



Product Type
Hydraulic/Magnetic Circuit Breaker

Product Series
C-Series

Description
[C-Series PDF eLibrary](#) ↓

The C-Series hydraulic/magnetic circuit breakers are designed for those applications requiring higher amperage and voltage handling capability in a smaller package. Available with American Standard or Metric Threaded Stud terminals, or Saddle Clamp screw terminals. Optional

mid-trip handle style actuator allows visual indication of electrical overload with or without alarm feature. These circuit breakers are also available with new solid color rocker actuators and unique two-color Visi-rocker® actuators. Visi-rocker can be specified to indicate either the ON or TRIPPED/OFF mode. The exclusive Rockerguard and Push-To-Reset bezel help prevent inadvertent actuation.

The C-Series UL489 circuit breakers employ a unique arc chute design which results in obtaining higher interrupting capacities, up to 10,000 amps. New thermoset glass filled polyester half shell construction provides for increased mechanical and electrical strength. Wiping contacts, mechanical linkage with two step actuation, cleans contacts providing high, positive contact pressure and longer contact life.

C-Series circuit breakers are offered in 1-6 poles, 0.02-100amps, up to 480VAC or 80VDC, UL489 up to 240VAC or 125VDC, with choice of time delays, terminal options, actuator styles and colors.

Series PDF eLibrary	<ul style="list-style-type: none"> • C-Series Cir. Breaker PDF (3.7 MB) • Cir. Breaker Time Delays for A,B,C,D & PD-Series PDF (2.3 MB) • Cir. Breaker Accessories PDF (49.5 KB)
Certifications	UL recognized, CSA, VDE -0642, UL-1500, TUV, UL489 Listed, UL489A Listed (Telecom)
Number of Poles	1-6 poles
Available Delays	Instant, Ultra-Short, Short, Medium, Long (motor loads), AC,DC, AC/DC; High Inrush - Short, Medium, Long
Maximum Current and Voltage Ratings	<p>UL Listed:</p> <p>0.1-100A @ 80VDC 0.1-60A @ 125VDC 0.1-70A @ 120VAC 0.1-30A @ 240VAC 110-250A @ 80VDC (UL489A Listed)</p> <p>UL Recognized:</p> <p>0.02-30A @ 480WYE/277VAC 2 pole 1 phase, 3 pole 3 phase 0.02-50A @ 277VAC 0.02-70A @ 250VAC, 80VDC 71-100A @ 120/240VAC, 65VDC</p>

Maximum Interrupting Capacity	<p>UL Listed: 10,000A @ 120VAC, 80VDC 5,000A @ 240VAC, 125VDC 10,000A @ 80VDC (UL489A Listed)</p> <p>UL Recognized: 7,500A @ 80VDC 3,000A @ 125/250VAC (UL only) 5,000A @ 250VAC w/fuse back up 5,000A @ 480WYE/277VAC w/fuse back up</p>
Auxiliary Switch Ratings	<p>10.1A @ 250VAC 0.1A @ 125VAC (gold contacts) 5A @ 30VDC 0.5A @ 80VDC 1.0A @ 65VDC</p>
Available Circuits	<p>Series, Shunt, Relay, Switch Only, Series Mid-Trip w/ Alarm Switch, Series w/Remote Shutdown, Relay and Shunt Trip Dual Coil</p>
Actuator Style	<p>Solid Color Curved Rocker (1 per unit) Two Color Visi-Rocker (1 per unit) Handle (1 per pole or 1 per unit) Mid Trip Handle (1 per pole) Mid Trip Handle and Alarm Switch (1 per pole)</p>
Terminal Options	<p>.250 Double QC Tabs 10-32 Threaded Stud 10-32 Screw 10-32 Screw with Washer and Saddle Clamp 1/4-20 Threaded Stud M5 Threaded Stud M6 Threaded Stud Push in Stud Terminal</p>
Mounting Method	<p>Front Panel</p>
Remote Operator Option	<p>Custom designed remote operated motor (housed within a circuit breaker molding), coupled to a Carling Technologies C-Series hydraulic/magnetic circuit breaker. The breaker can be operated manually, or remotely to control circuits for maintenance, load shedding and power distribution control functions from locations that are unattended or difficult to access. Some key features include:</p> <ul style="list-style-type: none"> * Design flexibility with multiple motor mounting options * Remote operated module operates 1 - 3 poles * Motor voltage input: 12 - 80 VDC * Motor start current: <1 amp * ON - OFF trip indication * Load shedding capable * Auto reset capable
Value Added	<p>Custom actuator colors Non-standard amp ratings Panel hole plug available and more</p>



Designed for those applications requiring higher amperage and voltage handling capability in a compact design. Available with American Standard or Metric Threaded Stud terminals, or Saddle Clamp screw terminals. Available with optional mid-trip handle style actuator, solid color rocker actuators and Visi-rocker two color actuators. Visi-rocker can be specified to indicate either the ON or TRIPPED/OFF mode. Rockerguard and Push-To-Reset bezel help prevent inadvertent actuation.

The C-Series UL489 breakers employ a unique arc chute design which results in obtaining higher interrupting capacities, up to 50,000 amps. Thermoset glass filled polyester half shell construction for increased mechanical & electrical strength; Wiping Contacts - Mechanical linkage with two-step actuation – cleans contacts, provides high, positive contact pressure & longer contact life; 1-6 poles, 0.02 - 100 amps, up to 480 VAC or 80 VDC, UL489 up to 240 VAC or 125 VDC, with choice of time delays and actuator colors.

Agency Certifications

UL Recognized

UL Standard 1077



Component Recognition Program as Protectors, Supplementary (Guide CCN/QVNU2, File E75596)

UL Standard 508



Switches, Industrial Control (Guide CCN/NRNT2, File E148683)

UL Standard 1500



Protectors, Supplementary for Marine Electrical & Fuel Systems (Guide PEQZ2, File E75596) Ignition Protection

UL Listed

UL Standard 489



Circuit Breakers, Molded Case, (Guide DIVQ, File E189195)

UL Standard 489A



Communications Equipment (Guide CCN/DITT, File E189195)

CSA Accepted



Component Supplementary Protector under Class 3215 30, File 047848 0 000 CSA Standard C22.2 No. 235

CSA Certified



Circuit Breaker Model Case (Class 1432 01, File 093910), CSA Standard C22.2 No. 5.1 - M

TUV Certified



EN60934, under License No. R72041016

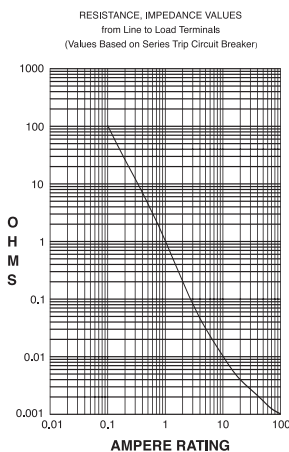
VDE Certified



EN60934, VDE 0642 under File No. 10537

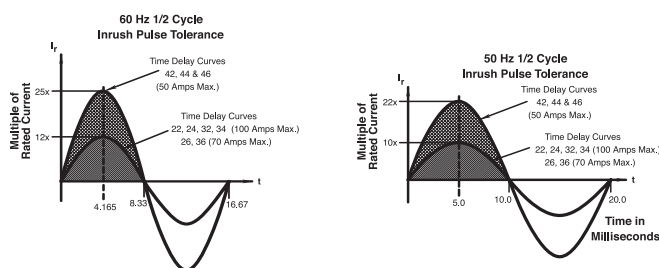
Electrical

Maximum Voltage	AC, 480 WYE/277 VAC, 50/60 Hz (see Table A.) UL489: AC,240 VAC. (See Table D), 50/60 Hz, 125 VDC
Current Rating	Standard current coils: 0.100, 0.250, 0.500, 0.750, 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 25.0, 30.0, 35.0, 40.0, 50.0, 60.0, 70.0, 80.0, 90.0 and 100 amps. Other ratings available, see Ordering Scheme.
Standard Voltage Coils	DC - 6V, 12V; AC - 120V; other ratings available, see Ordering Scheme.
Auxiliary Switch Rating	SPDT; 10.1 amps-250VAC, DC Aux. Switch 1.0A, 65 VDC. 0.5A, 80VDC, 1/4 HP, 125VAC, VDE & TUV 1.0 125 VAC.
Insulation Resistance Dielectric Strength	Minimum of 100 Megohms at 500 VDC. UL, CSA: 1960 V 50/60 Hz for one minute between all electrically isolated terminals. C-Series Circuit Breakers comply with the 8mm spacing and 3750V 50/60 Hz dielectric requirements from hazardous voltage to operator accessible surfaces, between adjacent poles and from main circuits to auxiliary circuits per Publications EN 60950 and VDE 0805.
Resistance, Impedance	Values from Line to Load Terminal - based on Series Trip Circuit Breaker.



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 5.0	15%
5.1 - 20.0	25%
20.1 - 100.0	35%

Pulse Tolerance Curves



Mechanical

Endurance	10,000 ON-OFF operations @ 6 per minute; with rated current & voltage.
Trip Free	All C-Series circuit breakers will trip on overload, even when actuator is forcibly held in the ON position.
Trip Indication	The operating actuator moves positively to the OFF position when an overload causes the breaker to trip. With mid-trip, handle moves to the mid position on electrical trip of the circuit breaker. With mid trip handle with alarm switch, handle moves to the mid position and the alarm switch actuates when the circuit breaker is electrically tripped.

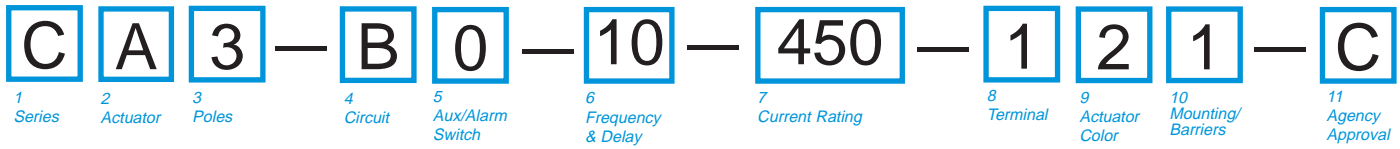
Physical

Number of Poles	1-6 poles ≤ 50A; 1-4 poles @ 51-70A; 1-2 poles 71-100A. UL489 Handle: 1 pole ≤ 100A, 2 pole ≤ 50A; Rocker: 1 pole ≤ 100A.
Internal Circuit Configurations	Series (with or without auxiliary switch, mid trip & mid trip with alarm switch) Shunt & Relay with current or voltage trip coils, Dual Coil, Switch Only (with or without aux. switch). UL489: Series (with or without auxiliary switch, mid-trip & mid-trip with alarm switch).
Weight	Approx.112 grams/pole (3.95 oz).
Standard Colors	Housing: Black

Environmental

Designed and tested in accordance with requirements of specification MIL-PRF-55629 & MIL-STD-202 as follows:

Shock	Withstands 100 Gs, 6ms sawtooth while carrying rated current per Method 213, Test Condition "I". Instantaneous and ultrashort curves tested @ 90% of rated current.
Vibration	Withstands 0.060" excursion from 10-55 Hz & 10 Gs 55-500 Hz, @ rated current per Method 204C, Test Cond. A. Instantaneous & ultrashort curves tested @ 90% of rated current.
Moisture Resistance	Method 106D, i.e., ten 24-hour cycles @ +25°C to +65°C, 80-98% RH.
Salt Spray	Method 101, Condition A (90-95% RH @ 5% NaCl Solution, 96 hrs).
Thermal Shock	Method 107D, Condition A (five cycles @ -55°C to +25°C to +85°C to +25°C).
Operating Temperature	-40°C to +85°C



1 SERIES
C

2 ACTUATOR¹

- A** Handle, one per pole
- B** Handle, one per multipole unit
- S** Mid-Trip Handle, one per pole
- T** Mid-Trip Handle, one per pole & Alarm Switch

3 POLES²

- | | | |
|--------------|----------------|---------------|
| 1 One | 3 Three | 5 Five |
| 2 Two | 4 Four | 6 Six |

4 CIRCUIT³

- | | |
|--|---|
| A³ Switch Only (No Coil) | F⁴ Relay Trip (Current) |
| B Series Trip (Current) | G⁴ Relay Trip (Voltage) |
| C Series Trip (Voltage) | H^{4,5} Dual Coil with Shunt Trip Voltage Coil |
| D⁴ Shunt Trip (Current) | K^{4,5} Dual Coil with Relay Trip Voltage Coil |
| E⁴ Shunt Trip (Voltage) | |

5 AUXILIARY/ALARM SWITCH⁶

- | | |
|---|---|
| 0 w/o Aux Switch | 5 S.P.S.T., 0.110 Q.C. Term. (Gold Contacts) |
| 2 S.P.D.T., 0.110 Q.C. Term. | 6 S.P.S.T., 0.139 Solder Lug |
| 3 S.P.D.T., 0.139 Solder Lug | 7 S.P.S.T., 0.110 Q.C. Term. (Gold Contacts) |
| 4 S.P.D.T., 0.110 Q.C. Term. (Gold Contacts) | 8 S.P.S.T., 0.187 Q.C. Term. |
| | 9 S.P.D.T., 0.187 Q.C. Term. |

6 FREQUENCY & DELAY

- | | |
|---|---|
| 03³ DC 50/60Hz, Switch Only | 30 DC, 50/60Hz Instantaneous |
| 10⁷ DC Instantaneous | 31 DC, 50/60Hz Ultra Short |
| 11 DC Ultra Short | 32 DC, 50/60Hz Short |
| 12 DC Short | 34 DC, 50/60Hz Medium |
| 14 DC Medium | 36 DC, 50/60Hz Long |
| 16 DC Long | 42⁸ 50/60Hz Short, Hi-Inrush |
| 20⁷ 50/60Hz Instantaneous | 44⁸ 50/60Hz Medium, Hi-Inrush |
| 21 50/60Hz Ultra Short | 46⁸ 50/60Hz Long, Hi-Inrush |
| 22 50/60Hz Short | 52⁸ DC, Short, Hi-Inrush |
| 24 50/60Hz Medium | 54⁸ DC, Medium, Hi-Inrush |
| 26 50/60Hz Long | 56 DC, Long, Hi-Inrush |

7 CURRENT RATING (AMPERES)

020	0.020	235	0.350	430	3.000	614	14.000
025	0.025	240	0.400	435	3.500	615	15.000
030	0.030	245	0.450	440	4.000	616	16.000
035	0.035	250	0.500	445	4.500	617	17.000
040	0.040	255	0.550	450	5.000	618	18.000
045	0.045	260	0.600	455	5.500	620	20.000
050	0.050	265	0.650	460	6.000	622	22.000
055	0.055	270	0.700	465	6.500	624	24.000
060	0.060	275	0.750	470	7.000	625	25.000
065	0.065	280	0.800	475	7.500	630	30.000
070	0.070	285	0.850	480	8.000	635	35.000
075	0.075	290	0.900	485	8.500	640	40.000
080	0.080	295	0.950	490	9.000	650	50.000
085	0.085	410	1.000	495	9.500	660⁹	60.000
090	0.090	512	1.250	610	10.000	670⁹	70.000
095	0.095	415	1.500	710	10.500	680⁹	80.000
210	0.100	517	1.750	611	11.000	685⁹	85.000
215	0.150	420	2.000	711	11.500	690⁹	90.000
220	0.200	522	2.250	612	12.000	695⁹	95.000
225	0.250	425	2.500	712	12.500	810⁹	100.000
230	0.300	527	2.750	613	13.000		

OR VOLTAGE COIL (NOMINAL RATED VOLTAGE)

A06 6 DC	A32 32 DC	J12 12 AC	J65 65 AC
A12 12 DC	A48 48 DC	J18 18 AC	K20 120 AC
A18 18 DC	A65 65 DC	J24 24 AC	L40 240 AC
A24 24 DC	J06 6 AC	J48 48 AC	

8 TERMINAL¹⁵

- | | |
|---|---|
| 1¹⁰ Stud 10-32, threaded | 6¹² Stud M6 threaded |
| 2¹¹ Screw 10-32 | 7^{13,15} 0.250 Double Quick Connect |
| 3¹² Stud 1/4-20, threaded | 8¹⁵ 1/4" Clip Terminal |
| 4¹¹ Stud M5 x 0.8, threaded | 9^{12,15} 7/16" Clip Terminal |
| 5¹¹ Screw M5 x 0.8 | A¹⁴ Plug-In Stud |
| | C^{11,15} 5/16" Clip Terminal |

9 ACTUATOR COLOR & LEGEND¹⁶

Actuator Color	I-O	ON-OFF	Dual	Legend Color
White	A	B	1	Black
Black	C	D	2	White
Red	F	G	3	White
Green	H	J	4	White
Blue	K	L	5	White
Yellow	M	N	6	Black
Gray	P	Q	7	Black
Orange	R	S	8	Black
Black (short handle) ¹⁷	T	U	9	White

10 MOUNTING/BARRIERS

MOUNTING STYLE	BARRIERS	VOLTAGE
Threaded Insert		
1 6-32 x 0.195 inches	no	< 300
A 6-32 X 0.195 inches	yes	< 300
C¹⁸ 6-32 X 0.195 inches	yes	≥ 300
2 ISO M3 x 5mm	no	< 300
B ISO M3 x 5mm	yes	< 300
D¹⁸ ISO M3 x 5mm	yes	≥ 300
Front panel Snap-In, 1.00" [25.4mm] wide bezel		
E¹⁷ with Handguard	no	< 300

11 AGENCY APPROVAL

- C** UL Recognized & CSA Accepted
- D** VDE Certified, UL Recognized & CSA Accepted
- E** TUV Certified, UL Recognized & CSA Accepted
- H** UL489 Construction: VDE Certified, UL Recognized & CSA Accepted
- I** UL Rec. STD 1077, UL Rec. 1500 (ignition protected), & CSA Accepted
- L** UL489 Construction: UL Recognized & CSA Accepted
- R** UL489 Construction: TUV Certified, UL Recognized & CSA Accepted

Notes:

- 1 Actuator Code:
 - A: Handle tie pin spacer(s) and retainers provided assembled with multi-pole units.
 - B: Handle location as viewed from front of breaker:

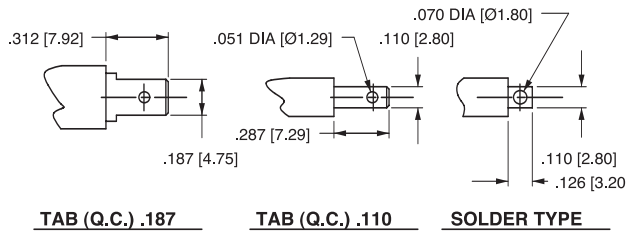
2 pole - left pole	3 pole - center pole
4 pole - two handles at center poles	5 pole - three handles at center poles
6 pole - four handles at center poles	
 - S: Handle moves to mid-position only upon electrical trip of the breaker. Available with circuit codes B, C, D, E, F, G, H and K.
 - T: Handle moves to mid-position and alarm switch activates only upon electrical trip of the breaker. Available with circuit codes B & C.
- 2 Standard multipole units have all poles identical except when specifying auxiliary switch and/or mixed poles. 4 pole max w/VDE. 5th pole available as Series Trip w/Voltage Coil only.
- 3 Switch Only circuits, rated up to 50 amps and 6 poles, and only available with VDE Certification when tied to a protected pole (Circuit Code B, C, D or H.). For .02 to 30 amps, select Current Code 630. For 35 - 50 amps, select Current Code 650. For 55-70 amps, select Current Code 670. For 75-100 amps, select Current Code 810.
- 4 Circuit Codes D,E,F,G,H & K available with Terminal Codes 1,2,4 & 5 only. Circuit Codes D, F, H & K available up to 50 amps maximum Current Rating. Consult factory for available Dual Coil options, as special catalog number is required. Dual Coil Voltage Coils with Shunt Trip Construction trip instantaneously on line voltage. Dual Coil Voltage Coils require 30VA minimum power to trip instantaneously and are rated for intermittent duty only.
- 6 Auxiliary Switch available with Series Trip and Switch Only circuits. On multi-pole breakers, one aux. switch is supplied, mounted in the extreme right pole.
- 7 Voltage coils not rated for continuous duty. Available only with delay codes 10 and 20. Available with Circuit Codes B & D only, and up to 50 amps maximum.
- 8 Current Ratings 60 - 70 are available up to four poles maximum. Ratings 71 - 100 are available up to two poles maximum.
- 10 Terminal Code 1 available to 60 amps maximum.
- 11 Terminal Codes 2,4,5 and C available to 50 amps maximum.
- 12 Terminal Codes 3,6 & 9 available to 100 amps maximum.
- 13 Terminal Code 7 available to 25 amps maximum.
- 14 Terminal Code A available to 100 amps maximum.
- 15 Terminal Codes 7,8,9 & C are not VDE approved.
- 16 No marking available. Consult factory. VDE/TUV Approval requires dual (I-O, ON-OFF) or I-O markings on all handles.
- 17 Single pole only.
- 18 VDE/TUV: 30 amps max.; UL/CSA: 50 amps max.; Available in 2 - 4 poles only and limited to AC Delays. "General Purpose amps" not rated for "full load amps" or to be used in applications with a motor.

TERMINAL		DIMENSIONAL DETAIL	RATING (AMPS)		
DESCRIPTION	CODE		25	50	100
#10-32 STUD	1				
M5 STUD	4				
#1/4-20 STUD	3				
M6 STUD	6				
#1/4-20 STUD	3				
M6 STUD	6				
#10-32 SCREW	2				
M-5 SCREW	5				

TERMINAL		DIMENSIONAL DETAIL	RATING (AMPS)		
DESCRIPTION	CODE		25	50	100
.250 DOUBLE Q.C.	7				
7/16" CLIP TERMINALS	9				
PUSH-IN STUD	A				

NOTES: TOLERANCE ON STUD LENGTHS IS ±.031 [±.79] UNLESS OTHERWISE SPECIFIED.

AUXILIARY / ALARM SWITCH TERMINAL DETAIL³



TIGHTENING TORQUE SPECIFICATIONS	
THREAD SIZE	TORQUE
#6-32 [M3] MOUNTING INSERTS	7-9 IN-LBS [0.8-1.0 NM]
#10-32 & M5 THD STUDS	15-20 IN-LBS [1.7-2.3 NM]
#10-32 THD SCREW	15-20 IN-LBS [1.7-2.3 NM]
#1/4-20 & M6 THD STUDS	30-35 IN-LBS [3.4-4.0 NM]

TERMINAL HARDWARE				
TERMINAL DESCRIPTION	CODE	AGENCY APPROVAL	AMPERE RATING	HARDWARE SUPPLIED
#10-32 STUD	1	ALL	.02 - 50	LOCK WASHER - FLAT WASHER - NUT
M5 STUD	4	ALL	.02 - 50	LOCK WASHER - FLAT WASHER - NUT
#1/4-20 STUD	3	ALL	.02 - 80	LOCK WASHER - FLAT WASHER - NUT
			81 - 100	LOCK WASHER - NUT - (2)FLAT WASHER - NUT
M6 STUD	6	ALL	.02 - 80	LOCK WASHER - FLAT WASHER - NUT
			81 - 100	LOCK WASHER - NUT - (2)FLAT WASHER - NUT
#10-32 SCREW	2 & 5	UL RECOGNIZED	.02 - 50	* SADDLE CLAMP - FLAT WASHER - SCREW
		UL-489 LISTED	.02 - 50	LOCK WASHER - FLAT WASHER - SCREW
		TUV & VDE CERTIFIED	.02 - 16	* SADDLE CLAMP - FLAT WASHER - SCREW
		TUV & VDE CERTIFIED	16,1 - 50	LOCK WASHER - FLAT WASHER - SCREW

* THE SADDLE CLAMP IS FOR DIRECT WIRE CONNECTION USE. DISCARD SADDLE CLAMP IF WIRE TERMINAL LUG IS USED

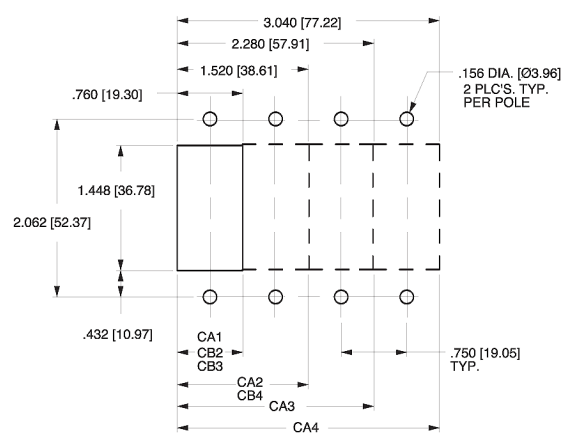
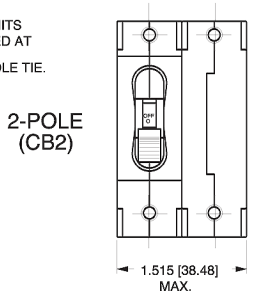
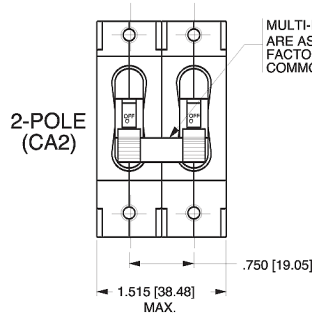
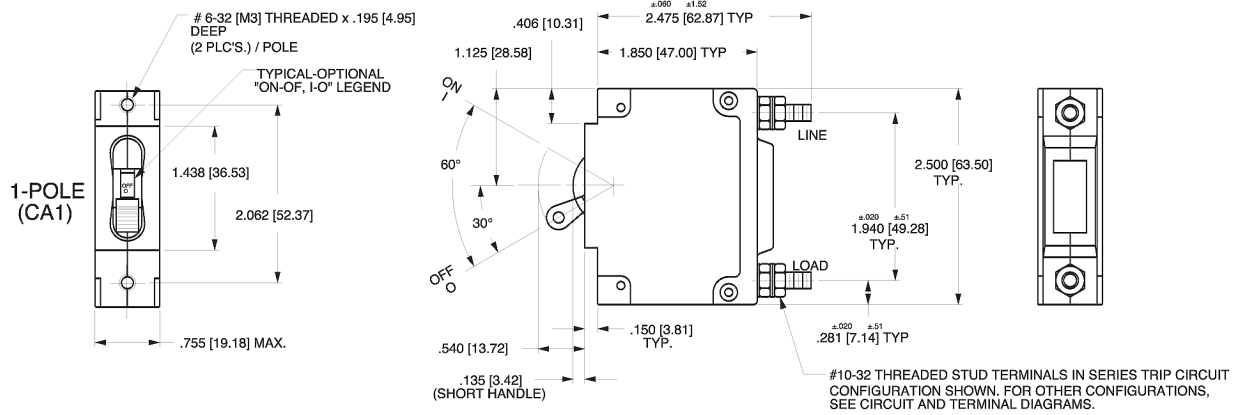
Notes:

- All dimensions are in inches [millimeters].
- Tolerance ±.020 [.51] unless otherwise specified.
- Available on Series Trip and Switch Only Circuits when called for on multi-pole units. Only one aux. switch is normally supplied, as viewed in multi-pole identification scheme.

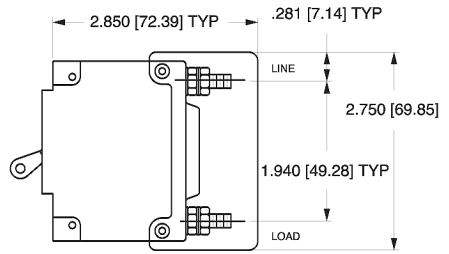
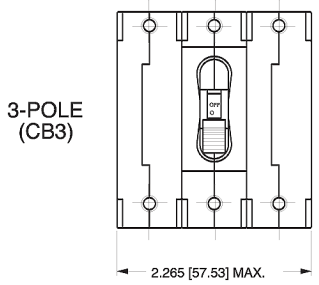
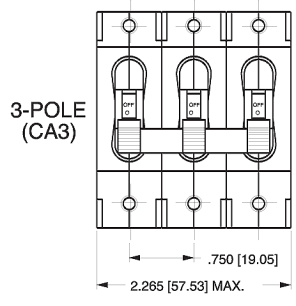
	CIRCUIT SCHEMATIC		CIRCUIT CODE	AUX SWITCH CODE	CIRCUIT SCHEMATIC		CIRCUIT CODE	AUX SWITCH CODE
	ANSI	IEC			ANSI	IEC		
	SWITCH ONLY (NO COIL)				SERIES TRIP			
			A	O			B C	O 2 3 4
			D E	0			H	0
			F G	0			K	0

HANDLE POSITION VS. AUX/ALARM SWITCH MODE					
CIRCUIT BREAKER MODE	STANDARD C/B		MID TRIP C/B		
	HANDLE POSITION	AUX. SWITCH MODE	HANDLE POSITION	STANDARD ALARM SWITCH MODE	REVERSE ALARM SWITCH MODE ⁴
OFF					
ON					
ELECTRICAL TRIP					

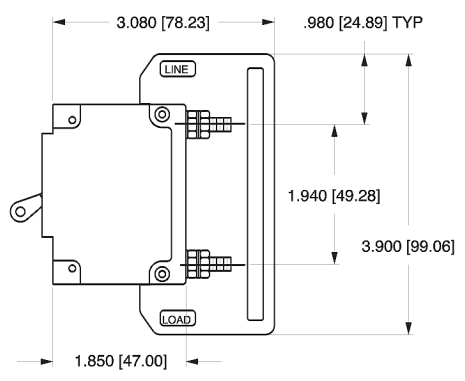
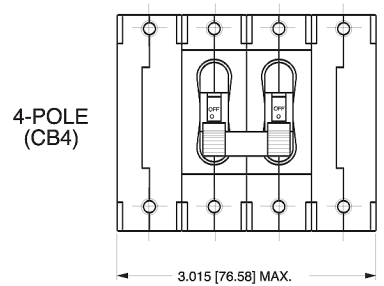
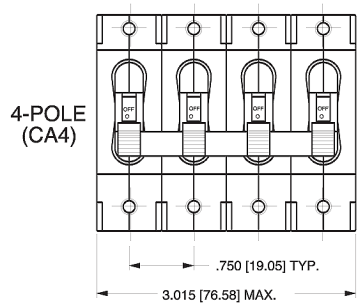
- Notes:
- All dimensions are in inches [millimeters].
 - Tolerance ± 0.020 [.51] unless otherwise specified.
 - Schematic shown represents current trip circuits.
 - Available only as special catalog number.



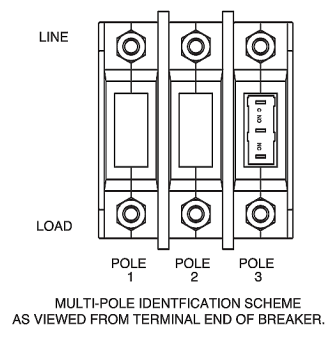
PANEL CUTOUT DETAIL
TOLERANCES ±.005 [0.12]



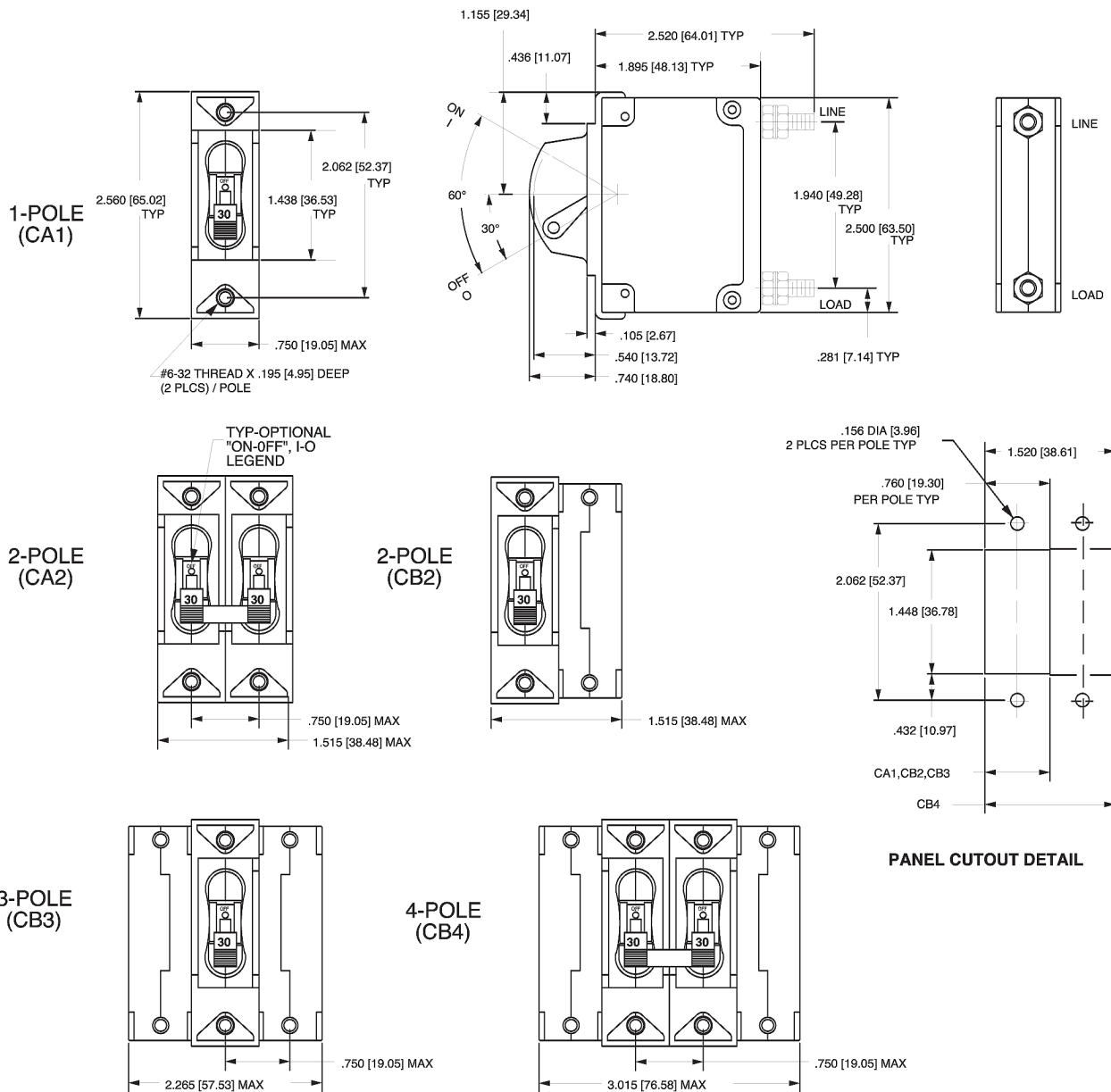
BARRIER FOR
UL-RECOGNIZED MULTI-POLE
BREAKERS



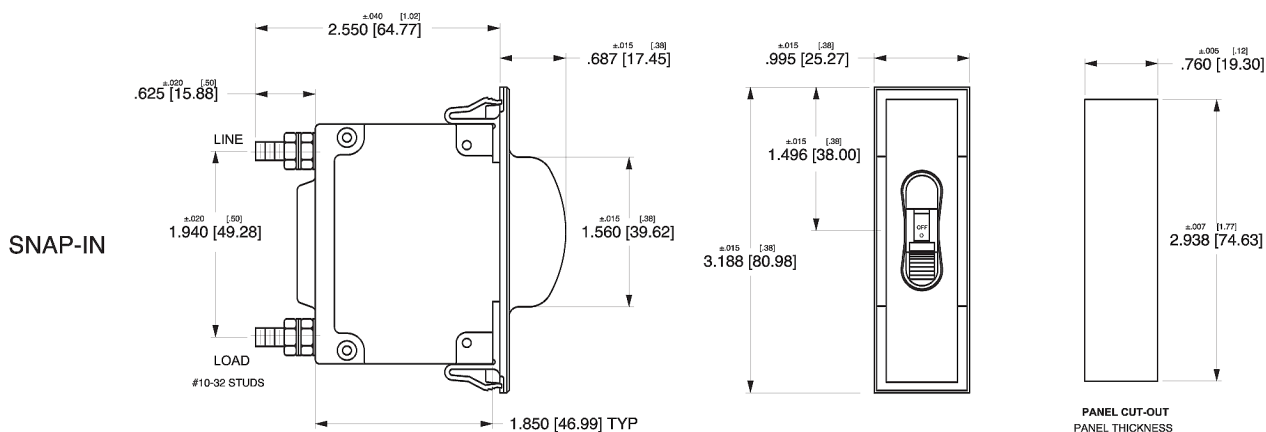
BARRIER FOR
UL-489 LISTED MULTI-POLE
BREAKERS



- Notes:
 1 All dimensions are in inches [millimeters].
 2 Tolerance ±.020 [.51] unless otherwise specified.



*Handleguard available as special catalog number only



- Notes:
 1 All dimensions are in inches [millimeters].
 2 Tolerance ±.020 [.51] unless otherwise specified.