⑤	15 – 225	2, 3	600	250	N.I.T.	—	—	200	—	—	—	100	—	35	—	22	—	**F-5**
FDC ⑤	15 – 225	4	600	250	N.I.T.	—	—	200	—	—	—	100	—	35	—	22	—	**F-5**
FDCE ⑤	15 – 225	3	600	—	N.I.T.	—	—	200	—	—	—	100	—	25	—	—	—	**F-5**

① N.I.T. is non-interchangeable trip unit and I.T. is interchangeable trip unit.
② Two-pole circuit breaker, or two poles of three-pole circuit breaker at 250V DC.
③ CSA listed only. Not UL listed.
④ UL listed only. Not CSA listed.
⑤ Current limiting.
⑥ The 175A 200A and 225A 2, 3 and 4 pole FDB breakers are CSA listed only, not UL listed.

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 Eaton.
- 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

CSA C22.2 No. 5 and UL489 Interrupting Capacity Ratings

		Interrupting Capacity (Symmetrical Amperes) (kA)					
		Volts Ac (50/60 Hz)				Volts Dc		
Circuit Breaker Type	Number of Poles	120	240	277	480	125/250②	250①②	Section Page Number
GD	2	–	65	–	14	10	–	G-2
	3	–	65	–	22	–	10	

		Interrupting Capacity (Symmetrical Amperes) (kA)								
		Volts Ac (50/60 Hz)						Volts Dc		
Circuit Breaker Type	Number of Poles	120	240	277	347	480Y/277	600Y/347	125	125/250①②	Section Page Number
GHQ	1	–	–	14	–	–	–	–	–	G-3
HGHB	1	–	–	25	–	–	–	14	–	G-3
GHB	1	65	–	14	–	–	–	14③	–	G-3
	2, 3	–	65	–	–	14	–	–	14	G-3
GBH④	1	65	–	14	10	–	–	14③	–	G-3
	2, 3	–	65	–	–	14	10	–	14	G-3
HGHC	1	–	–	25	–	–	–	14	–	G-4
GHC	1	65	–	14	–	–	–	14③	–	G-4
	2, 3	–	65	–	–	14	–	–	14	G-4
GCH④	1	65	–	14	10	–	–	14③	–	G-4
	2, 3	–	65	–	–	14	10	–	14	G-4
GHBGFEP ⑤	1	–	–	14	–	–	–	–	–	G-6
GHCGFEP ⑤	1	–	–	14	–	–	–	–	–	G-6

Catalogue Numbering System

This information is presented only as an aid to understanding catalogue numbers. It is not to be used to build catalogue numbers for circuit breakers or trip units.

Circuit Breaker/Frame Catalogue Number

GD 3 100

Circuit Breaker Type
GD
GHB
GBH
GHC
GCH
GHQ
HGHB
HGHC

Number of poles
1: 1 Pole
2: 2 Pole
3: 3 Pole

Trip Amperes
15
20
24
30
35
40
45
50
60
70
80
90
100

Suffix
K: Moulded Case Switch
V: 50°C
F01: Freeze Tested
J01: Fungus Protected
R01: Shock Tested

Terminal Types

Circuit Breaker Amperes	Terminal Type Material	Screw Head Type	Wire Type	AWG Wire Range	Metric Wire⑥ Range (mm^2)
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	–

Terminal Torque Values

AWG Wire Range	Torque Value bl-in	Torque Value N.m.
#14-#10	20	2.26
#8	40	4.52
#6-#4	45	5.09
#3-1/0	45	5.09

① Two poles of 3-pole circuit breaker. Two poles in series for 250 VDC application.
② Time constant is 8 milliseconds minimum.
③ 15 through 70A breakers only.
④ CSA listed only, Not UL listed.
⑤ UL listed only, not CSA listed.
⑥ Not CSA and UL listed sizes.

Types GHC, GCH and HGCH Circuit Breakers

Type CHC, 277 and 480Y/277V
Type GCH, 347 and 600Y/347V
Type HGHC, 277V

Typical GCH

Type GHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units④

Continuous Ampere Rating @ 40°C	277 Vac Maximum, 125 Vdc Maximum ①	480Y/277 Vac Maximum, 125/250 Vdc Maximum	480Y/277 Vac Maximum, 125/250 Vdc Maximum ②
	1-Pole	2-Pole	3-Pole
	Catalogue Number		
15	GHC1015 ③	GHC2015 ③	GHC3015 ③
20	GHC1020 ③	GHC2020 ③	GHC3020 ③
25	GHC1025	GHC2025	GHC3025
30	GHC1030	GHC2030	GHC3030
35	GHC1035	GHC2035	GHC3035
40	GHC1040	GHC2040	GHC3040
45	GHC1045	GHC2045	GHC3045
50	GHC1050	GHC2050	GHC3050
60	GHC1060	GHC2060	GHC3060
70	GHC1070	GHC2070	GHC3070
80	GHC1080	GHC2080	GHC3080
90	GHC1090	GHC2090	GHC3090
100	GHC1100	GHC2100	GHC3100

Type GCH Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units⑤

Continuous Ampere Rating @ 40°C	347 Vac Maximum, 125 Vdc Maximum ①	600Y/347 Vac Maximum, 125/250 Vdc Maximum	600Y/347 Vac Maximum, 125/250 Vdc Maximum ②
	1-Pole	2-Pole	3-Pole
	Catalogue Number		
15	GCH1015 ③	GCH2015 ③	GCH3015 ③
20	GCH1020 ③	GCH2020 ③	GCH3020 ③
25	GCH1025	GCH2025	GCH3025
30	GCH1030	GCH2030	GCH3030
35	GCH1035	GCH2035	GCH3035
40	GCH1040	GCH2040	GCH3040
45	GCH1045	GCH2045	GCH3045
50	GCH1050	GCH2050	GCH3050
60	GCH1060	GCH2060	GCH3060
70	GCH1070	GCH2070	GCH3070
80	GCH1080	GCH2080	GCH3080
90	GCH1090	GCH2090	GCH3090
100	GCH1100	GCH2100	GCH3100

Instruction Leaflet Number 15548.

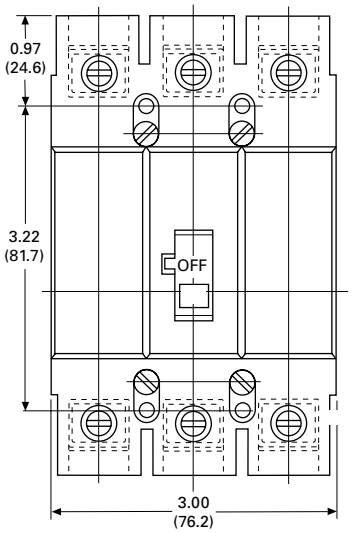
Type HGHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Continuous Ampere Rating @ 40°C	277V AC Maximum, 125V DC Maximum
	1-Pole
	Catalogue Number
15	HGHC1015
20	HGHC1020
25	HGHC1025
30	HGHC1030

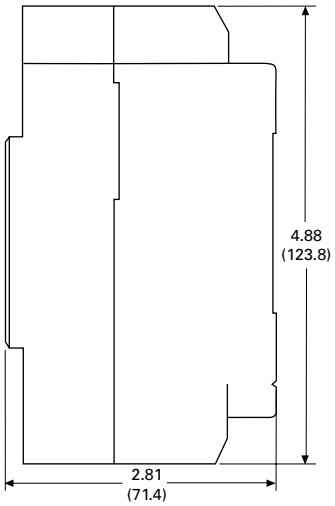
① 15 through 70 ampere circuit breakers only.
② Use (2) outside poles. Two poles in series for 250VDC application.
③ Uses .190-32 screw type clamp terminals.
④ 480Y/277V, circuit breakers (Type GHC) not suitable for 3-phase Delta (480V).
⑤ 600Y/347V, circuit breakers (Type GCH) not suitable for 3-phase Delta (600V). CSA listed only. Not UL listed.

GC/GHC/GCH-Frame, 3-Pole — Dimensions in Inches (mm)

Front View

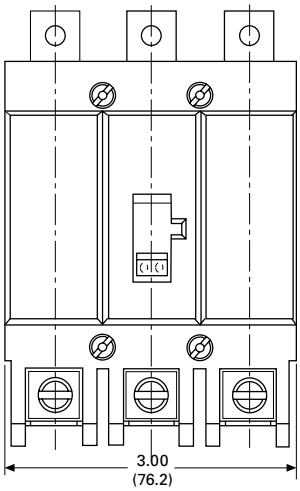


Side View



GB/GHB/GBH-Frame, 3-Pole — Dimensions in Inches (mm)

Front View



Side View