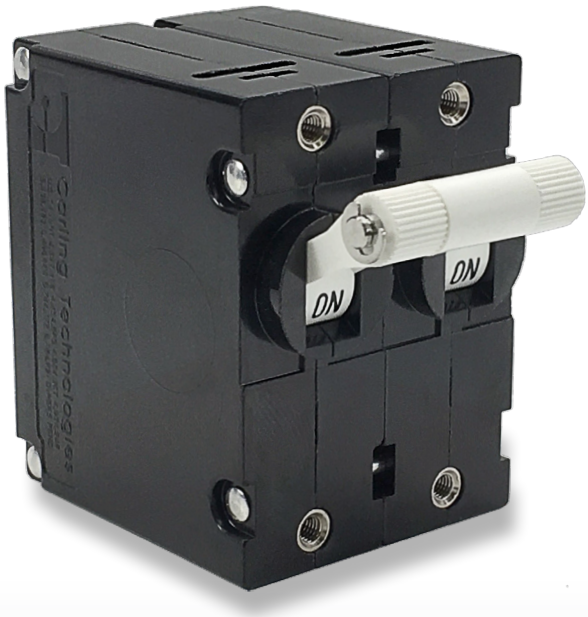
Carling Technologies®

A-Series

Hydraulic-Magnetic Circuit Breaker

PRODUCT WEBPAGE

request sample, configure part



Compact and Versatile Design

The A-Series hydraulic-magnetic circuit breakers offer precise operation in a compact size for both general purpose as well as full amp load applications. Visi Rocker® and recessed paddle actuators are ideally suited for clean, front panel designs while the metal toggle configuration is ideal for harsh environments. The A-Series is available as a one to six pole configuration, rated up to 50 amps, 277VAC/80VDC and has a max IC of 7,500 amps.

1-6	50	277	80	7500A
Poles	Amps Max	VAC Max	VDC Max	Max IC

Typical Applications

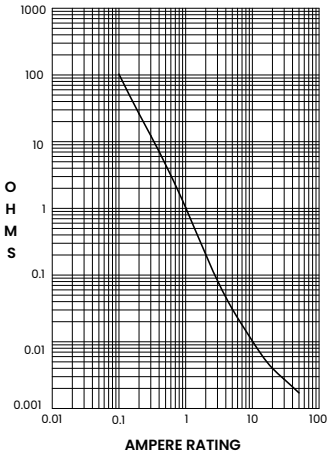
- Marine
- Telecom
- Renewable Energy
- Generators
- Welders
- Military

Tech Specs

Electrical

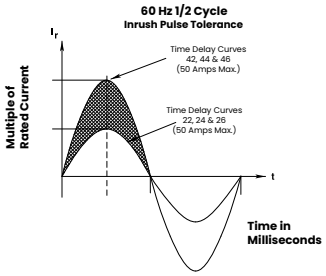
Maximum Voltage	277VAC 50/60 Hz, 80VDC
Current Ratings	Standard current coils: 0.100, 0.250, 0.500, 0.750, 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, 50.0. Other ratings available - consult ordering scheme.
Standard Voltage Coils	DC-6V, 12V; AC-120V, Other ratings available, consult ordering scheme.
Auxiliary Switch Rating	SPDT; 10.1 A - 250VAC, 1.0 A-65VDC/0.5 A - 80 VDC, 0.1A - 125VAC (with gold contacts)
Insulation Resistance	Minimum: 100 Megohms at 500 VDC
Dielectric Strength	UL, CSA - 1500V 60 Hz for one minute between all electrically isolated terminals. A-Series rocker circuit breakers comply with the 8mm spacing & 3750V dielectric requirements from hazardous voltage to operator accessible surfaces per EN 60950 and VDE 0805.
Resistance, Impedance	Values from Line to Load Terminal based on Series Trip Circuit Breaker.

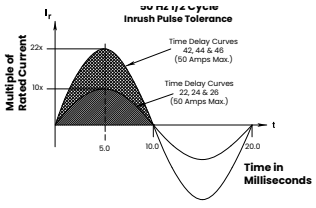
RESISTANCE PER POLE VALUES
from Line to Load Terminals
(Values Based on Series Trip Circuit Breaker)



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 5.0	15
5.1 - 20.0	25
20.1 - 50.0	35

Pulse Tolerance Curves





Mechanical

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

Physical

Number of Poles	1 - 6 Poles (handle) and 1-3 poles (rocker) at 30 Amps or less.1 and 2 poles at 31 Amps thru 50 Amps.
Internal Circuit Config.	Series, (with or without auxiliary switch), Shunt and Relay with current or voltage trip coils, Dual Coil, Switch Only with or without auxiliary switch.
Weight	Approximately 65 grams/pole. (Approximately 2.32 ounces/pole)
Standard Colors	Housing - Black; Actuator- See Ordering Scheme.

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 ultra-short curves tested @ 90% of rated current.
Vibration	Withstands 0.060" excursion from 10-55 Hz, and 10 Gs 55-500 Hz, at rated current per Method 204C, Test Condition A. Instantaneous and ultrashort curves tested at 90% of rated current.
Moisture Resistance	Method 106D; ten 24-hour cycles @ + 25°C to +65°C, 80-98% RH.56 days @ +85°C, 85% 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

*Manufacturer reserves the right to change product specification without prior notice.

Tech Specs

Electrical Tables

Table A: Lists UL Recognized & CSA Accepted configurations and performance capabilities as a Component Supplementary Protector.

Component Supplementary Protectors										
Circuit Configuration	Voltage			Current Rating		Short Circuit Capacity (Amps)		Application Codes		Notes
						UL / CSA				
	Max Rating	Frequency	Phase	Full Load Amps	General Purpose Amps	With Backup Fuse	Without Backup Fuse	UL	CSA	
Series	32	DC	---	0.02 - 15	---	---	5000	TC1, OL1, U2	TC1, OL1, U2	
	65	DC	---	31 - 50	---	---	7500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
	80	DC	---	0.02 - 30	---	---	7500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
				---	31 - 50	---	7500	TC1, 2, OL0, U1	TC1, 2, OL0, U1	
	125	50 / 60	1	0.02 - 30	---	---	3000	TC1, OL1, U2	TC1, OL1, U2	Rocker
	125	50 / 60	1	1 - 50	---	---	2000	TC1, OL1, U2	TC1, OL1, U2	
	125	50 / 60	1 [4]	1 - 50	---	---	1000	TC1, OL1, U2	TC3, OL1, U3	
	125 / 250	50 / 60	1 [3]	0.02 - 30	---	---	3000	TC1, 2, OL1, U2	TC1, 2, OL1, U2	Rocker
	125 / 250	50 / 60	1 [3]	0.02 - 50	---	---	3000	TC1, 2, OL1, U2	TC1, 2, OL1, U2	Handle
	250	50 / 60	1	0.02 - 30	---	---	1500	TC1, 2, OL0, U2	TC1, 2, OL0, U2	Single Pole
				0.02 - 30	---	---	3000	TC1, OL1, U2	TC1, OL1, U2	Two Pole
				---		---	3000	TC1, 2, OL0, U1	TC1, 2, OL0, U1	
			1 [4]	1 - 50	---	---	1000	TC1, OL1, U2	TC3, OL1, U3	
			3	0.02 - 30	---	5000 [2]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
				31 - 50	---	2000 [1]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
	277	50 / 60	1	0.02 - 30	---	5000 [1]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
Dual Coil	32	DC	---	0.02 - 50	---	---	5000	TC1, OL1, U2	TC1, OL1, U2	
	65	DC	---	0.02 - 50	---	---	7500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
	80	DC	---	0.02 - 30	---	---	7500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
				---	31 - 50	---	7500	TC1, 2, OL0, U1	TC1, 2, OL0, U1	
	125	50 / 60	1	0.02 - 30	---	---	3000	TC1, OL1, U2	TC1, OL1, U2	Rocker
				1 - 50	---	---	2000	TC1, OL1, U2	TC1, OL1, U2	
	125	50 / 60	1 [4]	0.02 - 30	---	---	1000	TC1, OL1, U2	TC3, OL1, U3	
	125 / 250	50 / 60	1 [3]	0.02 - 30	---	---	3000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Rocker
	125 / 250	50 / 60	1 [3]	0.02 - 50	---	---	3000	TC1, 2, OL1, U2	TC1, 2, OL1, U2	
	250	50 / 60	1	0.02 - 30	---	---	1500	TC1, OL0, U2	TC1, OL0, U2	Single Pole
			1	0.02 - 30	---	---	3000	TC1, OL1, U2	TC1, OL1, U2	Two Pole
			1	---	31 - 50	---	3000	TC1, 2, OL0, U1	TC1, 2, OL0, U1	
			1 [4]	1 - 50	---	---	1000	TC1, OL1, U2	TC3, OL1, U3	
			3	0.02 - 30	---	5000 [2]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
				31 - 50	---	2000 [1]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
	277	50 / 60	1	0.02 - 30	---	5000 [1]	---	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
Shunt	80	DC	---	0.02 - 30	---	---	7500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
	125 / 250	50 / 60	1	0.02 - 30	---	---	3000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
	250	50 / 60	1	0.02 - 30	---	---	3000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
			3	0.02 - 30	---	5000 [2]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
	277	50 / 60	1	0.02 - 30	---	5000 [1]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
Relay	80	DC	---	0.02 - 30	---	---	7500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
	125 / 250	50 / 60	1 [3]	0.02 - 30	---	---	3000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
	250	50 / 60	1	0.02 - 30	---	---	3000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
			3	0.02 - 30	---	5000 [2]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
	277	50 / 60	1	0.02 - 30	---	5000 [1]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
Switch Only	65	DC	---	0.02 - 50	---	not applicable				
	80	DC	---	0.02 - 30	---					
	250	50 / 60	1	---	31 - 50					
			3	0.02 - 50	---					
	277	50 / 60	1	0.02 - 30	31 - 50					

Notes:
1 Requires branch circuit backup with a UL LISTED Type K5 or RK5 fuse (15A minimum) at no more than 4 times the rating of the protector.
2 Same as note 1, except that backup fuse is limited to 80 A maximum.
3 2 pole protector required (with one pole per power line) for: 125/250 VAC, 1 pole protector required for : 125 VAC, 1Ø Power System.
4 Satisfies the requirements of clause 11.2.8.2.5 of CSA STD C22.2 No 100 for the use of supplementary protectors with portable generators.

Tech Specs

Electrical Tables

Table B: Lists UL Recognized, CSA Accepted, VDE & TUV Certified configurations & performance capabilities as a Component Supplementary Protector.

Component Supplementary Protectors														
Circuit Configuration	Voltage			Current Rating		Short Circuit Capacity (Amps)						Application Codes		Notes
						UL / CSA		VDE		TUV				
	Max Rating	Frequency	Phase	Full Load Amps	General Purpose Amps	With Backup Fuse	Without Backup Fuse	(Inc) with Backup Fuse	(Icn) without Backup Fuse	(Inc) with Backup Fuse	(Icn) without Backup Fuse	UL	CSA	
Series	65	DC	---	0.10 - 50	---	---	7500	---	---	5000	3000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	World Market Breaker TUV only
	80	DC	---	0.10 - 30	---	---	7500	3000	1500	3000	1500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Handle: 1 Pole
				31 - 50	31 - 50							TC1, 2, OL0, U1	TC1, 2, OL0, U1	
				0.10 - 30	---							TC1, 2, OL1, U1	TC1, 2, OL1, U1	Rocker: 1-3 Poles
				31 - 32								TC1, 2, OL1, U1	TC1, 2, OL1, U1	Rocker: 2 Pole
				31 - 50	31 - 50							TC1, 2, OL0, U1	TC1, 2, OL0, U1	Rocker: 1 Pole
	250	50 / 60	1	0.10 - 30	---	---	3000	3000	1500	5000	1500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Rocker: 1-3 Poles
				31 - 50	31 - 50			---	---			TC1, 2, OL0, U1	TC1, 2, OL0, U1	
				31 - 32	---			6000	1500			TC1, 2, OL1, U1	TC1, 2, OL1, U1	Rocker: 2 Pole
			1	0.10 - 30								TC1, OL1, U2	TC1, OL1, U2	
			1 [4]	1 - 50			1000	---	---			TC1, OL1, U2	TC3, OL1, U3	Rocker: 1-3 Poles
			3	0.10 - 30		5000 [3]	---	3000	1500	3000		TC1, 2, OL1, C1	TC1, 2, OL1, C1	
				31 - 50		2000 [2]						TC1, 2, OL1, C1	TC1, 2, OL1, C1	
Dual Coil	80	DC	---	0.10 - 30	---	---	7500	3000	1500	3000	1500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Rocker: 1-3 Poles
	250	50 / 60	1	0.10 - 30			3000			5000		TC1, 2, OL1, U1	TC1, 2, OL1, U1	
				30 - 50	31 - 50			---	---			TC1, 2, OL0, U1	TC1, 2, OL0, U1	
			3	0.10 - 30	---	5000 [3]	---	3000	1500	3000		TC1, 2, OL1, C1	TC1, 2, OL1, C1	
				31 - 50		2000 [2]		---	---			TC1, 2, OL1, C1	TC1, 2, OL1, C1	
Shunt	80	DC	---	0.10 - 30	---	---	7500	3000	1500	3000	1500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Handle: 1 Pole
	250	50 / 60	1				3000			5000		TC1, 2, OL1, U1	TC1, 2, OL1, U1	Rocker: 1-3 Poles
				30 - 50	31 - 50			---	---			TC1, 2, OL0, U1	TC1, 2, OL0, U1	
			3	0.10 - 30	---	5000 [3]	---	3000	1500	3000		TC1, 2, OL1, C1	TC1, 2, OL1, C1	
				31 - 50		2000 [2]		---	---			TC1, 2, OL1, C1	TC1, 2, OL1, C1	

Notes:
1 General Purpose Ratings for UL/CSA Only.
2 Requires branch circuit backup with a UL LISTED Type K5 or RK5 fuse (15A minimum) at no more than 4 times the rating of the protector.
3 Same as note 2, except that backup fuse is limited to 80 A maximum.
4 Satisfies the requirements of clause 11.2.8.2.5 of CSA STD C22.2 No 100 for the use of supplementary protectors with portable generators.

Tech Specs

Electrical Tables

Table C: Lists UL Recognized, CSA Accepted configurations and performance capabilities as Protectors, Supplementary for Marine Electrical and Fuel Systems (Guide PEQZ2, File E75596). Ignition Protected per UL 1500. UL Classified Small Craft Electrical Devices, Marine in accordance with ISO 8846 (Guide UZMK, File MQ1515) as Marine Supplementary Protectors.

UL1500 (Marine Ignition Protection)							
Circuit Configuration	Voltage			Current Rating	Short Circuit Capacity (Amps)	Application Codes	
	Max Rating	Frequency	Phase	Full Load Amps	Without Backup Fuse	UL	CSA
Series	14 [1]	DC	---	0.02 - 50	5000	TC1, OL1, U1	TC1, OL1, U1
	32 [1]					TC1, OL1, U2	TC1, OL1, U2
	65				3000	TC1, OL1, U1	TC1, OL1, U1
	125	50 / 60	1			TC1, OL1, U2	TC1, OL1, U2
	125 / 250		1 [2]			TC1, OL1, U2	TC1, OL1, U2
	250		1	0.02 - 30	1500	TC1, OL1, U1	TC1, OL1, U1

1 Notes:
2 Available with special catalog number only (consult factory).
3 2 pole protector required (with one per power line) for 125 / 250 VAC. 1 pole protector required for 125 VAC 1 phase power system

Table D: Lists UL Listed configurations and performance capabilities as Circuit Breakers for use in Communications Equipment

UL489A (Communications Equipment)				
Circuit Configuration	Voltage		Current Rating	Interrupting Capacity (Amps)
	Max Rating	Frequency	General Purpose Amps	without Backup Fuse
Series	80	DC	0.10 - 50	5000
			60 - 90 [1]	

Notes:
1 Parallel Pole Construction

Agency Approvals

UL 1077	Component Recognition Program as Protectors Supplementary (Guide CCN/QVNU2, File E75596)
UL 508	Switches, Industrial Control (Guide CCN/NRNT2, File E148683)
UL 1500	Protectors, Supplementary for Marine Electrical & Fuel Systems (Guide PEQZ2, File E75596) Ignition Protection
UL 489A	Communications Equipment (Guide CCN/DITT, File E189195)
CSA Certified	Component Supplementary Protector under Class 3215 30, File 047848 0 000 CSA Standard C22.2 No. 235
TUV Certified	EN60934, under License No. R72103448
VDE Certified	EN60934, VDE 0642 under File No. 10537

Ordering Scheme

Handle - UL 1077 Recognized

Sample Part Number	A	A	3	-	B	0	-	10	-	450	-	1	B	1	-	C
Selection	1	2	3		4	5		6		7		8	9	10		11

1. SERIES

A

2. ACTUATOR [1]

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. POLES

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

4. CIRCUIT

A [2]	Switch Only (No Coil)	**F** [3]	Relay Trip (Current)
B	Series Trip (Current)	**G** [3]	Relay Trip (Voltage)
C	Series Trip (Voltage)	**H** [3,4]	Dual Coil with Shunt Trip Voltage Coil
D [3]	Shunt Trip (Current)	**K** [3,4]	Dual Coil with Relay Trip Voltage Coil
E [3]	Shunt Trip (Voltage)		

5. AUXILIARY / ALARM SWITCH [5]

0	without Aux Switch	**7**	S.P.S.T., 0.110 Q.C. Term. (Gold Contacts)
1	S.P.D.T., 0.093 Q.C. Term.	**8**	S.P.S.T., 0.187 Q.C. Term.
2	S.P.D.T., 0.110 Q.C. Term.	**9**	S.P.D.T., 0.187 Q.C. Term.
5	S.P.S.T., 0.093 Q.C. Term. (Gold Contacts)		

6. FREQUENCY & DELAY

03	DC 50/60Hz, Switch Only	**31**	DC, 50/60Hz Ultra Short
10	DC Instantaneous	**32**	DC, 50/60Hz Short
11	DC Ultra Short	**34**	DC, 50/60Hz Medium
12	DC Short	**36**	DC, 50/60Hz Long
14	DC Medium	**42** [7]	50/60Hz Short, High-inrush
16	DC Long	**44** [7]	50/60Hz Medium, High-inrush
20	50/60Hz Instantaneous	**46** [7]	50/60Hz Long, High-inrush
21	50/60Hz Ultra Short	**52** [7]	DC, Short, High-inrush
22	50/60Hz Short	**54** [7]	DC, Medium, High-inrush
24	50/60Hz Medium	**56** [7]	DC, Long, High-inrush
26	50/60Hz Long		
30	DC, 50/60Hz Instantaneous		

Notes:

1 Actuator Code:
A: Handle tie pin spacer(s) and retainers provided un-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 Switch Only circuits, rated up to 50 amps and 6 poles, and only available when tied to a protected pole (Circuit Code B, C, D or H.), For .02 to 30 amps, select Cur rent Code 630. For 35 - 50 amps, select Current Code 650.

3 Available with terminal Codes 1, 2 and 3. Current Rating limited to 50A amps maximum.

4 Consult factory for available Dual Coil options, as special catalog number is required. With Shunt construction, Dual Coils will trip instantaneously on line volt age. Dual coils require 30VA minimum power to trip and are rated for intermittent duty only.

5 Auxiliary Switch breakers with Series Trip & Switch Only circuits: ≤ 30A - supplied with standard half shells. 35-50A - supplied with extended boat (B-Style) half shells. On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.

6 Separate pole type voltage coils not rated for continuous duty. Available only with delay codes 10 and 20.

7 Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized, CSA Accepted & TUV Certified to 50 amps.

8 VDE Certification available with single pole breakers with DC Delay only. UL Recog nition and CSA Accepted available in one and two pole breakers.

9 Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G, H, M and Q.

10 Terminal Code 1: VDE Certification up to 25 amps and UL Recognition and CSA Certification up to 30 amps, but not recommended over 20 amps.

11 Terminal Codes 3, 5, E and H (Bus Type) with VDE, are supplied with Lock Washers, and Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only VDE Certified when the washers are used.

12 Terminal Code L: VDE Certified available up to 12A. UL Recognized & CSA Accepted available up to 30A.

13 Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL Recognition and CSA Accepted, with Circuit Codes A, B and C. Two pole breakers with Terminal Code P (Printed Circuit Board) are available up to 40 amps with UL Recognition and CSA Accepted with Circuit Codes A, B and C.

14 Terminal Code Q not available with VDE certification.

15 Single pole only.

7. CURRENT RATING (AMPERES)

CODE	AMPERES						
020	0.020	**225**	0.250	**420**	2.000	**611**	11.000
025	0.025	**230**	0.300	**522**	2.250	**711**	11.500
030	0.030	**235**	0.350	**527**	2.750	**612**	12.000
035	0.035	**240**	0.400	**430**	3.000	**712**	12.500
040	0.040	**245**	0.450	**435**	3.500	**613**	13.000
045	0.045	**250**	0.500	**440**	4.000	**614**	14.000
050	0.050	**255**	0.550	**445**	4.500	**615**	15.000
055	0.055	**260**	0.600	**450**	5.000	**616**	16.000
060	0.060	**265**	0.650	**455**	5.500	**617**	17.000
065	0.065	**270**	0.700	**460**	6.000	**618**	18.000
070	0.070	**275**	0.750	**465**	6.500	**620**	20.000
075	0.075	**280**	0.800	**470**	7.000	**622**	22.000
080	0.080	**285**	0.850	**475**	7.500	**624**	24.000
085	0.085	**290**	0.900	**480**	8.000	**625**	25.000
090	0.090	**295**	0.950	**485**	8.500	**630**	30.000
095	0.095	**410**	1.000	**490**	9.000	**635** [8]	35.000
210	0.100	**512**	1.250	**495**	9.500	**640** [8]	40.000
215	0.150	**415**	1.500	**610**	10.000	**645** [8]	45.000
220	0.200	**517**	1.750	**710**	10.500	**650** [8]	50.000

OR VOLTAGE COIL (NORMAL RATED VOLTAGE) [6]

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. TERMINAL [9]

1 [10]	Push-On 0.250 Tab (Q.C.)	**B**	Screw M5 with upturned lugs
2	Screw 8-32 with upturned lugs	**C**	Screw, M4 with upturned lugs
3 [11]	Screw 8-32 (Bus Type)	**E** [11]	Screw M4 (Bus Type)
4	Screw 10-32 with upturned lugs	**F**	Screw M5 with upturned lugs & 30° bend
5 [11]	Screw 10-32 (Bus Type)	**G**	Screw M5 (Bus Type) & 30° bend
6	Screw 8-32 with upturned lugs & 30° bend	**H** [11]	Screw M5 (Bus Type)
7	Screw 8-32 (Bus Type) & 30° bend	**L** [12]	0.250 Q.C./ Solder Lug
8	Screw 10-32 with upturned lugs & 30° bend	**M** [11]	M6 Threaded Stud
9	Screw 10-32 (Bus Type) & 30° bend	**P** [13]	Printed Circuit Board Terminals
		Q [14]	Push-In Stud
		R	Screw, M4 with upturned lugs & 30° Bend
		S [13]	Push-On 0.110 Tab (Q.C.)
		T [11]	Screw, M4 with upturned lugs

9. ACTUATOR COLOR & LEGEND

Actuator Color	I-O	ON-OFF	Dual	Legend
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)[15]	**T**	**U**	**9**	White

10. MOUNTING / BARRIERS

	MOUNTING STYLE	BARRIERS
	Threaded Insert, 2 per pole	
1	6-32 x 0.195 inches	no
A	6-32 x 0.195 inches	yes
2	ISO M3 x 5mm	no
B	ISO M3 x 5mm (multipole only)	yes
	Front panel Snap-In, 0.75" wide bezel	
5	without Handleguard	no
6	without Handleguard (multipole only)	yes
	Front panel Snap-In, 0.96" wide bezel	
7	without Handleguard, 1-pole 0.96" wide; multipole units have .105" bezel overhang on all sides	no
8	without Handleguard, 1-pole 0.96" wide; (multipole only) .105" bezel overhang on all sides	yes

11. AGENCY APPROVAL

C	UL Recognized & CSA Accepted
D	VDE Certified, UL Recognized & CSA Accepted
E	TUV Certified, UL Recognized & CSA Accepted
I	UL Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted

Configure Complete Part Number > | Browse Standard Parts >

Ordering Scheme

Handle - UL 489A Listed

Sample Part Number	A	A	1	-	B	0	-	14	-	450	-	1	B	1	-	M	T
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

A

2. ACTUATOR [1]

A	Handle, one per pole
S	Mid-Trip Handle, one per pole
T	Mid-Trip Handle, one per pole & Alarm Switch

3. POLES [2]

1	One	**3**	Three
2	Two	**4**	Four

4. CIRCUIT

B	Series Trip (Current)

5 AUXILIARY/ALARM SWITCH [2]

0	without Aux Switch	**7**	S.P.S.T., 0.110 Q.C. Term. (Gold Contacts)
1	S.P.D.T., 0.093 Q.C. Term.	**8**	S.P.S.T., 0.187 Q.C. Term.
2	S.P.D.T., 0.110 Q.C. Term.	**9**	S.P.D.T., 0.187 Q.C. Term.
5	S.P.S.T., 0.093 Q.C. Term. (Gold Contacts)		

6. FREQUENCY & DELAY

11	DC Ultra Short	**52** [3]	DC, Short, High-inrush
12	DC Short	**54** [3]	DC, Medium, High-inrush
14	DC Medium	**56** [3]	DC, Long, High-inrush
16	DC Long		

7. CURRENT RATING (AMPERES)

CODE	AMPERES						
210	0.100	**285**	0.850	**455**	5.500	**613**	13.000
215	0.150	**290**	0.900	**460**	6.000	**614**	14.000
220	0.200	**295**	0.950	**465**	6.500	**615**	15.000
225	0.250	**410**	1.000	**470**	7.000	**616**	16.000
230	0.300	**512**	1.250	**475**	7.500	**617**	17.000
235	0.350	**415**	1.500	**480**	8.000	**618**	18.000
240	0.400	**517**	1.750	**485**	8.500	**620**	20.000
245	0.450	**420**	2.000	**490**	9.000	**622**	22.000
250	0.500	**522**	2.250	**495**	9.500	**624**	24.000
255	0.550	**527**	2.750	**610**	10.000	**625**	25.000
260	0.600	**430**	3.000	**710**	10.500	**630**	30.000
265	0.650	**435**	3.500	**611**	11.000	**635** [3]	35.000
270	0.700	**440**	4.000	**711**	11.500	**640** [3]	40.000
275	0.750	**445**	4.500	**612**	12.000	**645** [3]	45.000
280	0.800	**450**	5.000	**712**	12.500	**650** [3]	50.000

8. TERMINAL

1 [6]	Push-On 0.250 Tab (Q.C.)	**9**	Screw 10-32 (Bus Type) & 30° bend
2	Screw 8-32 with upturned lugs	**B**	Screw M5 with upturned lugs
3 [7]	Screw 8-32 (Bus Type)	**F**	Screw M5 with upturned lugs & 30° bend
4	Screw 10-32 with upturned lugs	**G**	Screw M5 (Bus Type) & 30° bend
5 [7]	Screw 10-32 (Bus Type)	**H**	Screw M5 (Bus Type)
6	Screw 8-32 with upturned lugs & 30° bend	**M** [7]	M6 Threaded Stud
7	Screw 8-32 (Bus Type) & 30° bend	**P** [8]	Printed Circuit Board Terminals
8	Screw 10-32 with upturned lugs & 30° bend	**Q** [9]	Push-In Stud & 30° bend

9. ACTUATOR COLOR & LEGEND

Actuator Color	ON-OFF	Dual	Legend Color
White	**B**	**1**	Black
Black	**D**	**2**	White
Red	**G**	**3**	White
Green	**J**	**4**	White
Blue	**L**	**5**	White
Yellow	**N**	**6**	Black
Gray	**Q**	**7**	Black
Orange	**S**	**8**	Black
Black (short handle) [10]	**U**	**9**	White

10. MOUNTING / BARRIERS [9]

MOUNTING STYLE		BARRIERS
	Threaded Insert, 2 per pole	
1	6-32 x 0.195 inches	no
A	6-32 x 0.195 inches	yes
2	ISO M3 x 5mm	no
B	ISO M3 x 5mm (multipole only)	yes
	Front panel Snap-In, 0.75" wide bezel	
5	without Handleguard	no
6	without Handleguard (multipole only)	yes
	Front panel Snap-In, 0.96" wide bezel	
7	without Handleguard, 1-pole 0.96" wide; multipole units have .105" bezel overhang on all sides	no
8	without Handleguard, 1-pole 0.96" wide; (multipole only) .105" bezel overhang on all sides	yes

11. MAXIMUM APPLICATION RATING

M	80 DC

12. AGENCY APPROVAL

T	UL489A Listed
K	UL489A Listed, VDE Certified
J	UL489A Listed, TUV Certified

Notes:

1 Actuator Code:
A: Handle tie pin spacer(s) and retainers provided un-assembled with multi-pole units.
S: Handle moves to mid-position only upon electrical trip of the breaker.
T: Handle moves to mid-position and alarm switch activates only upon electrical trip of the breaker.

2 On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.

3 VDE Certified to 30 amps. UL489A Listed to 50 amps.

4 VDE Certification available with single pole breakers only. UL489A Listing available with one and two pole breakers.

5 Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9 G, H, M and Q.

6 Terminal Code 1 (Push-On) available up to 25 amps with VDE Certification and 30 amps with UL489A Listing, but is not recommended over 20 amps.

7 Terminal Codes 3, 5 and H (Bus Type) with VDE, are supplied with Lock Washers, and Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only VDE Certified when the washers are used.

8 Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL489A Listing.

9 Terminal Code Q not available with VDE certification.

10 Single pole only.

Configure Complete Part Number > Browse Standard Parts >

Ordering Scheme

Handle - World

Sample Part Number	A	A	3	-	B	0	-	14	-	450	-	1	A	1	-	P
Selection	1	2	3		4	5		6		7		8	9	10		11

1. SERIES

A

2. ACTUATOR [1]

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. POLES

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

4. CIRCUIT

A [2]	Switch Only (No Coil)	**D** [3]	Shunt Trip (Current)
B	Series Trip (Current)	**E** [3]	Shunt Trip (Voltage)
C	Series Trip (Voltage)	**H** [3,4]	Dual Coil with Shunt Trip Voltage Coil

5. AUXILIARY / ALARM SWITCH [5]

0	without Aux Switch
2	S.P.D.T., 0.110 Q.C. Term.

6. FREQUENCY & DELAY

03	DC 50/60Hz, Switch Only	**30**	DC, 50/60Hz Instantaneous
10	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	**42** [7]	50/60Hz Short, High-inrush
20	50/60Hz Instantaneous	**44** [7]	50/60Hz Medium, High-inrush
21	50/60Hz Ultra Short	**46** [7]	50/60Hz Long, High-inrush
22	50/60Hz Short	**52** [7]	DC, Short, High-inrush
24	50/60Hz Medium	**54** [7]	DC, Medium, High-inrush
26	50/60Hz Long	**56** [7]	DC, Long, High-inrush

7. CURRENT RATING (AMPERES)

CODE	AMPERES						
210	0.100	**285**	0.850	**455**	5.500	**613**	13.000
215	0.150	**290**	0.900	**460**	6.000	**614**	14.000
220	0.200	**295**	0.950	**465**	6.500	**615**	15.000
225	0.250	**410**	1.000	**470**	7.000	**616**	16.000
230	0.300	**512**	1.250	**475**	7.500	**617**	17.000
235	0.350	**415**	1.500	**480**	8.000	**618**	18.000
240	0.400	**517**	1.750	**485**	8.500	**620**	20.000
245	0.450	**420**	2.000	**490**	9.000	**622**	22.000
250	0.500	**522**	2.250	**495**	9.500	**624**	24.000
255	0.550	**527**	2.750	**610**	10.000	**625**	25.000
260	0.600	**430**	3.000	**710**	10.500	**630**	30.000
265	0.650	**435**	3.500	**611**	11.000	**635** [8]	35.000
270	0.700	**440**	4.000	**711**	11.500	**640** [8]	40.000
275	0.750	**445**	4.500	**612**	12.000	**645** [8]	45.000
280	0.800	**450**	5.000	**712**	12.500	**650** [8]	50.000

OR VOLTAGE COIL (NORMAL RATED VOLTAGE) [6]

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. TERMINAL

1 [10]	Push-On 0.250 Tab (Q.C.)	**9**	Screw 10-32 (Bus Type) & 30° bend
2	Screw 8-32 with upturned lugs	**B**	Screw M5 with upturned lugs
3 [11]	Screw 8-32 (Bus Type)	**C**	Screw, M4 with upturned lugs
4	Screw 10-32 with upturned lugs	**E** [11]	Screw M4 (Bus Type)
5 [11]	Screw 10-32 (Bus Type)	**F**	Screw M5 with upturned lugs & 30° bend
6	Screw 8-32 with upturned lugs & 30° bend	**G**	Screw M5 (Bus Type) & 30° bend
7	Screw 8-32 (Bus Type) & 30° bend	**H** [11]	Screw M5 (Bus Type)
8	Screw 10-32 with upturned lugs & 30° bend	**M**	M6 Threaded Stud
		R	Screw, M4 with upturned lugs & 30° Bend
		T [11]	Screw, M4 with upturned lugs

9 ACTUATOR COLOR & LEGEND

Actuator Color	I-O	Dual	Legend Color
White	**A**	**1**	Black
Black	**C**	**2**	White
Red	**F**	**3**	White
Green	**H**	**4**	White
Blue	**K**	**5**	White
Yellow	**M**	**6**	Black
Gray	**P**	**7**	Black
Orange	**R**	**8**	Black
Black (short handle)[15]	**T**	**9**	White

10. MOUNTING / BARRIERS

	MOUNTING STYLE	BARRIERS
	Threaded Insert, 2 per pole	
1	6-32 x 0.195 inches	no
A	6-32 x 0.195 inches	yes
2	ISO M3 x 5mm	no
B	ISO M3 x 5mm (multipole only)	yes
	Front panel Snap-In, 0.75" wide bezel	
5	without Handleguard	no
6	without Handleguard (multipole only)	yes
	Front panel Snap-In, 0.96" wide bezel	
7	without Handleguard, 1-pole 0.96" wide; multipole units have .105" bezel overhang on all sides	no
8	without Handleguard, 1-pole 0.96" wide; (multipole only) .105" bezel overhang on all sides	yes

11. AGENCY APPROVAL

P	TUV Certified, UL Recognized & CSA Accepted
Q	UL Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted

Notes:

1 Actuator Code:
A: Handle tie pin spacer(s) and retainers provided unassembled with multi-pole units.
S: Handle moves to mid-position only upon electrical trip of the breaker. Available with circuit codes B, C, D, E, and H.
T: Handle moves to mid-position and alarm switch activates only upon electrical trip of the breaker. Available with circuit codes B & C.

2 Switch Only circuits, rated up to 50 amps and 6 poles, and only available when tied to a protected pole (Circuit Code B, C, D or H.), For .01 to 30 amps, select Current Code 630. For 35 - 50 amps, select Current Code 650.

3 Available with terminal Codes 1, 2 and 3. Current Rating limited to 30 amps maximum.

4 Consult factory for available Dual Coil options, as special catalog number is required. With Shunt construction, Dual Coils will trip instantaneously on line volt age. Dual coils require 30VA minimum power to trip and are rated for intermittent duty only.

5 On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.

6 Separate pole type voltage coils not rated for continuous duty. Available only with delay codes 10, 20 & 30.

7 Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized, CSA Accepted & TUV Certified to 50 amps.

8 Available up to two poles with AC or DC delays.

9 Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G and H.

10 Terminal Code 1: TUV Certification up to 30 amps, but not recommended over 20 amps.

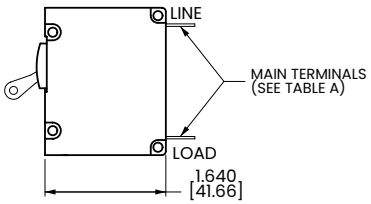
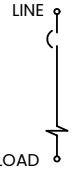
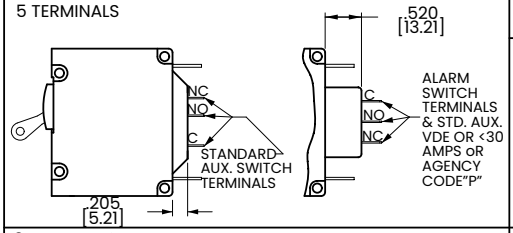
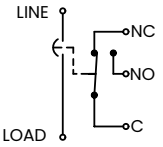
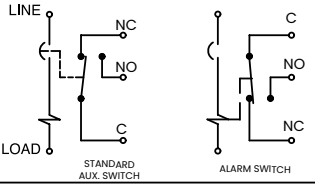
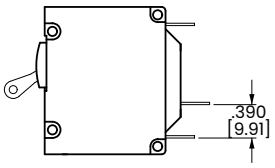
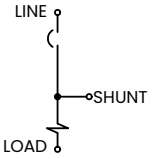
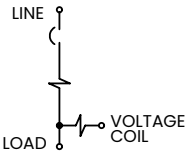
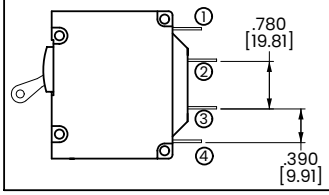
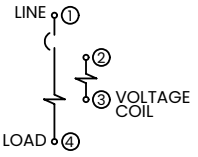
11 Terminal Codes 3, 5 , 7, 9, E, G and H (Bus Type) are supplied with Lock Washers. These breakers are only TUV Certified when the washers are used.

12 Single pole only.

Configure Complete Part Number > Browse Standard Parts >

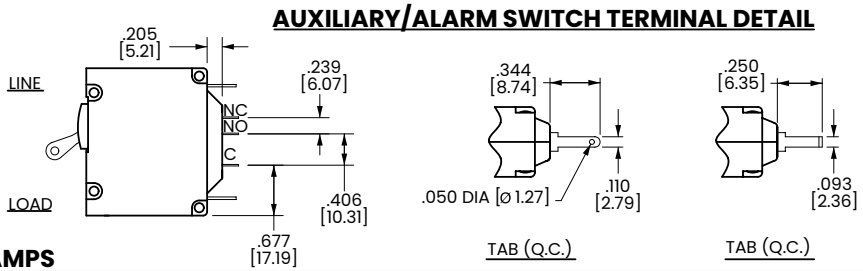
Circuit & Terminal Diagrams Handle

inches [millimeters]

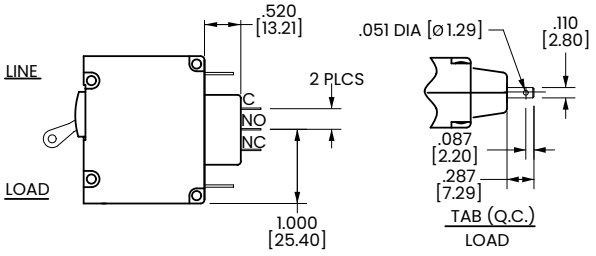
CIRCUIT BREAKER PROFILE	CIRCUIT SCHEMATIC ANSI SWITCH ONLY (NO COIL)	CIRCUIT CODE	AUX SWITCH CODE	CIRCUIT SCHEMATIC ANSI SERIES TRIP	CIRCUIT CODE	AUX SWITCH CODE
2 TERMINALS 		A	BC		BC	0
5 TERMINALS 	SWITCH ONLY (NO COIL) WITH AUXILIARY SWITCH 	A	1 2 3 4	SERIES TRIP WITH (3) AUXILIARY/ALARM SWITCH 	BC	1 2 3 4
3 TERMINALS 	SHUNT TRIP 	DE	0	DUAL COIL; SERIES TRIP CURRENT COIL, RELAY TRIP VOLTAGE COIL 	H	0
4 TERMINALS 	RELAY TRIP 	FG	0	DUAL COIL; SERIES TRIP CURRENT COIL, RELAY TRIP VOLTAGE COIL 	K	0

AUXILIARY/ALARM SWITCH TERMINAL DETAIL

≤ 30 AMPS



> 30 AMPS

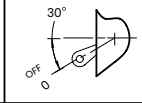
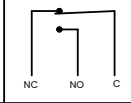
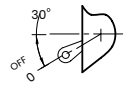
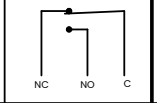
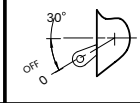
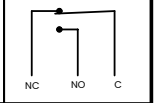
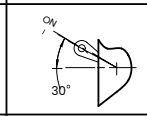
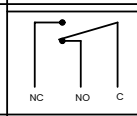
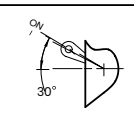
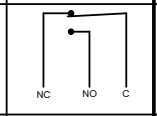
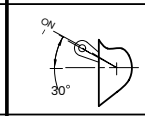
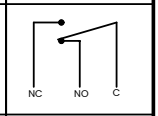
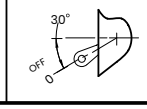
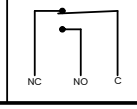
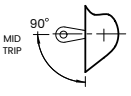
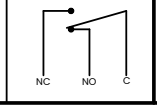
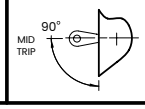
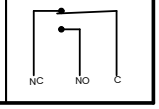


Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.
2 Alarm Switch available with .110 x .020 Q.C. & Solder Lug Terminals Only.

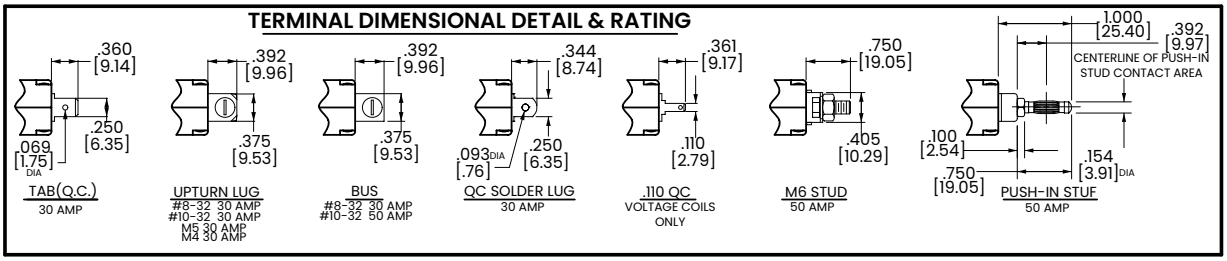
Circuit & Terminal Diagrams Handle

inches [millimeters]

HANDLE POSITION VS. AUX/ALARM SWITCH MODE

CIRCUIT BREAKER MODE	STANDARD C/B HANDLE POSITION	STANDARD C/B AUX. SWITCH MODE	MID TRIP C/B HANDLE POSITION	MID TRIP C/B ALARM SWITCH MODE	MID TRIP C/B HANDLE POSITION	MID TRIP C/B AUX. SWITH CODE (W/O ALARM SWITCH)
OFF						
ON						
ELECTRICAL TRIP						

TERMINAL DIMENSIONAL DETAIL & RATING



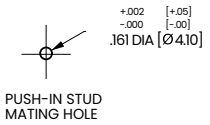
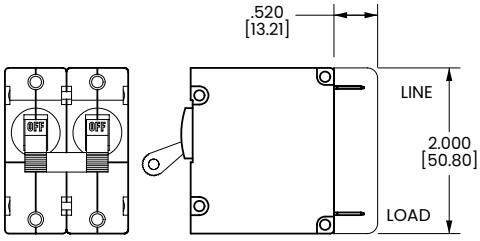


TABLE A
TIGHTENING TORQUE SPECIFICATIONS

THREAD SIZE	TORQUE
#6-32 & M3 MOUNTING HARDWARE	7-9 IN-LBS [0.8-1.0 NM]
#8-32 & M4 THREAD TERMINAL SCREW	12-15 IN-LBS [1.4-1.7 NM]
#10-32 & M5 THREAD TERMINAL SCREW	15-20 IN-LBS [1.7-2.3 NM]

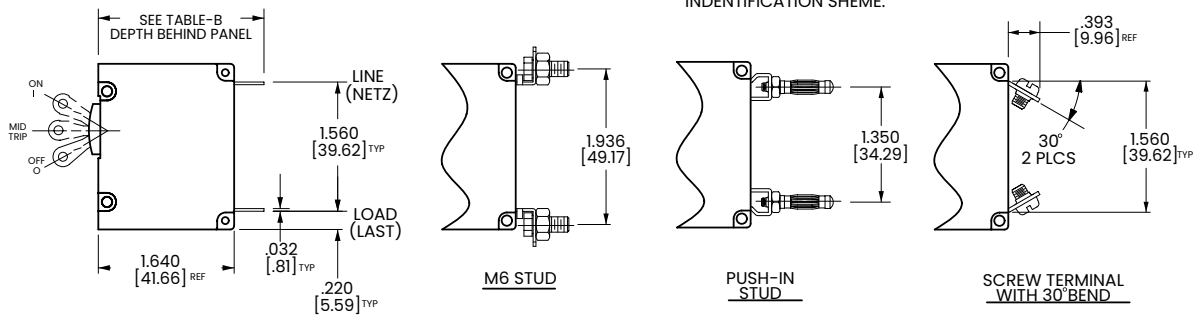


BARRIER FOR UL-RECOGNIZED MULTI-POLE BREAKERS

TABLE B

TERMINAL DESCRIPTION		DEPTH BEHIND PANEL
MAIN	TAB (Q.C.)	2.000[50.80]
	SCREW TYPE	2.032[51.60]
SHUNT,RELAY & DUAL COIL	TAB (Q.C.)	2.207[56.10]
	SCREW #8-32 W/UPTURNED LUGS	2.364[60.05]
AUX. SWITCH*	.093 TAB (Q.C.)	2.095[53.20]
	.110 TAB (Q.C.)	2.189[55.60]
	SOLDER TYPE	1.970[50.00]

*AVAILABLE ON SERIES TRIP AND SWITCH ONLY CIRCUITS WHEN CALLED FOR ON MULTI-POLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, AS SHOWN IN MULTI-POLE INDENTIFICATION SHEME.

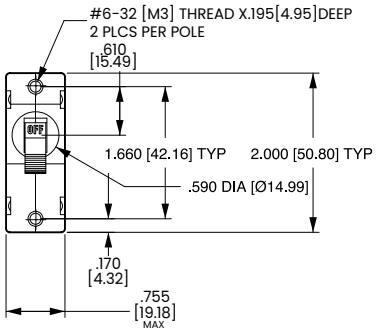


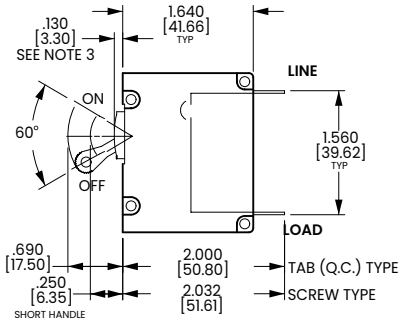
Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.
2 Alarm Switch available with .110 x .020 QC & solder lug terminals only.

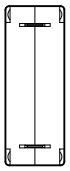
Dimensional Specs Handle

inches [millimeters]

1-POLE (AA1)

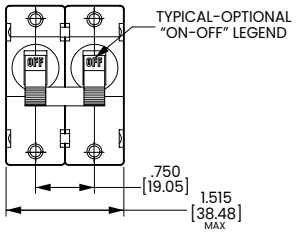




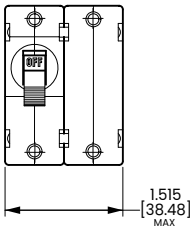


TAB (Q.C.) TYPE TERMINALS IN SERIES TRIP CONCUIT CONFIGURATION SHOWN. FOR OTHER CONFIGURATIONS SEE CIRCUIT & TERMINAL DIAGRAMS

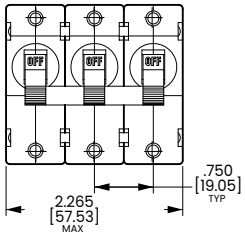
2-POLE (AA2)



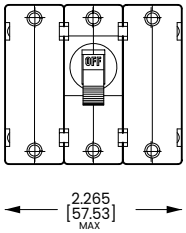
2-POLE (AB2)



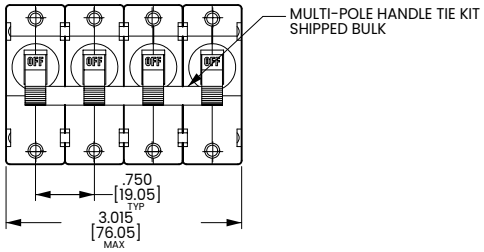
3-POLE (AA3)



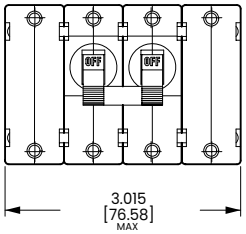
3-POLE (AB3)

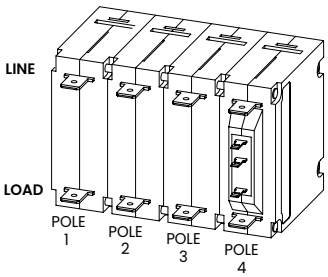


4-POLE (AA4)

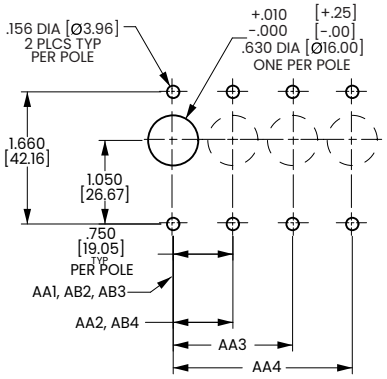


4-POLE (AB4)





MULTI-POLE INDENTIFICATION SCHEME
AS VIEWED FROM TERMINAL END OF BREAKER.



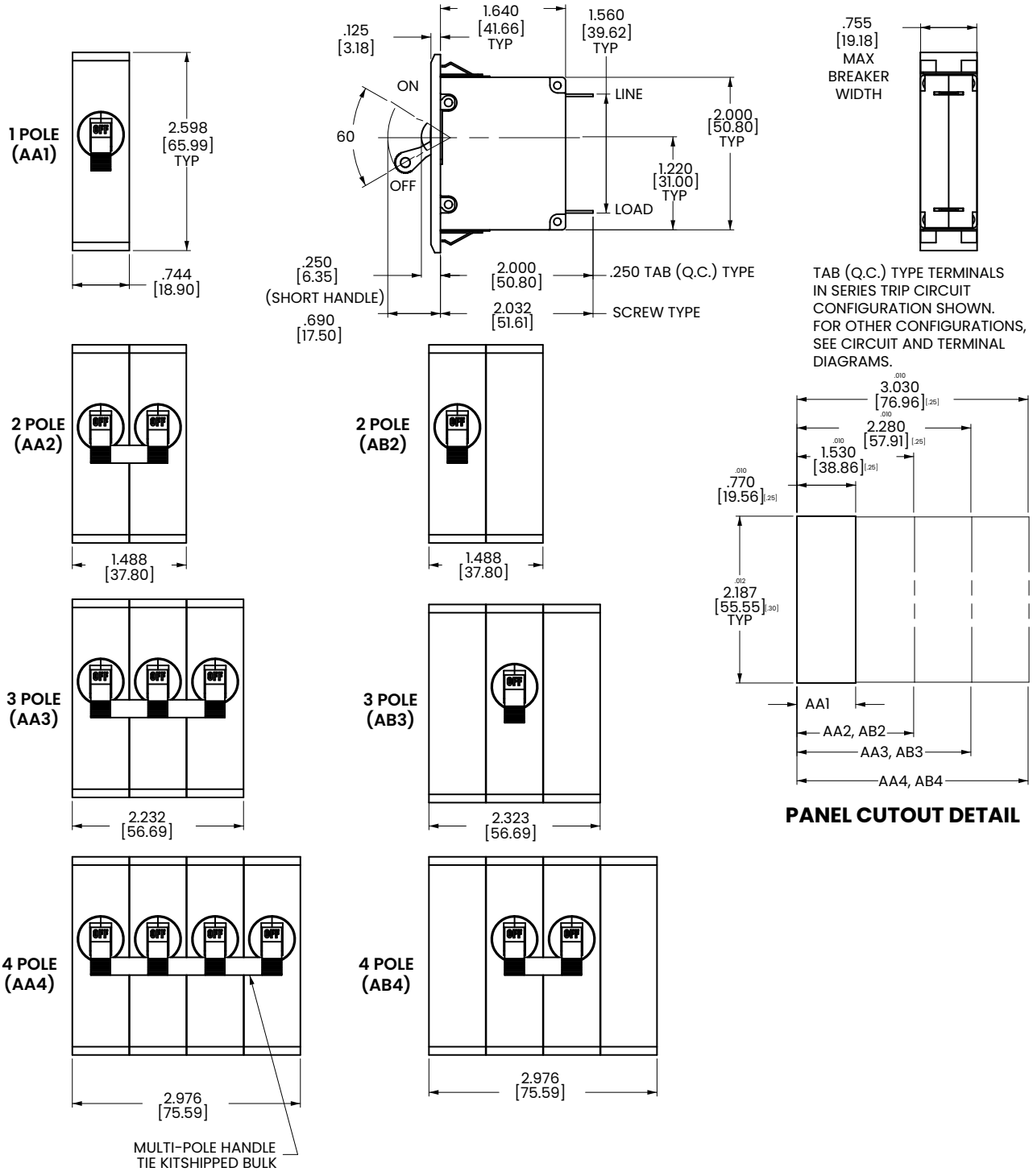
PANEL CUTOUT DETAIL

TOLERANCE ±.005[±.12]
UNLESS OTHERWISE SPECIFIED

Notes:
1 Tolerance ± 0.20 [.51] unless otherwise specified.
2 For agency code P = .150 [3.81].

Dimensional Specs Handle

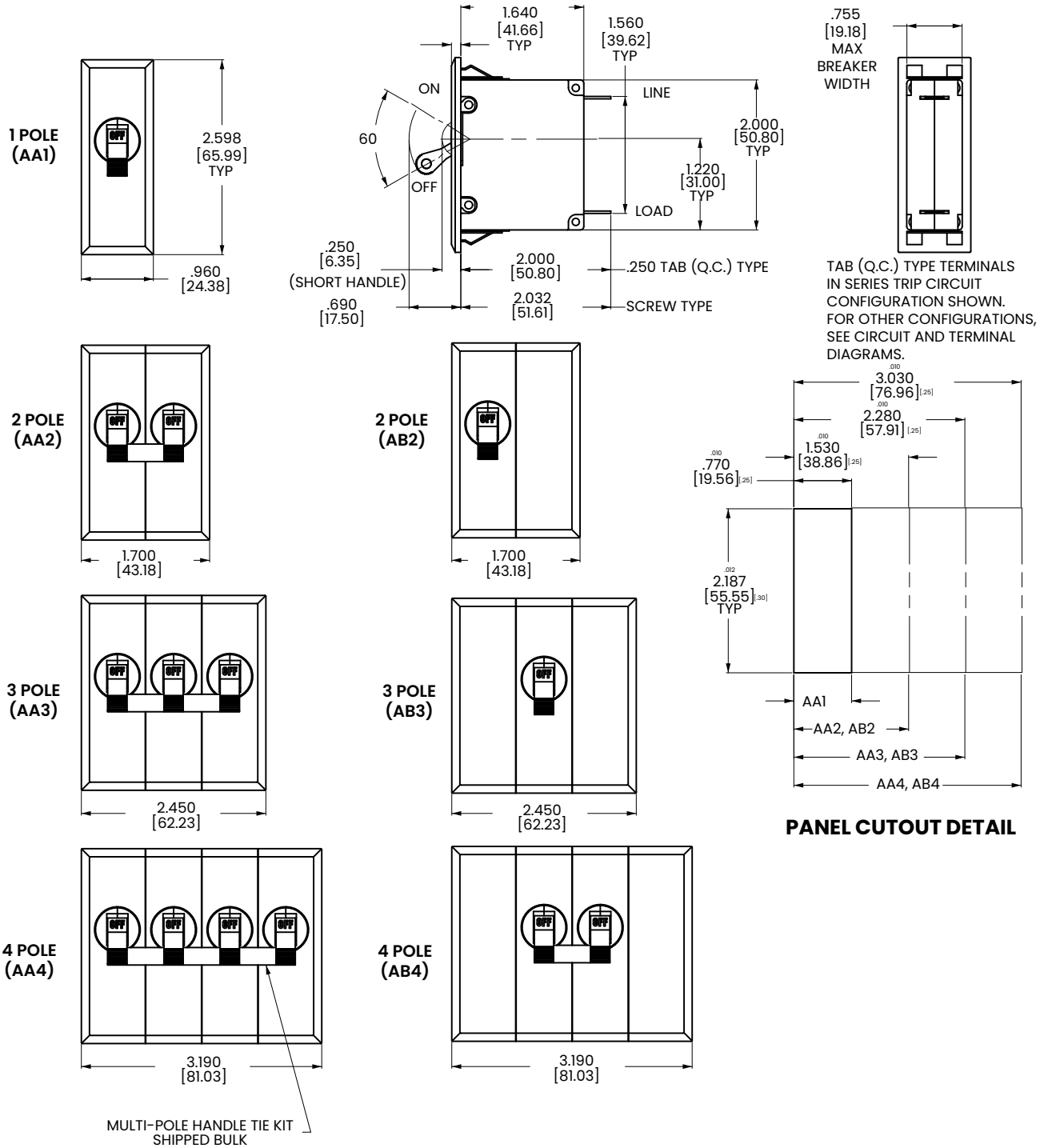
inches [millimeters]



Notes:
1 Recommended panel thickness: .040 [1.02] to .100 [2.54].
2 Tolerance ±.020 [.51] unless otherwise specified.

Dimensional Specs Handle

inches [millimeters]



Notes:
1 Recommended panel thickness: .040 [1.02] to .100 [2.54].
2 Tolerance ±.020 [.51] unless otherwise specified.

Ordering Scheme

Sealed Toggle

Sample Part Number	A	M	1	-	B	0	-	10	-	450	-	1	0	1	-	C
Selection	1	2	3		4	5		6		7		8	9	10		11

1. SERIES

A

2. ACTUATOR [1]

M	Sealed Toggle, one per unit

3. POLES

1	One	**2**	Two	**3**	Three

4. CIRCUIT

A [2]	Switch Only (No Coil)	**F** [3]	Relay Trip (Current)
B	Series Trip (Current)	**G** [3]	Relay Trip (Voltage)
C	Series Trip (Voltage)	**H** [3,4]	Dual Coil with Shunt Trip Voltage Coil
D [3]	Shunt Trip (Current)		
E [3]	Shunt Trip (Voltage)	**K** [3,4]	Dual Coil with Relay Trip Voltage Coil

5. AUXILIARY / ALARM SWITCH [5]

0	without Aux Switch	**7**	S.P.S.T., 0.110 Q.C. Term. (Gold Contacts)
1	S.P.D.T., 0.093 Q.C. Term.	**8**	S.P.S.T., 0.187 Q.C. Term.
2	S.P.D.T., 0.110 Q.C. Term.	**9**	S.P.D.T., 0.187 Q.C. Term.
5	S.P.S.T., 0.093 Q.C. Term. (Gold Contacts)		

6. FREQUENCY & DELAY

03	DC 50/60Hz, Switch Only	**30**	DC, 50/60Hz Instantaneous
10	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	**42** [7]	50/60Hz Short, High-inrush
20	50/60Hz Instantaneous	**44** [7]	50/60Hz Medium, High-inrush
21	50/60Hz Ultra Short	**46** [7]	50/60Hz Long, High-inrush
22	50/60Hz Short	**52** [7]	DC, Short, High-inrush
24	50/60Hz Medium	**54** [7]	DC, Medium, High-inrush
26	50/60Hz Long	**56** [7]	DC, Long, High-inrush

7. CURRENT RATING (AMPERES)

CODE	AMPERES						
020	0.020	**230**	0.300	**425**	2.500	**612**	12.000
025	0.025	**235**	0.350	**527**	2.750	**712**	12.500
030	0.030	**240**	0.400	**430**	3.000	**613**	13.000
035	0.035	**245**	0.450	**435**	3.500	**614**	14.000
040	0.040	**250**	0.500	**440**	4.000	**615**	15.000
045	0.045	**255**	0.550	**445**	4.500	**616**	16.000
050	0.050	**260**	0.600	**450**	5.000	**617**	17.000
055	0.055	**265**	0.650	**455**	5.500	**618**	18.000
060	0.060	**270**	0.700	**460**	6.000	**620**	20.000
065	0.065	**275**	0.750	**465**	6.500	**622**	22.000
070	0.070	**280**	0.800	**470**	7.000	**624**	24.000
075	0.075	**285**	0.850	**475**	7.500	**625**	25.000
080	0.080	**290**	0.900	**480**	8.000	**630**	30.000
085	0.085	**295**	0.950	**485**	8.500	**635** [8]	35.000
090	0.090	**410**	1.000	**490**	9.000	**640** [8]	40.000
095	0.095	**512**	1.250	**495**	9.500	**645** [8]	45.000
210	0.100	**415**	1.500	**610**	10.000	**650** [8]	50.000
215	0.150	**517**	1.750	**710**	10.500		
220	0.200	**420**	2.000	**611**	11.000		
225	0.250	**522**	2.250	**711**	11.500		

OR VOLTAGE COIL (NORMAL RATED VOLTAGE) [6]

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. TERMINAL [9]

1 [10]	Push-On 0.250 Tab (Q.C.)	**C**	Screw, M4 with upturned lugs
2	Screw 8-32 with upturned lugs	**E**	Screw M4 (Bus Type)
3	Screw 8-32 (Bus Type)	**F**	Screw M5 with upturned lugs & 30° bend
4	Screw 10-32 with upturned lugs	**G**	Screw M5 (Bus Type) & 30° bend
5	Screw 10-32 (Bus Type)	**H**	Screw M5 (Bus Type)
6	Screw 8-32 with upturned lugs & 30° bend	**L** [12]	0.250 Q.C./ Solder Lug
7	Screw 8-32 (Bus Type) & 30° bend	**M**	M6 Threaded Stud
8	Screw 10-32 with upturned lugs & 30° bend	**P** [12]	Printed Circuit Board Terminals
9	Screw 10-32 (Bus Type) & 30° bend	**Q**	Push-In Stud
B	Screw M5 with upturned lugs	**R**	Screw, M4 with upturned lugs & 30° Bend
		S [17]	Push-On 0.110 Tab (Q.C.) & 30° bend
		T	Screw, M4 with upturned lugs

9. LEGEND PLATE

0	No legend plate

10. MOUNTING / BARRIERS

	MOUNTING STYLE	BARRIERS
1	Standard Hex Nut	no
A	Standard Hex Nut (multipole only)	yes

11. AGENCY APPROVAL

C	UL Recognized & CSA Accepted
I	UL Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted

Notes:

1 Actuator Code M: Handle location as viewed from front of panel: 2 pole - right pole 3 pole - center pole

2 Switch Only circuits, rated up to 50 amps and 3 poles. Only available when tied to a protected pole. For .02 to 30 amps, select Current Code 630. For 35 - 50 amps, select Current Code 650.

3 Available with terminal Codes 1, 2 and 3. Current Rating limited to 30 amps maximum.

4 Consult factory for available Dual Coil options, as special catalog number is required. With Shunt construction, Dual Coils will trip instantaneously on line volt age. Dual coils require 30VA minimum power to trip and are rated for intermittent duty only.

5 Auxiliary Switch available on Series Trip & Switch Only circuits, limited to 30 amps. On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.

6 Voltage coils not rated for continuous duty. Available only with delay codes 10 and 20.

7 Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized, CSA Accepted & TUV Certified to 50 amps.

8 UL Recognition and CSA Certification available on one and two pole breakers.

9 Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, B, F, G, H, M and Q.

10 Terminal Code 1: UL Recognition and CSA Certification up to 30 amps, but not recommended over 20 amps.

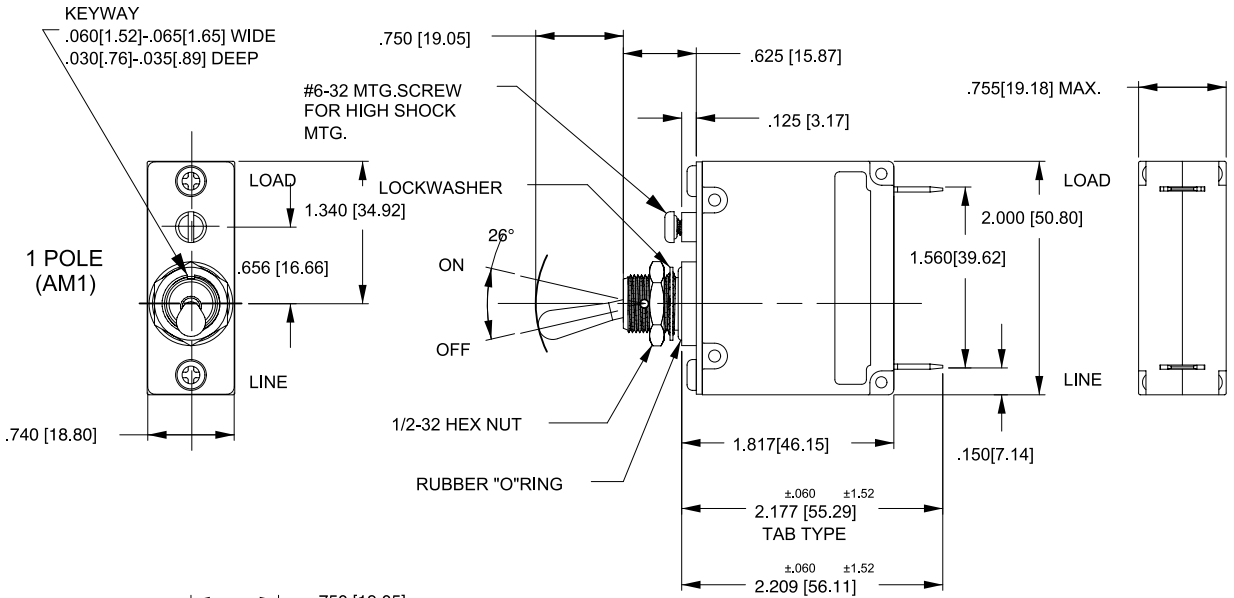
11 Terminal Code L : available up to 30A.

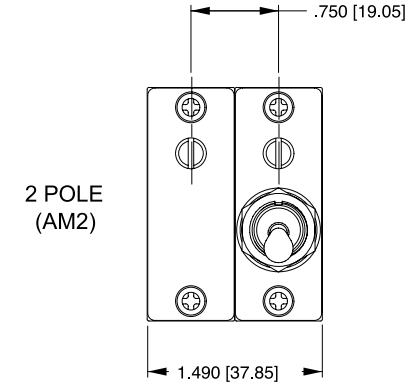
12 Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 50 amps, with Circuit Codes A, B and C. Two pole breakers with Terminal Code P (Printed Circuit Board) are available up to 40 amps with Circuit Codes A, B and C.

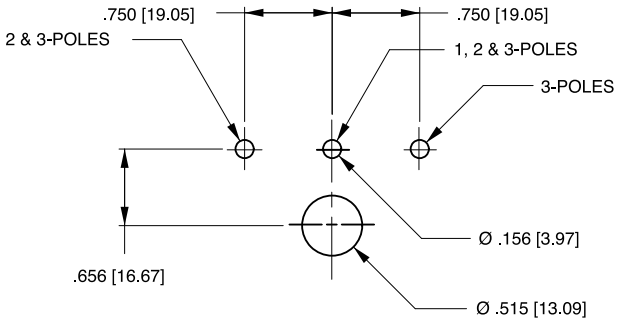
Configure Complete Part Number > Browse Standard Parts >

Dimensional Specs Sealed Toggle

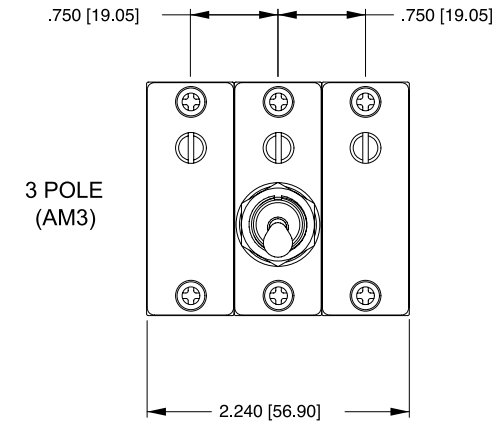
inches [millimeters]







PANEL CUTOUT DETAIL
TOLERANCES ±.005[.13]



Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Ordering Scheme

Rocker UL 1077 Recognized

Sample Part Number	A	F	1	-	B	0	-	24	-	630	-	2	3	1	-	D
Selection	1	2	3		4	5		6		7		8	9	10		11

1. SERIES

A

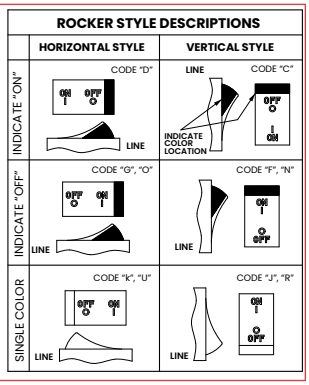
2. ACTUATOR [1]

Two Color Visi-Rocker
- **C** Indicate ON, vertical legend
- **D** Indicate ON, horizontal legend
- **F** Indicate OFF, vertical legend
- **G** Indicate OFF, horizontal legend
- **H** Indicate OFF, no legend

Push-To-Reset, Visi-Rocker
- **N** Indicate OFF, vertical legend
- **O** Indicate OFF, horizontal legend
- **P** Indicate OFF, no legend

Single color
- **J** Vertical legend
- **K** Horizontal legend
- **L** No legend

Push-To-Reset , Single color
- **R** Vertical legend
- **U** Horizontal legend
- **V** No legend



3. POLES

1	One	**2**	Two	**3**	Three

4. CIRCUIT

A [3]	Switch Only (No Coil)	**G** [4]	Relay Trip (Voltage)
B	Series Trip (Current)	**H** [4,5]	Dual Coil with Shunt Trip Voltage Coil
C	Series Trip (Voltage)	**K** [4,5]	Dual Coil with Relay Trip Voltage Coil
D [4]	Shunt Trip (Current)		
E [4]	Shunt Trip (Voltage)		

5. AUXILIARY / ALARM SWITCH [5]

0	without Aux Switch	**7**	S.P.S.T., 0.110 Q.C. Term. (Gold Contacts)
1	S.P.D.T., 0.093 Q.C. Term.	**8**	S.P.S.T., 0.187 Q.C. Term.
2	S.P.D.T., 0.110 Q.C. Term.	**9**	S.P.D.T., 0.187 Q.C. Term.
5	S.P.S.T., 0.093 Q.C. Term. (Gold Contacts)		

6. FREQUENCY & DELAY

03	DC 50/60Hz, Switch Only	**30**	DC, 50/60Hz Instantaneous
10	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	**42** [9]	50/60Hz Short, High-inrush
20	50/60Hz Instantaneous	**44** [9]	50/60Hz Medium, High-inrush
21	50/60Hz Ultra Short	**46** [9]	50/60Hz Long, High-inrush
22	50/60Hz Short	**52** [9]	DC, Short, High-inrush
24	50/60Hz Medium	**54** [9]	DC, Medium, High-inrush
26	50/60Hz Long	**56** [9]	DC, Long, High-inrush

7. CURRENT RATING (AMPERES)

CODE	AMPERES						
020	0.020	**225**	0.250	**420**	2.000	**611**	11.000
025	0.025	**230**	0.300	**522**	2.250	**711**	11.500
030	0.030	**235**	0.350	**527**	2.750	**612**	12.000
035	0.035	**240**	0.400	**430**	3.000	**712**	12.500
040	0.040	**245**	0.450	**435**	3.500	**613**	13.000
045	0.045	**250**	0.500	**440**	4.000	**614**	14.000
050	0.050	**255**	0.550	**445**	4.500	**615**	15.000
055	0.055	**260**	0.600	**450**	5.000	**616**	16.000
060	0.060	**265**	0.650	**455**	5.500	**617**	17.000
065	0.065	**270**	0.700	**460**	6.000	**618**	18.000
070	0.070	**275**	0.750	**465**	6.500	**620**	20.000
075	0.075	**280**	0.800	**470**	7.000	**622**	22.000
080	0.080	**285**	0.850	**475**	7.500	**624**	24.000
085	0.085	**290**	0.900	**480**	8.000	**625**	25.000
090	0.090	**295**	0.950	**485**	8.500	**630**	30.000
095	0.095	**410**	1.000	**490**	9.000	**635** [8]	35.000
210	0.100	**512**	1.250	**495**	9.500	**640** [8]	40.000
215	0.150	**415**	1.500	**610**	10.000	**645** [8]	45.000
220	0.200	**517**	1.750	**710**	10.500	**650** [8]	50.000

OR VOLTAGE COIL (NORMAL RATED VOLTAGE) [8]

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. TERMINAL [11]

1 [12]	Push-On 0.250 Tab (Q.C.)	**C**	Screw, M4 with upturned lugs
2	Screw 8-32 with upturned lugs	**E** [13]	Screw M4 (Bus Type)
3 [13]	Screw 8-32 (Bus Type)	**F**	Screw M5 with upturned lugs & 30° bend
4	Screw 10-32 with upturned lugs	**G**	Screw M5 (Bus Type) & 30° bend
5 [13]	Screw 10-32 (Bus Type)	**H** [13]	Screw M5 (Bus Type)
6	Screw 8-32 with upturned lugs & 30° bend	**L** [14]	0.250 Q.C./ Solder Lug
7	Screw 8-32 (Bus Type) & 30° bend	**M** [13]	M6 Threaded Stud
8	Screw 10-32 with upturned lugs & 30° bend	**P** [15]	Printed Circuit Board Terminals
9	Screw 10-32 (Bus Type) & 30° bend	**Q**	Push-In Stud
B	Screw M5 with upturned lugs	**R**	Screw, M4 with upturned lugs & 30° Bend
		S [17]	Push-On 0.110 Tab (Q.C.) & 30° bend
		T	Screw, M4 with upturned lugs

9. ACTUATOR COLOR & LEGEND

Actuator or Visi-Color [12]	Marking: I-O	Marking: ON-OFF	Marking: Dual [12]	Marking Color: Single Color	Marking Color: Visi-Rocker
White	**A**	**B**	**1**	Black	White
Black	**C**	**D**	**2**	White	n/a
Red	**F**	**G**	**3**	White	Red
Green	**H**	**J**	**4**	White	Green
Blue	**K**	**L**	**5**	White	Blue
Yellow	**M**	**N**	**6**	Black	Yellow
Gray	**P**	**Q**	**7**	Black	Gray
Orange	**R**	**S**	**8**	Black	Orange

10. MOUNTING / BARRIERS [20]

		BARRIERS
STANDARD ROCKER BEZEL Threaded Insert, 2 per pole		
1	6-32 x 0.195 inches	no
A	6-32 X 0.195 inches (multi-pole units only)	yes
2	ISO M3 x 5mm	no
B	ISO M3 x 5mm (multi-pole units only)	yes
ROCKERGUARD & PUSH-TO-RESET BEZEL Threaded Insert, 2 per pole		
3	6-32 x 0.195 inches	no
C	6-32 x 0.195 inches (multi-pole units only)	yes
4	ISO M3 x 5mm	no
D	ISO M3 x 5mm (multi-pole units only)	yes
FRONT PANEL SNAP-IN BRACKET, 0.744" [18.90mm] wide bezel		
8	without Rockerguard (single pole units only)	no
H	with Rockerguard (single pole units only)	no
FRONT PANEL SNAP-IN BRACKET, 0.96" [24.48mm] wide bezel		
9	without Rockerguard (single pole units only)	no
J	with Rockerguard (single pole units only)	no

11. AGENCY APPROVAL

- **C** UL Recognized & CSA Accepted
- **D** VDE Certified, UL Recognized & CSA Accepted
- **E** TUV Certified, UL Recognized & CSA Accepted
- **I** UL Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted

Notes:
1. Push-To-Reset actuators have OFF portion of rocker shrouded.
2. Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.
3. Switch Only circuits, rated up to 50 amps & 3 poles, are available only 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.
4. Available with terminal Codes 1, 2 and 3. Current Rating limited to 30 amps maximum.
5. Consult factory for Dual Coil options, as special catalog number is required. With Shunt construction, Dual Coils will trip instantaneously on line voltage. Dual coils require 30VA minimum power to trip and are rated for intermittent duty only.
6. Auxiliary Switch breakers with Series Trip & Switch Only circuits: ≤ 30A, are supplied with standard half shells. 30-50A are supplied with extended boat (B-Style) half shells.
7. On multi-pole breakers, one auxiliary switch is supplied, mounted in the right pole.
8. Separate pole type voltage coils not rated for continuous duty. Available only with delay codes 10 & 20.
9. Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized, CSA Accepted & TUV Certified to 50 amps.
10. Series Trip current ratings: VDE Certification available with single pole breakers with DC Delay only. UL Recognition & CSA Accepted available in one and two pole breakers.
11. Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G, H, M and Q.
12. Terminal Code 1: VDE Certification up to 25 amps and UL Recognition and CSA Accepted up to 30 amps, but not recommended over 20 amps.
13. Terminal Codes 3, 5 E & H (Bus Type) with VDE, are supplied with Lock Washers; Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only VDE Certified when the washers are used.
14. VDE Cert. available up to 12 amps. UL Rec. & CSA Accepted available up to 30 amps.
15. Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL Recognition and CSA Accepted, with Circuit Codes A, B & C.Two pole breakers with Terminal Code P (Printed Circuit Board) are available up to 40 amps with UL Recognition and CSA Certification with Circuit Codes A, B and C.
16. Terminal Code Q not available with VDE.
17. Terminal Code S used on voltage coil circuit constructions only.
18. Color shown is visi and legend with remainder of rocker black.
19. Dual = ON-OFF/I-O legend with actuator. None = no legend on actuator
20. Legend on Push-to-reset bezel/shroud is white with single color actuator codes R, & U. Legend on Push-to-reset bezel/shroud matches Visi-color of rocker with actuator codes N & O. Rockerguard available with actuator codes C through L.

Configure Complete Part Number > | Browse Standard Parts >

Ordering Scheme

Rocker - UL 489A Listed

Sample Part Number	A	F	1	-	B	0	-	14	-	450	-	1	3	1	-	M	T
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

A

2. ACTUATOR [1]

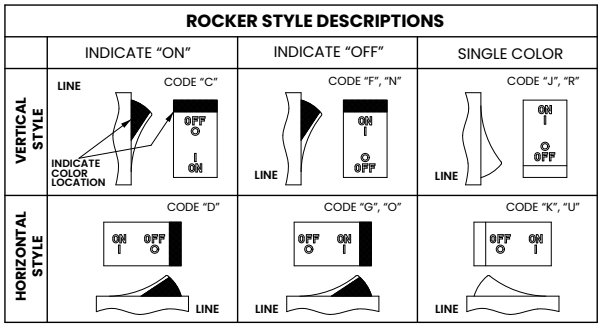
Two Color Visi-Rocker
- **C** Indicate ON, vertical legend
- **D** Indicate ON, horizontal legend
- **F** Indicate OFF, vertical legend
- **G** Indicate OFF, horizontal legend

Single color
- **J** Vertical legend
- **K** Horizontal legend

Push-To-Reset, Visi-Rocker
- **N** Indicate OFF, vertical legend
- **O** Indicate OFF, horizontal legend

Push-To-Reset , Single color
- **R** Vertical legend
- **U** Horizontal legend

ROCKER STYLE DESCRIPTIONS



3. POLES [2]

1	One	**2**	Two	**3**	Three

4. CIRCUIT

B Series Trip (Current)

5. AUXILIARY / ALARM SWITCH [2]

- **0** without Aux Switch
- **1** S.P.D.T., 0.093 Q.C. Term.
- **2** S.P.D.T., 0.110 Q.C. Term.
- **5** S.P.S.T., 0.093 Q.C. Term. (Gold Contacts)
- **7** S.P.S.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

- **11** DC Ultra Short
- **12** DC Short
- **14** DC Medium
- **16** DC Long
- **52** DC, Short, High-inrush
- **54** DC, Medium, High-inrush
- **56** DC, Long, High-inrush

7. CURRENT RATING (AMPERES)

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
210	0.100	**285**	0.850	**455**	5.500	**613**	13.000
215	0.150	**290**	0.900	**460**	6.000	**614**	14.000
220	0.200	**295**	0.950	**465**	6.500	**615**	15.000
225	0.250	**410**	1.000	**470**	7.000	**616**	16.000
230	0.300	**512**	1.250	**475**	7.500	**617**	17.000
235	0.350	**415**	1.500	**480**	8.000	**618**	18.000
240	0.400	**517**	1.750	**485**	8.500	**620**	20.000
245	0.450	**420**	2.000	**490**	9.000	**622**	22.000
250	0.500	**522**	2.250	**495**	9.500	**624**	24.000
255	0.550	**527**	2.750	**610**	10.000	**625**	25.000
260	0.600	**430**	3.000	**710**	10.500	**630**	30.000
265	0.650	**435**	3.500	**611**	11.000	**635**[4]	35.000
270	0.700	**440**	4.000	**711**	11.500	**640**[4]	40.000
275	0.750	**445**	4.500	**612**	12.000	**645**[4]	45.000
280	0.800	**450**	5.000	**712**	12.500	**650**[4]	50.000

8. TERMINAL [5]

- **1** [6] Push-On 0.250 Tab (Q.C.)
- **2** Screw 8-32 with upturned lugs
- **3** [7] Screw 8-32 (Bus Type)
- **4** Screw 10-32 with upturned lugs
- **5** [7] Screw 10-32 (Bus Type)
- **6** Screw 8-32 with upturned lugs & 30° bend
- **7** Screw 8-32 (Bus Type) & 30° bend
- **8** Screw 10-32 with upturned lugs & 30° bend
- **9** Screw 10-32 (Bus Type) & 30° bend
- **B** Screw M5 with upturned lugs
- **F** Screw M5 with upturned lugs
- **G** Screw M5 (Bus Type) & 30° bend
- **H** Screw M5 (Bus Type)
- **M** [7] M6 Threaded Stud
- **P** [8] Printed Circuit Board Terminals
- **Q** [9] Push-In Stud

9. ACTUATOR COLOR & LEGEND

Actuator or Visi-Color [10]	Marking: ON-OFF	Marking: Dual [10]	Marking Color: Single Color	Marking Color: Visi-Rocker
White	**B**	**1**	Black	White
Black	**D**	**2**	White	n/a
Red	**G**	**3**	White	Red
Green	**J**	**4**	White	Green
Blue	**L**	**5**	White	Blue
Yellow	**N**	**6**	Black	Yellow
Gray	**Q**	**7**	Black	Gray
Orange	**S**	**8**	Black	Orange

10. MOUNTING / BARRIERS [20]

		BARRIERS
STANDARD ROCKER BEZEL Threaded Insert, 2 per pole		
1	6-32 x 0.195 inches	no
A	6-32 X 0.195 inches (multi-pole units only)	yes
2	ISO M3 x 5mm	no
B	ISO M3 x 5mm (multi-pole units only)	yes
ROCKERGUARD & PUSH-TO-RESET BEZEL Threaded Insert, 2 per pole		
3	6-32 x 0.195 inches	no
C	6-32 x 0.195 inches (multi-pole units only)	yes
4	ISO M3 x 5mm	no
D	ISO M3 x 5mm (multi-pole units only)	yes
FRONT PANEL SNAP-IN BRACKET, 0.744" [18.90mm] wide bezel		
8	without Rockerguard (single pole units only)	no
H	with Rockerguard (single pole units only)	no
FRONT PANEL SNAP-IN BRACKET, 0.96" [24.48mm] wide bezel		
9	without Rockerguard (single pole units only)	no
J	with Rockerguard (single pole units only)	no

11. MAXIMUM APPLICATION RATING

M 80 DC

12. AGENCY APPROVAL

- **T** UL489A Listed
- **K** UL489A Listed, VDE Certified
- **J** UL489A Listed, TUV Certified

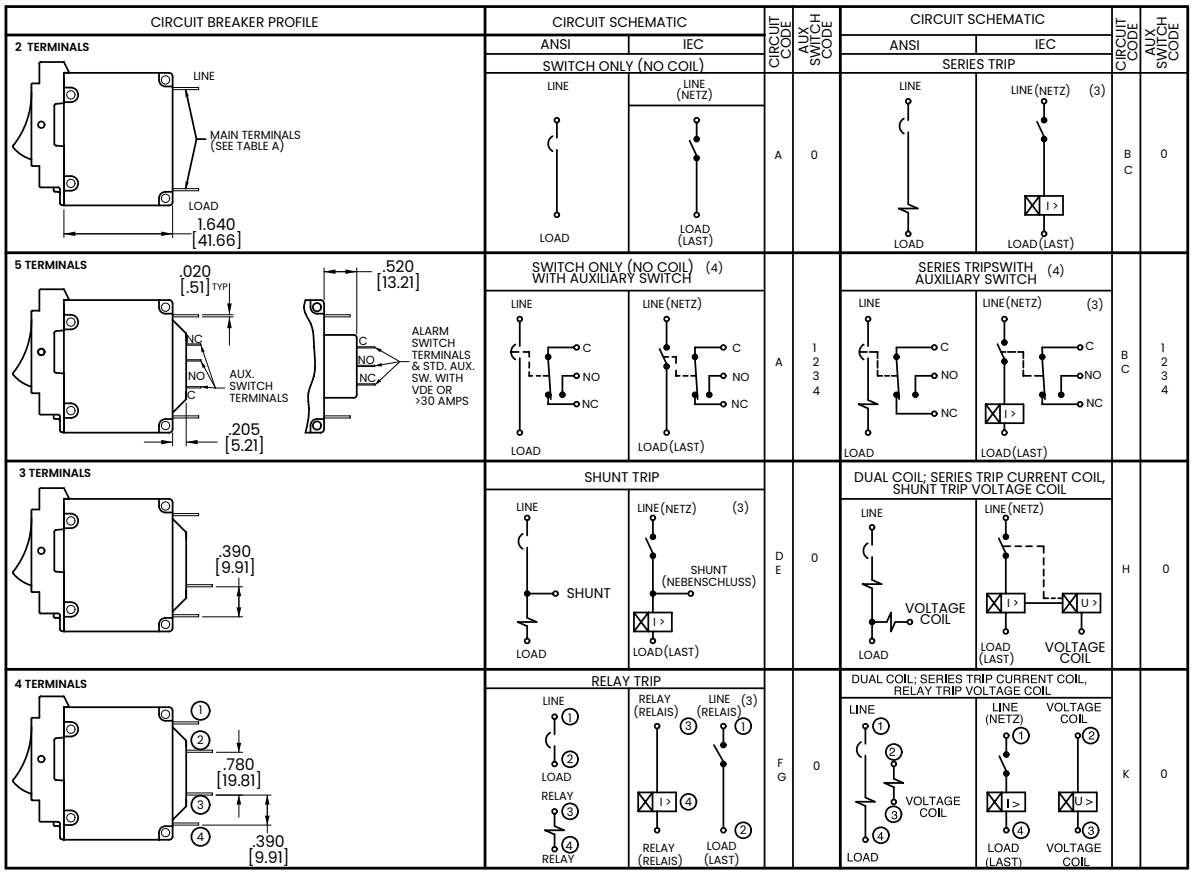
Notes:
1. Push-To-Reset actuators have OFF portion of rocker shrouded.
2. Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.
3. Auxiliary Switch breakers with Series Trip circuits: ≤ 30A, are supplied with standard half shells. 30-50A are supplied with extended boat (B-Style) half shells.
4. VDE Certification available with single pole breakers only. UL489A Listing available with one and two pole breakers.
5. Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G, H, M and Q.
6. Terminal Code 1 (Push-On) available up to 25 amps with TUV or VDE Certification and 30 amps with UL489A Listing, but is not recommended over 20 amps.
7. Terminal Codes 3, 5 and H (Bus Type) with TUV or VDE, are supplied with Lock Washers, and Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only TUV or VDE Certified when the washers are used.
8. Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL489A Listing.
9. Terminal Code Q not available with VDE certification.
10. Color shown is Visi and Legend with remainder of rocker black. Dual = ON-OFF/I-O legend.
11. Legend on Push-to-reset bezel/shroud is white with single color actuator codes R & U. Legend on Push-To-Reset bezel/shroud matches Visi-Color of rocker with actuator codes N & O. Rockerguard available with actuator codes C through K

Configure Complete Part Number > | Browse Standard Parts >

Circuit & Terminal Diagrams

Rocker

inches [millimeters]

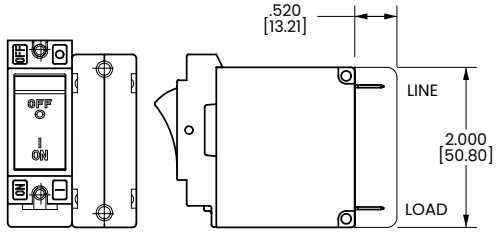


CIRCUIT CODE	AUX SWITCH CODE
A	0
B C	0
A	1 2 3 4
B C	1 2 3 4
D E	0
H	0
F G	0
K	0

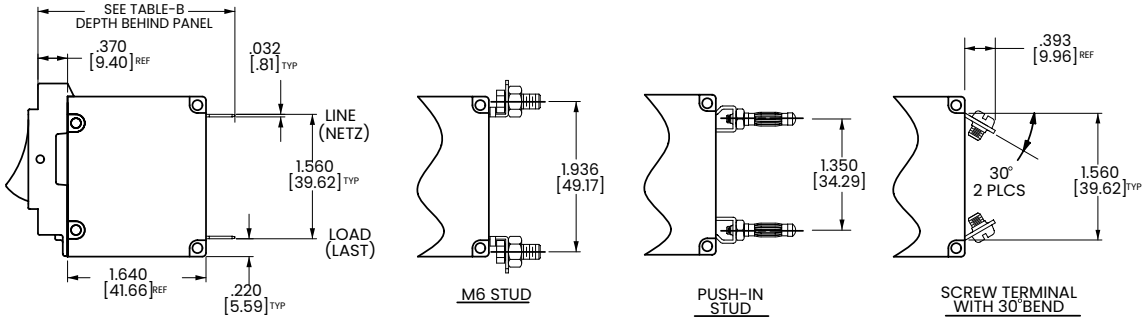
TABLE B

TERMINAL DESCRIPTION		DEPTH BEHIND PANEL
MAIN	TAB (Q.C.)	2.370[60.20]
	SCREW TYPE	2.402[61.01]
SHUNT,RELAY & DUAL COIL	TAB (Q.C.)	2.577[65.46]
	SCREW #8-32 W/UPTURNED LUGS	2.734[69.44]
AUX. SWITCH*	.093 TAB (Q.C.)	2.465[62.61]
	.110 TAB (Q.C.)	2.559[65.00]
	SOLDER TYPE	2.340[59.44]

*AVAILABLE ON SERIES TRIP AND SWITCH ONLY CIRCUITS WHEN CALLED FOR ON MULTI-POLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, AS SHOWN IN MULTI-POLE INDENTIFICATION SHEME.



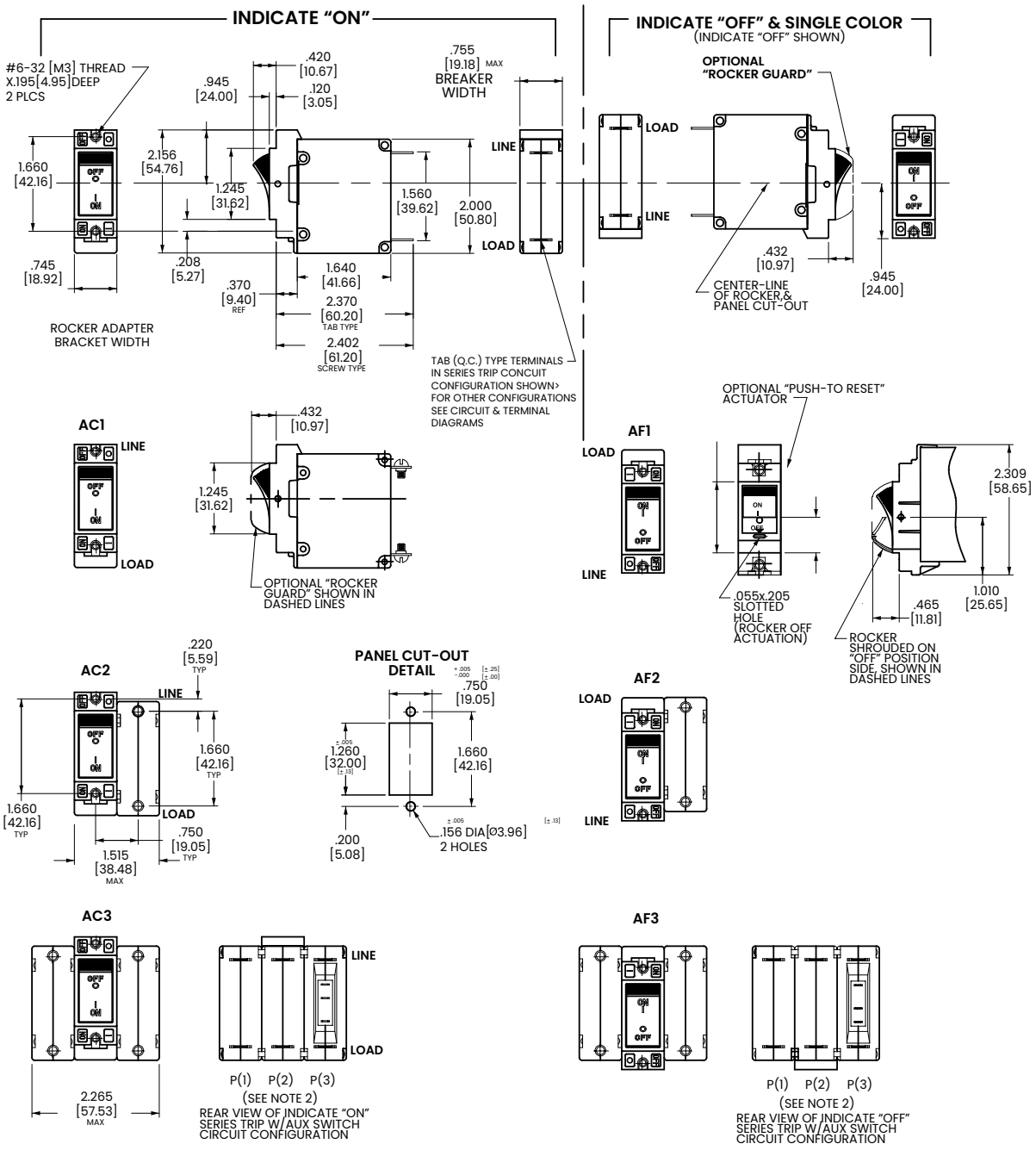
BARRIER FOR UL-RECOGNIZED MULTI-POLE BREAKERS



Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.
2 Schematic shown represents current trip circuit.
3 Circuits shown for >30 amps / VDE.

Dimensional Specs Rocker

inches [millimeters]

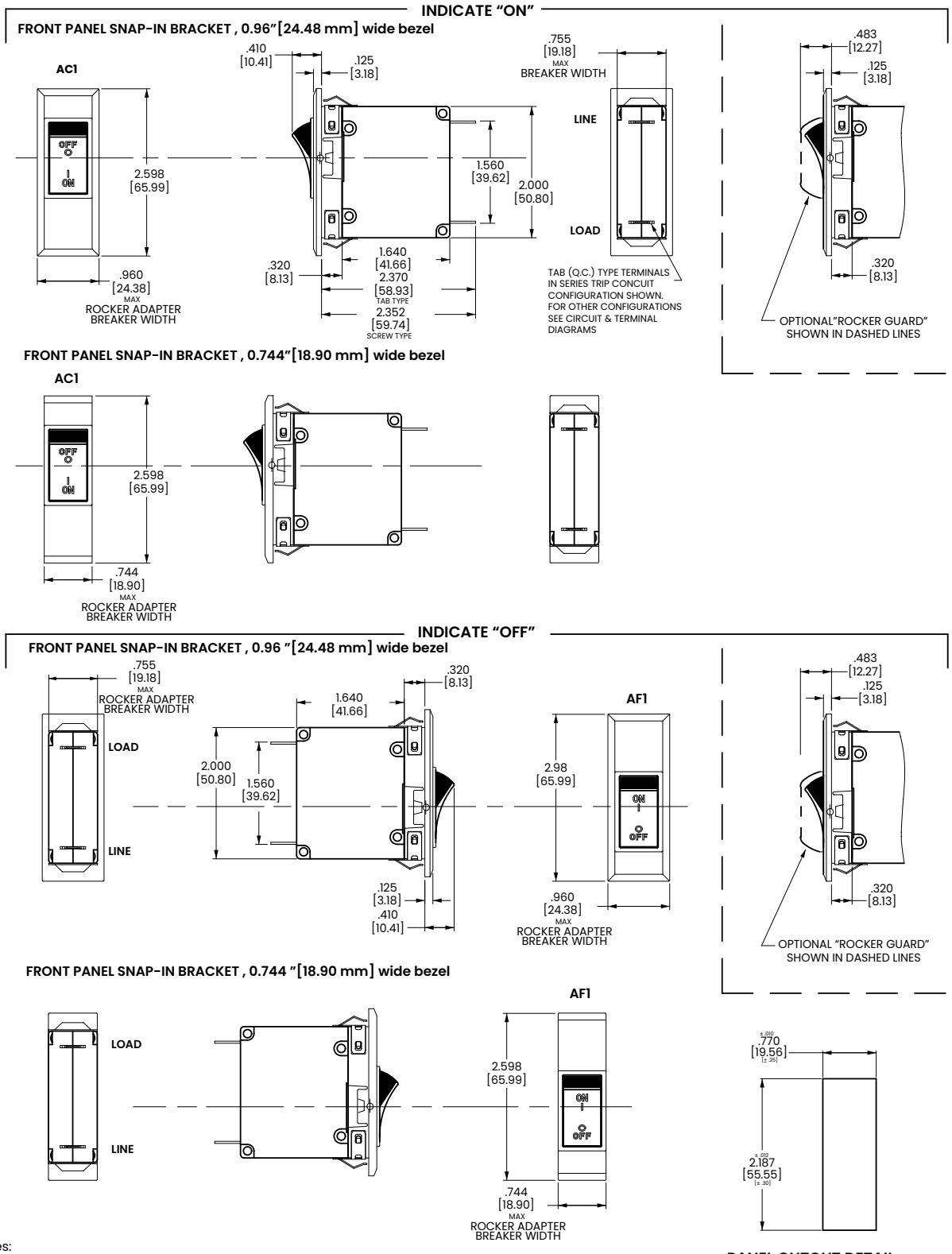


Notes:
1 Dimensions apply to all variations shown. Notice that circuit breaker line & load terminal orientation on indicate OFF is opposite of indicate ON.
2 For pole orientation with horizontal legend, rotate front view clockwise 90°.
3 Tolerance ± 0.20 [.51] unless otherwise specified.

Dimensional Specs

Rocker Snap-In Bracket

inches [millimeters]



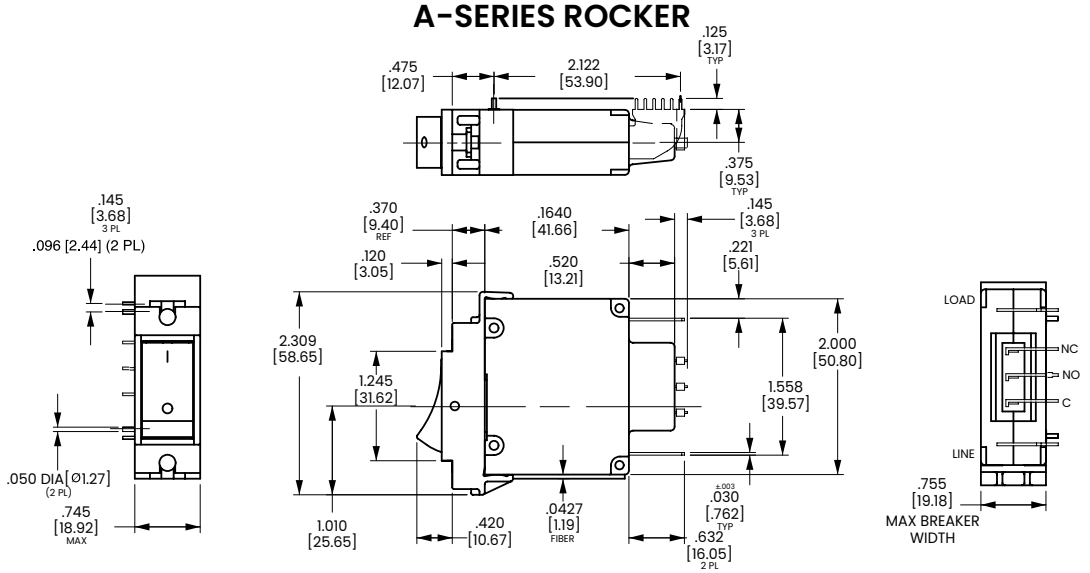
Notes:

1 Dimensions apply to all variations shown. Notice that circuit breaker line & load terminal
2 For pole orientation with horizontal legend, rotate front view clockwise 90°. Orientation on indicate "OFF" is opposite of indicate "ON"
3 Recommended panel thickness: .04 0 [1.02] to .100 [2.54]
4 Tolerance ±.020 [.51] unless otherwise specified.

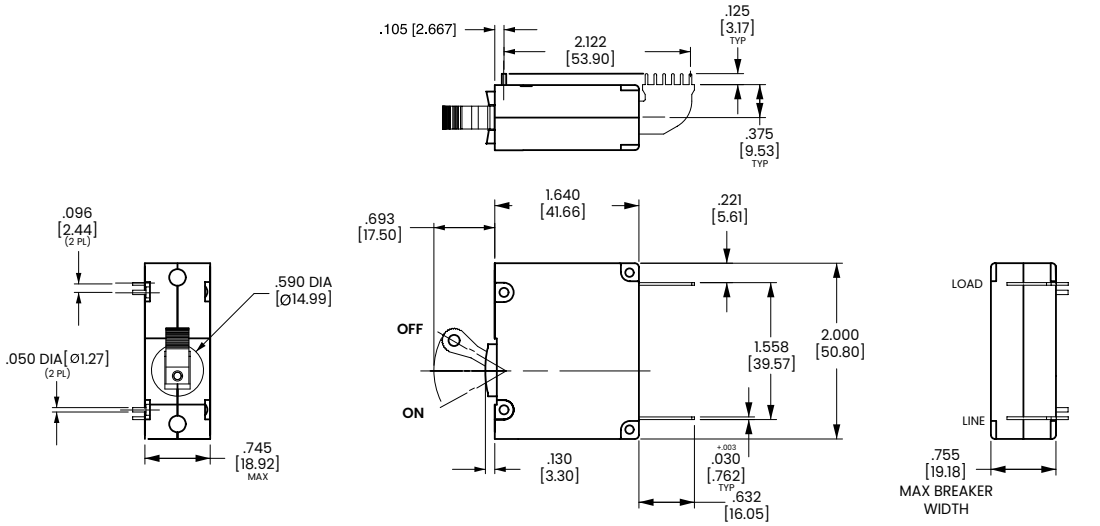
PC Terminal Diagrams

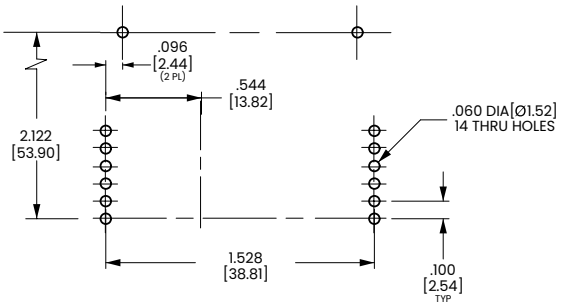
inches [millimeters]

A-SERIES ROCKER

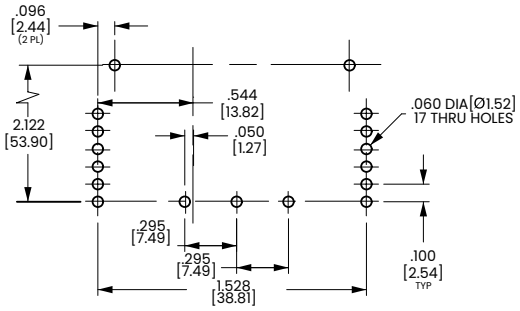


A-SERIES HANDLE





P.C. FOOT PRINT



P.C. FOOT PRINT WITH AUX. SWITCH

Notes:
1 Drawing illustrates A-Series with VDE certification.
2 Tolerance ± 0.20 [.51] unless otherwise specified

Ordering Scheme

Flat Rocker - UL 1077 Recognized

Sample Part Number	A	1	1	-	B	0	-	24	-	630	-	2	3	1	-	E
Selection	1	2	3		4	5		6		7		8	9	10		11

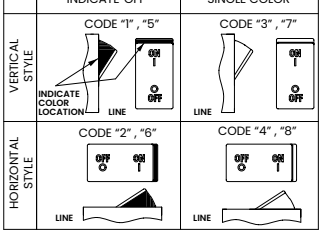
1. SERIES

A

2. ACTUATOR [1]

Two Color Visi-Rocker
1 Indicate OFF, vertical legend
2 Indicate OFF, horizontal legend
Single color
3 Vertical legend
4 Horizontal legend
Push-To-Reset, Visi-Rocker
5 Indicate OFF, vertical legend
6 Indicate OFF, horizontal legend
Push-To-Reset , Single color
7 Vertical legend
8 Horizontal legend

ROCKER STYLE DESCRIPTIONS



3. POLES [2]

1	One	**2**	Two	**3**	Three

4. CIRCUIT

A [3] Switch Only (No Coil)
B Series Trip (Current)
C Series Trip (Voltage)
D [4] Shunt Trip (Current)
E [4] Shunt Trip (Voltage)
F [4] Relay Trip (Current)
G [4] Relay Trip (Voltage)
H [4,5] Dual Coil with Shunt Trip Voltage Coil
K [4,5] Dual Coil with Relay Trip Voltage Coil

5. AUXILIARY / ALARM SWITCH [6,7]

0 without Aux Switch
1 S.P.D.T., 0.093 Q.C. Term.
2 S.P.D.T., 0.110 Q.C. Term.
5 S.P.S.T., 0.093 Q.C. Term. (Gold Contacts)
7 S.P.S.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

03 DC 50/60Hz, Switch Only
10 [6] DC Instantaneous
11 DC Ultra Short
12 DC Short
14 DC Medium
16 DC Long
20 [6] 50/60Hz Instantaneous
21 50/60Hz Ultra Short
22 50/60Hz Short
24 50/60Hz Medium
26 50/60Hz Long
30 DC, 50/60Hz Instantaneous
31 DC, 50/60Hz Ultra Short
32 DC, 50/60Hz Short
34 DC, 50/60Hz Medium
36 DC, 50/60Hz Long
42 [9] 50/60Hz Short, High-inrush
44 [9] 50/60Hz Medium, High-inrush
46 [9] 50/60Hz Long, High-inrush
52 [9] DC, Short, High-inrush
54 [9] DC, Medium, High-inrush
56 DC, Long, High-inrush

7. CURRENT RATING (AMPERES)

CODE	AMPERES						
020	0.020	**225**	0.250	**420**	2.000	**611**	11.000
025	0.025	**230**	0.300	**522**	2.250	**711**	11.500
030	0.030	**235**	0.350	**527**	2.750	**612**	12.000
035	0.035	**240**	0.400	**430**	3.000	**712**	12.500
040	0.040	**245**	0.450	**435**	3.500	**613**	13.000
045	0.045	**250**	0.500	**440**	4.000	**614**	14.000
050	0.050	**255**	0.550	**445**	4.500	**615**	15.000
055	0.055	**260**	0.600	**450**	5.000	**616**	16.000
060	0.060	**265**	0.650	**455**	5.500	**617**	17.000
065	0.065	**270**	0.700	**460**	6.000	**618**	18.000
070	0.070	**275**	0.750	**465**	6.500	**620**	20.000
075	0.075	**280**	0.800	**470**	7.000	**622**	22.000
080	0.080	**285**	0.850	**475**	7.500	**624**	24.000
085	0.085	**290**	0.900	**480**	8.000	**625**	25.000
090	0.090	**295**	0.950	**485**	8.500	**630**	30.000
095	0.095	**410**	1.000	**490**	9.000	**635** [8]	35.000
210	0.100	**512**	1.250	**495**	9.500	**640** [8]	40.000
215	0.150	**415**	1.500	**610**	10.000	**645** [8]	45.000
220	0.200	**517**	1.750	**710**	10.500	**650** [8]	50.000

OR VOLTAGE COIL (NORMAL RATED VOLTAGE) [8]

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		

Configure Complete Part Number > Browse Standard Parts >

8. TERMINAL [11]

1 [12] Push-On 0.250 Tab (Q.C.)
2 Screw 8-32 with upturned lugs
3 [13] Screw 8-32 (Bus Type)
4 Screw 10-32 with upturned lugs
5 [13] Screw 10-32 (Bus Type)
6 Screw 8-32 with upturned lugs & 30° bend
7 Screw 8-32 (Bus Type) & 30° bend
8 Screw 10-32 with upturned lugs & 30° bend
9 Screw 10-32 (Bus Type) & 30° bend
B Screw M5 with upturned lugs
C Screw, M4 with upturned lugs
E [13] Screw M4 (Bus Type)
F Screw M5 with upturned lugs & 30° bend
G Screw M5 (Bus Type) & 30° bend
H [13] Screw M5 (Bus Type)
L [14] 0.250 Q.C./ Solder Lug
M [13] M6 Threaded Stud
P [15] Printed Circuit Board Terminals
Q Push-In Stud
R Screw, M4 with upturned lugs & 30° Bend
S [16] Push-On 0.110 Tab (Q.C.) & 30° bend
T Screw, M4 with upturned lugs

9. ACTUATOR COLOR & LEGEND

Actuator or Visi-Color [17]	Marking: ON-OFF	Marking: Dual [17]	Marking Color: Single Color	Marking Color: Visi-Rocker
White	**B**	**1**	Black	White
Black	**D**	**2**	White	n/a
Red	**G**	**3**	White	Red
Green	**J**	**4**	White	Green
Blue	**L**	**5**	White	Blue
Yellow	**N**	**6**	Black	Yellow
Gray	**Q**	**7**	Black	Gray
Orange	**S**	**8**	Black	Orange

10. MOUNTING / BARRIERS [18]

STANDARD ROCKER BEZEL Threaded Insert, 2 per pole FLAT ROCKER ACTUATOR		BARRIERS
1	6-32 x 0.195 inches	no
A	6-32 X 0.195 inches (multi-pole units only)	yes
2	ISO M3 x 5mm	no
B	ISO M3 x 5mm (multi-pole units only)	yes
RECESSED OFF SIDE ROCKER ACTUATOR [19]		
5	6-32 x 0.195 inches	no
E	6-32 x 0.195 inches (multi-pole units only)	yes
6	ISO M3 x 5mm	no
F	ISO M3 x 5mm (multi-pole units only)	yes
PUSH-TO-RESET BEZEL,Threaded Insert, 2 per pole		
3	6-32 x 0.195 inches	no
C	6-32 x 0.195 inches (multi-pole units only)	yes
4	ISO M3 x 5mm	no
D	ISO M3 x 5mm (multi-pole units only)	yes

11. AGENCY APPROVAL

C UL Recognized & CSA Accepted
E TUV Certified, UL Recognized & CSA Accepted
I UL Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted

Notes:
1 Push-To-Reset actuators have OFF portion of rocker shrouded.
2 Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.
3 Switch Only circuits, rated up to 50 amps & 3 poles. Only available when tied to a protected pole. For .02 to 30 amps, select Current Code 630. For 35 - 50 amps, select Current Code 650.
4 Available with terminal Codes 1, 2 and 3. Current Rating limited to 30 amps maximum.
5 Consult factory for Dual Coil options, as special catalog number is required. With Shunt construction, Dual Coils will trip instantaneously on line voltage. Dual coils require 30VA minimum power to trip and are rated for intermittent duty only.
6 Auxiliary Switch breakers with Series Trip & Switch Only circuits: ≤ 30A, are supplied with standard half shells. 30-50A are supplied with extended boat (B-Style) half shells.
7 On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.
8 Separate pole type voltage coils not rated for continuous duty. Available only with delay codes 10 & 20.
9 Available with Circuit Codes B & D only. UL Recognized, CSA Accepted & TUV Certified to 50 amps.
10 UL Recognition, CSA Acceptance & TUV Certification available in one and two pole breakers.
11 Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G, H, M and Q.
12 Terminal Code 1: Available up to 30 amps, but not recommended over 20 amps.
13 Terminal Codes 3, 5 E & H (Bus Type) with TUV, are supplied with Lock Washers; Terminal Code M (M6 Threaded Stud) with TUV is supplied with Lock and Flat Washers. These breakers are only TUV Certified when the washers are used.
14 TUV Cert. available up to 12 amps. UL Rec. & CSA Accepted available up to 30 amps.
15 Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 50 amps with UL Recognition, CSA Accepted & TUV Certification, with Circuit Codes A, B and C. Two pole breakers with Terminal Code P (Printed Circuit Board) are avail able up to 40 amps with UL Recognition and CSA Accepted with Circuit Codes A, B & C.
16 Terminal Code S used on voltage coil circuit constructions only.
17 Color shown is visi & legend with remainder of rocker black, Dual = ON-OFF/I-O legend.
18 Legend on Push-to-reset bezel/shroud is white with single color actuator codes 7 & 8. Legend on Push-To-Reset bezel/shroud matches Visi-Color of rocker with actuator codes 5 & 6.
19 Recessed "off-side" available with actuator codes 1, 2, 3 & 4. Legends on rocker are available in ink stamping only.

Ordering Scheme

Flat Rocker - UL 489A Listed

Sample Part Number	A	1	1	-	B	0	-	14	-	630	-	2	3	1	-	M	T
Selection	1	2	3		4	5		6		7		8	9	10		11	12

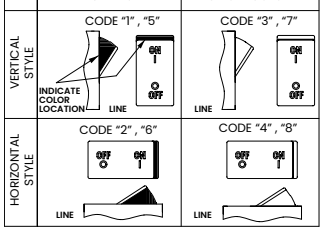
1. SERIES

A

2. ACTUATOR [1]

Two Color Visi-Rocker
1 Indicate OFF, vertical legend
2 Indicate OFF, horizontal legend
Single color
3 Vertical legend
4 Horizontal legend
Push-To-Reset, Visi-Rocker
5 Indicate OFF, vertical legend
6 Indicate OFF, horizontal legend
Push-To-Reset , Single color
7 Vertical legend
8 Horizontal legend

ROCKER STYLE DESCRIPTIONS



3. POLES [2]

1	One	**2**	Two	**3**	Three

4. CIRCUIT

B	Series Trip (Current)

5. AUXILIARY / ALARM SWITCH [3]

0	without Aux Switch	**7**	S.P.S.T., 0.110 Q.C. Term. (Gold Contacts)
1	S.P.D.T., 0.093 Q.C. Term.	**8**	S.P.S.T., 0.187 Q.C. Term.
2	S.P.D.T., 0.110 Q.C. Term.	**9**	S.P.D.T., 0.187 Q.C. Term.

6. FREQUENCY & DELAY

11	DC Ultra Short	**52**	DC, Short, High-inrush
12	DC Short	**54**	DC, Medium, High-inrush
14	DC Medium	**56**	DC, Long, High-inrush
16	DC Long		

7. CURRENT RATING (AMPERES)

CODE	AMPERES						
020	0.020	**225**	0.250	**420**	2.000	**611**	11.000
025	0.025	**230**	0.300	**522**	2.250	**711**	11.500
030	0.030	**235**	0.350	**527**	2.750	**612**	12.000
035	0.035	**240**	0.400	**430**	3.000	**712**	12.500
040	0.040	**245**	0.450	**435**	3.500	**613**	13.000
045	0.045	**250**	0.500	**440**	4.000	**614**	14.000
050	0.050	**255**	0.550	**445**	4.500	**615**	15.000
055	0.055	**260**	0.600	**450**	5.000	**616**	16.000
060	0.060	**265**	0.650	**455**	5.500	**617**	17.000
065	0.065	**270**	0.700	**460**	6.000	**618**	18.000
070	0.070	**275**	0.750	**465**	6.500	**620**	20.000
075	0.075	**280**	0.800	**470**	7.000	**622**	22.000
080	0.080	**285**	0.850	**475**	7.500	**624**	24.000
085	0.085	**290**	0.900	**480**	8.000	**625**	25.000
090	0.090	**295**	0.950	**485**	8.500	**630**	30.000
095	0.095	**410**	1.000	**490**	9.000	**635**[4]	35.000
210	0.100	**512**	1.250	**495**	9.500	**640**[4]	40.000
215	0.150	**415**	1.500	**610**	10.000	**645**[4]	45.000
220	0.200	**517**	1.750	**710**	10.500	**650**[4]	50.000

8. TERMINAL [11]

2	Screw 8-32 with upturned lugs	**9**	Screw 10-32 (Bus Type) & 30° bend
3 [7]	Screw 8-32 (Bus Type)	**B**	Screw M5 with upturned lugs
4	Screw 10-32 with upturned lugs	**F**	Screw M5 with upturned lugs
5 [7]	Screw 10-32 (Bus Type)	**G**	Screw M5 (Bus Type) & 30° bend
6	Screw 8-32 with upturned lugs & 30° bend	**H**	Screw M5 (Bus Type)
8	Screw 10-32 with upturned lugs & 30° bend	**M** [7]	M6 Threaded Stud
		P [8]	Printed Circuit Board Terminals
		Q [9]	Push-In Stud

9. ACTUATOR COLOR & LEGEND

Actuator or Visi-Color [11]	Marking: ON-OFF	Marking: Dual [11]	Marking Color: Single Color	Marking Color: Visi-Rocker
White	**B**	**1**	Black	White
Black	**D**	**2**	White	n/a
Red	**G**	**3**	White	Red
Green	**J**	**4**	White	Green
Blue	**L**	**5**	White	Blue
Yellow	**N**	**6**	Black	Yellow
Gray	**Q**	**7**	Black	Gray
Orange	**S**	**8**	Black	Orange

10. MOUNTING / BARRIERS [12]

		BARRIERS
	STANDARD ROCKER BEZEL Threaded Insert, 2 per pole FLAT ROCKER ACTUATOR	
1	6-32 x 0.195 inches	no
A	6-32 X 0.195 inches (multi-pole units only)	yes
2	ISO M3 x 5mm	no
B	ISO M3 x 5mm (multi-pole units only)	yes
	RECESSED OFF SIDE ROCKER ACTUATOR	
5	6-32 x 0.195 inches	no
E	6-32 x 0.195 inches (multi-pole units only)	yes
6	ISO M3 x 5mm	no
F	ISO M3 x 5mm (multi-pole units only)	yes
	PUSH-TO-RESET BEZEL,Threaded Insert, 2 per pole	
3	6-32 x 0.195 inches	no
C	6-32 x 0.195 inches (multi-pole units only)	yes
4	ISO M3 x 5mm	no
D	ISO M3 x 5mm (multi-pole units only)	yes

11. MAXIMUM APPLICATION RATING

M	80 DC

12.AGENCY APPROVAL

T	UL489A Listed
J	UL489A Listed, TUV Certified

Notes:
1 Push-To-Reset actuators have OFF portion of rocker shrouded.
2 Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.
3 Auxiliary Switch breakers with Series Trip circuits: ≤ 30A, are supplied with standard half shells. 30-50A are supplied with extended boat (B-Style) half shells.
4 VDE Certification available with single pole breakers only. UL489A Listing avail able with one and two pole breakers.
5 Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G, H, M and Q.
6 Terminal Code 1 (Push-On) available up to 25 amps with TUV or VDE Certification and 30 amps with UL489A Listing, but is not recommended over 20 amps.
7 Terminal Codes 3, 5 and H (Bus Type) with TUV or VDE, are supplied with Lock Washers, and Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only TUV or VDE Certified when the washers are used.
8 Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL489A Listing.
9 Terminal Code Q not available with VDE certification.
10 Color shown is Visi and Legend with remainder of rocker black. Dual = ON-OFF/I-O legend.
11 Legend on Push-to-reset bezel/shroud is white with single color actuator codes R & U.
12 Legend on Push-To-Reset bezel/shroud matches Visi-Color of rocker with actua tor codes N & O. Rockerguard available with actuator codes C through K

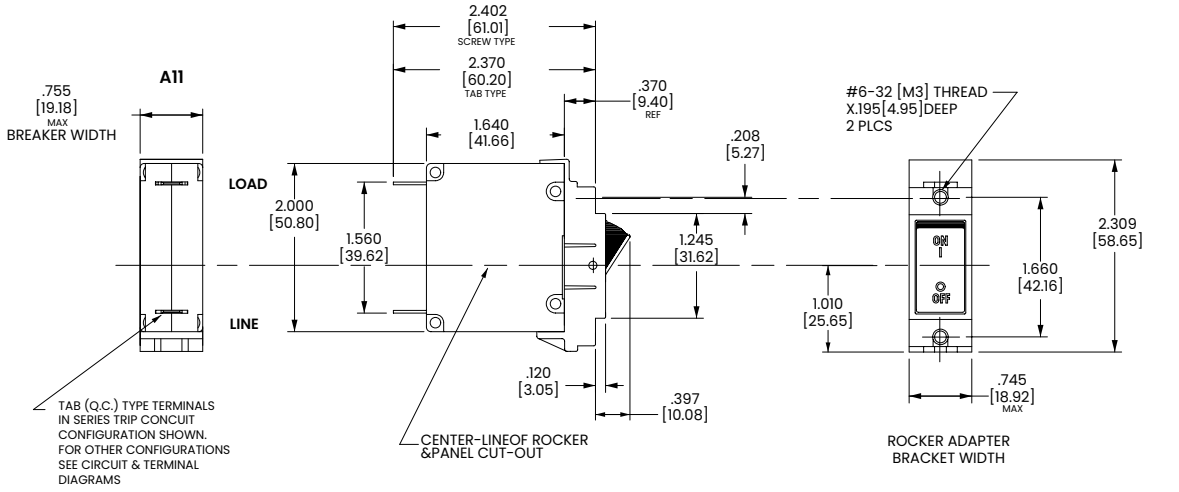
Configure Complete Part Number > | Browse Standard Parts >

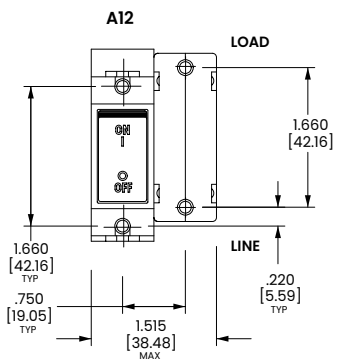
Dimensional Specs

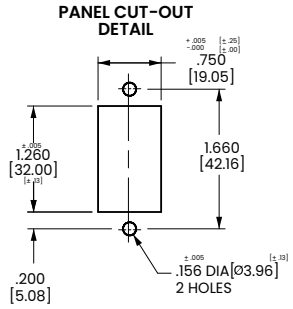
Flat Rocker

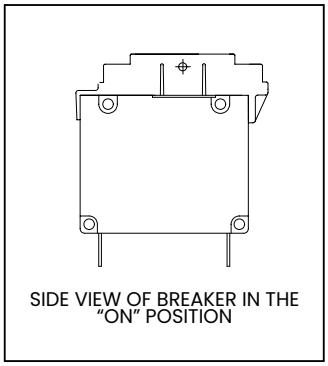
inches [millimeters]

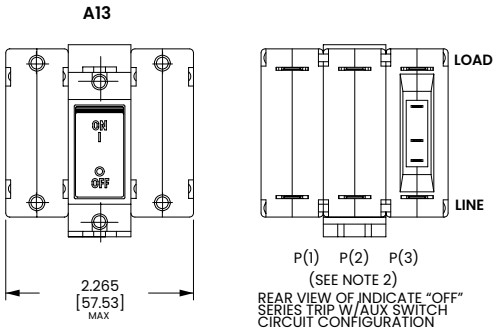
INDICATE "OFF" & SINGLE COLOR
(INDICATE "OFF" SHOWN)

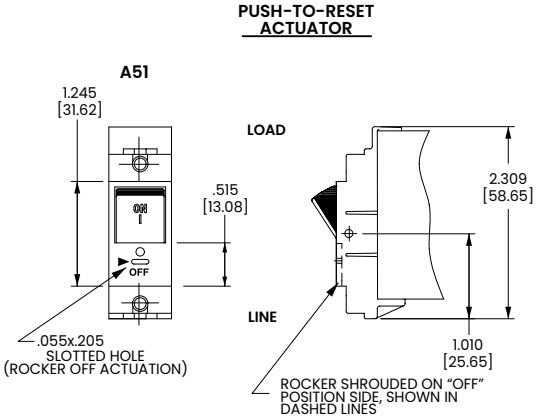


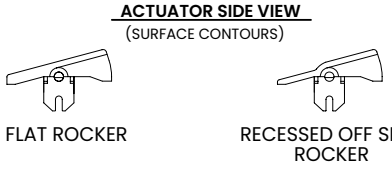












Notes:
1 For pole orientation with horizontal legend, rotate front view clockwise 90°.
2 Tolerance ± 0.20 [.51] unless otherwise specified.

Ordering Scheme

Recessed Paddle

Sample Part Number	A	Y	1	-	B	0	-	14	-	630	-	2	3	1	-	M	T
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

A

2. ACTUATOR [1]

Y	Single Color Recessed Paddle Actuator with Vertical Legends

3. POLES [2]

1	One	**2**	Two	**3**	Three

4. CIRCUIT

A	Switch-Only (No Coil)	**F**	Relay Trip (Current)
B	Series Trip (Current)	**G**	Relay Trip (Voltage)
C	Series Trip (Voltage)	**H**	Dual Coil with Shunt Trip Voltage Coil
D	Shunt Trip (Current)	**K**	Dual Coil with Shunt Trip Current Coil
E	Shunt Trip (Voltage)		

5. AUXILIARY SWITCH

0	without Aux Switch
1	S.P.D.T. with 0.093 Q.C. Terminals
2	S.P.D.T. with 0.110 Q.C. Terminals
3	S.P.D.T. with 0.139 Solder Lug Terminals
5	S.P.D.T. with 0.093 Q.C. Terminals (Gold Contacts)
6	S.P.S.T.-N.O. with 0.139 Solder Lug Terminals
7	S.P.S.T.-N.O. with 0.110 Q.C. Terminals (Gold Contacts)
8	S.P.S.T.-N.O. with 0.187 Q.C. Terminals
9	S.P.D.T. with 0.187 Q.C. Terminals

6. FREQUENCY & DELAY [3]

3	DC, 50/60 Hz Switch Only	**24**	50/60 Hz Medium
10	DC Instantaneous	**26**	50/60 Hz Long
11	DC Ultra Short	**42**	50/60 Hz Short High-inrush
12	DC Short	**44**	50/60 Hz Medium High-inrush
14	DC Medium	**46**	50/60 Hz Long High-inrush
16	DC Long	**52**	DC, Short, High-inrush
20	50/60 Hz Instantaneous	**54**	DC, Medium, High-inrush
21	50/60 Hz Ultra Short	**56**	DC, Long, High-inrush
22	50/60 Hz Short		

7. CURRENT RATING (AMPERES) [4]

CODE	AMPERES						
020	0.020	**225**	0.250	**420**	2.000	**611**	11.000
025	0.025	**230**	0.300	**522**	2.250	**711**	11.500
030	0.030	**235**	0.350	**527**	2.750	**612**	12.000
035	0.035	**240**	0.400	**430**	3.000	**712**	12.500
040	0.040	**245**	0.450	**435**	3.500	**613**	13.000
045	0.045	**250**	0.500	**440**	4.000	**614**	14.000
050	0.050	**255**	0.550	**445**	4.500	**615**	15.000
055	0.055	**260**	0.600	**450**	5.000	**616**	16.000
060	0.060	**265**	0.650	**455**	5.500	**617**	17.000
065	0.065	**270**	0.700	**460**	6.000	**618**	18.000
070	0.070	**275**	0.750	**465**	6.500	**620**	20.000
075	0.075	**280**	0.800	**470**	7.000	**622**	22.000
080	0.080	**285**	0.850	**475**	7.500	**624**	24.000
085	0.085	**290**	0.900	**480**	8.000	**625**	25.000
090	0.090	**295**	0.950	**485**	8.500	**630**	30.000
095	0.095	**410**	1.000	**490**	9.000	**635**	35.000
210	0.100	**512**	1.250	**495**	9.500	**640**	40.000
215	0.150	**415**	1.500	**610**	10.000	**645**	45.000
220	0.200	**517**	1.750	**710**	10.500	**650**	50.000

OR VOLTAGE COIL (NORMAL 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. TERMINAL

1	Push-On 0.250 Tab (Q.C.)	**B**	Screw M5 with upturned lugs
2	Screw 8-32 with upturned lugs	**C**	Screw, M4 with upturned lugs
3 [7]	Screw 8-32 (Bus Type)	**F**	Screw M5 with upturned lugs
4	Screw 10-32 with upturned lugs	**G**	Screw M5 (Bus Type) & 30° bend
5 [7]	Screw 10-32 (Bus Type)	**H**	Screw M5 (Bus Type)
6	Screw 8-32 with upturned lugs & 30° bend	**M**	M6 Threaded Stud
7	Screw 8-32 (Bus Type) & 30° bend	**P**	Printed Circuit Board Terminals
8	Screw 10-32 with upturned lugs & 30° bend	**Q**	Push-In Stud
9	Screw 10-32 (Bus Type) & 30° bend	**R**	Screw, M4 with upturned lugs & 30° Bend
		S	Screw, M5 with upturned lugs
		T	Screw, M4 with upturned lugs

9. ACTUATOR COLOR & LEGEND [5]

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

10. MOUNTING / BARRIERS

		BARRIERS
1	6-32 x 0.195 inches	no
A	6-32 X 0.195 inches (multi-pole units only)	yes
2	ISO M3 x 5mm	no
B	ISO M3 x 5mm (multi-pole units only)	yes

11. MAXIMUM APPLICATION RATING [6]

A	65 VDC
C	120/240 VAC (Available only on 2 or 3-Pole units)
K	120 VAC
M	80 DC

12.AGENCY APPROVAL [7]

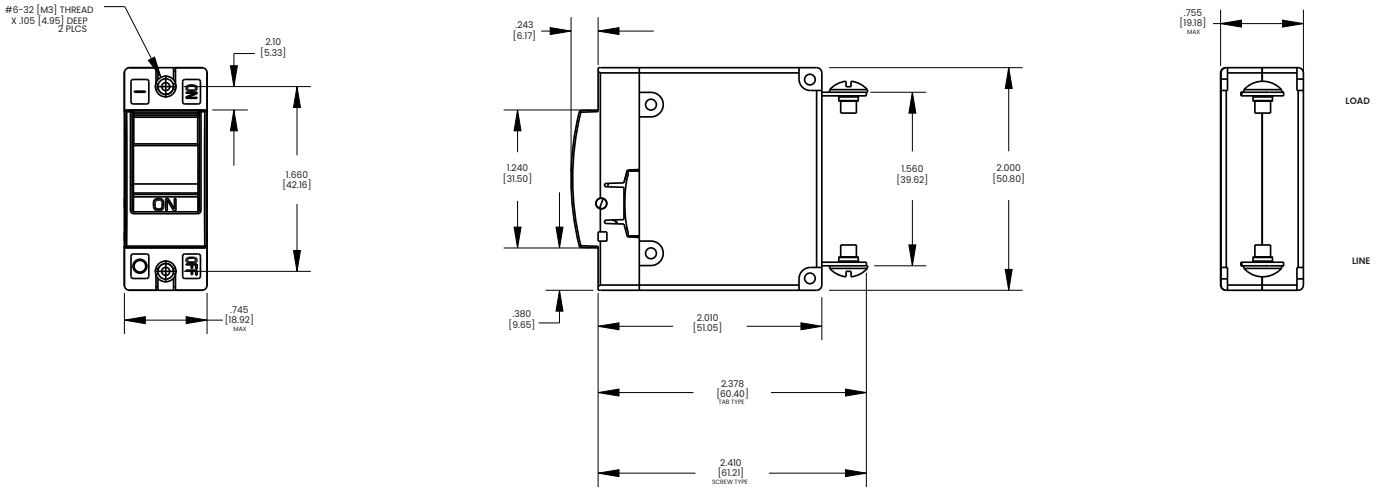
A	Without Approvals
C	UL Recognized and CSA Accepted
T	UL 489A

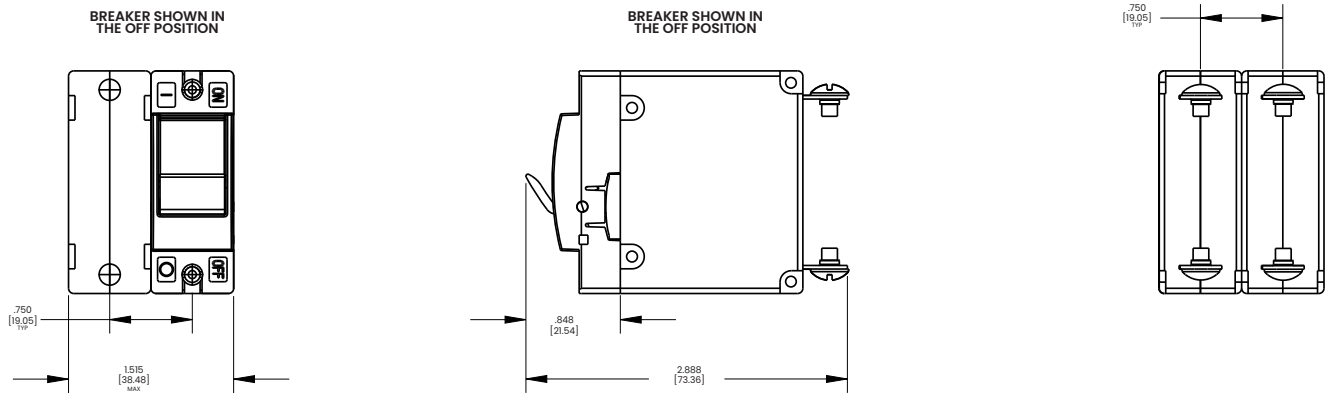
Notes:
1. All standard catalog numbers are supplied with Vertical Legends. For Horizontal or other non-standard legends, choose "X" and order as a special catalog number.
2. For rating (T) 2 & 3 Pole not available.
3. Frequency and Time Delay ratings of (03, 20, 21, 22, 24, 26, 42, 44, 46) not available with approval T.
4. Voltage Coil Ratings starting with (J, K, or L) not available with approval T.
5. "OFF and/or "O" Legends are on Bracket and are only visible when the Paddle Actuator is in the off position.
6. Maximum Application Ratings (C & K) not available with approval T.
7. Not all approvals are available in all constructions. Consult factory for details.

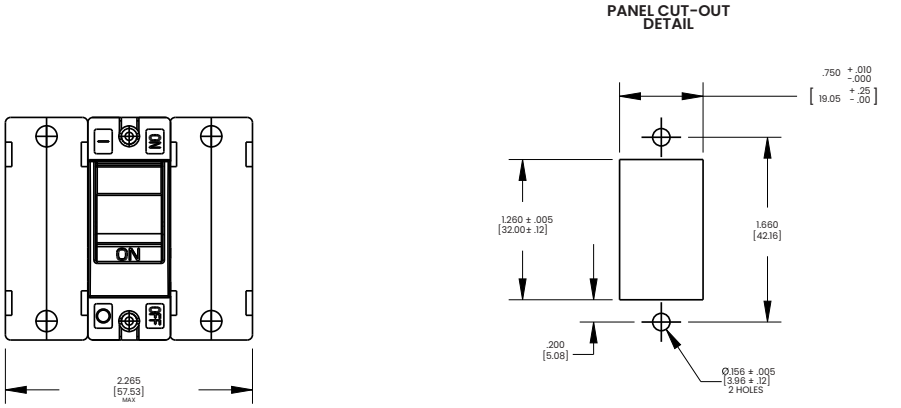
Configure Complete Part Number > | Browse Standard Parts >

Dimensional Specs Recessed Paddle

inches [millimeters]







Notes:
1 Tolerance ± 0.20 [.51] unless otherwise specified

Authorized Sales Representatives and Distributors

Click on a region of the map below to find your local representatives and distributors or visit www.carlingtech.com/findarep.

About Carling

Founded in 1920, Carling Technologies is a leading manufacturer of electrical and electronic switches and assemblies, circuit breakers, electronic controls, power distribution units, and multiplexed power distribution systems. With six ISO9001 and IATF16949 registered manufacturing facilities and technical sales offices worldwide, Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! To learn more about Carling please visit www.carlingtech.com/company-profile.

To view all of Carling's environmental, quality, health & safety certifications please visit www.carlingtech.com/environmental-certifications.

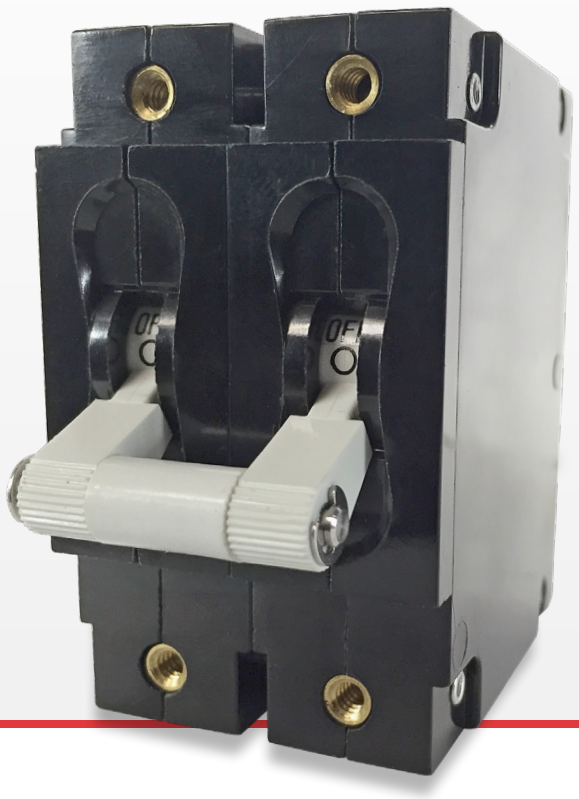
Carling Technologies®

C-Series

Hydraulic-Magnetic Circuit Breaker

PRODUCT WEBPAGE

request sample, configure part



Compact Circuit Breaker with High Amperage and Voltage Capabilities

Compact yet robust, the C-Series hydraulic-magnetic circuit breaker is designed for high amperage and voltage applications. C-Series breakers are available as a one to six pole configuration and are rated up to 100 amps, 480VAC/80VDC or 240VAC/125VDC for UL 489 configurations. Parallel pole options offer ratings from 100-250 amps. The C-Series employs a unique arc chute design which allows for higher interrupting capacities of up to 10,000 amps.

1-6	250	480	125
Poles	Amps Max	VAC Max	VDC Max

Typical Applications

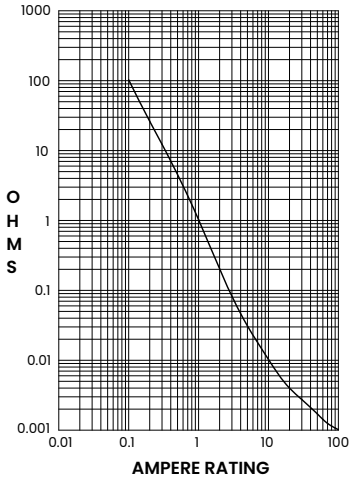
- Marine
- Datacom/Telecom
- Renewable Energy
- Generators & Welders
- Military

Tech Spec

Electrical

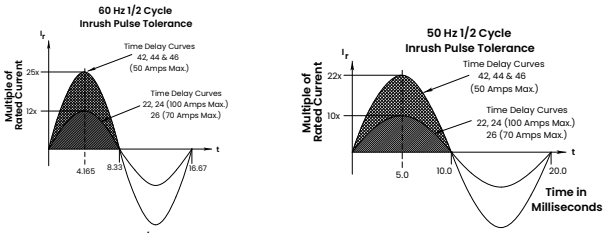
Maximum Voltage	AC, 480 WYE/277 VAC, 50/60 Hz (see Table A.) UL489: AC,240 VAC. (See Table D),50/60 Hz, 125 VDC
Current Ratings	Standard current coils: 0.100, 0.250, 0.500, 0.750, 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 25.0, 30.0, 35.0, 40.0, 50.0, 60.0, 70.0, 80.0, 90.0 and 100 amps. Other ratings available, 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 & TUV1.0 125 VAC.
Insulation Resistance	Minimum of 100 Megohms at 500 VDC.
Dielectric Strength	UL, CSA: 1960 V 50/60 Hz for oneminute 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.

RESISTANCE, IMPEDANCE VALUES
from Line to Load Terminals
(Values Based on Series Trip Circuit Breaker



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 5.0	15
5.1 - 20.0	25
20.1 - 50.0	35

Pulse Tolerance Curves



Mechanical

Endurance	10,000 ON-OFF operations @ 6 per minute; with rated current & voltage.
Trip Free	All 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 Config.	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 & midtrip 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 100Gs,6mssawtooth while carrying rated current pernMethod 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	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

*Manufacturer reserves the right to change product specification without prior notice.

Tech Specs

Tables

Table A: Lists UL Recognized & CSA Accepted configurations and performance capabilities as a component supplementary protector

Component Supplementary Protectors									
Circuit Configuration	Voltage			Current Rating		Short Circuit Capacity (Amps)		Application Codes		Construction Notes
						UL / CSA				
	Max. Rating	Frequency	Phase	Full Load Amps	General Purpose Amps	With Backup Fuse	Without Backup Fuse	UL	CSA	
Series	32	DC	---	0.02 - 100	---	---	5,000	TC1, OL1, U2	TC1, OL1, U2	---
	48			110 - 150						
	65			0.02 - 70				TC1, 2, OL1, U1	TC1, 2, OL1, U1	
				-	71 - 100			TC1, 2, OL0, U1	TC1, 2, OL0, U1	
	80			0.02 - 70	---		7,500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
				---	71 - 100			TC1, 2, OL0, U1	TC1, 2, OL0, U1	
				0.02 - 70	---		10,000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Must have Agency "L"
				---	71 - 100			TC1, 2, OL0, U1	TC1, 2, OL0, U1	
	125			0.02 - 50	---		5,000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Must have Agency "L"
	125/250							TC1, 2, OL1, U1	TC1, 2, OL1, U1	Must have Agency "L"
	250							TC1, 2, OL1, U1	TC1, 2, OL1, U1	Must have Agency "L". 250 volts requires 2 pole
	125	50 / 60	1	0.02 - 100			3,000	TC1, OL1, U2	TC1, OL1, U2	Per pole rating
	150	DC	---	---	80 - 100		5,000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Must have Agency "L"
					101 - 175			TC1, 2, OL0, U3	---	Must have Agency "L"
										Must have Agency "L" parallel pole
	125/250	50 / 60	1	0.02 - 100	---		3,500	TC1, OL1, U2	TC1, OL1, U2	---
				0.02 - 50			3,000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	2 or 3 poles breaking single phase
				51 - 100			1,000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	2 or 3 poles breaking single phase
				0.02 - 100			5,000	TC1, 2, OL1, U2	TC1, 2, OL1, U2	2 or 3 poles breaking single phase. Agency "L"
	250			0.02 - 50			3,500	TC1, 2, OL1, U2	TC1, 2, OL1, U2	Per pole rating
				0.02 - 100			5,000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Must have Agency "L"
				51 - 70		5,000	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	---
			3	---	0.02 - 100	---	3,000	TC1, 2, OL0, U2	TC1, 2, OL0, U2	
				0.02 - 70	---	5,000	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	3 poles breaking 3 phase
				---	0.02 - 90	---	5,000	TC1, 2, OL0, U1	TC1, 2, OL0, U1	Must have Agency "L"
	277		1	0.02 - 50	---	5,000	--	TC1, 2, OL1, C1	TC1, 2, OL1, C1	---
	480/277		3	0.02 - 30				TC1, 2, OL1, C1	TC1, 2, OL1, C1	3 poles breaking 3 phase
				---				TC1, 2, OL0, C1	TC1, 2, OL0, C1	---
	480		1	0.02 - 30				TC1, 2, OL1, C1	TC1, 2, OL1, C1	2 poles breaking 1 phase
				---				TC1, 2, OL0, C1	TC1, 2, OL0, C1	---
Dual Coil	80	DC	---	0.02 - 50		---	7,500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
	125	50 / 60	1				3,000	TC1, OL1, U2	TC1, OL1, U2	Per pole rating
	125/250						3,500	TC1, OL1, U2	TC1, OL1, U2	2 or 3 poles breaking single phase
							3,000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	2 or 3 poles breaking single phase
	250		3				3,500	TC1, OL1, U2	TC1, OL1, U2	---
							3,000	TC1, OL0, U2	TC1, OL0, U2	Per pole rating
	277		1			5,000	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	---
								TC1, 2, OL1, C1	TC1, 2, OL1, C1	3 poles breaking 3 phase
Shunt	80	DC	---			---	7,500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	---
	277	50 / 60	1			5,000	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
	250		3					TC1, 2, OL1, C1	TC1, 2, OL1, C1	3 poles breaking 3 phase
	480/277			0.02 - 30				TC1, 2, OL1, C1	TC1, 2, OL1, C1	3 poles breaking 3 phase
				---	31 - 50			TC1, 2, OL0, C1	TC1, 2, OL0, C1	---
	480		1	0.02 - 30	---			TC1, 2, OL1, C1	TC1, 2, OL1, C1	2 poles breaking 1 phase
				---	31 - 50			TC1, 2, OL0, C1	TC1, 2, OL0, C1	
Relay	80	DC	---	0.02 - 50		---	7,500	TC1, 2, OL1, U1	TC1, 2, OL1, U1	---
	277	50 / 60	1			5,000	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1	
	250		3					TC1, 2, OL1, C1	TC1, 2, OL1, C1	3 poles breaking 3 phase
Switch Only	65	DC	---	71 - 100		---	---	---	---	---

	80			71 - 100						
				---	---					
	125	50 / 60	1	0.02 - 100						
	125/250									2 or 3 poles breaking single phase
	250		3	0.02 - 70						---
	277		1	0.02 - 50						
	480/277		3	0.02 - 30						3 poles breaking 3 phase
				---	31 - 50					---

Notes:

1. Requires branch circuit backup with a UL LISTED Type K5 or RK5 fuse rated 15A minimum and no more than 4 times full load amps not to exceed 125A for 50 Amp or less rating and not to exceed 175 for 51 through 100 Amp rating

Tech Specs

Tables

Table B: Lists UL Recognized and CSA Accepted configurations and performance capabilities as a Manual Motor Controller.

Manual Motor Controllers					
Circuit Configuration	Voltage			Current Rating	Horsepower Ratings
	Max. Rating	Frequency	Phase	Full Load Amps	Max. HP
Series, Shunt & Relay Switch Only	120 [1]	50 / 60	1	0.02 - 50	7 1/2
	250 [1]			0.02 - 20	3
			3		5
	277 [1]		1		3
	480 [2]		3		5

Notes:
1. Requires branch circuit backup with a UL Listed Type K5 or RK5 fuse rated 15A Minimum and no more than 4 times full load amps not to exceed 125A for 50 Amp or less rating and not to exceed 175A for 51 through 100A rating.
2. UL Recognized and CSA Certified at 480V refers to 3 and 4 pole versions used in a 3Ø, WYE connected circuit or a 2 pole version with 2 poles breaking 1Ø and backed up with a series fusing as stated in note 1.

* Shunt and Relay Trip - Voltage Coil Construction not current coils

Table C: Lists UL Recognized, CSA Accepted, VDE and TUV Certified configurations and performance capabilities as a Component Supplementary Protector.

Component Supplementary Protectors													
Circuit Configuration	Voltage			Current Rating		Short Circuit Capacity (Amps)						Application Codes	Construction Notes
						UL / CSA		VDE		TUV			
	Max. Rating	Frequency	Phase	Full Load Amps	General Purpose Amps [1]	With Backup Fuse	Without Backup Fuse	(Inc) With Backup Fuse	(Icn) Without Backup Fuse	(Inc) With Backup Fuse	(Icn) Without Backup Fuse	UL / CSA	
Series	80	DC	---	0.10 - 70	---	---	7,500	---	5,000	5,000	1,500	TC1,2,OL1,U1	---
				71 - 100	71 - 100		10,000			---	5,000	TC1,2,OL0,U1	Agency F, H, J or R
	125			1 - 50	---		5,000		---			TC1,2,OL1,U1	Agency J or R
	250			0.10 - 50			5,000					TC1,2,OL1,U1	2P, Agency J or R
		50 / 60	1	0.10 - 70				3,000	1,500	3,000	1,500		---
				0.10 - 100				---	---	5,000	5,000		Agency J or R
			3	0.10 - 90									
	415			0.10 - 30		5,000 [2]	---	3,000	1,500	3,000	1,500	TC1,2,OL1,C1	Rocker
								5,000	2,500				Handle, Agency F, H, J or R
Dual Coil	80	DC	---	0.10 - 30		---	7,500	---	1,500	5,000		TC1,2,OL1,U1	---
	250	50 / 60	1 & 3				5,000	3,000		3,000			
Shunt	80	DC	---	0.10 - 70			7,500	---	5,000	5,000		TC1,2,OL1,U1	---
	250	50 / 60	1 & 3				5,000	3,000	1,500	3,000		TC1,2,OL1,U1	---
	415		3	0.10 - 30		5,000 [2]	---					TC1,2,OL1,C1	Rocker
								5,000	2,500				Handle, Agency F, H, J or R

Notes:
1. General Purpose ratings for UL/CSA only.
2. Requires branch circuit backup with a UL LISTED Type K5 or RK5 fuse rated 15A minimum and no more than 4 times full load amps not to exceed 125A for 50 Amp or less rating and not to exceed 175 for 51 through 100 Amp rating.

Table D: Lists UL Listed (489), CSA Certified (C22.2 No. 5.1-M) configuration and performance capabilities as a Molded Case Circuit Breaker.

UL489 Listed Branch Circuit Breakers						
Circuit Configuration	Voltage			Current Rating	Interrupting Capacity (Amps)	Construction Notes
	Max. Rating	Frequency	Phase	Full Load Amps	Without Backup Fuse	
Series	80	DC	---	0.10 - 100	50,000 [1]	Limited to 2 Poles Max from 71 - 100 Amps
				101 - 150	10,000	2 Poles - Parallel Poles
				151 - 250		3 Poles - Parallel Poles
	125			0.10 - 100	5,000	1 - 3 Poles
	125 / 250			0.10 - 50		1 or 2 Poles (2 poles required for 250 Volts)
	120	50 / 60	1		10,000	1 - 3 Poles
				51 - 70	5,000	
	120 / 240			0.10 - 50		2 or 3 Poles (1 pole of a 3 pole unit is neutral)
					10,000 [1]	
	240			0.10 - 30	5,000	1 Pole
				0.10 - 20	10,000	2 Poles
	277					1-2 Poles
Dual Coil	120			0.10 - 30		---

Notes:
1 Special catalog number required. Consult factory.

Tech Specs

Tables

Table E: Lists UL Recognized, CSA Accepted configurations and performance capabilities as Protectors, Supplementary for Marine Electrical and Fuel Systems (Guide PEQZ2, File E75596). Ignition Protected per UL 1500. UL Classified Small Craft Electrical Devices, Marine in accordance with ISO 8846 (Guide UZMK, File MQ1515) as Marine Supplementary Protectors.

UL1500 (Marine Ignition Protection)								
Circuit Configuration	Voltage			Current Rating	Interrupting Capacity (Amps)	Application Codes		Construction Notes
	Max Rating	Frequency	Phase	Full Load Amps	Without Backup Fuse	UL	CSA	
Series	48	DC	---	0.02 - 100	5,000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	---
				101 - 150				
	65			0.02 - 100	1,500	TC1, 2, OL0, U1	TC1, 2, OL0, U1	
	80			0.02 - 70		TC1, 2, OL1, U1	TC1, 2, OL1, U1	
	125	50 / 60	1		5,000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	
				71 - 100	1,500			
	250			0.02 - 70		TC1, 2, OL1, U1	TC1, 2, OL1, U1	
				71 - 100				2 Poles Breaking Single Phase

Table F: Lists UL Listed configurations and performance capabilities as Circuit Breakers for use in Communications Equipment (Guide DITT, File E189195), under UL489A.

PARALLEL POLE CONSTRUCTION UL489A Listed for Communications Equipment				
Circuit Configuration	Voltage		Current Rating	Interrupting Capacity (Amps)
	Max. Rating	Frequency	General Purpose Amps	Without Backup Fuse
Series	80	DC	100 - 250	10,000

Agency Approvals

UL 1077	Component Recognition Program as Protectors Supplementary (Guide CCN/QVNU2, File E75596)
UL 508	Switches, Industrial Control (Guide CCN/NRNT2, File E148683)
UL 1500	Protectors, Supplementary for Marine Electrical & Fuel Systems (Guide PEQZ2, File E75596) Ignition Protection
UL 489	Circuit Breakers, Molded Case, (Guide DIVQ, File E129899)
UL 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. R72040875
VDE Certified	EN60934, VDE 0642 under File No. 10537

Ordering Scheme

Handle - UL 1077 Recognized

Sample Part Number	C	A	3	-	B	0	-	10	-	450	-	1	2	1	-	C
Selection	1	2	3		4	5		6		7		8	9	10		11

1. SERIES

C

2. ACTUATOR [1]

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. POLES [2]

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

4. CIRCUIT [3]

A [3]	Switch Only (No Coil)	**G** [4]	Relay Trip (Voltage)
B	Series Trip (Current)	**H** [4,5]	Dual Coil with Shunt Trip Voltage Coil
C	Series Trip (Voltage)	**K** [4,5]	Dual Coil with Relay Trip Voltage Coil
D [4]	Shunt Trip (Current)		
E [4]	Shunt Trip (Voltage)		
F [4]	Relay Trip (Current)		

5. AUXILIARY / ALARM SWITCH [5]

0	without Aux Switch	**7**	S.P.S.T., 0.139 Solder Lug. (Gold Contacts)
2	S.P.D.T., 0.110 Q.C. Term.	**8**	S.P.S.T., 0.187 Q.C. Term.
3	S.P.D.T., 0.139 Solder Lug.	**9**	S.P.D.T., 0.187 Q.C. Term.
4	S.P.S.T., 0.093 Q.C. Term. (Gold Contacts)		

6. FREQUENCY & DELAY

03	DC 50/60Hz, Switch Only	**31**	DC, 50/60Hz Ultra Short
10	DC Instantaneous	**32**	DC, 50/60Hz Short
11	DC Ultra Short	**34**	DC, 50/60Hz Medium
12	DC Short	**36**	DC, 50/60Hz Long
14	DC Medium	**42** [8]	50/60Hz Short, High-inrush
16	DC Long	**44** [8]	50/60Hz Medium, High-inrush
20	50/60Hz Instantaneous	**46** [8]	50/60Hz Long, High-inrush
21	50/60Hz Ultra Short	**52** [8]	DC, Short, High-inrush
22	50/60Hz Short	**54** [8]	DC, Medium, High-inrush
24	50/60Hz Medium	**56**	DC, Long, High-inrush
26	50/60Hz Long		
30	DC, 50/60Hz Instantaneous		

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 with VDE. 5th pole available as Series Trip with 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.

5 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 & Switch Only circuits. On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.

7 Voltage coils not rated for continuous duty. Available only with delay codes 10 & 20.

8 Available with Circuit Codes B & D only, and up to 50 amps maximum.

9 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, 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.

7. CURRENT RATING (AMPERES)

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	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	**660** [9]	60.000
090	0.090	**512**	1.250	**610**	10.000	**670** [9]	70.000
095	0.095	**415**	1.500	**710**	10.500	**680** [9]	80.000
210	0.100	**517**	1.750	**611**	11.000	**685** [9]	85.000
215	0.150	**420**	2.000	**711**	11.500	**690** [9]	90.000
220	0.200	**522**	2.250	**612**	12.000	**695** [9]	95.000
225	0.250	**425**	2.500	**712**	12.500	**810** [9]	100.000
230	0.300	**527**	2.750	**613**	13.000		

OR VOLTAGE COIL (NORMAL RATED VOLTAGE) [7]

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
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 .TERMINAL [15]

1 [10]	Stud 10-32	**6** [12]	Stud M6
2 [11]	Screw 10-32	**7** [13,15]	0.250 Double Click Connect
3 [12]	Stud 1/4-20	**9** [15]	7/16" Clip Terminal
4 [11]	Stud M5 x 0.8	**A** [14]	Plug-In Stud
5 [11]	Screw M5 x 0.8	**C** [11,15]	5/16" Clip Terminal

9. ACTUATOR COLOR & LEGEND [16]

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
C [18]	6-32 X 0.195 inches	yes	≥ 300
2	ISO M3 x 5mm	no	< 300
B	ISO M3 x 5mm	yes	< 300
D [18]	ISO M3 x 5mm	yes	≥ 300
	Front panel Snap-In, 1.00" [25.4mm] wide bezel		
E [17]	with Handleguard	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 Recognized STD 1077, UL Recognized 1500 (ignition protected), CSA Accepted
L	UL489 Construction: UL Recognized, CSA Accepted
R	UL489 Construction: TUV Certified, UL Recognized, CSA Accepted

Configure Complete Part Number > | Browse Standard Parts >

Ordering Scheme

Handle - UL 489 & UL 489A Listed / Parallel Pole

Sample Part Number	C	A	2	-	P	0	-	D4	-	820	-	3	2	1	-	M	T
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

C

2. ACTUATOR [1]

A	Handle, one per pole
S	Mid-Trip Handle, one per pole [1]
T	Mid-Trip, one per pole & Alarm Switch [1]

3. POLES [4]

1	One
2	Two
3	Three

4. CIRCUIT

P	Series Trip (parallel pole)

5 AUXILIARY/ALARM SWITCH [2]

0	without Aux Switch
2	S.P.D.T., 0.110 Q.C. Term.
3	S.P.D.T., 0.139 Solder Lug
4	S.P.D.T., 0.110 Q.C. Term. (Gold Contacts)
5	S.P.S.T., N.O., 0.110 Q.C Term. (Gold Contacts)
6	S.P.S.T., 0.139 Solder Lug
7	S.P.S.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

D1	DC Ultra Short
D2	DC Short
D4	DC Medium
D6	DC Long

7. CURRENT RATING (AMPERES)

CODE	AMPERES						
810	100.00	**813**	130.00	**817**	170.00	**820**	200.00
811	110.00	**814**	140.00	**917**	175.00	**922**	225.00
812	120.00	**815**	150.00	**818**	180.00	**825**	250.00
912	125.00	**816**	160.00	**819**	190.00		

8. TERMINAL [4]

3	1/4-20 threaded Stud
6	M6 threaded Stud
A	Plug-In Stud [3]

9 ACTUATOR COLOR & LEGEND

	Legend ON-OFF	Dual	Legend Color
White	**B**	**1**	Black
Black	**D**	**2**	White
Red	**G**	**3**	White
Green	**J**	**4**	White
Blue	**L**	**5**	White
Yellow	**N**	**6**	Black
Gray	**Q**	**7**	Black
Orange	**S**	**8**	Black

10. MOUNTING

	Threaded Insert
1	6-32 x 0.195 inches
2	ISO M3 x 5mm

11. MAXIMUM APPLICATION RATING

M	80 DC

12. AGENCY APPROVAL

A	Without Approval
G	UL489 Listed
J	UL489A Listed, TUV Certified
K	UL489A Listed, VDE Certified
T	UL489A Listed
7	UL489A Listed, TUV Certified

Notes:

1 Handle moves to Mid-Position only upon electrical trip of C/B when Actuator S is specified. When Actuator Code T is specified, handle moves to Mid Position and Alarm Switch actuates only upon electrical trip of C/B. Code T is only available with Circuit Code N.

2 Standard Handle colors are White, Black, Red & Yellow.

3 Breakers with Terminal Codes 3 & 6 are supplied with bus bars connecting the Line and Load Terminals. For Terminal Code A, Line and Load Terminals must be connected to a copper bus bar having a minimum cross-section of 0.078 square inches. Terminal Code A is not available on the single pole unit.

4 Ratings for 101 to 125 amps are available in 1-pole.
Ratings from 110 to 200 amps are available in 2-pole.
For ratings from 225-300 amps, specify 3-pole.

5 1 pole only available with terminal codes 3 and 6.

6 Agency codes K and 7 are not available with 1 pole.
Agency code J is only available with 1 pole.
Agency code G is only available in 2 and 3 pole.
Circuit P, ratings 101-150 amps (2 pole) and ratings 151-250 amps (3 pole).

Configure Complete Part Number > | Browse Standard Parts >

Ordering Scheme

Handle - UL 489 Listed

Sample Part Number	C	A	3	-	B	0	-	14	-	450	-	1	2	1	-	K	G
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

C

2. ACTUATOR [1]

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. POLES [2]

1	One
2	Two
3	Three

4. CIRCUIT

B	Series Trip (Current)

5 AUXILIARY/ALARM SWITCH [2]

0	without Aux Switch
2	S.P.D.T., 0.110 Q.C. Term.
3	S.P.D.T., 0.139 Solder Lug
4	S.P.D.T., 0.110 Q.C. Term.
6	S.P.S.T., 0.139 Solder Lug
8	S.P.S.T., 0.187 Q.C. Term.
9	S.P.D.T., 0.187 Q.C. Term. (Gold Contacts)

6. FREQUENCY & DELAY

11	DC Ultra Short
12	DC Short
14	DC Medium
16	DC Long
21	50/60Hz Ultra Short
22	50/60Hz Short
24	50/60Hz Medium
26	50/60Hz Long
42 [4]	50/60Hz Short, High-inrush
44 [4]	50/60Hz Medium, High-inrush
46 [4]	50/60Hz Long, High-inrush
52 [4]	DC Short, High-inrush
54 [4]	DC Medium, High-inrush
56 [4]	DC Long, High-inrush

Notes:

1 Actuator Code:
A: Handle tie pin spacer(s) and retainers provided assembled with multipole units.
B: Handle located, as viewed from front of breaker in left pole. 2 pole maximum.
S: Handle moves to mid-position only upon electrical trip of the breaker.
T: Handle moves to mid-position and alarm switch activates only upon electrical trip of the breaker.

2 Standard multipole units have all poles identical except when specifying auxiliary switch and/or mixed poles. 2 & 3 pole circuit breakers required for 120/240 VAC (Maximum application rating code C) applications, have all poles identical except when specifying auxiliary /alarm switch which is normally supplied in extreme right pole per figure B. Terminal barriers are required on all multipole breakers. Third pole is for 120/240 VAC applications requiring neutral disconnect. The 3rd pole has the same construction as poles 1 & 2.

3 On multi-pole breakers, one auxiliary. switch is supplied, mounted in the extreme right pole.VDE approval on auxiliary switch codes 2, 3 & 4 only. Auxiliary / Alarm Switch with Independent Circuit ie: separate from breaker circuit, only available with circuit breakers rated 50 amp maximum at 80 VDC, 125 VDC, and 120 VAC. Auxiliary / Alarm Switch with Dependent Circuit ie: same as circuit breaker, is supplied from factory with common terminal of auxiliary / alarm switch connected to line terminal on 120/240 and 240 VAC ratings. Circuit breakers rated 120 VAC 50 amp maximum can be supplied with Auxiliary/Alarm switch common terminal connected to breaker line terminal. Consult factory for special catalog number.

4 Available up to 50 amps maximum.

5 Current ratings 71 - 100 with VDE approvals are available up to two poles maximum.

6 Terminal Codes 9 & C are not VDE approved.

7 Terminal Code 1 available to 60 amps maximum.

8 Terminal Codes 2, 4, 5 & C available to 50 amps maximum.

9 Terminal Codes 3, 6 & 9 available to 100 amps maximum.

10 Terminal Code A available to 100 amps maximum.

11 VDE and TUV approvals require Dual (I-O, ON-OFF) markings on all handles.

12 Barriers supplied on multi-pole units only.

Configure Complete Part Number > Browse Standard Parts >

7. CURRENT RATING (AMPERES) [4]

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
210	0.100	**295**	0.950	**470**	7.000	**618**	18.000
215	0.150	**410**	1.000	**475**	7.500	**620**	20.000
220	0.200	**512**	1.250	**480**	8.000	**622**	22.000
225	0.250	**415**	1.500	**485**	8.500	**624**	24.000
230	0.300	**517**	1.750	**490**	9.000	**625**	25.000
235	0.350	**420**	2.000	**495**	9.500	**630**	30.000
240	0.400	**522**	2.250	**610**	10.000	**635**	35.000
245	0.450	**425**	2.500	**710**	10.500	**640**	40.000
250	0.500	**527**	2.750	**611**	11.000	**660**	60.000
255	0.550	430	3.000	**711**	11.500	**670**	70.000
260	0.600	**435**	3.500	**612**	12.000	**680**	80.000
265	0.650	**440**	4.000	**712**	12.500	**685**	85.000
270	0.700	**445**	4.500	**613**	13.000	**690**	90.000
275	0.750	**450**	5.000	**614**	14.000	**695**	95.000
280	0.800	**455**	5.500	**615**	15.000	**810**	100.00
285	0.850	**460**	6.000	**616**	16.000		
290	0.900	**465**	6.500	**617**	17.000		

8. TERMINAL [6]

1 [7]	Stud 10-32
2 [8]	Screw 10-32
3 [9]	Stud 1/4-20
4 [8]	Stud M5 x 0.8
5 [8]	Screw M5 x 0.8
6 [9]	Stud M6
9 [9]	7/16" Clip Terminal
A [10]	Plug-In Stud
C [8]	5/16" Clip Terminal

9 ACTUATOR COLOR & LEGEND

Actuator Color	ON-OFF	Dual	Legend Color
White	**B**	**1**	Black
Black	**D**	**2**	White
Red	**G**	**3**	White
Green	**J**	**4**	White
Blue	**L**	**5**	White
Yellow	**N**	**6**	Black
Gray	**Q**	**7**	Black
Orange	**S**	**8**	Black

10. MOUNTING

	MOUNTING STYLE **Threaded Insert**	BARRIERS [12]
1	6-32 x 0.195 inches	yes
2	ISO M3 x 5mm	yes

11. MAXIMUM APPLICATION RATING

B	125 DC
C	120/240 AC [2]
D	240 AC
K	120 AC
F	277 AC
M	80 DC

12. AGENCY APPROVAL [11]

A	without approvals
F	UL489 Listed, CSA Certified & VDE Certified
G	UL489 Listed & CSA Certified
J	UL489 Listed, CSA Certified & TUV Certified

Circuit & Terminal Diagrams Handle

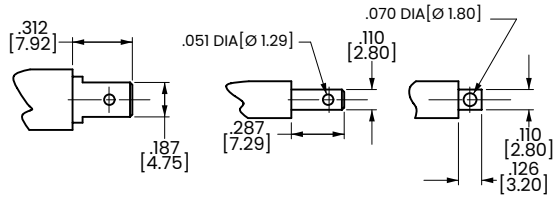
inches [millimeters]

TERMINAL			RATING(AMPS)			
DESCRIPTION	CODE	DIMENSIONAL DETAIL	25	50	100	80
#10-32 STUD	1	.723 [18.36], .150 [3.81]	■	■		
M5 STUD	4	.688 [17.48], .150 [3.81]	■	■		
#1/4-20 STUD	3	.723 [18.36], .150 [3.81]	■	■	■	
M6 STUD	6					
#1/4-20 STUD	3	.675 [17.15], .235 [5.97]				■
M6 MUD	6	.669 [16.99], .264 [6.71]				■
#10-32 SCREW	2	±.015 ±.38, .150 [3.81]	■	■		
M-5 SCREW	5					

TERMINAL			RATING(AMPS)			
DESCRIPTION	CODE	DIMENSIONAL DETAIL	25	50	100	80
.250 DOUBLE Q.C.	7	.400 [10.16], .820 [20.83], .320 [8.13], .173 [4.39], .250 [6.35]	■			
7/16" CLIP TERMINALS	9	.437 DIA [Ø11.10] COMPONENT DIA, .644 [16.36], .901 [22.89]		■	■	
PUSH-IN STUD	A	.960 [24.38], +.002 -.000 +.05 -.00 .311 DIA[Ø7.90], .558 [14.17], CENTERLINE OF PUSH-IN STUD CONTACT AREA, PUSH-IN STUD MATING HOLE		■	■	■

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

AUXILIARY / ALARM SWITCH TERMINAL DETAIL[3]



TAB (Q.C.).187 TAB (Q.C.).110 SOLDER TYPE

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]

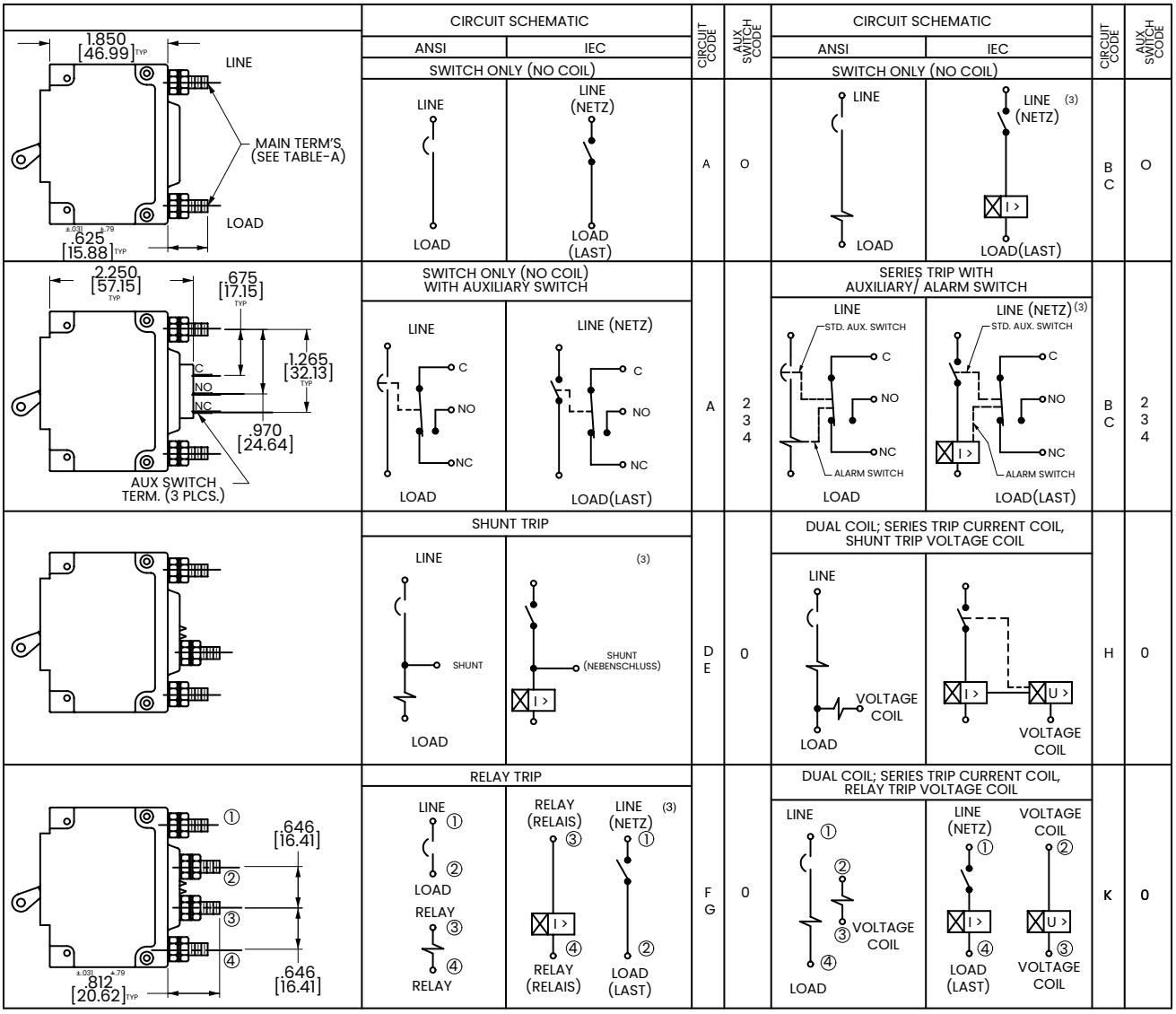
TERMINAL HARDWARE				
TERMINAL DESCRIPTION	CODE	AGENCY APPROVAL	AMPERE RATING	HARDWARE SUPPLIED
#10-32 STUD	1	ALL	.02-50	LOCK WASHER-FLAT WASHER-NUT
M5 STUD	4	ALL	.02-50	LOCK WASHER-FLAT WASHER-NUT
#1/4-20 STUD	3	ALL	.02-80	LOCK WASHER-FLAT WASHER-NUT
			81-100	LOCK WASHER-NUT-(2)FLAT WASHER-NUT
M6 STUD	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

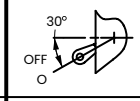
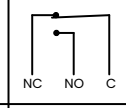
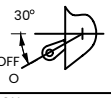
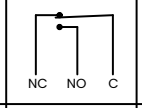
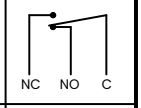
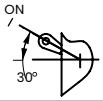
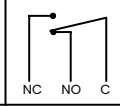
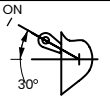
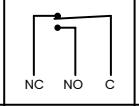
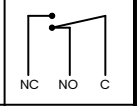
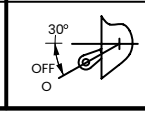
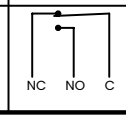
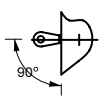
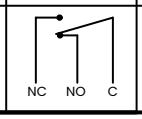
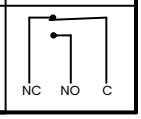
Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.
2 Available on Series Trip and Switch Only Circuits when called for on multi-pole units. Only one auxiliary switch is normally supplied, as viewed in mulit-pole identification scheme.

Circuit & Terminal Diagrams Handle

inches [millimeters]



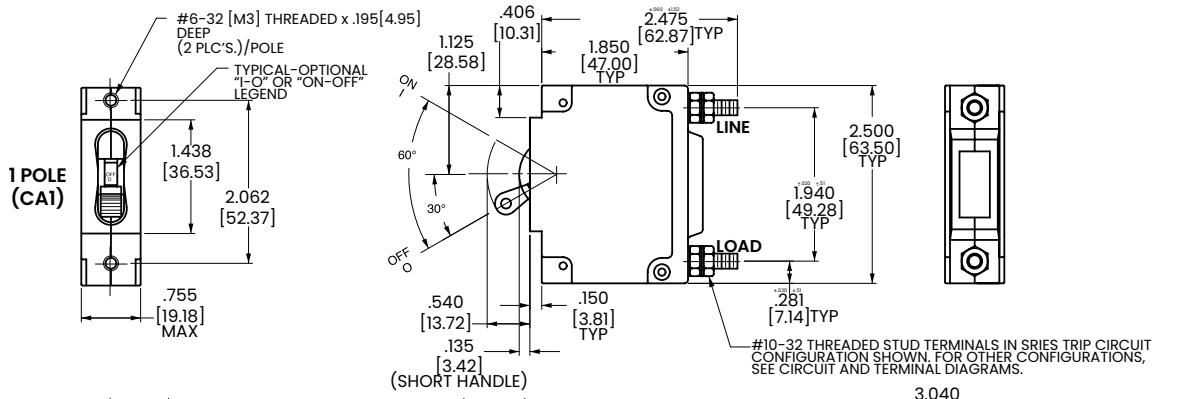
HANDLE POSITION VS. AUX/ALARM SWITCH MODE

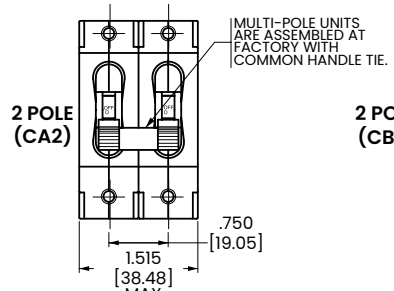
CIRCUIT BREAKER MODE	STANDARD C/B HANDLE POSITION	STANDARD C/B AUX. SWITCH MODE	MID TRIP C/B HANDLE POSITION	MID TRIP C/B STANDARD ALARM SWITCH MODE	MID TRIP C/B REVERSE ALARM SWITCH MODE 4
OFF					
ON					
ELECTRICAL TRIP					

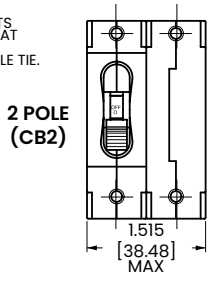
Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.
2 Schematic shown represents current trip `circuits.
3 Available only as special catalog number.

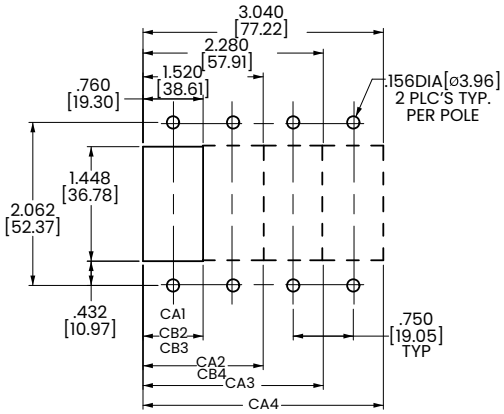
Dimensional Specs Handle

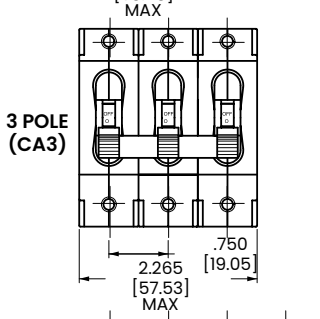
inches [millimeters]

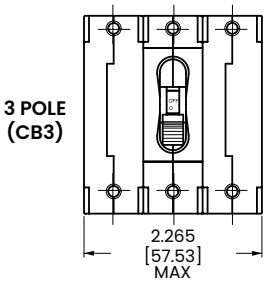






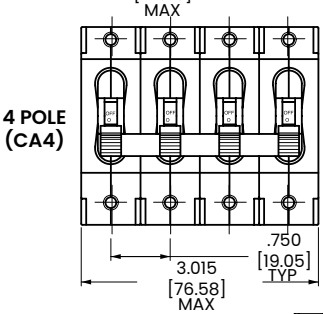


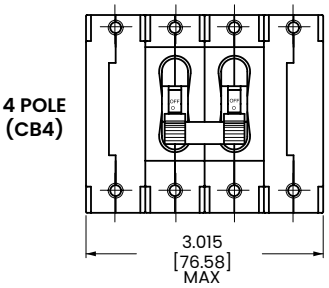


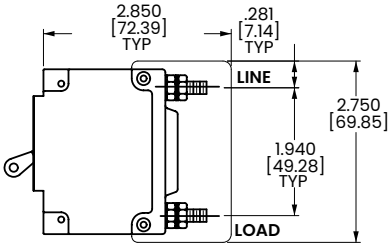


PANEL CUTOUT DETAIL

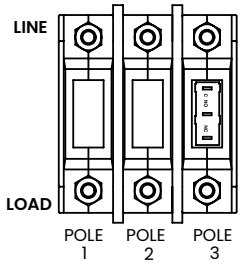
TOLERANCES ±.005[.12]



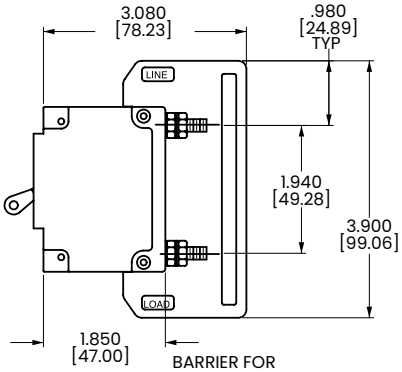




BARRIER FOR UL-RECOGNIZED MULTI-POLE BREAKERS



MULTI-POLE INDENTFICATION SCHEME AS VIEWED FROM TERMINAL END OF BREAKER.



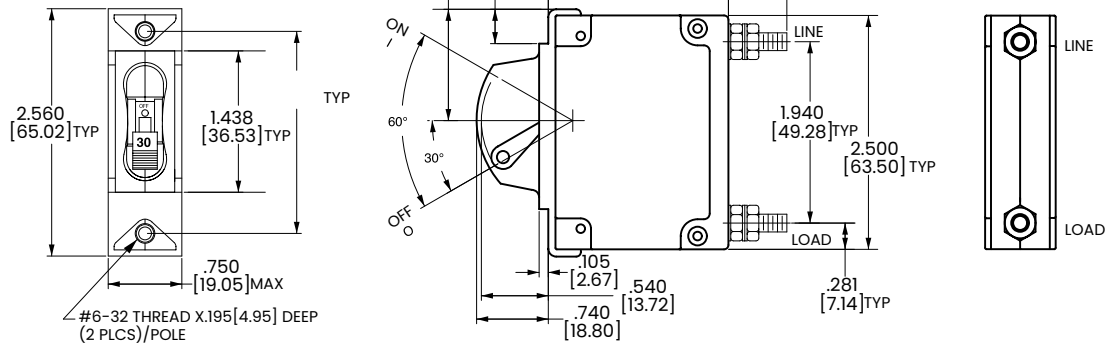
BARRIER FOR UL-489 LISTED MULTI-POLE BREAKERS

Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

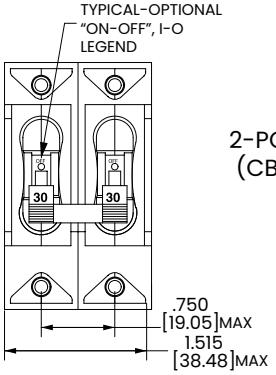
Dimensional Specs Handleguard

inches [millimeters]

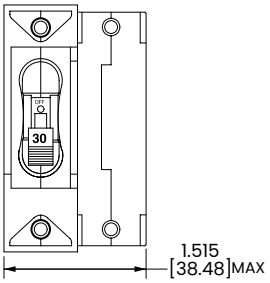
1-POLE
(CA1)

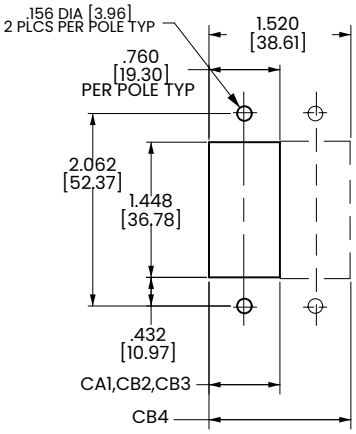


2-POLE
(CA2)



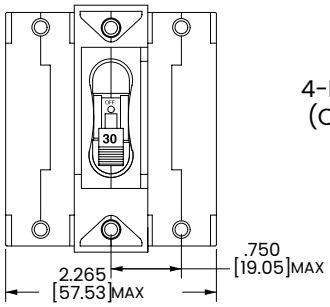
2-POLE
(CB2)



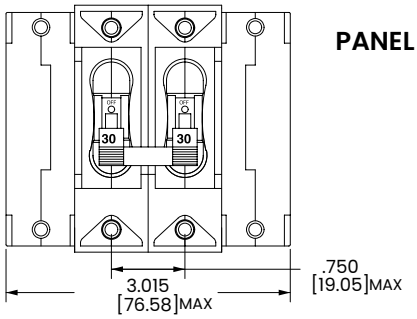


PANEL CUT-OUT DETAIL

3-POLE
(CB3)

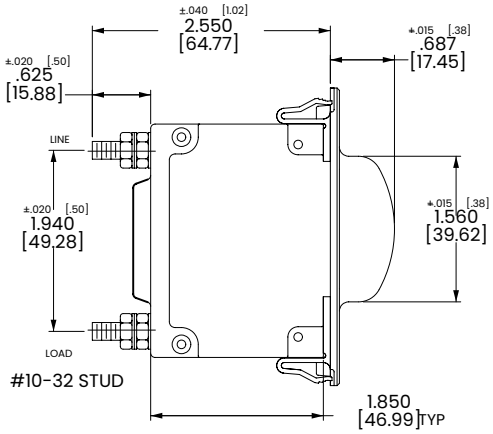


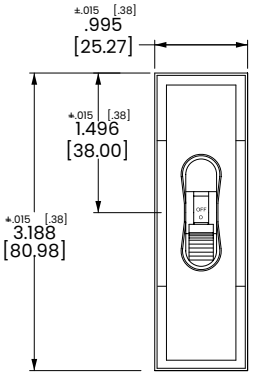
4-POLE
(CB4)

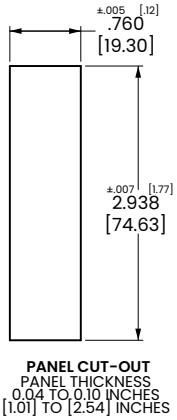


* Handleguard available as special catalog number only

SNAP-IN







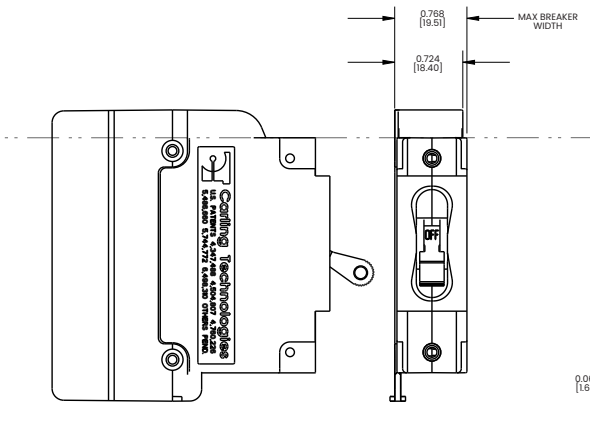
PANEL CUT-OUT
PANEL THICKNESS
0.04 TO 0.10 INCHES
[1.01] TO [2.54] INCHES

Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

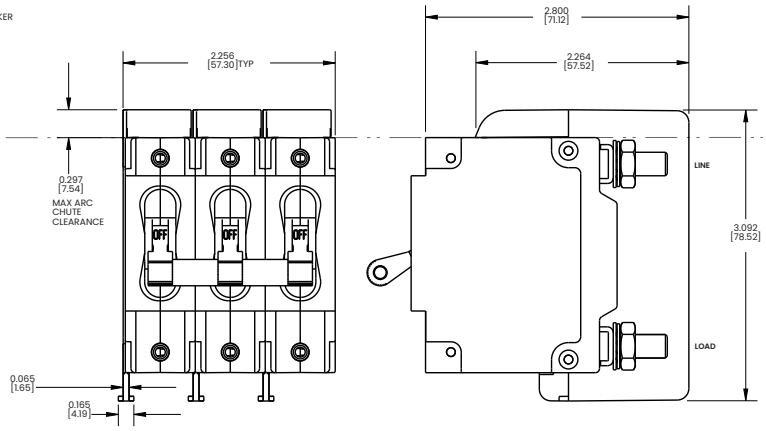
Dimensional Specs Arc Chute Barrier

inches [millimeters]

1-POLE (CA1)
W/ ARC CHUTE BARRIER

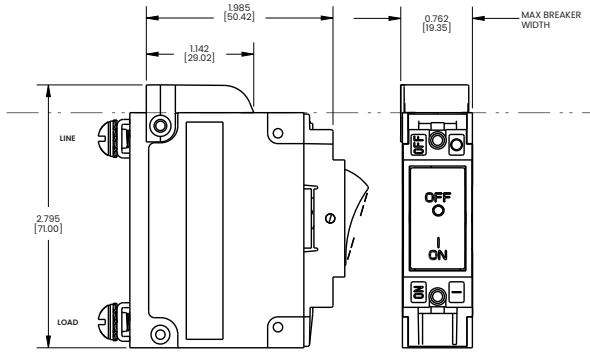


3-POLE (CA3)
W/ ARC CHUTE BARRIER

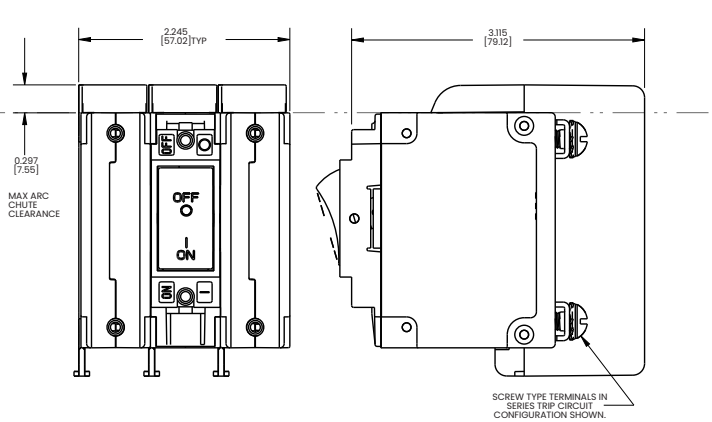


INDICATE "ON"

1-POLE (CC1, CD))
W/ ARC CHUTE (NO BARRIER)

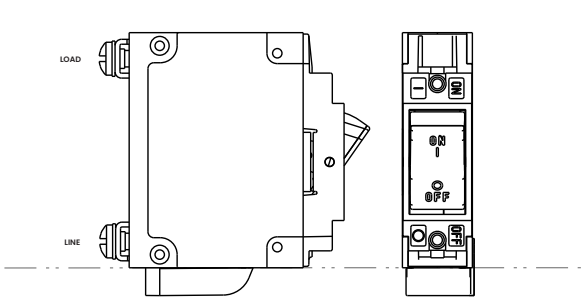


3-POLE (CC3, CD3)
W/ ARC CHUTE BARRIER

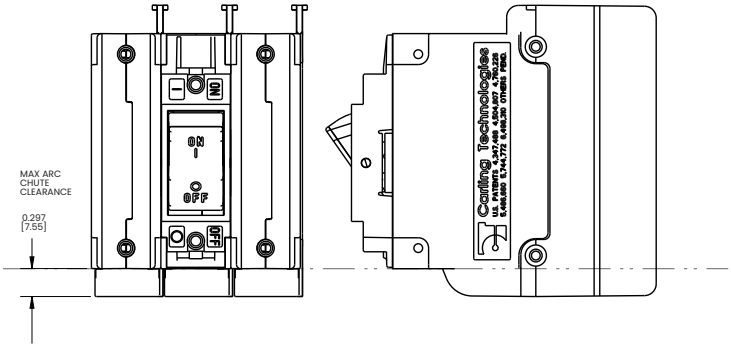


INDICATE "OFF"/ SINGLE COLOR

1-POLE (CF1, CG1, C11, C21)
W/ ARC CHUTE (NO BARRIER)



3-POLE (CF3, CG3, C13, C23)
W/ ARC CHUTE BARRIER

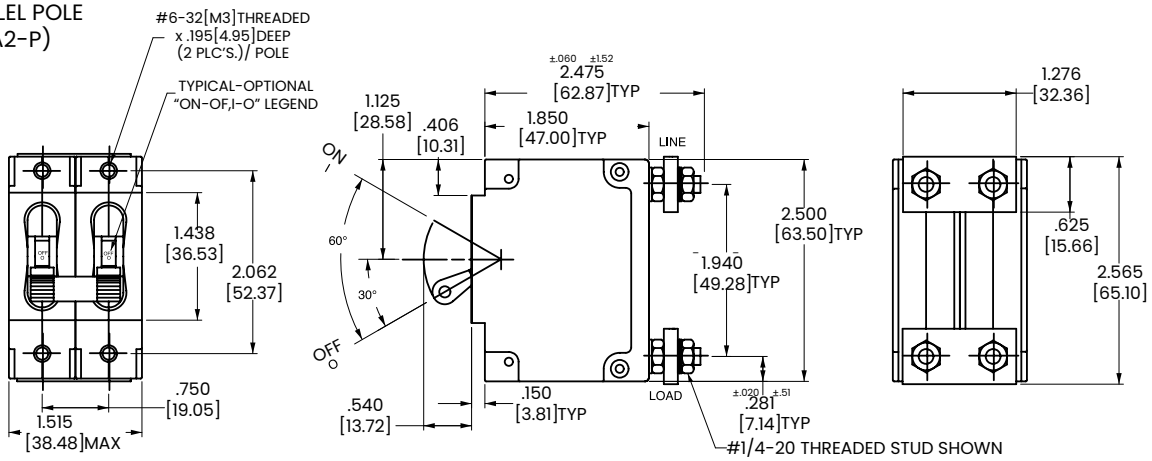


Notes:
1 Only 1-pole and 3-pole configurations shown. Arc chute (without barrier) and arc chute barrier also available for 2-pole construction.
2 Dimensions apply to all variations shown.
3 Notice that line and load terminal orientation for indicate on and indicate off rocker circuit breakers are opposite.
4 Screw type terminals shown for Rocker style (CF1, C11, etc) circuit breakers. For other terminal configurations see circuit and terminal diagrams.
5 Tolerance ± .020 unless otherwise specified.
6 Must be ordered under a special catalog number.

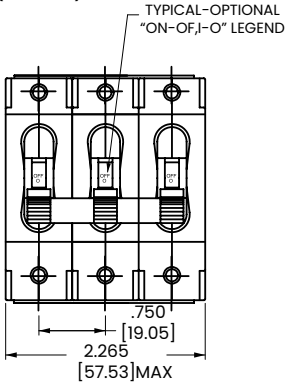
Dimensional Specs Parallel Pole

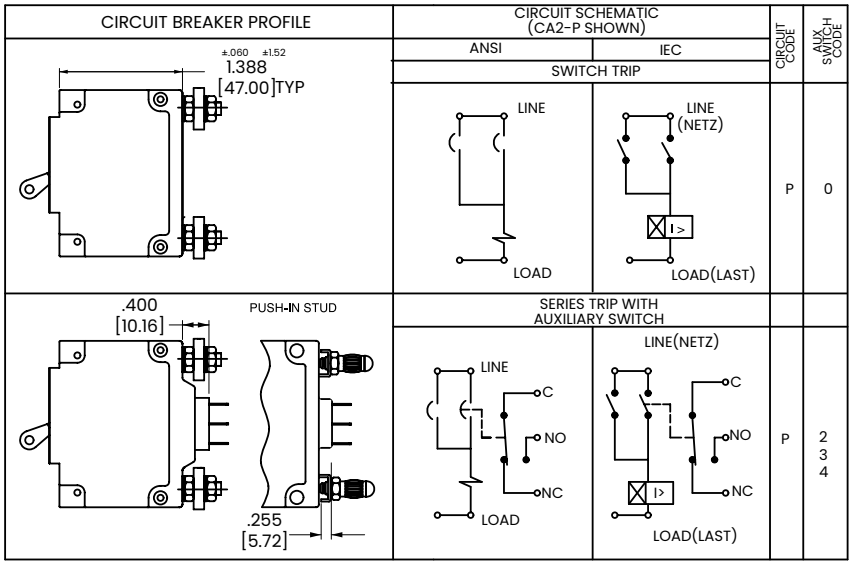
inches [millimeters]

PARALLEL POLE
(CA2-P)

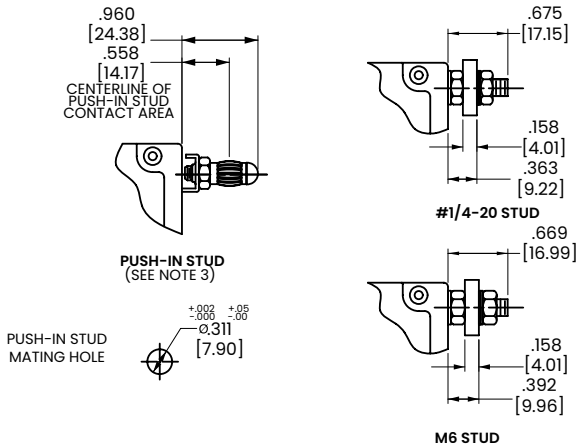


PARALLEL POLE
(CA3-P)



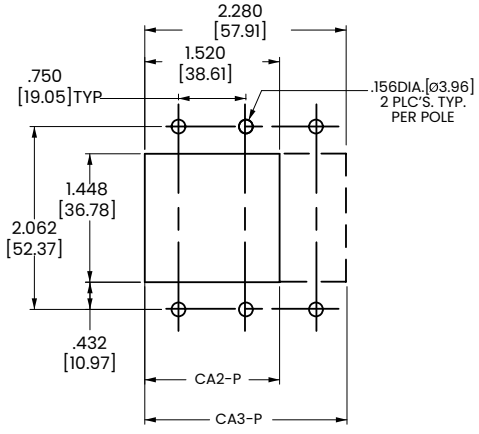


TERMINAL DETAILS



PANEL CUT-OUT DETAIL

TOLERANCE±005[.12]



Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Ordering Scheme

Sealed Toggle - UL 1077 Recognized

Sample Part Number	C	M	3	-	B	0	-	10	-	450	-	1	0	1	-	C
Selection	1	2	3		4	5		6		7		8	9	10		11

1. SERIES

C

2. ACTUATOR [1]

M	Sealed Toggle, one per pole

3. POLES

1	One	**2**	Two	**3**	Three

4. CIRCUIT

A [2]	Switch Only (no coil)	**G** [3]	Relay Trip (voltage)
B	Series Trip (current)	**H** [3,4]	Dual Coil with Shunt Trip Voltage Coil
C	Series Trip (voltage)		
D [3]	Shunt Trip (current)	**K** [3,4]	Dual Coil with Relay Trip Voltage Coil
E [3]	Shunt Trip (voltage)		
F [3]	Relay Trip (current)		

5. AUXILIARY / ALARM SWITCH [5]

0	without Aux Switch	**6**	S.P.S.T., 0.139 Solder Lug
2	S.P.D.T., 0.110 Q.C. Term.	**8**	S.P.S.T., 0.187 Q.C. Term.
3	S.P.D.T., 0.139 Solder Lug	**9**	S.P.D.T., 0.187 Q.C. Term.
4	S.P.D.T., 0.110 Q.C. Term. (Gold Contacts)		

6. FREQUENCY & DELAY

03 [2]	DC 50/60Hz, Switch Only	**30**	DC 50/60Hz Instantaneous
10 [6]	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	**42** [7]	50/60Hz Short, High-inrush
20 [6]	50/60Hz Instantaneous	**44** [7]	50/60Hz Medium, High-inrush
21	50/60Hz Ultra Short	**46** [7]	50/60Hz Long, High-inrush
22	50/60Hz Short	**52** [7]	DC Short, High-inrush
24	50/60Hz Medium	**54** [7]	DC Medium, High-inrush
26	50/60Hz Long	**56**	DC Long, High-inrush

Notes:

1 Actuator Code M: Handle location as viewed from front of breaker:
2 pole - right pole 3 pole - center pole

2 Switch Only circuits, rated up to 50 amps and 3 poles, and only available with VDE. 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.

3 Circuit Codes D,E,F,G,H & K available with Terminal Codes 1,2,4 & 5 only.

4 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.

5 Auxiliary Switch available with Series Trip and Switch Only circuits. On multipole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.

6 Voltage coils not rated for continuous duty. Available only with delay codes 10 & 20.

7 Available with Circuit Codes B & D only, and up to 50 amps maximum.

8 Consult factory for current ratings 71-100, in three pole units, available as special catalog number only.

9 Terminal Code 1 available to 60 amps maximum.

10 Terminal Codes 2, 4, 5 and C available to 50 amps maximum.

11 Terminal Codes 3, 6 & 9 available to 100 amps maximum.

12 Terminal Code 7 available to 25 amps maximum.

13 Terminal Code A available to 100 amps maximum.

Configure Complete Part Number > | Browse Standard Parts >

7. CURRENT RATING (AMPERES) [9]

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	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	**660** [9]	60.000
090	0.090	**512**	1.250	**610**	10.000	**670** [9]	70.000
095	0.095	**415**	1.500	**710**	10.500	**680** [9]	80.000
210	0.100	**517**	1.750	**611**	11.000	**685** [9]	85.000
215	0.150	**420**	2.000	**711**	11.500	**690** [9]	90.000
220	0.200	**522**	2.250	**612**	12.000	**695** [9]	95.000
225	0.250	**425**	2.500	**712**	12.500	**810** [9]	100.000
230	0.300	**527**	2.750	**613**	13.000		

OR VOLTAGE COIL (NORMAL RATED VOLTAGE) [6]

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 .TERMINAL

1	Stud 10-32 [9]	**6**	Stud M6 [11]
2	Screw 10-32 [10]	**7**	0.250 Double Click Connect [12]
3	Stud 1/4-20 [11]	**9**	7/16" Clip Terminal [11]
4	Stud M5 x 0.8 [10]	**A**	Plug-In Stud [13]
5	Screw M5 x 0.8 [10]	**C**	5/16" Clip Terminal [10]

9. LEGEND PLATE

0	No Legend

10. MOUNTING / BARRIERS

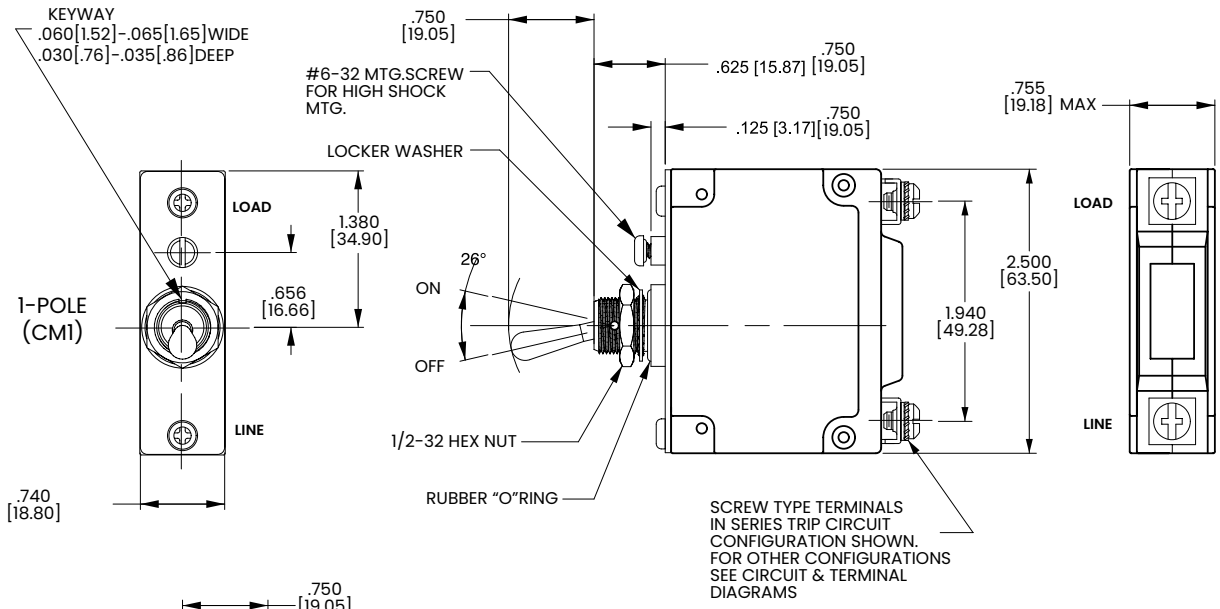
	MOUNTING STYLE	BARRIERS
1	Standard Hex Nut	no
A	Standard Hex Nut (multi-pole units only)	yes

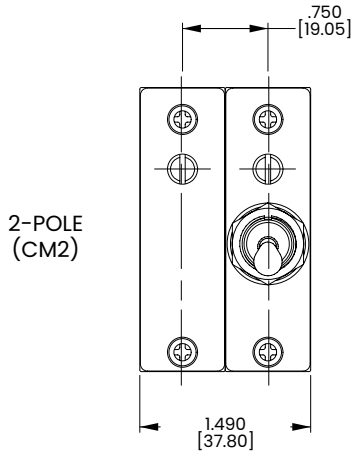
11 AGENCY APPROVAL

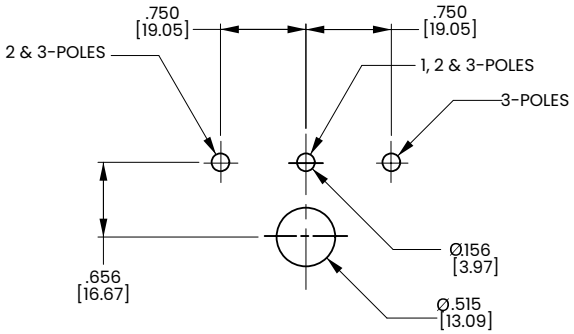
C	UL Recognized & CSA Accepted
I	UL Recognized & CSA Accepted, UL1500 ignition protection
L	UL Recognized & CSA Accepted with listed construction

Dimensional Specs Sealed Toggle

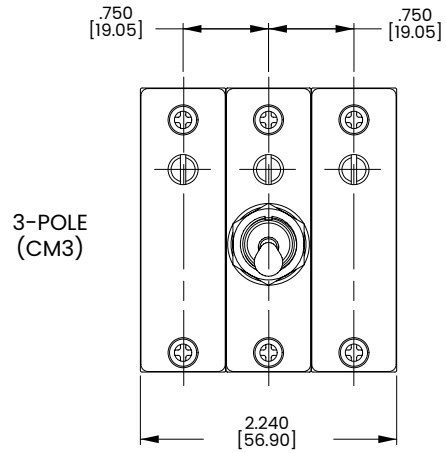
inches [millimeters]







PANEL CUTOUT DETAIL
TOLERANCES ±.005[.13]



Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Ordering Scheme

Rocker - UL 1077 Recognized

Sample Part Number	C	C	3	-	B	0	-	14	-	450	-	1	2	1	-	D
Selection	1	2	3		4	5		6		7		8	9	10		11

1. SERIES

C

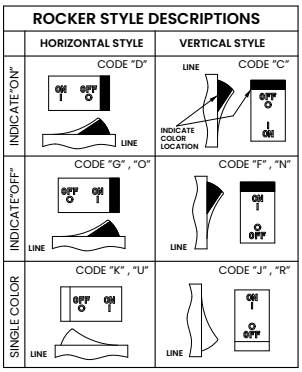
2. ACTUATOR [1]

Two Color Visi-Rocker
- **C** Indicate ON, vertical legend
- **D** Indicate ON, horizontal legend
- **E** Indicate ON, no legend
- **F** Indicate OFF, vertical legend
- **G** Indicate OFF, horizontal legend
- **H** Indicate OFF, no legend

Push-To-Reset, Visi-Rocker
- **N** Indicate OFF, vertical legend
- **O** Indicate OFF, horizontal legend
- **P** Indicate OFF, no legend

Single color
- **J** Vertical legend
- **K** Horizontal legend
- **L** No legend

Push-To-Reset, Single color
- **R** Vertical legend
- **U** Horizontal legend
- **V** No legend



3. POLES [2]

1	One	**2**	Two	**3**	Three

4. CIRCUIT

- **F** [4] Relay Trip (Current)
- **A** [3] Switch Only (No Coil)
- **G** [4] Relay Trip (Voltage)
- **B** Series Trip (Current)
- **H** [4,5] Dual Coil with Shunt Trip Voltage Coil
- **C** Series Trip (Voltage)
- **D** [4] Shunt Trip (Current)
- **K** [4,5] Dual Coil with Relay Trip
- **E** [4] Shunt Trip (Voltage)

5. AUXILIARY / ALARM SWITCH [6]

- **0** without Aux Switch
- **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
- **8** S.P.S.T., 0.187 Q.C. Term.
- **4** S.P.D.T., 0.110 Q.C. Term.
- **9** S.P.D.T., 0.187 Q.C. Term. (Gold Contacts)

6. FREQUENCY & DELAY

- **03** DC 50/60Hz, Switch Only
- **10** [7] DC Instantaneous
- **11** DC Ultra Short
- **12** DC Short
- **14** DC Medium
- **16** DC Long
- **20** [7] 50/60Hz Instantaneous
- **21** 50/60Hz Ultra Short
- **22** 50/60Hz Short
- **24** 50/60Hz Medium
- **26** 50/60Hz Long
- **30** DC 50/60Hz Instantaneous
- **31** DC 50/60Hz Ultra Short
- **32** DC 50/60Hz Short
- **34** DC 50/60Hz Medium
- **36** DC 50/60Hz Long
- **42** [8] 50/60Hz Short, High-inrush
- **44** [8] 50/60Hz Medium, High-inrush
- **46** [8] 50/60Hz Long, High-inrush
- **52** [8] DC Short, High-inrush
- **54** [8] DC Medium, High-inrush
- **56** [8] DC Long, High-inrush

Notes:
1. Push-To-Reset actuators have OFF portion of rocker shrouded.
2. Multi-pole breakers have all poles identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker. Rocker location as viewed from front panel: 2 pole – left pole; 3 pole – center pole.
3. Switch Only circuits, rated up to 50 amps and 3 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.
5. 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 multipole breakers, one auxiliary switch is supplied, mounted in the extreme right pole. Auxiliary switch codes 2, 3 & 4 are VDE approved.
7. Voltage coils not rated for continuous duty. Available only with delay codes 10 & 20.
8. Available with Circuit Codes B & D only, and up to 50 amps maximum.
9. 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 & 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, 9 & C are not VDE approved.
16. Color shown is visi and legend with remainder of rocker black
17. Legend on Push-to-reset bezel/shroud is white when single color rocker is ordered. Dual = ON-OFF/I-O legend with actuator codes C - G, and J, K, N, O, R, & U. None = no legend with actuator codes H, L, P, V. Rockerguard available with actuator codes C - L. Push-to-reset available with actuator codes N, O, P, R, U, V.
18. VDE/TUV approval requires Dual (I-O, ON-OFF) or I-O markings on rocker.
19. 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.

7. CURRENT RATING (AMPERES) [9]

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	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	**660** [9]	60.000
090	0.090	**512**	1.250	**610**	10.000	**670** [9]	70.000
095	0.095	**415**	1.500	**710**	10.500	**680** [9]	80.000
210	0.100	**517**	1.750	**611**	11.000	**685** [9]	85.000
215	0.150	**420**	2.000	**711**	11.500	**690** [9]	90.000
220	0.200	**522**	2.250	**612**	12.000	**695** [9]	95.000
225	0.250	**425**	2.500	**712**	12.500	**810** [9]	100.000
230	0.300	**527**	2.750	**613**	13.000		

OR VOLTAGE COIL (NORMAL RATED VOLTAGE) [7]

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. TERMINAL

- **1** Stud 10-32 [10]
- **2** Screw 10-32 [11]
- **3** Stud 1/4-20 [12]
- **4** Stud M5 x 0.8 [11]
- **5** Screw M5 x 0.8 [11]
- **6** Stud M6 [12]
- **7** 0.250 Double Click Connect [13]
- **9** 7/16" Clip Terminal
- **A** Plug-In Stud [14]
- **C** 5/16" Clip Terminal

9. ACTUATOR COLOR & LEGEND [16,17,18]

Actuator or Visi-Color Color:	Marking: I-O	ON-OFF	Dual/None	Marking Color: Single Color Rocker/Handle	Visi-Rocker
White	**A**	**B**	**1**	Black	White
Black	**C**	**D**	**2**	White	n/a
Red	**F**	**G**	**3**	White	Red
Green	**H**	**J**	**4**	White	Green
Blue	**K**	**L**	**5**	White	Blue
Yellow	**M**	**N**	**6**	Black	Yellow
Gray	**P**	**Q**	**7**	Black	Gray
Orange	**R**	**S**	**8**	Black	Orange

10 MOUNTING / BARRIERS [1]

	STANDARD ROCKER BEZEL	BARRIERS	VOLTAGE
1	6-32 x 0.195 inches	no	<300
2	6-32 x 0.195 inches	yes	<300
3 [19]	6-32 x 0.195 inches	yes	≥300
4	ISO M3 x 5mm	no	<300
5	ISO M3 x 5mm	yes	<300
6 [19]	ISO M3 x 5mm	yes	≥300
	ROCKERGUARD BEZEL		
A	6-32 x 0.195 inches	no	<300
C	6-32 x 0.195 inches	yes	<300
E [19]	6-32 x 0.195 inches	yes	≥300
G	ISO M3 x 5mm	no	<300
J	ISO M3 x 5mm	yes	<300
L [19]	ISO M3 x 5mm	yes	≥300
	PUSH-TO-RESET BEZEL		
B	6-32 x 0.195 inches	no	<300
D	6-32 x 0.195 inches	yes	<300
F [19]	6-32 x 0.195 inches	yes	≥300
H	ISO M3 x 5mm	no	<300
J	ISO M3 x 5mm	yes	<300
M [19]	ISO M3 x 5mm	yes	≥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 Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted
- **L** UL489 Construction: UL Recognized & CSA Accepted
- **R** UL489 Construction: TUV Certified, UL Recognized & CSA Accepted

Configure Complete Part Number > | Browse Standard Parts >

Ordering Scheme

Rocker - UL 489A Listed / Parallel Pole

Sample Part Number	C	1	2	-	P	0	-	D4	-	820	-	3	2	A	-	M	T
Selection	1		2	3		4	5		6		7	8	9	10		11	12

1. SERIES

C

2. ACTUATOR [1]

C	Curved Rocker, Two Color Visi, Indicate On, Vertical Legend
D	Curved Rocker, Two Color Visi, Indicate On, Horizontal Legend
F	Curved Rocker, Two Color Visi, Indicate Off, Vertical Legend
G	Curved Rocker, Two Color Visi, Indicate Off, Horizontal Legend
J	Curved Rocker, Single Color, Vertical Legend
K	Curved Rocker, Single Color, Horizontal Legend
N	Curved Rocker, Push To Reset, Two Color Visi, Vertical Legend
O	Curved Rocker, Push To Reset, Two Color Visi, Horizontal Legend
1	Flat Rocker, Two Color Visi, Vertical Legend
2	Flat Rocker, Two Color Visi, Horizontal Legend
3	Flat Rocker, Single Color, Vertical Legend
4	Flat Rocker, Single Color, Horizontal Legend
5	Flat Rocker, Push To Reset, Two Color Visi, Vertical Legend
6	Flat Rocker, Push To Reset, Two Color Visi, Horizontal Legend
7	Flat Rocker, Push To Reset, Single Color, Vertical Legend
8	Flat Rocker, Push To Reset, Single Color, Horizontal Legend

3. POLES

1	One	**2**	Two	**3**	Three

4. CIRCUIT

P Series Trip (parallel pole)

5 AUXILIARY/ALARM SWITCH

0	without Aux Switch	**6**	S.P.S.T., 0.139 Solder Lug
2	S.P.D.T., 0.110 Q.C. Term.	**7**	S.P.S.T., 0.110 Q.C Term. (Gold Contacts)
3	S.P.D.T., 0.139 Solder Lug	**8**	S.P.S.T., 0.187 Q.C. Term.
4	S.P.D.T., 0.110 Q.C. Term. (Gold Contacts)	**9**	S.P.D.T., 0.187 Q.C. Term.
5	S.P.S.T., N.O., 0.110 Q.C Term. (Gold Contacts)		

6. FREQUENCY & DELAY

D1	DC Ultra Short
D2	DC Short
D4	DC Medium
D6	DC Long

7. CURRENT RATING (AMPERES) [2]

CODE	AMPERES						
810	100.00	**813**	130.00	**817**	170.00	**820**	200.00
811	110.00	**814**	140.00	**917**	175.00	**922**	225.00
812	120.00	**815**	150.00	**818**	180.00	**825**	250.00
912	125.00	**816**	160.00	**819**	190.00		

8. TERMINAL [3]

3	Stud 1/4-20
6	Stud M6
A	Plug-In Stud [1]

9 ACTUATOR COLOR & LEGEND

	LEGEND		
Actuator Color	ON-OFF	Dual	Legend Color
White	**B**	**1**	Black
Black	**D**	**2**	White
Red	**G**	**3**	White
Green	**J**	**4**	White
Blue	**L**	**5**	White
Yellow	**N**	**6**	Black
Gray	**Q**	**7**	Black
Orange	**S**	**8**	Black

10. MOUNTING

	ROCKER / MOUNTING INSERT STYLE
A	Standard Rocker Bezel - 6-32 Inserts
B	Standard Rocker Bezel - M3 Inserts
C	Rocker Guard Bezel - 6-32 Inserts
D	Rocker Guard Bezel - M3 Inserts
E	Standard Bezel with recessed Off Side Flat Rocker - 6-32 Inserts
F	Standard Bezel with recessed Off Side Flat Rocker - M3 Inserts
G	Push to Reset Bezel - 6-32 Inserts
H	Push to Reset Bezel - M3 Inserts

11. MAXIMUM APPLICATION RATING

M 80 DC

12. AGENCY APPROVAL [4]

A	Without Approval
G	UL489 Listed
J	UL489A Listed, TUV Certified
T	UL489A Listed
7	UL489A Listed, TUV Certified

Notes:

1 Breakers with Terminal Codes 3 & 6 are supplied with bus bars connecting the Line and Load Terminals. For Terminal Code A, Line and Load Terminals must be connected to a copper bus bar having a minimum cross-section of 0.078 square inches. Terminal Code A is not available on the single pole unit.

2 Ratings for 101 to 125 amps are available in 1-pole.
Ratings from 110 to 200 amps are available in 2-pole.
For ratings from 225-300 amps, specify 3-pole.

3 1 pole only available with terminal codes 3 and 6.

4 Agency codes K and 7 are not available with 1 pole.
Agency code J is only available with 1 pole.
Agency code G is only available in 2 and 3 pole.
Circuit P, ratings 101-150 amps (2 pole) and ratings 151-250 amps (3 pole).

Configure Complete Part Number > | Browse Standard Parts >

Ordering Scheme

Rocker - UL 489 Listed

Sample Part Number	C	C	3	-	B	0	-	14	-	450	-	1	2	A	-	K	G
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

C

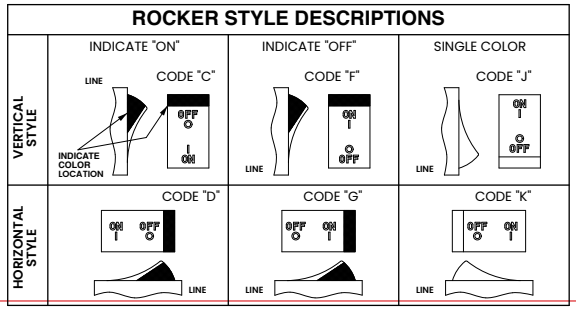
2. ACTUATOR [1]

Two Color Visi-Rocker

C	Indicate ON, vertical legend
D	Indicate ON, horizontal legend
F	Indicate OFF, vertical legend
G	Indicate OFF, horizontal legend

Single color

J	Vertical legend
K	Horizontal legend



3. POLES [1]

1	One	**2**	Two	**3**	Three

4. CIRCUIT

B Series Trip (current)

5 AUXILIARY/ALARM SWITCH [2]

0	without Aux Switch	**6**	S.P.S.T., 0.139 Solder Lug
2	S.P.D.T., 0.110 Q.C. Term.	**8**	S.P.S.T., 0.187 Q.C. Term.
3	S.P.D.T., 0.139 Solder Lug	**9**	S.P.D.T., 0.187 Q.C. Term. (Gold Contacts)
4	S.P.D.T., 0.110 Q.C. Term.		

6. FREQUENCY & DELAY

11	DC Ultra Short	**26**	50/60Hz Long
12	DC Short	**42** [8]	50/60Hz Short, High-inrush
14	DC Medium	**44** [8]	50/60Hz Medium, High-inrush
16	DC Long	**46** [8]	50/60Hz Long, High-inrush
21	50/60Hz Ultra Short	**52** [8]	DC Short, High-inrush
22	50/60Hz Short	**54** [8]	DC Medium, High-inrush
24	50/60Hz Medium	**56**	DC Long, High-inrush

Notes:

1. Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.
2. On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.
3. Available up to 50 amps maximum.
4. Current ratings 71 - 100 with VDE approvals are available up to two poles maximum.
5. Terminal Code 1 available to 60 amps maximum.
6. Terminal Codes 2, 4, 5 & C available to 50 amps maximum.
7. Terminal Codes 3, 6, 9 & A available to 100 amps maximum.
8. Terminal Codes 9 & C are not VDE approved.
9. Color shown is visi and legend with remainder of rocker black
10. Dual = ON-OFF/I-O legend on actuator.
11. VDE and TUV approval requires Dual (I-O, ON-OFF) markings on rocker.
12. Rockerguard available with all actuator codes.
13. Barriers supplied on multi-pole units only.
14. 2 & 3 pole circuit breakers required for 120/240 AC rating.

Configure Complete Part Number > | Browse Standard Parts >

7. CURRENT RATING (AMPERES) [2]

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
210	0.100	**295**	0.950	**470**	7.000	**618**	18.000
215	0.150	**410**	1.000	**475**	7.500	**620**	20.000
220	0.200	**512**	1.250	**480**	8.000	**622**	22.000
225	0.250	**415**	1.500	**485**	8.500	**624**	24.000
230	0.300	**517**	1.750	**490**	9.000	**625**	25.000
235	0.350	**420**	2.000	**495**	9.500	**630**	30.000
240	0.400	**522**	2.250	**610**	10.000	**635**	35.000
245	0.450	**425**	2.500	**710**	10.500	**640**	40.000
250	0.500	**527**	2.750	**611**	11.000	**650**	50.000
255	0.550	**430**	3.000	**711**	11.500	**660**	60.000
260	0.600	**435**	3.500	**612**	12.000	**670**	70.000
265	0.650	**440**	4.000	**712**	12.500	**680**	80.000
270	0.700	**445**	4.500	**613**	13.000	**685**	85.000
275	0.750	**450**	5.000	**614**	14.000	**690**	90.000
280	0.800	**455**	5.500	**615**	15.000	**695**	95.000
285	0.850	**460**	6.000	**616**	16.000	**810**	100.000
290	0.900	**465**	6.500	**617**	17.000		

8. TERMINAL [3]

1	Stud 10-32 [5]	**6**	Stud M6 [7]
2	Screw 10-32 with saddle [6]	**9**	7/16" Clip Terminal & washer clamps [7,8]
3	Stud 1/4-20 [7]	**A**	Plug-In Stud [7,8]
4	Stud M5 x 0.8 [6]	**C**	5/16" Clip Terminal [6,8]
5	Screw M5 x 0.8 with saddle & washer clamps [6]		

9. ACTUATOR COLOR & LEGEND

Actuator or Visi-Color	Marking:		Marking Color:	
Color:	**ON-OFF**	**Dual** [10]	**Single Color Rocker/Handle**	**Visi-Rocker**
White	**B**	**1**	Black	White
Black	**D**	**2**	White	n/a
Red	**G**	**3**	White	Red
Green	**J**	**4**	White	Green
Blue	**L**	**5**	White	Blue
Yellow	**N**	**6**	Black	Yellow
Gray	**Q**	**7**	Black	Gray
Orange	**S**	**8**	Black	Orange

10. MOUNTING / BARRIERS [12]

	Standard Rocker Bezel Threaded Insert, 2 per pole	BARRIERS [13]
A	6-32 X 0.195 inches	yes
C	ISO M3 x 5mm	yes
	Rockerguard Bezel Threaded Insert, 2 per pole	
B	6-32 x 0.195 inches	yes
D	ISO M3 x 5mm	yes

11. MAXIMUM APPLICATION RATING

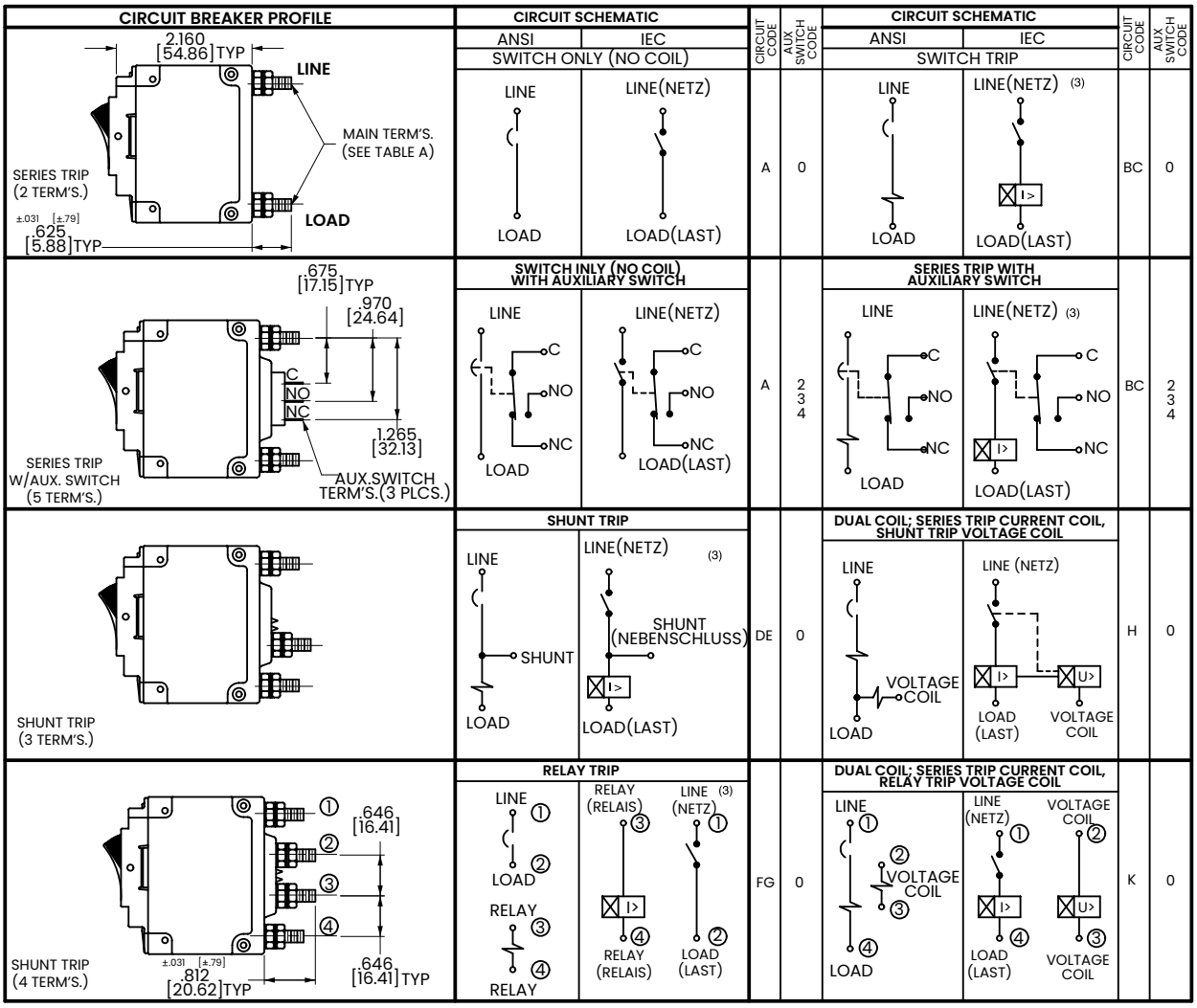
B	125 DC
C	120/240 AC [14]
D	240 AC
F	277 AC
K	120 AC
M	80 DC

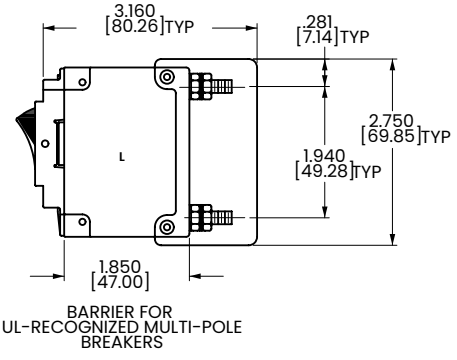
12. AGENCY APPROVAL

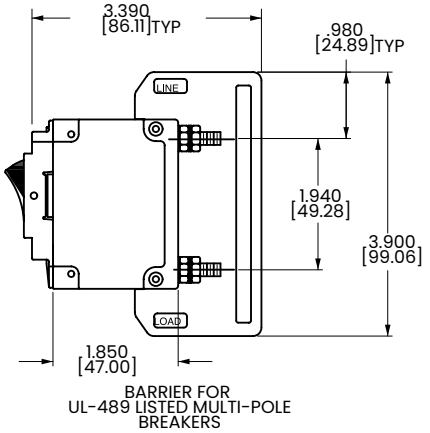
A	without approvals
F	UL 489 Listed, CSA Certified, & VDE Certified
G	UL 489 Listed & CSA Certified
J	UL 489 Listed, CSA Certified & TUV Certified

Circuit & Terminal Diagrams Rocker

inches [millimeters]



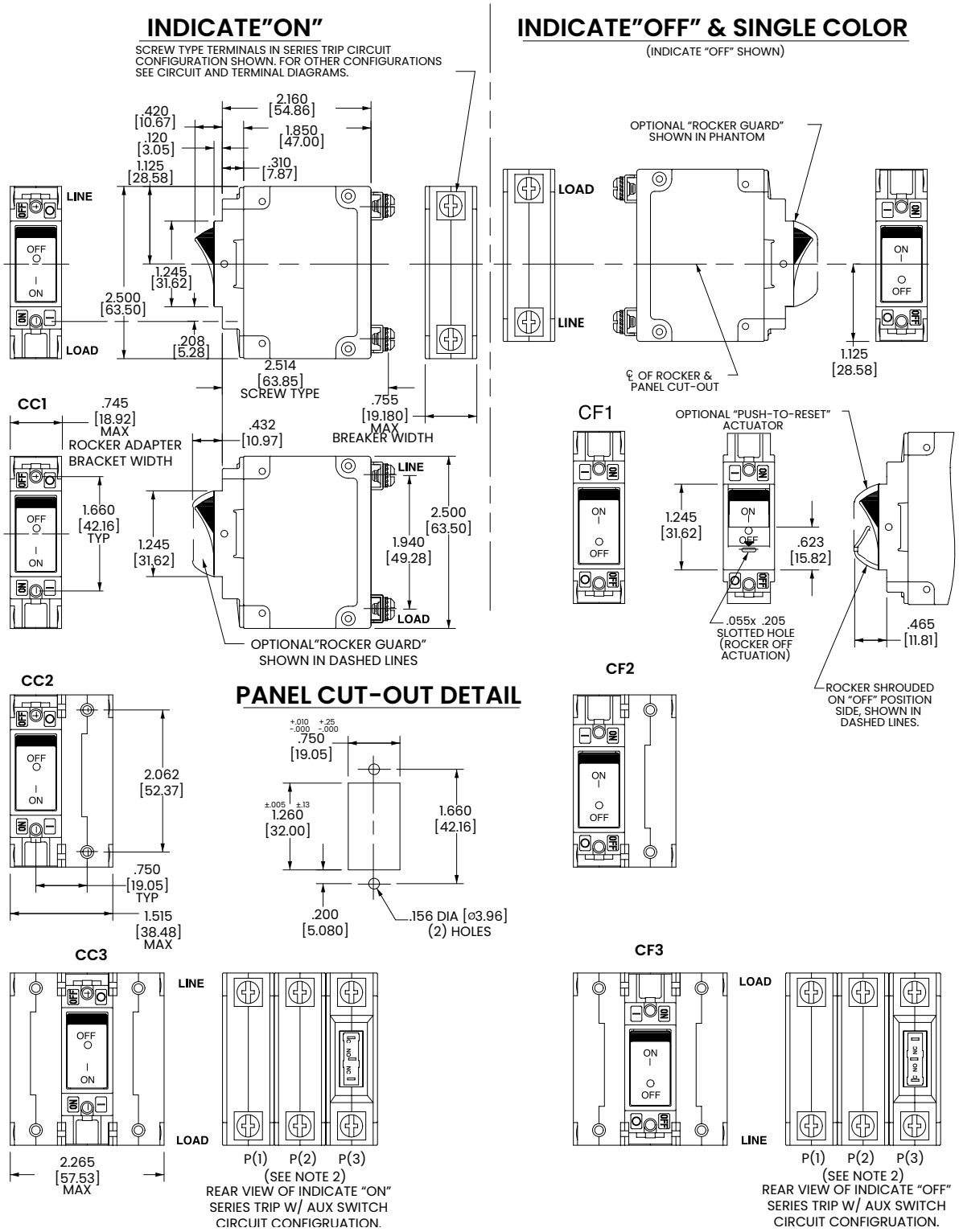




Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.
2 Schematic shown represents current trip circuit.

Dimensional Specs Rocker

inches [millimeters]



Notes:
1 Dimensions apply to all variations shown. Notice that circuit breaker line and load terminal orientation on indicate OFF is opposite of indicate ON.
2 For pole orientation with horizontal legend, rotate front view clockwise 90°.
3 Tolerance ±.020 [.51] unless otherwise specified.

Ordering Scheme

Flat Rocker - UL 1077 Recognized

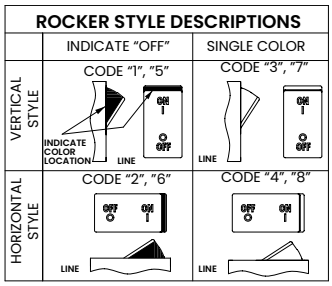
Sample Part Number	C	1	2	-	B	0	-	10	-	450	-	1	2	1	-	E
Selection	1		2	3		4	5		6		7	8	9	10		11

1. SERIES

C

2. ACTUATOR [1]

Two Color Visi-Rocker
1 Indicate OFF, vertical legend
2 Indicate OFF, horizontal legend
Single color
3 Vertical legend
4 Horizontal legend
Push-To-Reset, Visi-Rocker
5 Indicate OFF, vertical legend
6 Indicate OFF, horizontal legend
Push-To-Reset , Single color
7 Vertical legend
8 Horizontal legend



3. POLES [2]

1 One **2** Two **3** Three

4. CIRCUIT

F [4] Relay Trip (Current)
A [3] Switch Only (No Coil)
G [4] Relay Trip (Voltage)
B Series Trip (Current)
H [4,5] Dual Coil with Shunt Trip
C Series Trip (Voltage) Voltage Coil
D [4] Shunt Trip (Current)
K [4,5] Dual Coil with Relay Trip
E [4] Shunt Trip (Voltage) Voltage Coil

5. AUXILIARY / ALARM SWITCH [6]

0 without Aux Switch
2 S.P.D.T., 0.110 Q.C. Term.
3 S.P.D.T., 0.139 Solder Lug
4 S.P.D.T., 0.110 Q.C. Term. (Gold Contacts)
6 S.P.S.T., 0.139 Solder Lug
8 S.P.S.T., 0.187 Q.C. Term.
9 S.P.D.T., 0.187 Q.C. Term.

6. FREQUENCY & DELAY

03 DC 50/60Hz, Switch Only
10 [7] DC Instantaneous
11 DC Ultra Short
12 DC Short
14 DC Medium
16 DC Long
20 [7] 50/60Hz Instantaneous
21 50/60Hz Ultra Short
22 50/60Hz Short
24 50/60Hz Medium
26 50/60Hz Long
30 DC 50/60Hz Instantaneous
31 DC 50/60Hz Ultra Short
32 DC 50/60Hz Short
34 DC 50/60Hz Medium
36 DC 50/60Hz Long
42 [8] 50/60Hz Short, High-inrush
44 [8] 50/60Hz Medium, High-inrush
46 [8] 50/60Hz Long, High-inrush
52 [8] DC Short, High-inrush
54 [8] DC Medium, High-inrush
56 [8] DC Long, High-inrush

Notes:
1 Push-to-reset actuators have OFF portion of rocker shrouded.
2 Multi-pole breakers have all poles identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker. Rocker location as viewed from front panel: 2 pole – left pole; 3 pole – center pole.
3 Switch Only circuits, rated up to 50 amps and 3 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.
5 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 multipole breakers, one auxiliary switch is supplied, mounted in the extreme right pole. Auxiliary switch codes 2, 3 & 4 are VDE approved.
7 Voltage coils not rated for continuous duty. Available only with delay codes 10 and 20.
8 Available with Circuit Codes B & D only, and up to 50 amps maximum.
9 Current ratings 60-70 are available up to four poles maximum. Current 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 & 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, 9 & C are not VDE approved.
16 Color shown is visi & legend with remainder of rocker black. Dual = ON-OFF/I-O legend.
17 Legend on Push-to-reset bezel/shroud is white with single color actuator codes 7 & 8. Legend on Push-to-reset bezel/shroud matches visi-color of rocker with actuator codes 5 & 6.
18 VDE/TUV approval requires Dual (I-O, ON-OFF) or I-O markings on rocker.
19 VDE/TUV: 30 amps max.; UL/CSA: 50 amps max.; Available in 2 & 3 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.
20 Recessed "OFF SIDE" available with actuator codes 1,2,3&4. Legends on rocker are available in ink stamping only.

7. CURRENT RATING (AMPERES) [9]

CODE	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	**660** [9]	60.000
090	0.090	**512**	1.250	**610**	10.000	**670** [9]	70.000
095	0.095	**415**	1.500	**710**	10.500	**680** [9]	80.000
210	0.100	**517**	1.750	**611**	11.000	**685** [9]	85.000
215	0.150	**420**	2.000	**711**	11.500	**690** [9]	90.000
220	0.200	**522**	2.250	**612**	12.000	**695** [9]	95.000
225	0.250	**425**	2.500	**712**	12.500	**810** [9]	100.000
230	0.300	**527**	2.750	**613**	13.000		

OR VOLTAGE COIL (NORMAL RATED VOLTAGE) [7]

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. TERMINAL

1 Stud 10-32 [10]
2 Screw 10-32 with saddle [11]
3 Stud 1/4-20 [12]
4 Stud M5 x 0.8 [11]
5 Screw M5 x 0.8 [11]
6 Stud M6 [12]
9 7/16" Clip Terminal
7 0.250 Double Click Connect [13]
A Plug-In Stud [14]
C 5/16" Clip Terminal

9. ACTUATOR COLOR & LEGEND [16,17,18]

Actuator or Visi-Color Color:	Marking: I-O	ON-OFF	Dual/None	Marking Color: Single Color Rocker/Handle	Visi-Rocker
White	**A**	**B**	**1**	Black	White
Black	**C**	**D**	**2**	White	n/a
Red	**F**	**G**	**3**	White	Red
Green	**H**	**J**	**4**	White	Green
Blue	**K**	**L**	**5**	White	Blue
Yellow	**M**	**N**	**6**	Black	Yellow
Gray	**P**	**Q**	**7**	Black	Gray
Orange	**R**	**S**	**8**	Black	Orange

10 MOUNTING / BARRIERS [1]

STANDARD ROCKER BEZEL		BARRIERS	VOLTAGE
1	6-32 x 0.195 inches	no	<300
2	6-32 x 0.195 inches	yes	<300
3 [19]	6-32 x 0.195 inches	yes	≥300
4	ISO M3 x 5mm	no	<300
5	ISO M3 x 5mm	yes	<300
6 [19]	ISO M3 x 5mm	yes	≥300
	ROCKERGUARD BEZEL		
A	6-32 x 0.195 inches	no	<300
C	6-32 x 0.195 inches	yes	<300
E [19]	6-32 x 0.195 inches	yes	≥300
G	ISO M3 x 5mm	no	<300
J	ISO M3 x 5mm	yes	<300
L [19]	ISO M3 x 5mm	yes	≥300
	PUSH-TO-RESET BEZEL		
B	6-32 x 0.195 inches	no	<300
D	6-32 x 0.195 inches	yes	<300
F [19]	6-32 x 0.195 inches	yes	≥300
H	ISO M3 x 5mm	no	<300
J	ISO M3 x 5mm	yes	<300
M [19]	ISO M3 x 5mm	yes	≥300

11 AGENCY APPROVAL

C UL Recognized & CSA Accepted
E TUV Certified, UL Recognized & CSA Accepted
I UL Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted
L UL489 Construction: UL Recognized & CSA Accepted
R UL489 Construction: TUV Certified, UL Recognized & CSA Accepted

Configure Complete Part Number > Browse Standard Parts >

Ordering Scheme

Flat Rocker - UL 489 Listed

Sample Part Number	C	1	2	-	B	0	-	14	-	450	-	1	2	A	-	K	G
Selection		1	2	3		4	5		6		7		8	9	10	11	12

1. SERIES

C

2. ACTUATOR [1]

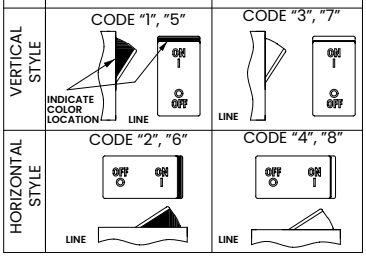
Two Color Visi-Rocker
1 Indicate OFF, vertical legend
2 Indicate OFF, horizontal legend

Single color
3 Vertical legend
4 Horizontal legend

Push-To-Reset, Visi-Rocker
5 Indicate OFF, vertical legend
6 Indicate OFF, horizontal legend

Push-To-Reset , Single color
7 Vertical legend
8 Horizontal legend

ROCKER STYLE DESCRIPTIONS



3. POLES [2]

1	One	**2**	Two	**3**	Three

4. CIRCUIT

B	Series Trip (current)

5 AUXILIARY/ALARM SWITCH [2]

0	without Aux Switch	**6**	S.P.S.T., 0.139 Solder Lug
2	S.P.D.T., 0.110 Q.C. Term.	**8**	S.P.S.T., 0.187 Q.C. Term.
3	S.P.D.T., 0.139 Solder Lug	**9**	S.P.D.T., 0.187 Q.C. Term.
4	S.P.D.T., 0.110 Q.C. Term. (Gold Contacts)		

6. FREQUENCY & DELAY

11	DC Ultra Short	**26**	50/60Hz Long
12	DC Short	**42** [4]	50/60Hz Short, High-inrush
14	DC Medium	**44** [4]	50/60Hz Medium, High-inrush
16	DC Long	**46** [4]	50/60Hz Long, High-inrush
21	50/60Hz Ultra Short	**52** [4]	DC Short, High-inrush
22	50/60Hz Short	**54** [4]	DC Medium, High-inrush
24	50/60Hz Medium	**56** [4]	DC Long, High-inrush

Notes:
1 Push-to-reset actuators have OFF portion of rocker shrouded.
2 Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.
3 On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.
4 Available up to 50 amps maximum.
5 Current ratings 71 - 100 with VDE approvals are available up to two poles maximum.
6 Terminal Code 1 available to 60 amps maximum.
7 Terminal Codes 2, 4, 5 & C available to 50 amps maximum.
8 Terminal Codes 3, 6, 9 & A available to 100 amps maximum.
9 Terminal Codes 9 & C are not VDE approved.
10 Color shown is visi and legend with remainder of rocker black
11 Dual = ON-OFF/I-O legend on actuator.
12 TUV approval requires Dual (I-O, ON-OFF) markings on rocker.
13 Legend on push-to-reset bezel/shroud is white when single color rocker is ordered. Legend on push-to-reset bezel/shroud matches visi-color of rocker with actuator codes 5 & 6.
14 Recessed "OFF-SIDE" available with actuator codes 1, 2, 3, & 4. Legends on rocker are available in ink stamping only.
15 Barriers supplied on multi-pole units only.
16 2 & 3 pole circuit breakers required for 120/240 AC rating.

Configure Complete Part Number > | Browse Standard Parts >

7. CURRENT RATING (AMPERES) [5]

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
210	0.100	**295**	0.950	**470**	7.000	**618**	18.000
215	0.150	**410**	1.000	**475**	7.500	**620**	20.000
220	0.200	**512**	1.250	**480**	8.000	**622**	22.000
225	0.250	**415**	1.500	**485**	8.500	**624**	24.000
230	0.300	**517**	1.750	**490**	9.000	**625**	25.000
235	0.350	**420**	2.000	**495**	9.500	**630**	30.000
240	0.400	**522**	2.250	**610**	10.000	**635**	35.000
245	0.450	**425**	2.500	**710**	10.500	**640**	40.000
250	0.500	**527**	2.750	**611**	11.000	**650**	50.000
255	0.550	**430**	3.000	**711**	11.500	**660**	60.000
260	0.600	**435**	3.500	**612**	12.000	**670**	70.000
265	0.650	**440**	4.000	**712**	12.500	**680**	80.000
270	0.700	**445**	4.500	**613**	13.000	**685**	85.000
275	0.750	**450**	5.000	**614**	14.000	**690**	90.000
280	0.800	**455**	5.500	**615**	15.000	**695**	95.000
285	0.850	**460**	6.000	**616**	16.000	**810**	100.000
290	0.900	**465**	6.500	**617**	17.000		

8. TERMINAL

1	Stud 10-32 [6]	**6**	Stud M6 [8]
2	Screw 10-32 with saddle [7]	**9**	7/16" Clip Terminal [8,9]
3	Stud 1/4-208	**A**	Plug-In Stud [8]
4	Stud M5 x 0.8 [7]	**C**	5/16" Clip Terminal [7,9]
5	Screw M5 x 0.8 [7]		

9 ACTUATOR COLOR & LEGEND [10]

Actuator or Visi-Color Color:	Marking: ON-OFF	Dual [10]	Marking Color: Single Color Rocker/Handle	Visi-Rocker
White	**B**	**1**	Black	White
Black	**D**	**2**	White	n/a
Red	**G**	**3**	White	Red
Green	**J**	**4**	White	Green
Blue	**L**	**5**	White	Blue
Yellow	**N**	**6**	Black	Yellow
Gray	**Q**	**7**	Black	Gray
Orange	**S**	**8**	Black	Orange

10. MOUNTING / BARRIERS

	STANDARD ROCKER BEZEL	BARRIERS [15]
	Threaded Insert, 2 per pole	
A	6-32 X 0.195 inches	yes
C	ISO M3 x 5mm	yes
	RECESSED OFF ROCKER [14]	
	Threaded Insert, 2 per pole	
E	6-32 x 0.195 inches	yes
F	ISO M3 x 5mm	yes
	PUSH-TO-RESET BEZEL [13]	
	Threaded Insert, 2 per pole	
B	6-32 x 0.195 inches	yes
D	ISO M3 x 5mm	yes

11. MAXIMUM APPLICATION RATING

B	125 DC
C	120/240 AC [16]
D	240 AC
F	277 AC
K	120 AC
M	80 DC

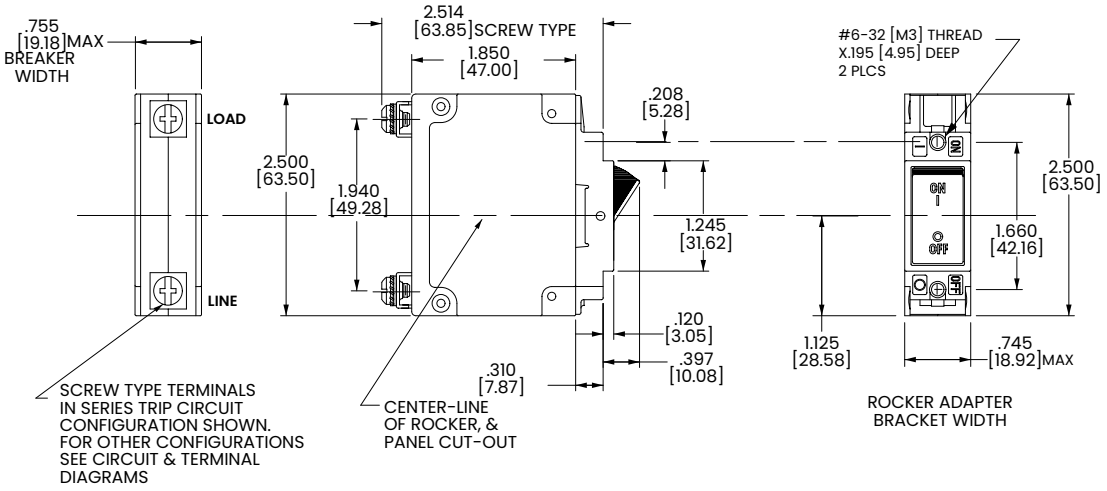
12. AGENCY APPROVAL [12]

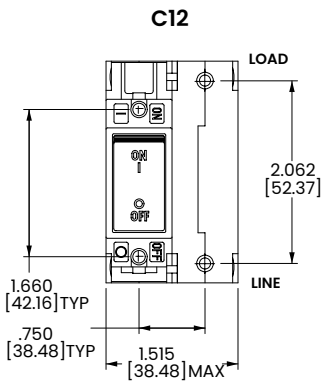
A	without approvals
G	UL 489 Listed & CSA Certified
J	UL489 Listed, CSA Certified & TUV Certified

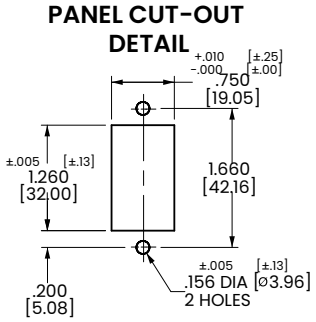
Dimensional Specs Flat Rocker

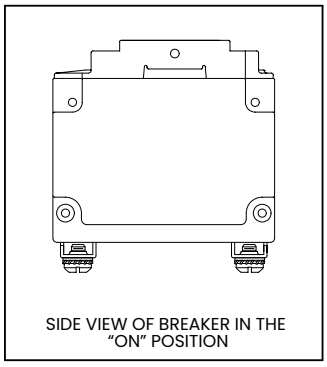
inches [millimeters]

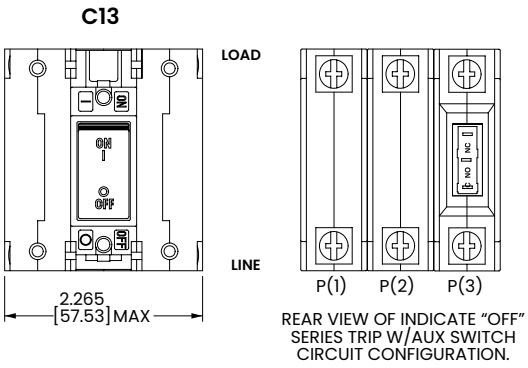
INDICATE"OFF" & SINGLE COLOR



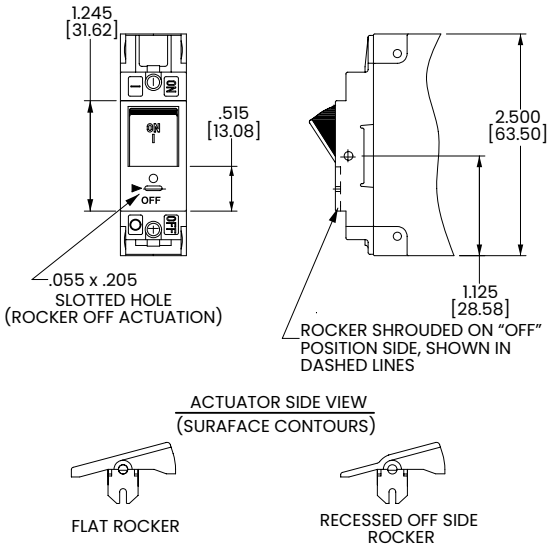








PUSH-TO-RESET ACTUATOR



Notes:
1 For pole orientation with horizontal legend, rotate front view clockwise 90°.
2 Tolerance ±.020 [.51] unless otherwise specified.

Authorized Sales Representatives and Distributors

Click on a region of the map below to find your local representatives and distributors or visit www.carlingtech.com/findarep.

About Carling

Founded in 1920, Carling Technologies is a leading manufacturer of electrical and electronic switches and assemblies, circuit breakers, electronic controls, power distribution units, and multiplexed power distribution systems. With six ISO9001 and IATF16949 registered manufacturing facilities and technical sales offices worldwide, Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! To learn more about Carling please visit www.carlingtech.com/company-profile.

To view all of Carling's environmental, quality, health & safety certifications please visit www.carlingtech.com/environmental-certifications.

Carling Technologies®

CX-Series

Hydraulic-Magnetic Circuit Breaker

PRODUCT WEBPAGE

request sample, configure part, watch video

High Amperage and DC Voltage Circuit Breaker Disconnect for UL 489B Applications

The CX-Series hydraulic-magnetic circuit breakers employ a patented magnetic flux boosting terminal configuration to offer rapid cooling and superior performance for high amperage and high DC voltage applications. Compact in size, the CX-Series is available as a one pole breaker rated up to 125 amps, as a two to four pole breaker rated up to 115 amps, and as a disconnect option with additional amperage and pole configuration options. Maximum voltage capacity of 600VDC and 10,000 amps max IC.

1-6	1-25	600	Suited for 380VDC
Poles	Amps	VDC Max	Applications

Typical Applications

- Datacom, PDU and UPS Systems
- Power Supplies and Convertors
- Renewable Energy
- Motor Controllers
- Charging Stations
- Smart Grids
- Mission Critical Equipment

www.carlingtech.com 860.793.9281 sales@carlingtech.com

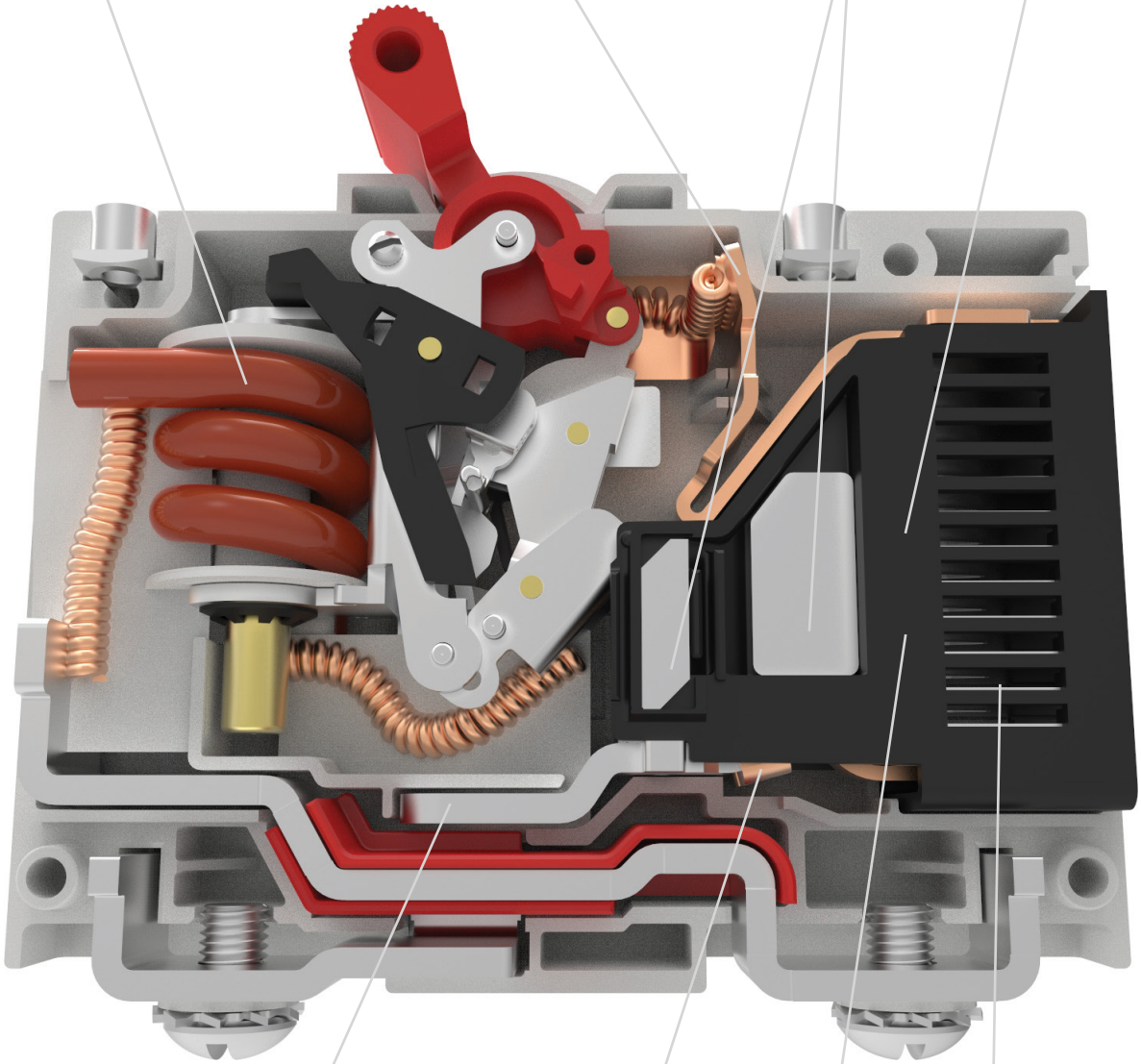
Design Features

HYDRAULIC/MAGNETIC SENSING COIL

UPPER ARC RUNNER
Aids in motivating arc off of movable contact and into arc chamber

MAGNETS

ARC SPLITTER RETAINER
with integrated pressurizing walls



PATENTED MAGNETIC FLUX BOOSTING TERMINAL CONFIGURATION
Design enhances motivation of arc into arc chamber

LOWER ARC RUNNER
Aids in motivating arc off of stationary contact and into arc chamber

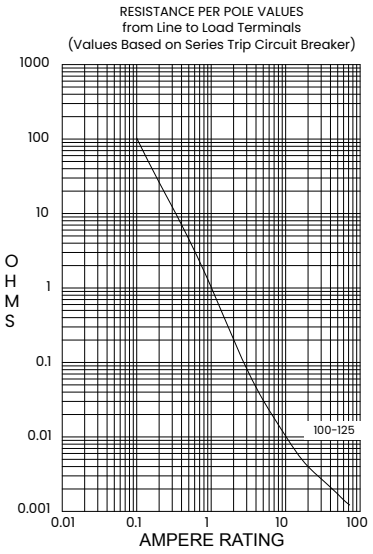
LARGE ARC GAP
To generate high arc voltages

(12) ARC DEIONIZING SPLITTER PLATES

Tech Specs

Electrical

Maximum Voltage	600 VDC
Overload	50 operations at 600% of rated current for UL489, and at 150% of rated current for UL1077.



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 5.0	15
5.1 - 20.0	25
20.1 - 50.0	35

Physical

Number of Poles	1- 2 poles, + Auxiliary Switch Pole.
Termination	10-32 or M5 Screw Terminals
Terminals	1/4-20 or M6 Threaded Stud
Termination Barrier	Standard with multi-pole constructions
Mounting	Threaded insert: #6-32 UNC-2B, or M3X0.5-6H B ISO (2 per pole)
Actuator	Handle, 1 per pole.
Internal Circuit Configuration	Series Trip
Materials	Housing - Glass filled Polyester Handle - Glass filled Polyester Line/Load Terminals - Copper Alloy.~150 Grams (~5.3 Ounces).
Weight	~150 Grams (~5.3 Ounces).
Standard Color	Housing - Gray. Handle - White, Black, Red, Green, Blue, Yellow, Gray,

Environmental

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

Shock	Withstands 100 Gs, 6ms saw tooth while carrying rated current per MILPRF-55629 and MIL-STD-202G, Method 213G, Test Condition "I". Instantaneous and ultra short curves tested at 90% of rated curren
Vibration	Withstands 0.060" excursion from 10-55 Hz & 10 Gs 55-500 Hz, at rated current per MIL-PRF-55629 and MILSTD-202G, Method 204D, Test Cond. A. Instantaneous & ultrashort curves tested at 90% of rated current.
Moisture Resistance	MIL-PRF-55629 and MIL-STD-202G, Method 106G, i.e., Ten 24- hour cycles at +25°C to +65°C, 80-98% RH.
Salt Spray	Method 101, Condition A (90-95% RH at 5% NaCl Solution, 96 hrs).
Thermal Shock	MIL-PRF-55629 and MIL-STD-202G, Method 107G, Condition A (5-cycles at -55°C to +25°C to +85°C to +25°C).
Operating Temperature	-40°C to +85°C.

Mechanical

Endurance	Max 10,000 ON-OFF operations @ 6 per minute; 6000 with rated current & voltage, and 4,000 cycles mechanical.
Trip Free	Trips on overload even when actuator is forcibly held in the "On" position.
Trip Indication	The operating handle moves positively to the "Off" position when an overload causes the breaker to trip.

*Manufacturer reserves the right to change product specification without prior notice.

Tech Specs

Tables

Table A: Lists UL Listed (UL489) configuration and performance capabilities as a Molded Case Circuit Breaker

UL489 Listed Branch Circuit Breakers					
Circuit Configuration	Voltage		Max Current Rating (Amps)	Interrupting Capacity (Amps)	Poles
	Max Rating	Frequency			
Series	250	DC	15	5,000	1
	250 / 500			10,000	2
	410 / 205		50		

Table B: Lists UL Recognized configurations and performance capabilities as a Component Supplementary Protector

UL1077 Component Supplementary Protector						
Circuit Configuration	Voltage		Max Current Rating (Amps)	Interrupting Capacity (Amps)	Poles	Application Code
	Max Rating	Frequency				
Series	300	DC	1 - 75	5,000	1	TC1, OL0, U3
	300		76 - 125	3,000		
	440		1 - 30	10,000	2	
			31 - 63	5,000		
	600		1 - 75			
			78 - 115	3,000		
Switch Only [1]	600		1 - 115	-	2 or 3	-

Notes
1 Requires inclusion of a relay trip voltage coil

Table C: Lists UL Listed (UL489B) configuration and performance capabilities as a Molded Case Switch

UL489B Listed Photovoltaic Molded Case Switch						
Circuit Configuration	Voltage			Current Rating (Amps)	Interrupting Capacity (Amps)	Application Code
	Max Rating	Frequency	Poles			
Series	600	DC	2 [1]	50 - 100	600	May have a third pole that is a voltage pole
			4 [2]	110 - 175		May have a fifth pole that is a voltage trip pole

Notes
1 Two poles in series.
2 Two poles in series in parallel with 2 poles in series.

Table D: TUV Certified Configuration to IEC / EN 60947-2. Low Voltage Switch gear and Control gear - Circuit Breakers

TUV IEC/EN 60947-2 Low Voltage Switch Gear & Control Gear / Circuit Breaker					
Circuit Configuration	Voltage			Current Rating (Amps)	Interrupting Capacity ICS / ICU (Amps)
	Max Rating	Frequency	Poles		
Series	440	DC	2	1 - 63	4,000

Ordering Scheme UL 489 Listed

Sample Part Number	C	X	1	-	B	0	-	14	-	615	-	2	2	A	-	12	G
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

C

2. ACTUATOR

X Handle, one per pole

3. POLES

1 One
2 Two

4. CIRCUIT

B Series Trip (current)

5 AUXILIARY/ALARM SWITCH

0 Without Aux Switch

6. FREQUENCY & DELAY

11 DC Ultra Short
12 DC Short
14 DC Medium
16 DC Long

7. CURRENT RATING (AMPERES)

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
220	0.20	**295**	0.95	**460**	6.00	**614**	14.00
225	0.25	**410**	1.00	**465**	6.50	**615**	15.00
230	0.30	**512**	1.25	**470**	7.00	**616**	16.00
235	0.35	**415**	1.50	**475**	7.50	**617**	17.00
240	0.40	**517**	1.75	**480**	8.00	**618**	18.00
245	0.45	**420**	2.00	**485**	8.50	**620**	20.00
250	0.50	**522**	2.25	**490**	9.00	**622**	22.00
255	0.55	**425**	2.50	**495**	9.50	**624**	24.00
260	0.60	**527**	2.75	**610**	10.00	**625**	25.00
265	0.65	**430**	3.00	**710**	10.50	**630**	30.00
270	0.70	**435**	3.50	**611**	11.00	**635**	35.00
275	0.75	**440**	4.00	**711**	11.50	**640**	40.00
280	0.80	**445**	4.50	**612**	12.00	**645**	45.00
285	0.85	**450**	5.00	**712**	12.50	**650**	50.00
290	0.90	**455**	5.50	**613**	13.00		

8. TERMINAL

2 Screw Terminal, 10-32
3 Stud, 1/4-20
5 Screw Terminal, M5
6 Stud, M6

9 ACTUATOR COLOR & LEGEND

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

10. MOUNTING INSERTS

A 6-32 Thread
B M3 Thread

11. MAXIMUM APPLICATION RATING

12 250 VDC
13 250/500 VDC [1]
15 205/410 VDC

12. AGENCY APPROVAL

A Without Approvals
G UL 489 Listed
S UL 489 Listed, TUV to IEC60947-2 [1]

Notes:
1 Only Available with 250/500 VDC up to 15 amps.

Configure Complete Part Number > Browse Standard Parts >

Ordering Scheme UL 489B Listed

Sample Part Number	C	X	2	-	S	0	-	03	-	810	-	3	2	A	-	06	14
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

C

2. ACTUATOR

X Handle, one per pole

3. POLES 1,2

2 Two
3 Three
4 Four
5 Five

4. CIRCUIT

S Switch Only

5. RELAY TRIP VOLTAGE COIL RATING 1,2

0 Without Relay Trip Voltage Coil
A 12 VDC
B 24 VDC
C 32 VDC
D 48 VDC

6. FREQUENCY & DELAY

03 DC Switch Only

7. CURRENT RATING (AMPERES) 1,3

2-Pole Section
810 50A - 100A

4-Pole Section
917 110A - 175A

8. TERMINAL 4,5

3 Stud, 1/4-20
6 Stud, M6
A Stud, 1/4-20, with 10-32 Screw Terminals on Voltage Pole
B Stud, M6, with M5 Screw Terminals on Voltage Pole

9 ACTUATOR COLOR & LEGEND

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

10. MOUNTING INSERTS

A 6-32 Thread
B M3 Thread

11. MAXIMUM APPLICATION RATING

06 600 VDC

12. AGENCY APPROVAL

A Without Approvals
14 UL489B Listed

Notes:
1 2 Pole Unit is required for ratings between 50A - 100A.
4 Pole Unit is required for ratings between 110A - 175A.
2 A Relay Trip Voltage Coil Pole may be added to either the 2 or 4 Pole construction.
The addition of this extra pole dictates a change in the designation for the number of poles in selection 3.
3 For Current Ratings between 50A - 100A select current code 810 (100A).
For Current Ratings between 101A - 175A select current code 917 (175A).
4 Voltage Pole must have screw terminals.
Switch Pole must have stud terminals.
5 On 3 Pole Unit, Voltage Pole to be located at P1 as standard.
On 5 Pole Unit, Voltage Pole to be located at P3 as standard.

Configure Complete Part Number > Browse Standard Parts >

COS-8067 Rev: B

Ordering Scheme UL 1077 Recognized

Sample Part Number	C	X	1	-	B	0	-	14	-	620	-	2	2	A	-	10	C
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

C

2. ACTUATOR

X	Handle, one per pole

3. POLES [7]

1	One	**3**	Three
2	Two	**4**	Four [10]

4. CIRCUIT

A	Switch Only (no coil) [1, 9]
B	Series Trip (current)
G	Relay Trip (voltage) [1, 2, 3, 9]

5. AUXILIARY SWITCH

0	Without Aux Switch

6. FREQUENCY & DELAY

03	DC 50/60Hz, Switch Only
10	DC Instantaneous
11	DC Ultra Short
12	DC Short
14	DC Medium
16	DC Long

7. CURRENT RATING (AMPERES)

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
220	0.200	**415**	1.500	**490**	9.000	**630**	30.000
225	0.250	**517**	1.750	**495**	9.500	**635**	35.000
230	0.300	**420**	2.000	**610**	10.000	**640**	40.000
235	0.350	**522**	2.250	**710**	10.500	**650**	50.000
240	0.400	**425**	2.500	**611**	11.000	**660**	60.000
245	0.450	**527**	2.750	**711**	11.500	**665**	65.000
250	0.500	**430**	3.000	**612**	12.000	**670**	70.000
255	0.550	**435**	3.500	**712**	12.500	**675**	75.000
260	0.600	**440**	4.000	**613**	13.000	**680**	80.000
265	0.650	**445**	4.500	**614**	14.000	**685**	85.000
270	0.700	**450**	5.000	**615**	15.000	**690**	90.000
275	0.750	**455**	5.500	**616**	16.000	**695**	95.000
280	0.800	**460**	6.000	**617**	17.000	**810**	100.000
285	0.850	**465**	6.500	**618**	18.000	**911**	115.000
290	0.900	**470**	7.000	**620**	20.000	**912**	125.000
295	0.950	**475**	7.500	**622**	22.000		
410	1.000	**480**	8.000	**624**	24.000		
512	1.250	**485**	8.500	**625**	25.000		

8. TERMINAL [8]

2	Screw, 10-32
3	Stud, 1/4-20
5	Screw, M5
6	Stud, M6

9 ACTUATOR COLOR & LEGEND

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

10. MOUNTING INSERTS

A	6-32 Thread
B	M3 Thread

11. MAXIMUM APPLICATION RATING

10	300VDC
11	440 VDC without factory installed terminal bus [4]
14	440VDC with factory installed terminal bus [4]
06	600VDC [5]
18	220/440VDC [11]

12. AGENCY APPROVAL

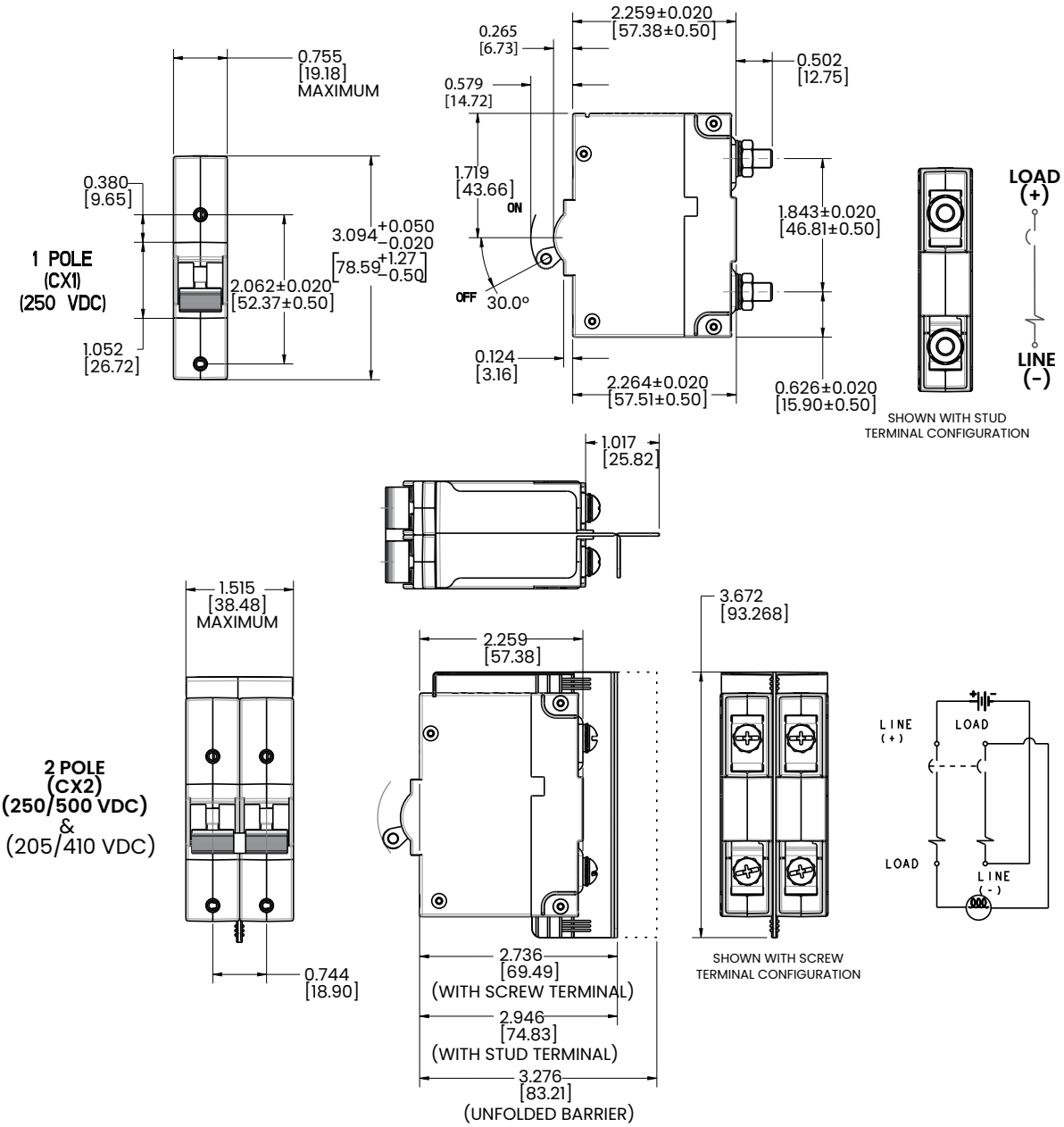
A	Without Approvals
C	UL 1077 Recognized
W	UL 1077 Recognized & TUV Certified IEC/ EN 60947-2 [9]

Notes:
1. Only available when tied to a protected pole. Requires special part number consult factory for details
2. Voltage trip circuit coil not rated for continuous duty - use instantaneous delay code 10
3. Contacts Rated for 20A @ 80 VDC
4. 440 VDC Rating available in two different wiring configurations.
5. 600 VDC only available with factory installed terminal bus.
6. Single pole units available up to 125A, multi pole units limited to 115A Max.
7. 3 Pole units must include one Auxiliary switch pole (circuit code A or G) - Requires Special Part Number. Unless breaker is rated 220/440 VDC (Voltage Code 18) in which case Circuit Code B is required.
8. Screw Terminals are limited to 50A max.
9. Agency approval code W only available with 440 VDC or 220/440 VDC rating and circuit code B.
10. 4 Pole 600 VDC units only available up to 75A Max.
11. 3 Pole 220/440 VDC units only available in one specific wiring configuration. See dimensional specifications pages for more details

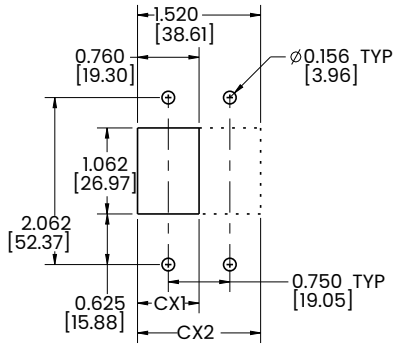
Configure Complete Part Number > | Browse Standard Parts >

Dimensional Specs UL 489 Listed

inches [millimeters]



PANEL CUTOUT DETAIL
TOLERANCES ± .005[.12]



Notes:
1 600V Rating requires minimum of 2 protected poles

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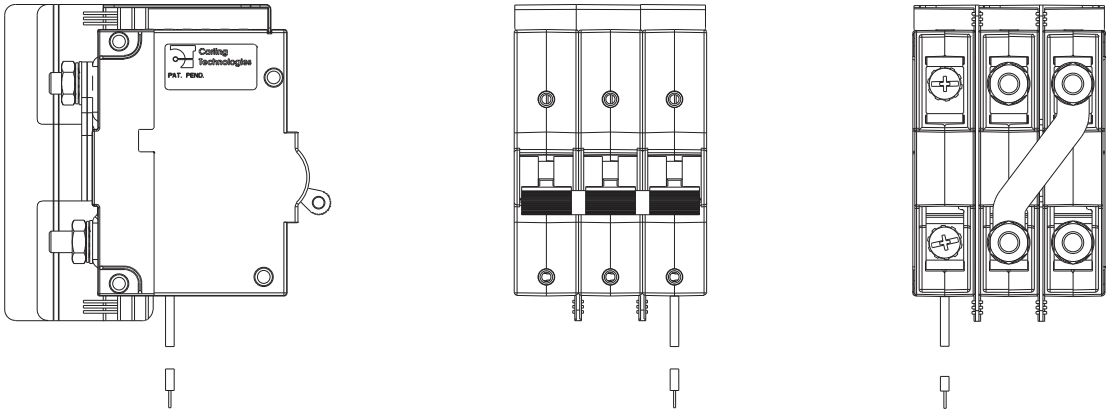
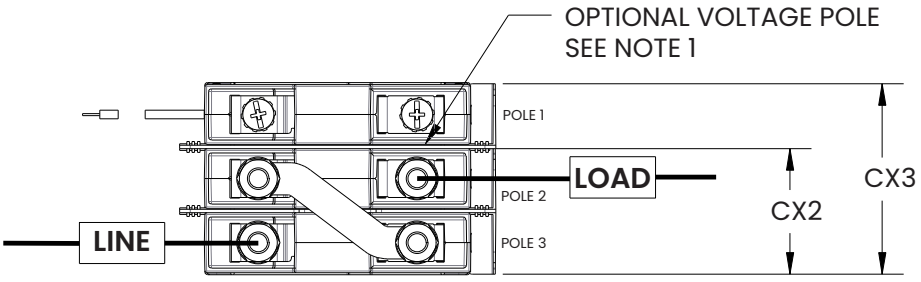
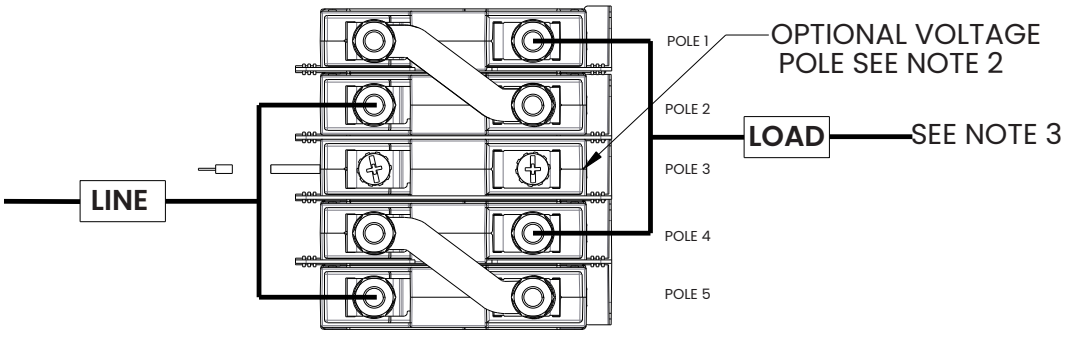
Dimensional Specs UL 489B Listed

inches [millimeters]





CX3-2 POLE SWITCH (CX2)SHOWN
WITH OPTIONAL VOLTAGE POLE
50A-100A DEVICE,600VDC

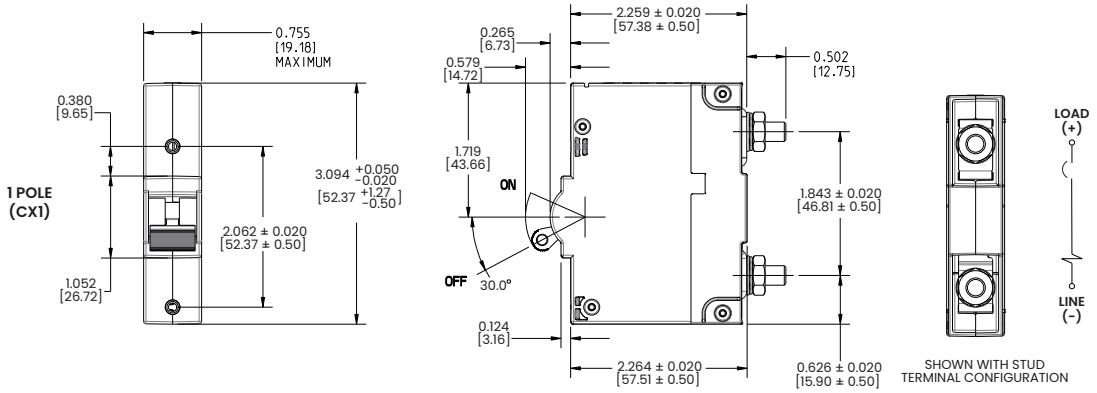


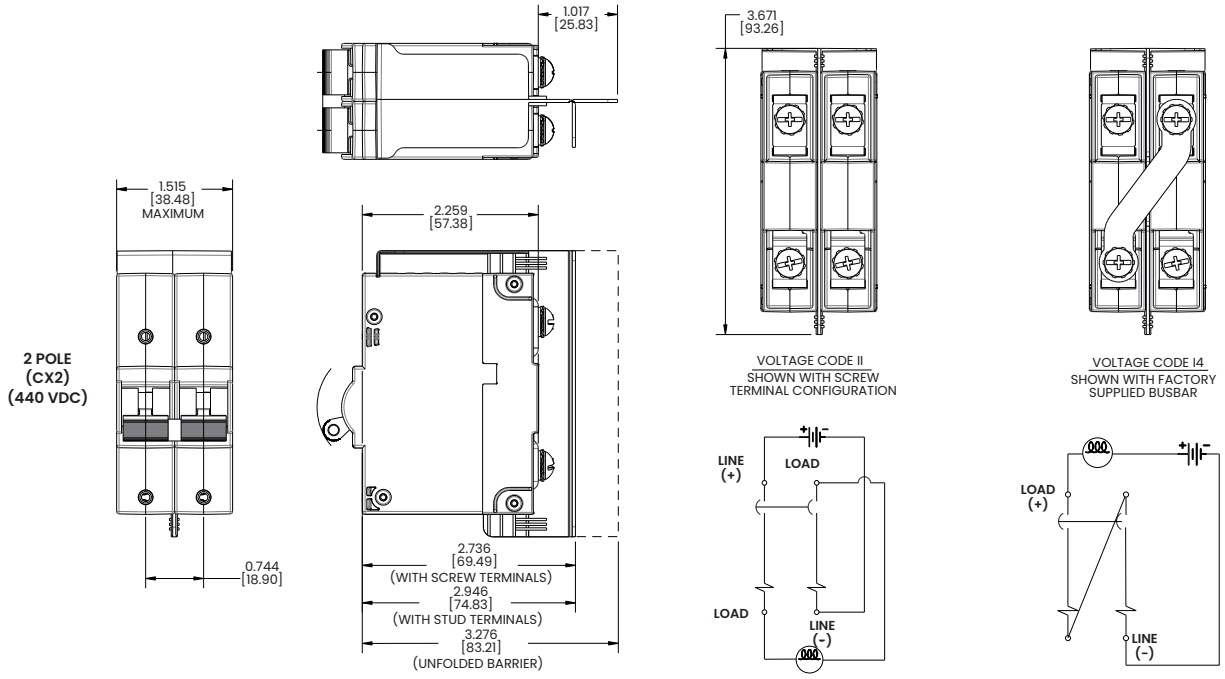
CX5-4 POLE SWITCH (CX4)SHOWN
WITH OPTIONAL VOLTAGE POLE
101A-175A DEVICE,600VDC

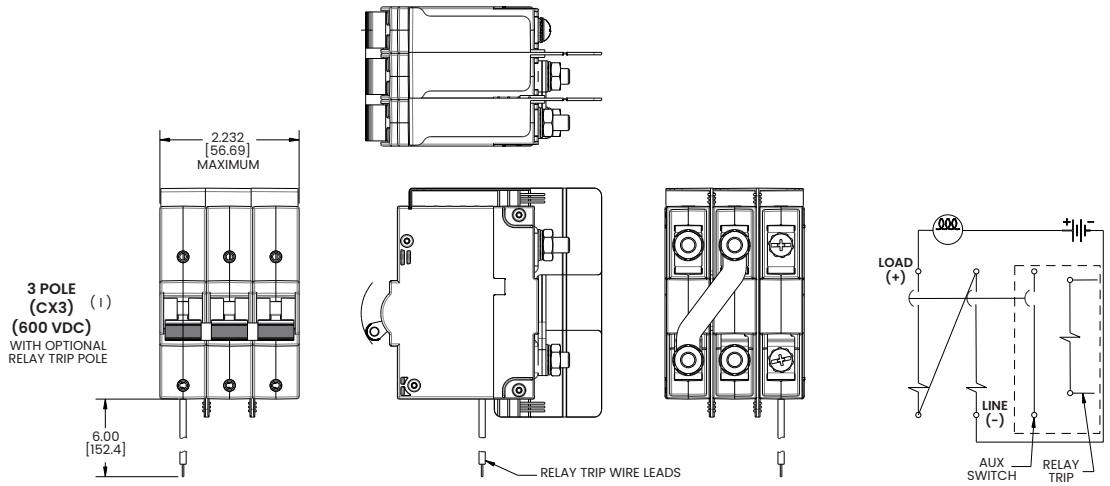
Notes:
1 3 pole configuration supplied with voltage coil on pole 1. Optional location pole 3. Consult factory.
2 5 pole configuration supplied with voltage coil in center pole. (Pole 3)
3 Line & Load connections requires bus connection as shown.
Minimum cross selection .127 in^2 (81.94 mm^2)

Dimensional Specs UL 1077 Recognized

inches [millimeters]







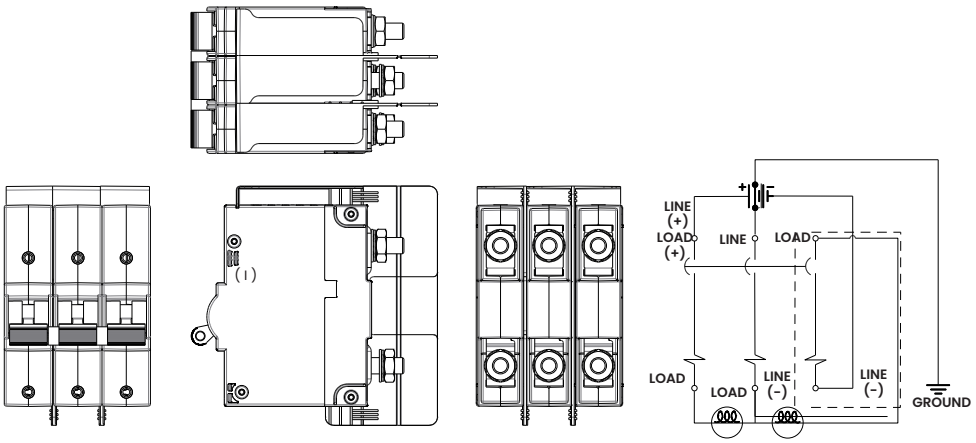
Notes:
1 600V Rating requires minimum of 2 protected poles

CLA-8118 Rev: E

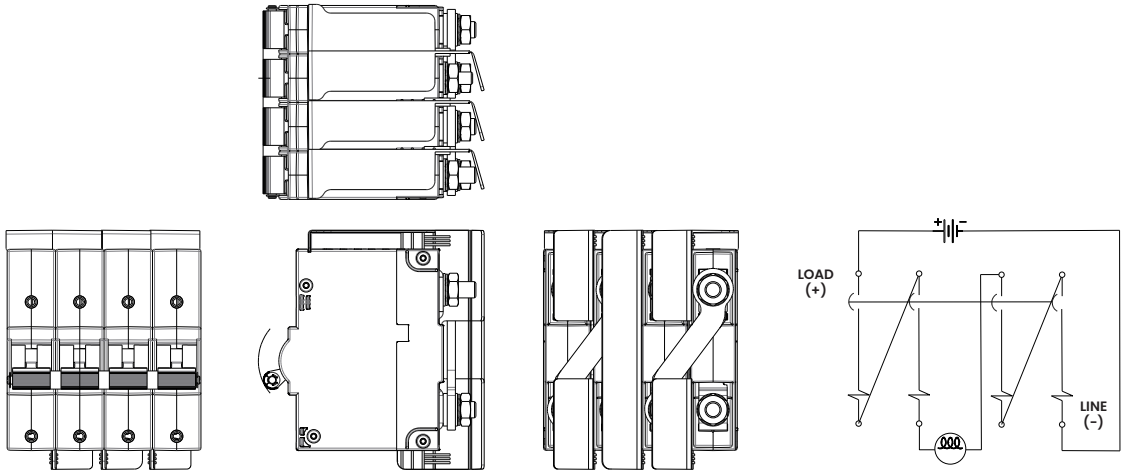
Dimensional Specs UL 1077 Recognized

inches [millimeters]

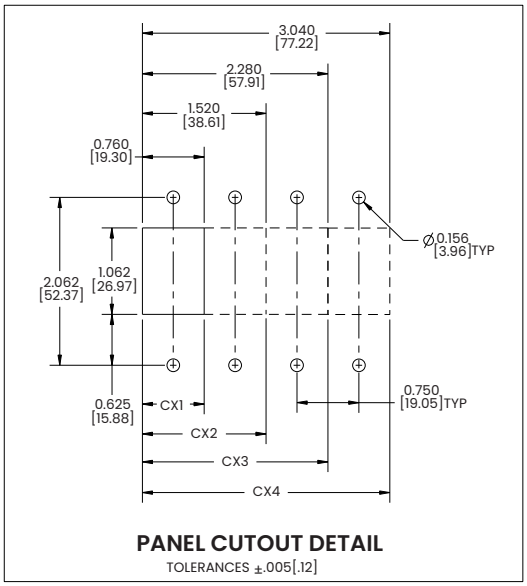
3 POLE (CX3) (220/440 VDC)



4 POLE (CX4) (1,2) (600 VDC)



(2) FOUR POLE UNIT AVAILABLE UP TO 75A MAXIMUM



PANEL CUTOUT DETAIL

TOLERANCES ±.005[.12]

Notes:

1 600V Rating requires minimum of 2 protected poles

CLA-8118 Rev: E

Authorized Sales Representatives and Distributors

Click on a region of the map below to find your local representatives and distributors or visit www.carlingtech.com/findarep.

About Carling

Founded in 1920, Carling Technologies is a leading manufacturer of electrical and electronic switches and assemblies, circuit breakers, electronic controls, power distribution units, and multiplexed power distribution systems. With six ISO9001 and IATF16949 registered manufacturing facilities and technical sales offices worldwide, Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! To learn more about Carling please visit www.carlingtech.com/company-profile.

To view all of Carling's environmental, quality, health & safety certifications please visit www.carlingtech.com/environmental-certifications.

Carling Technologies®

F-Series

Hydraulic-Magnetic Circuit Breaker

PRODUCT WEBPAGE

request sample, configure part

Handles High Current
Battery Disconnect for Contingency Power

The F-Series hydraulic-magnetic circuit breaker accommodates current ratings from 100 to 700 amps, as per agency approvals. An optional 25 millivolt metering shunt allows for safely monitoring current output. These breakers are available as a one to three pole configuration with maximum voltage ratings of 277VAC/125VDC and max IC of 50,000 amps.

1-3	100-700	277	125
Poles	Amps	VAC Max	VDC Max

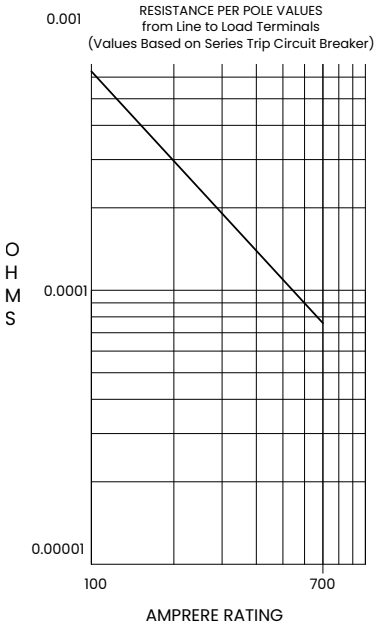
Typical Applications

- Higher Amperage Applications
- Battery Disconnect Systems
- Telecom
- Renewable Energy
- Military

Tech Specs

Electrical

Maximum Voltage	125VDC, 277VAC
Current Ratings	Standard current coils: 100, 125, 150, 175, 225, 250 amps. 300, 350, 400, 500, 600, 700 amps available as parallel pole construction.
Auxiliary Switch Rating	SPDT; 10.1 Amps @ 250VAC, 1.0 Amps @ 65VDC, 0.5 Amps @ 80VDC 0.1 Amps @ 125VAC (with gold contacts).
Insulation Resistance	Minimum: 100 Megohms at 500 VDC
Dielectric Strength	1960 VAC, 50/60 Hz for one minute between all electrically isolated terminals, except 2500 VAC for one minute between alarm/aux. switch and main terminals with contacts in open and closed position. F-Series circuit breakers comply with the 8mm spacing & 3750VAC 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 (%)
100 - 700	50

Mechanical

Endurance	4000 ON-OFF operations with rated Current & Voltage & 4000 operations with no load (8000 operations total) @ 5 per minute. Parallel Pole construction: 1000 operations with rated Current and Voltage @ 5 per minute.
Trip Free	All F-Series Circuit Breakers will trip on overload, even when the actuator is forcibly held in the ON position.
Trip Indication	The operating actuator moves positively to the OFF position when an overload causes the circuit breaker to trip.

Physical

Number of Poles	1-3 Poles Note: Ratings over 250 Amps only available with parallel pole.
Internal Circuit Configuration	Series (with or without auxiliary switch), Switch Only (with or without auxiliary switch).
Available Accessories	Factory installed: DC Current Metering Shunt (25 mV @Ir)
Weight	Varies depending on construction. Consult factory.
Standard Colors	Housing - Black; Actuator- Black or White with contrasting ON-OFF legend.

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 ultra-short curves tested @ 90% of rated current.
Vibration	Withstands 0.060" excursion from 10-55 Hz, and 10 Gs 55-500 Hz, at rated current per Method 204C, Test Condition A. Instantaneous and ultrashort curves tested at 90% of rated current.
Moisture Resistance	Method 106D; ten 24-hour cycles @ + 25°C to +65°C, 80-98% RH.56 days @ +85°C, 85% 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

*Manufacturer reserves the right to change product specification without prior notice.

Tech Specs

Tables

Table A: Lists UL Listed (489) and CSA Certified (C22.2 N0. 5.1-M) configurations and performance capabilities as a Molded Case Circuit Breaker

UL489 Listed Branch Circuit Breakers						
Circuit Configuration	Voltage			Current Rating	Interrupting Capacity (Amps)	
	Max Rating	Frequency	Phase	Full Load Amps	UL / CSA 1-3 Poles	TUV [2] 1 or 2 Poles
Series	125	DC	-	50 - 250	50,000	25,000
	120/240 [1]	50/60	1	100 - 250	10,000	-
	277					
	208Y / 120		3			

Notes:
1 120/240V rating available in 2 or 3 poles. In a 3 pole construction the center pole is Neutral.
2 TUV constructions are not available with AC ratings and 150-250 amp ratings only.

Table B: Lists UL Listed configurations and performance capabilities as Circuit Breakers for use in Communications Equipment (Guide DITT, File E189195), under UL489A

UL489 Listed Branch Circuit Breakers				
Circuit Configuration	Voltage		Current Rating	Interrupting Capacity (Amps)
	Max Rating	Frequency	Full Load Amps	Without Backup Fuse
Series	125	DC	251 - 700	50,000

Agency Approvals

UL 489	Circuit Breakers , Molded Case (Guide DIVQ, File E129899) Complies with the requirements of the CSA Standard for Molded Case Circuit Breakers,
UL 489A	CANCSA- C22.2 No. 5.1 –M Circuit Breakers for Use in Communications Equipment (Guide DITT, File E189195)
TUV Certified	IEC 60947-2 Low Voltage Switchgear and Control Gear under TUV License No. R72031058

Ordering Scheme

Sample Part Number	F	A	2	-	B	0	-	14	-820	-	1	2	A	-	B	G
Selection	1	2	3		4	5		6	7		8	9	10		11	12

1. SERIES

F

2. ACTUATOR

A	Handle, one per pole
S	Mid-Trip Handle, one per pole
T	Mid-Trip Handle, one per pole & Alarm Switch

3. POLES

1	One	**2**	Two	**3**	Three

4. CIRCUIT [2]

A	Switch Only (no coil) [1]
B	Series Trip (current)
C	Series Trip (voltage) [2]
Parallel Pole Construction:	
M	Series Trip (Current) with Metering Shunt [3,4]
N	Switch Only with Metering Shunt [3,4]
P	Series Trip (Current) [3]
Q	Switch Only [3]

5 AUXILIARY SWITCH [5]

0	without Auxiliary Switch
2	S.P.D.T. 0.110 Q.C. Terminals
4	S.P.D.T. 0.110 Q.C. Terminals (Gold Contacts)
5	S.P.S.T., 0.093 Q.C. Terminals (Gold Contacts)
6	S.P.S.T. 0.110 Q.C. Terminals
7	S.P.S.T. 0.110 Q.C. Terminals (Gold Contacts)
8	S.P.S.T. 0.187 Q.C. Terminals
9	S.P.D.T. 0.187 Q.C. Terminals
A	S.P.S.T., 0.093 Round QC Terminals [6]
B	S.P.D.T., 0.093 Round QC Terminals [6]

6. FREQUENCY & DELAY

03	DC 50/60Hz, Switch Only	**16**	DC Long
10	DC Instantaneous [7]	**22**	AC Short
11	DC Ultra Short	**24**	AC Medium
12	DC Short	**26**	AC Long
14	DC Medium		

7. CURRENT RATING (AMPERES) [4]

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
810	100.00	**922**	225.00	**845**	450.00 [8]
912	125.00	**825**	250.00	**850**	500.00 [8]
815	150.00	**830**	300.00 [8]	**860**	600.00 [8]
917	175.00	**835**	350.00 [8]	**870**	700.00 [8]
820	200.00	**840**	400.00 [8]		

OR VOLTAGE COIL [7]

CODE	RATING	TRIP VOLTS	CODE	RATING	TRIP VOLTS	CODE	RATING	TRIP VOLTS
A06	6DC	5DC	**A24**	24DC	20DC	**A65**	65DC	55DC
A12	12DC	10DC	**A32**	32DC	25DC	**J06**	6AC	5AC
A18	18DC	15DC	**A48**	48DC	40DC	**B25**	120DC	100DC

8. TERMINAL

Back Connected (Front Mounted Only)		**Max Rating**
1	3/8-16 Stud [9]	250A
2	3/8-16 Screw, Line & Load [14]	700A
5	3/8-16 Short Stud [14]	250A
Front Connected (Back Mounted Only) [11]		**Max Rating**
3	Box Wire Connector, Line & Load	700A
4	3/8-16 Screw, Line & Load [14]	700A

9. ACTUATOR COLOR & LEGEND [12,13]

Actuator Color	I-O	ON-OFF	Dual	Marking Color
White	**A**	**B**	**1**	Black
Black	**C**	**D**	**2**	White

10. MOUNTING

Front Mounting Inserts		Back Mounting Inserts
A	10-32	10-32 screw clearance holes
B	ISO M5	10-32 screw clearance holes

11. MAXIMUM APPLICATION RATING

	VOLTAGE	CURRENT
B	125 VDC	700A
C [15]	120/240	250A
F	277 VAC	250A
7 [16]	120/208 VAC	250A

12. AGENCY APPROVAL

A	No approvals
G	UL489 Listed & cULus
J	UL489 Listed, cULus & TUV Certified to IEC/EN 60934
T	UL489A (Telecom) Listed

Notes:

1. For 100 to 250 amps, select Current Code 825. For 300-400 amps, select Current Code 840. For 450-700 amps, select Current Code 870.
2. Available with Frequency and Delay code 10 or 20 only, and are not rated for continuous duty. Delay 10 and 20 are only available with voltage coils.
3. 3 Codes M, N, P & Q (Parallel Poles) are supplied with factory installed Bus Bar on Line and Load.
4. 4 Metering terminals are female pin type, ref. Molex part number 02-09-1101, model 1189-T.
5. Auxiliary Switch breakers are only available with Series Trip and Switch Only circuits. On multi-pole breakers, one Auxiliary Switch is supplied, mounted in the extreme right pole per figure A. Back-Mounted breakers require special mounting provisions when an Auxiliary Switch is specified.
6. Available with parallel pole construction (circuit codes P and Q, and breakers with circuit codes M and N).
7. Frequency and delay code 10 is only available with Voltage Coils. Voltage Coils are not rated for continuous duty.
8. Ratings over 250 amps are only available with Agency Approval code T (UL489A) and are Parallel Pole configuration (circuit codes M, N, P and Q.) 300-450 amp ratings are available on two pole breakers. 500-700 amp ratings are available on three pole breakers.
9. Per UL requirement, an "Anti-Flash Over Barrier" is supplied between poles on multipole breakers with 3/8 - 16 stud terminals (Terminal Code 1) on AC rated breakers only.
10. Front connected breakers can also be front mounted by utilizing the supplied front panel mounting inserts. Terminal connections must be made before mounting.
11. Box Wire connector will accept #6 through 250 MCM copper wire.
12. Agency codes G & T must have ON-OFF or dual legends. Agency code J must have dual legend.
13. Other colors available. Consult factory.
14. Terminals 2,4 & 5 are shipped without terminal hardware.
15. 2 or 3 Pole Circuit Breaker Required for 120/240 VAC Rating.
16. 3 Pole Circuit Breaker Required for 120/208 VAC Rating.

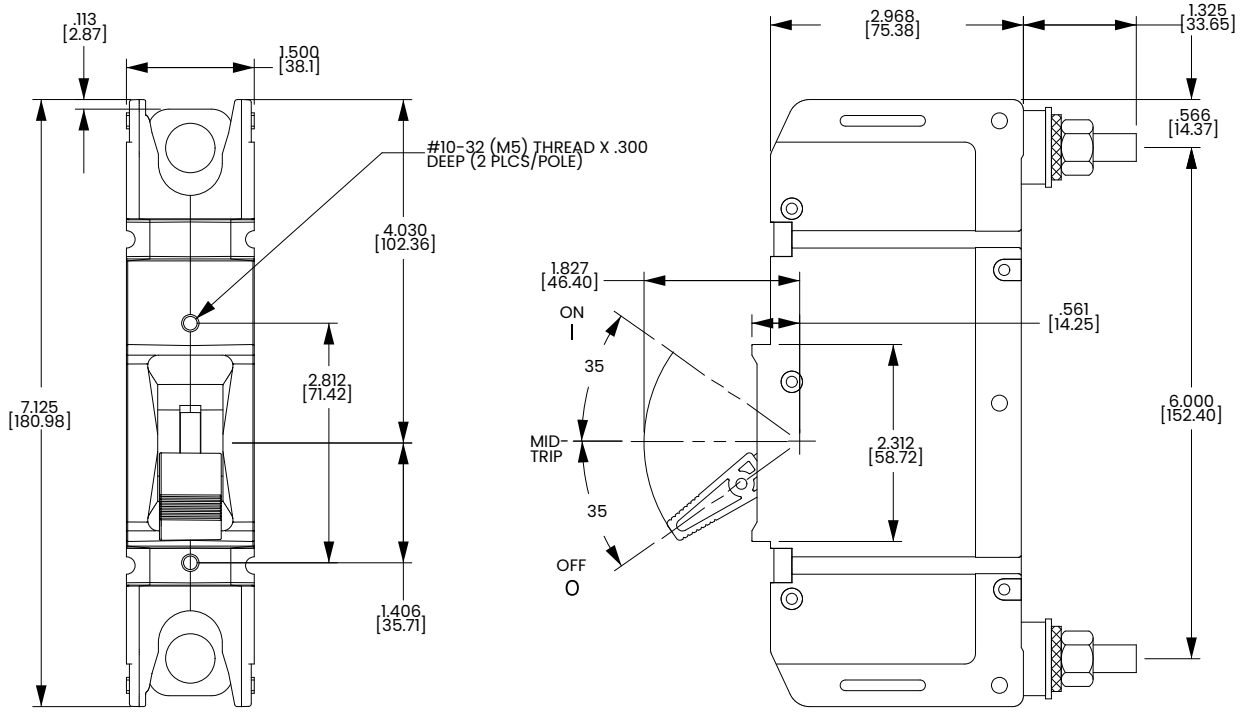
Configure Complete Part Number > | Browse Standard Parts >

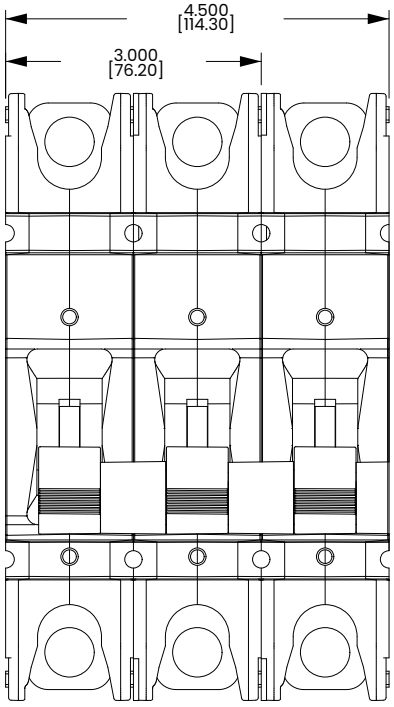
COS-8092 Rev B

Dimensional Specs

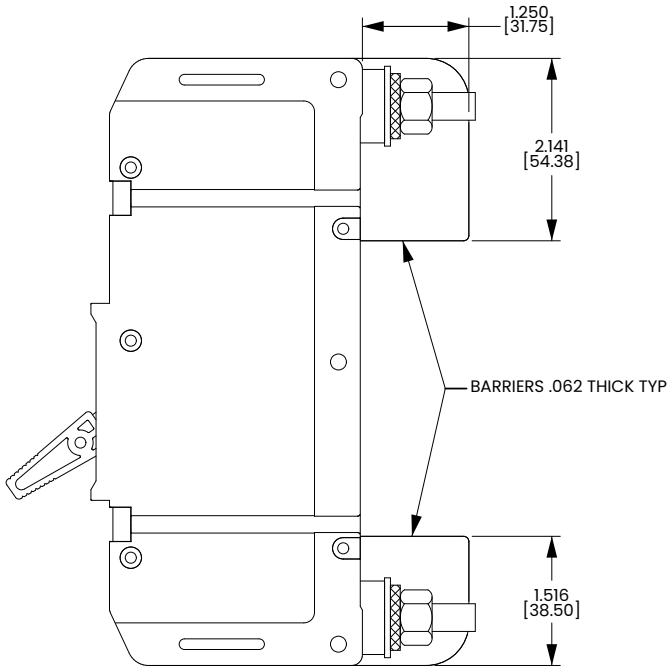
inches [millimeters]

SERIES TRIP BACK CONNECT (STUD TERMINALS SHOWN)





MULTIPOLE SERIES TRIP, SHOWING TERMINAL BARRIER

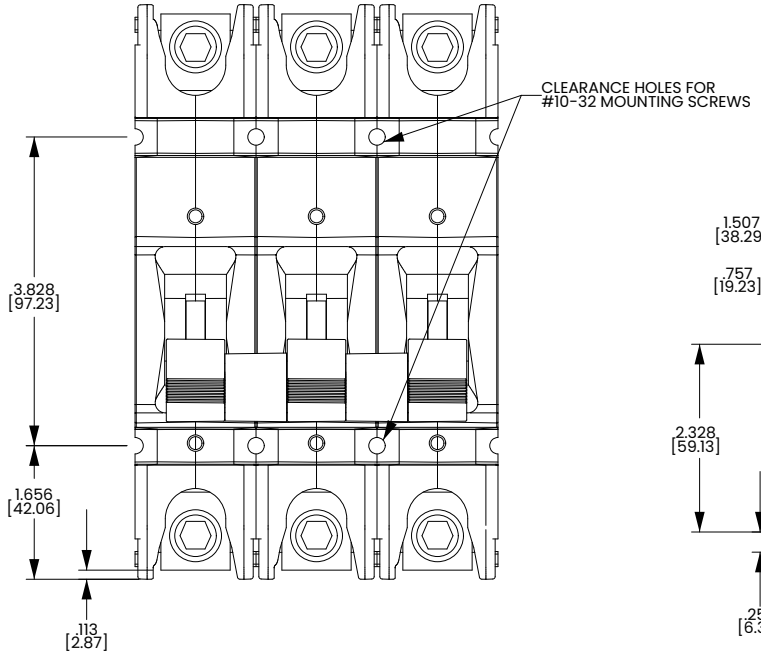


Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

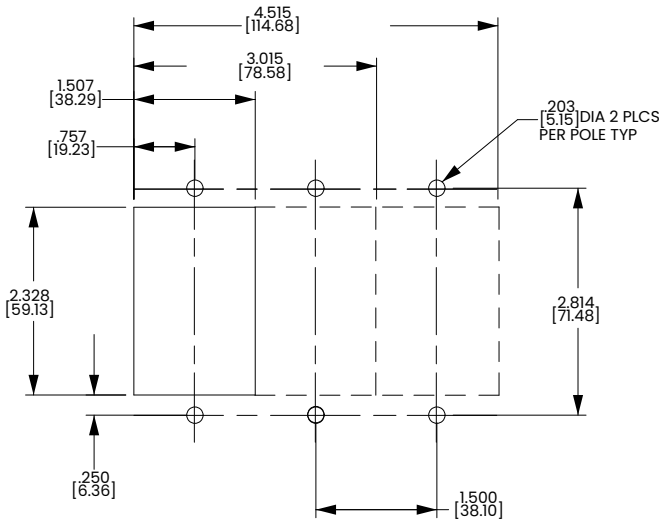
Dimensional Specs

inches [millimeters]

SERIES TRIP FRONT CONNECT
(BOX LUG TERMINALS SHOWN)



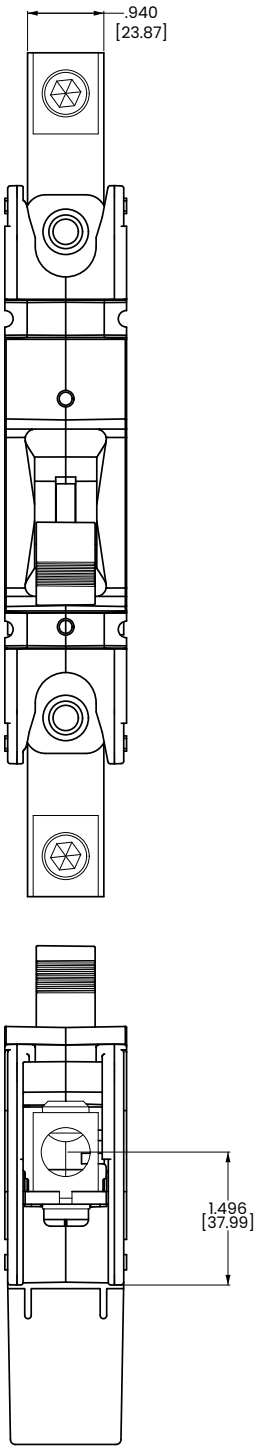
PANEL CUTOUT DETAIL



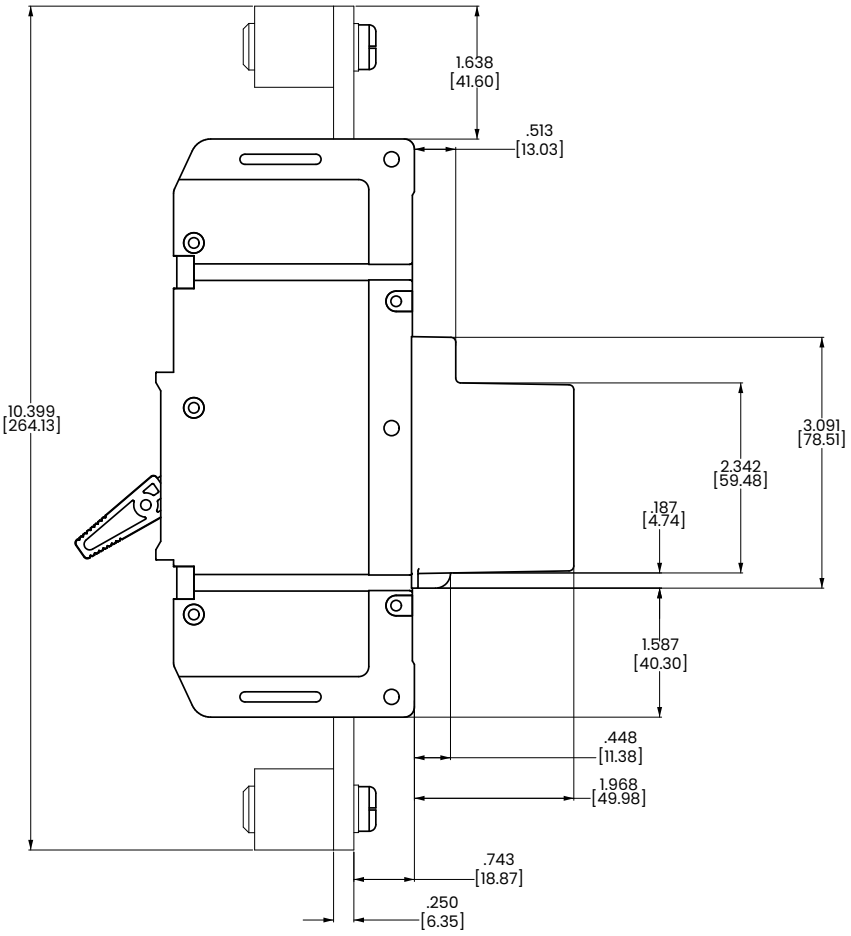
Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Dimensional Specs

inches [millimeters]



**F-SERIES - 100-250 AMPS
SHOWING METERING
SHUNT AND
BOX LUG CONNECTORS.**

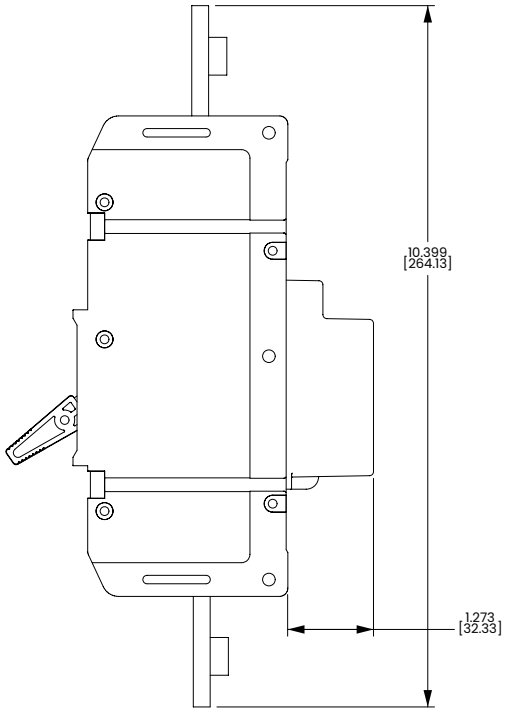


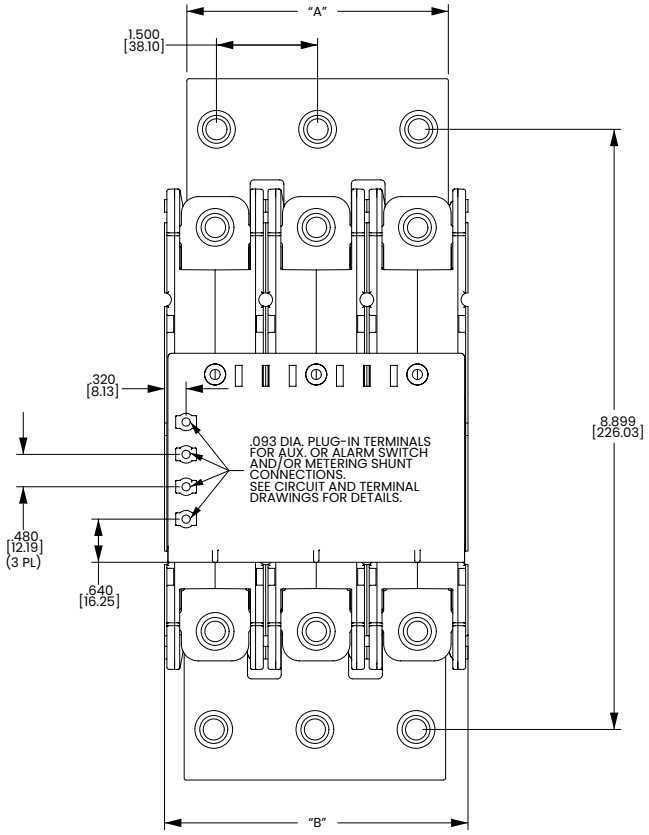
F-Series breakers are available up to 700A, and are also available with a 25 millivolt metering shunt construction. This optional construction provides a safe method for monitoring current flowing through the breaker by simply connecting a meter with light gauge wire to the appropriate terminals located on the shunt housing at the rear of the breaker. You can customize the application by measuring and displaying percentage of current, watts or safe/danger zones.

Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Dimensional Specs

inches [millimeters]





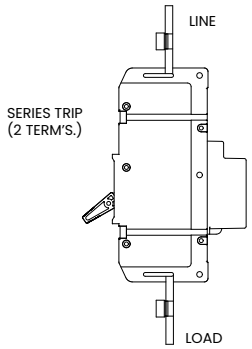
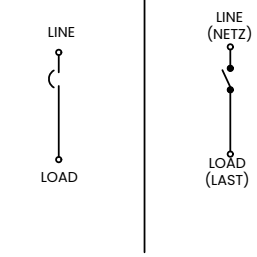
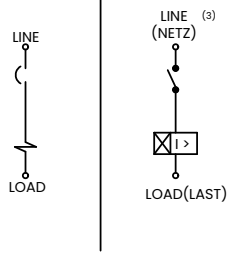
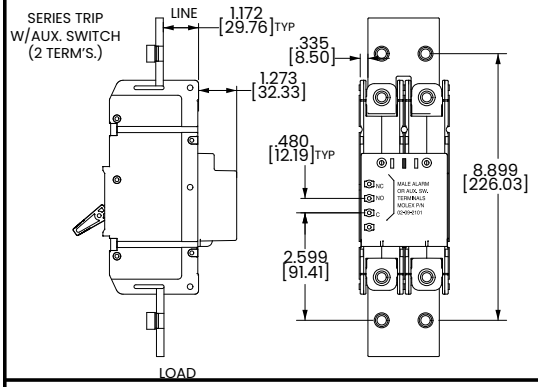
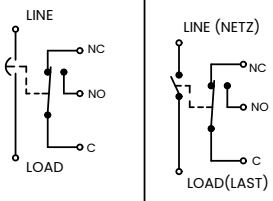
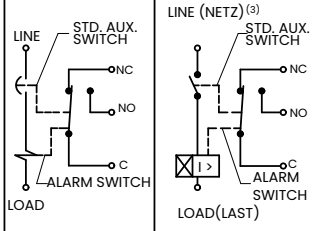
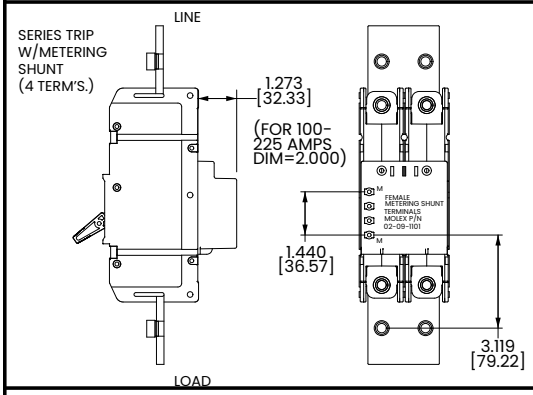
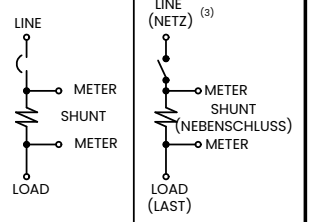
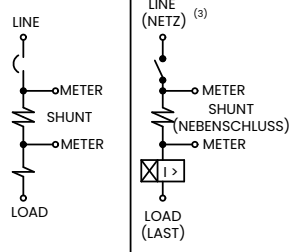
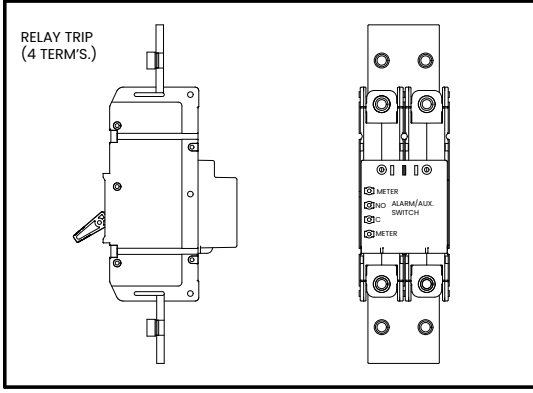
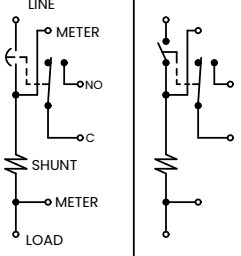
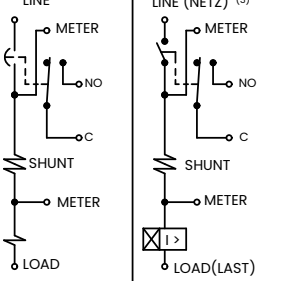
F-SERIES PARALLEL POLE 250-700 AMPS

Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Circuit & Terminal Diagram

inches [millimeters]

F-SERIES PARALLEL POLE CONSTRUCTION:

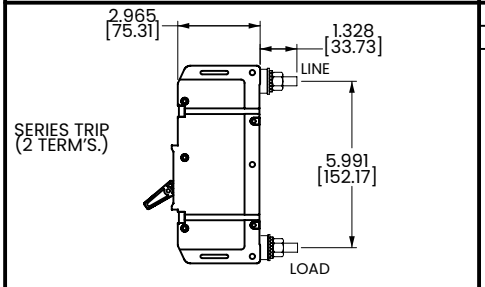
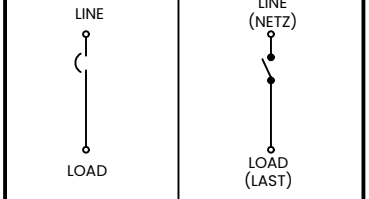
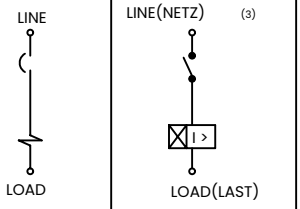
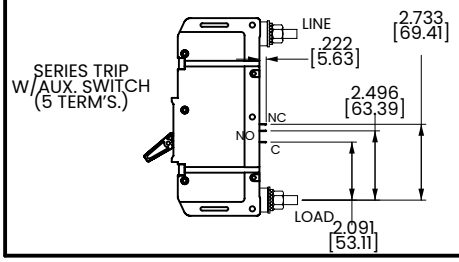
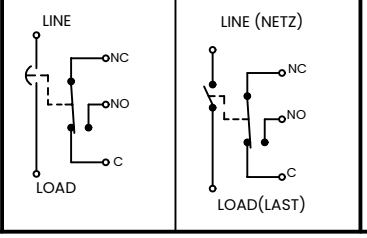
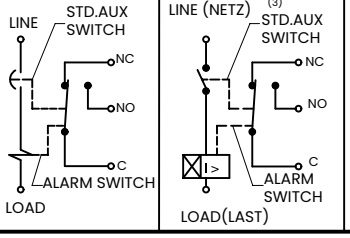
CIRCUIT BREAKER PROFILE	CIRCUIT SCHEMATIC ANSI / IEC	CIRCUIT CODE	AUX SWITCH CODE	CIRCUIT SCHEMATIC ANSI / IEC	CIRCUIT CODE	AUX SWITCH CODE
	SWITCH ONLY (NO COIL) 	A	0	SERIES TRIP 	BC	0
	SWITCH ONLY (NO COIL) WITH ALARM OR AUX. SWITCH 	A	B	SERIES TRIP WITH AUXILIARY/ ALARM SWITCH 	BC	B
	SWITCH ONLY (NO COIL), WITH METERING SHUNT 	N	0	SERIES TRIP CURRENT COIL, WITH METERING SHUNT 	M	0
	SWITCH ONLY WITH ALARM OR AUX. SWITCH AND METERING SHUNT 	N	A	SERIES TRIP WITH ALARM OR AUX. SWITCH AND METERING SHUNT 	M	A

Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Circuit & Terminal Diagram

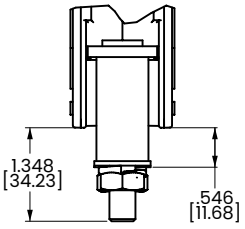
inches [millimeters]

F-SERIES PARALLEL POLE CONSTRUCTION:

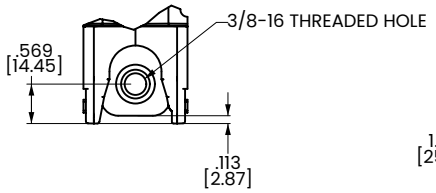
CIRCUIT BREAKER PROFILE	CIRCUIT SCHEMATIC	CIRCUIT CODE	AUX SWITCH CODE	CIRCUIT SCHEMATIC	CIRCUIT CODE	AUX SWITCH CODE
	ANSI / IEC — SWITCH ONLY (NO COIL)			ANSI / IEC — SERIES TRIP		
		A	0		BC	0
	SWITCH ONLY (NO COIL) WITH AUXILIARY SWITCH 	A	2 3 4 5 9	SERIES TRIP WITH AUXILIARY SWITCH 	BC	2 3 4 5 9

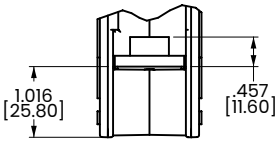
TERMINAL DETAILS

BACK CONNECT

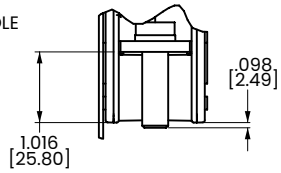


3/8-16 THREADED STUD
CODE 1



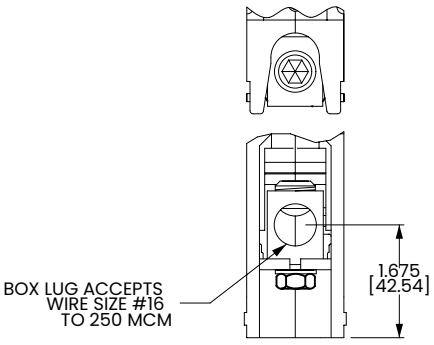


3/8-16 THREADED STUD
CODE 2

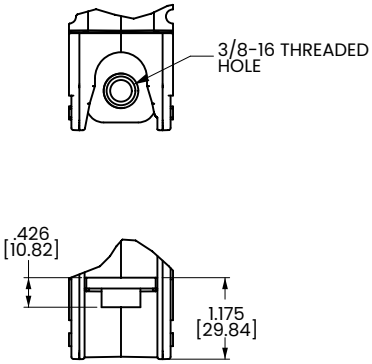


SHORT STUD
CODE 5

FRONT CONNECT



BOX WIRE
CONNECTOR



3/8-16 THREADED HOLE
CODE 4

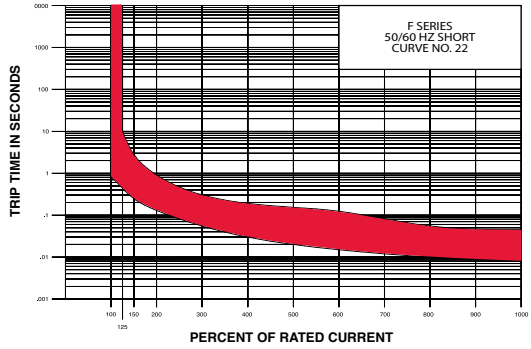
Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Time Delay

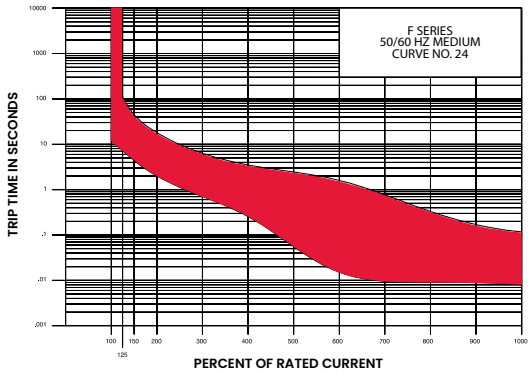
F-SERIES TIME DELAY VALUES									
	PERCENT OF RATED CURRENT								
	Delay	100%	125%	150%	200%	400%	600%	800%	1000%
TRIP TIME SECONDS	11	No Trip	.013 - .125	.010 - .070	.008 - .032	.006 - .020	.005 - .020	.004 - .020	.004 - .020
	12	No Trip	.475 - 10.0	.275 - 2.80	.140 - .850	.030 - .190	.015 - .125	.010 - .050	.008 - .038
	14	No Trip	10.0 - 110	6.00 - 40.0	2.50 - 15.0	.500 - 3.00	.180 - 1.00	.010 - .280	.008 - .080
	16	No Trip	110 - 1000	60.0 - 400	22.0 - 150	4.00 - 25.0	1.00 - 5.50	.010 - 1.80	.008 - .390
	22	No Trip	0.44 - 10.0	0.25 - 2.80	0.13 - 0.90	0.030 - 0.19	0.015 - 0.125	0.010 - 0.055	0.008 - 0.045
	24	No Trip	7.20 - 110	4.40 - 45.0	2.00 - 18.0	0.25 - 3.50	0.016 - 1.60	0.009 - 0.33	0.008 - 0.11
	26	No Trip	100 - 1100	32.0 - 400	14.0 - 150	2.50 - 25.0	0.020 - 11.0	0.010 - 3.10	0.008 - 0.39

AC

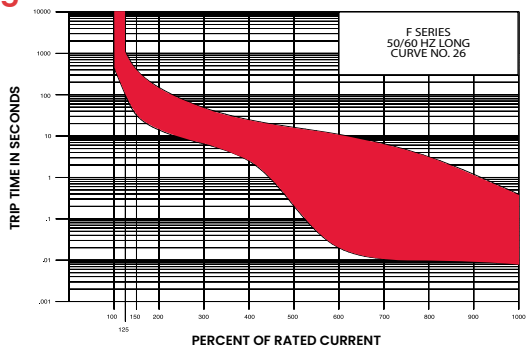
Short - AC 22



Medium - AC 24

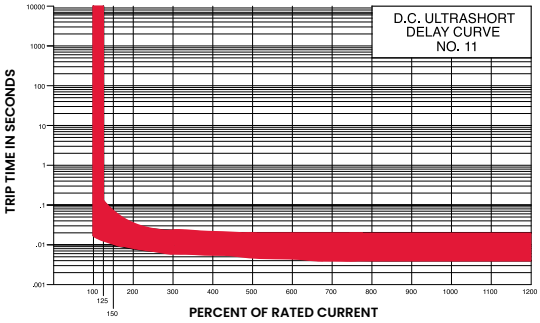


Long - AC 26

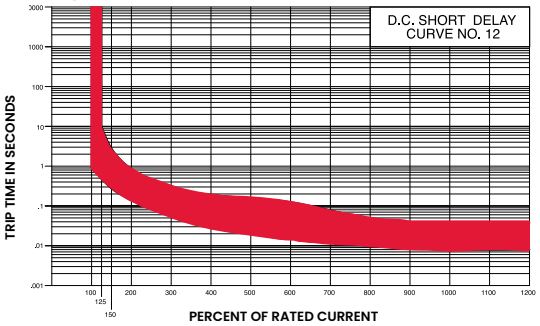


DC

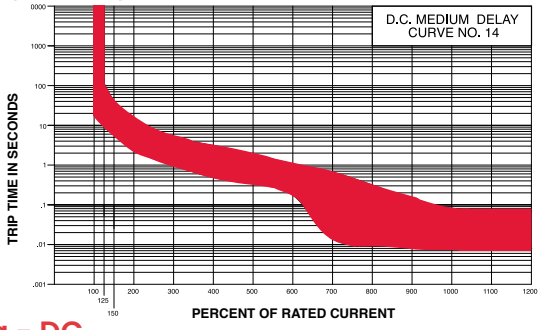
Ultrashort - DC



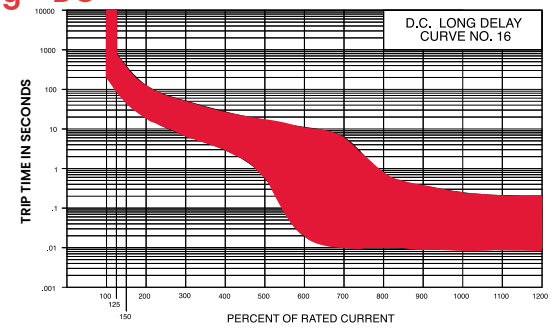
Short - DC



Medium - DC



Long - DC



Authorized Sales Representatives and Distributors

Click on a region of the map below to find your local representatives and distributors or visit www.carlingtech.com/findarep.

About Carling

Founded in 1920, Carling Technologies is a leading manufacturer of electrical and electronic switches and assemblies, circuit breakers, electronic controls, power distribution units, and multiplexed power distribution systems. With six ISO9001 and IATF16949 registered manufacturing facilities and technical sales offices worldwide, Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! To learn more about Carling please visit www.carlingtech.com/company-profile.

To view all of Carling's environmental, quality, health & safety certifications please visit www.carlingtech.com/environmental-certifications.

Carling Technologies®

J-Series

Hydraulic Magnetic Circuit Breaker

PRODUCT WEBPAGE

request sample, configure part, watch video

Compact Size, Designed for High Power Density Applications

The J-Series is a compact hydraulic-magnetic circuit breaker featuring a 10,000 amp maximum interrupting capacity, making it ideally suited for high power density applications. This low profile circuit breaker offers a variety of actuator styles and terminal options. The J-Series is available in one to three poles with ratings from 1 to 20 amps, up to 240VAC and a max IC of 10,000 amps; 5,000 amps TUV.

1-3	1-20	240	Up to 10,000AIC
Poles	Amps	VAC Max	Short Circuit Capacity

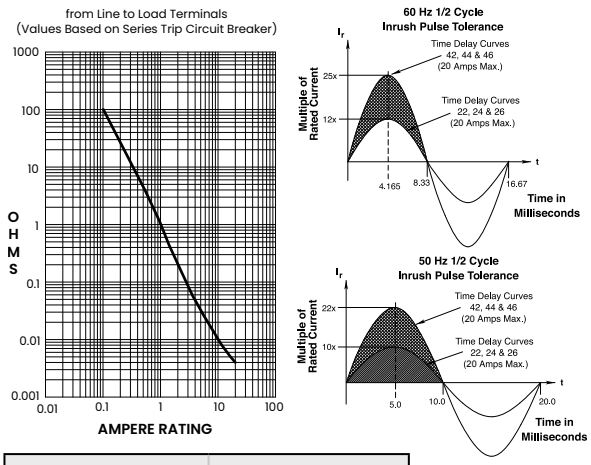
Typical Applications

- Datacom/Telecom,
- AC Power Distribution Units
- AC Power Supplies,
- Power Dense Motors & Controls
- Marine Applications Requiring High Interrupting Capacity

Tech Specs

Electrical

Dielectric Strength	Meets UL and cULus requirements and can withstand 1500 VAC, 60Hz for one minute between all electrically isolated terminals.
Insulation Resistance	Minimum of 100 Megohms @ 500VDC
Overload	50 operations @ 600% of rated current for AC rated devices.
Inrush Pulse Tolerance	Standard delays 12 times rated current, high inrush delays 25x for ½ cycle @ 60Hz
Interrupt Capacity	See Table A
Resistance, Impedance	(Across circuit breaker terminals)



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 5.0	+/- 15
5.1 - 20.0	+/- 25

Mechanical

Endurance	6,000 ON-OFF operations @ 6 per minute; with rated Current and Voltage.4,000 ON-OFF operations with no load.
Trip Free	All J-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

Agency Approvals

UL489, cULus CAN/CSA 22.2 No. 5, TUV EN60947-2

Physical

Number of Poles	1 - 3 poles
Termination	Designed for use with straight, fork, flanged fork, and ring terminals.
Termination Torque	See dimensional specs page (Table 1) for tightening torque specifications (Line and Load terminals)
Terminal Barrier	Foldable barriers to comply with regulatory standards.
Mounting	Threaded Insert: #6-32 UNC-2B or M3 x 0.5-6 H B ISO (2 per Pole).
Insert Termination Torque	7-9 in-lbs
Actuator	Rocker with or without guard
Internal Circuit Configuration	Series Trip, without auxiliary switch
Materials	Housing - Glass Filled Polyester Rocker – Nylon Line/Load Terminals – Copper Alloy; Bright Acid Tin Plated
Weight	~170 Grams (~5.75 Ounces) per pole
Standard Color	Housing - Black. Rocker – Several (See ordering scheme)

Environmental

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

Operation Temperature	-40° C to +85° C
Storage Temperature	-40° C to +85° C
Vibration	Withstands 0.060" excursion from 10-55Hz, and 10G's 55-500Hz, at rated current per Method 204C, Test Condition A. Instantaneous and ultrashort curves tested @ 90% of rated current.
Shock	Withstands 100G's, 6ms saw tooth while carrying rated current per Method 213B, Test Condition "I". Instantaneous and ultra short curves tested @ 90% rated current.
Moisture Resistance	Method 106G, i.e., Ten 24-hour cycles at +25°C to +65°C, 80-98% RH.
Salt Spray	Method 101, Condition A (90-95% RH @ 5% NaCl Solution, 96 hours)
Thermal Shock	Method 107G, Condition A (Five cycles @ -55°C to +25°C to +85°C to 25°C)

Tables

Table A: Voltage and Current Rating

Electrical Ratings								
Circuit Configuration	Voltage			Current Rating	Short Circuit Capacity (Amps)			Construction Notes
					UL / cULus	TUV		
	Max Rating	Frequency	Phase	Full Load Amps	without backup fuse	with backup fuse	without backup fuse	
Series	120/240	50 / 60	1	1.0 - 20.0	10,000	5,000	5,000	2 or 3 Pole
	240							1 or 2 Pole

Ordering Scheme

Rocker

Sample Part Number	J	1	1	-	B	0	-	24	-	620	-	1	1	B	-	D	G
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

J J-Series Circuit Breaker

2. ACTUATOR

FLAT ROCKER:
Two Color Visi-Rocker
1 Indicate OFF, vertical legend
2 Indicate OFF, horizontal legend
Single color
3 Vertical legend
4 Horizontal legend
Push-To-Reset, Visi-Rocker
5 Indicate OFF, vertical legend
6 Indicate OFF, horizontal legend
Push-To-Reset, Single color
7 Vertical legend
8 Horizontal legend
CURVED ROCKER:
Two Color Visi-Rocker
C Indicate ON, vertical legend
D Indicate ON, horizontal legend
F Indicate OFF, vertical legend
G Indicate OFF, horizontal legend
Single color
J Vertical legend
K Horizontal legend

3. POLES

1	One	**2**	Two	**3**	Three [1]

4. CIRCUIT

B Series Trip (Current)

5. AUXILIARY SWITCH

0 without Aux Switch

6. FREQUENCY & TIME DELAY

20 50 / 60Hz Instantaneous [2]
21 50 / 60Hz Ultra Short
22 50 / 60Hz Short
24 50 / 60Hz Medium
26 50 / 60Hz Long
42 50 / 60Hz Short, Hi-Inrush
44 50 / 60Hz Medium, Hi-Inrush
46 50 / 60Hz Long, Hi-Inrush

7. CURRENT RATING (AMPERES)

CODE	AMPERES							
410	1.00	**435**	3.50	**480**	8.00	**712**	12.50
512	1.25	**440**	4.00	**485**	8.50	**613**	13.00
415	1.50	**445**	4.50	**490**	9.00	**614**	14.00
517	1.75	**450**	5.00	**495**	9.50	**615**	15.00
420	2.00	**455**	5.50	**610**	10.00	**616**	16.00
522	2.25	**460**	6.00	**710**	10.50	**617**	17.00
425	2.50	**465**	6.50	**611**	11.00	**618**	18.00
527	2.75	**470**	7.00	**711**	11.50	**619**	19.00
430	3.00	**475**	7.50	**612**	12.00	**620**	20.00

8. TERMINAL

1 Push-On .250 Tab (Q.C.)
2 Screw 8-32 with upturned lugs
3 Screw 8-32 (Bus Type)
4 Screw 10-32 with upturned lugs
5 Screw 10-32 (Bus Type)
6 Screw 8-32 with upturned lugs and 30˚ Bend
7 Screw 8-32 (Bus Type) and 30˚ Bend
8 Screw 10-32 with upturned lugs and 30˚ Bend
9 Screw 10-32 (Bus Type) and 30˚ Bend
B Screw M5 with upturned lugs
C Screw M4 with upturned lugs
F Screw M5 with upturned lugs and 30˚ Bend
G Screw M5 (Bus Type) and 30˚ Bend
H Screw M5 (Bus Type)
J Screw M5 Back Connect
K Screw 10-32 Back Connect
L Screw 10-32 Back Connect, Alt. Spacing [3]
M Screw M5 Back Connect, Alt. Spacing [3]
N Screw M4 Back Connect
P Screw M4 Back Connect, Alt. Spacing [3]
R Screw 8-32 Back Connect, Alt. Spacing [3]
Y Screw 8-32 Back Connect

9. ACTUATOR COLOR & LEGEND [4]

Actuator or Visi-Color	Marking:		Marking Color:	
	ON-OFF	Dual	Single Color	Visi-Rocker
White	**B**	**1**	Black	White
Black	**D**	**2**	White	n/a
Red	**G**	**3**	White	Red
Green	**J**	**4**	White	Green
Blue	**L**	**5**	White	Blue
Yellow	**N**	**6**	Black	Yellow
Gray	**Q**	**7**	Black	Gray
Orange	**S**	**8**	Black	Orange

10. MOUNTING [5]

Standard Rocker Bezel
A 6-32 x .195 inches
B ISO M3 x 5 mm
1 6-32 x .195 inches
2 ISO M3 x 5 mm
Rockerguard (Curved Rocker) / Push-to-Reset (Flat Rocker) Bezel
C 6-32 x .195 inches
D ISO M3 x 5 mm
3 6-32 x .195 inches
4 ISO M3 x 5 mm
Recessed Off (Flat Rocker)
E 6-32 x .195 inches
F ISO M3 x 5 mm
5 6-32 x .195 inches
6 ISO M3 x 5 mm

11. APPLICATION RATING

C 120 / 240 VAC [6]
D 240 VAC

12. AGENCY APPROVAL

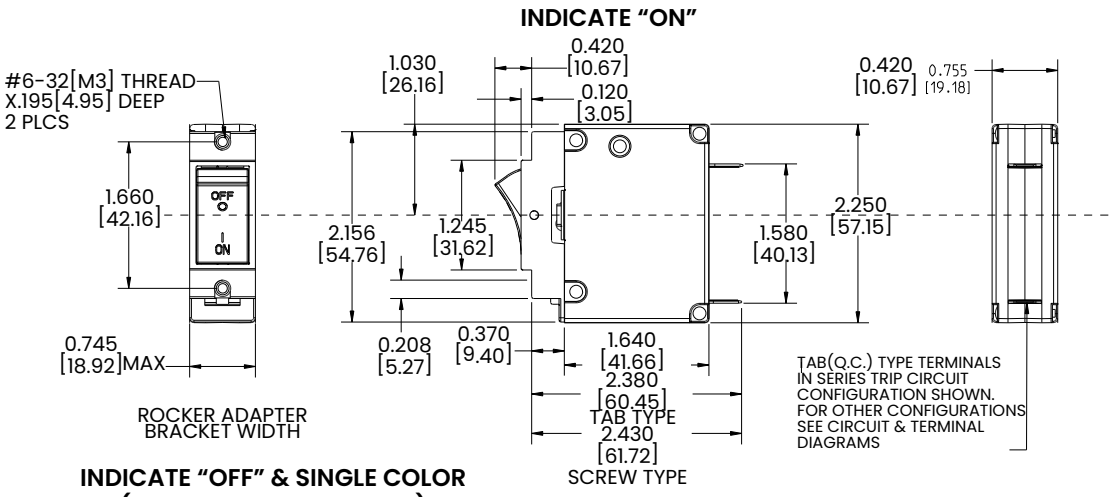
A Without Approvals
G UL 489 Listed, cULus Listed
3 UL 489 Listed, cULus Listed, TUV Certified

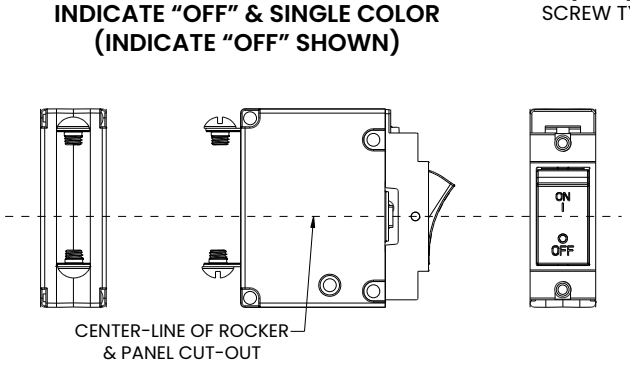
Notes:
1 3 Pole Units available when 1 of 3 poles is neutral.
2 20 Delay available only with no agency approvals.
3 Refer to dimensional specifications for alternate back connect terminal spacing dimension.
4 TUV Approval requires Dual (I-O, ON-OFF) markings.
5 For codes A through F, rocker to be on Pole 1 for multi pole breakers with behind the panel standoff bracket on pole 2. For codes 1 through 6, rocker to be on pole 2 for multipole breakers with behind the panel standoff bracket on Pole 1. For 1 & 3 pole breakers use codes A-F.
6 Voltage Rating available with 2 and 3 pole breakers only.

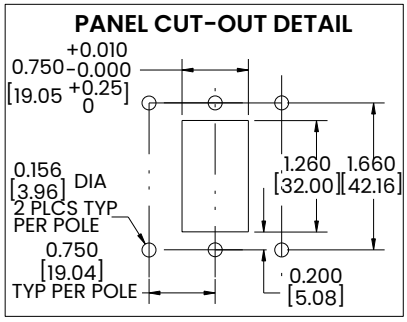
Configure Complete Part Number > Browse Standard Parts >

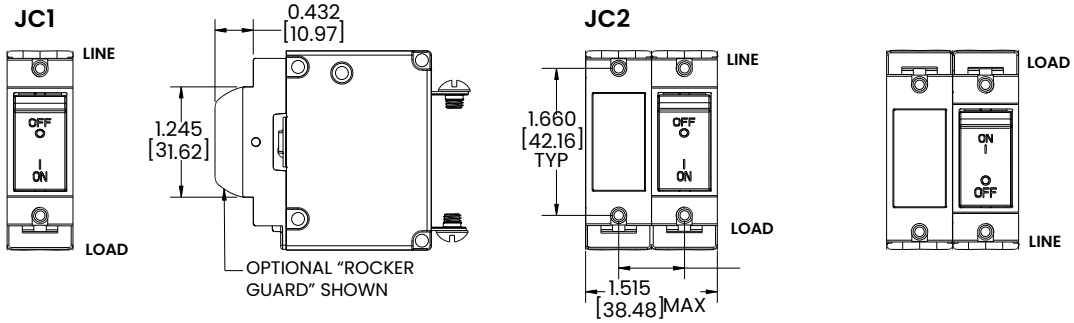
Dimensional Specs Rocker

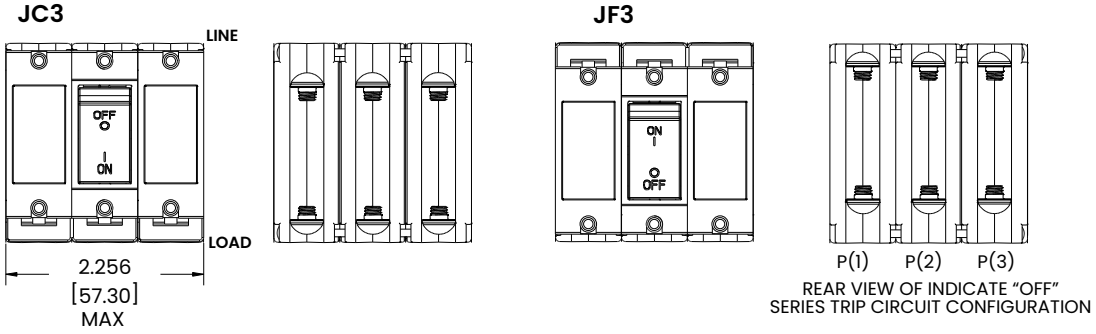
inches [millimeters]











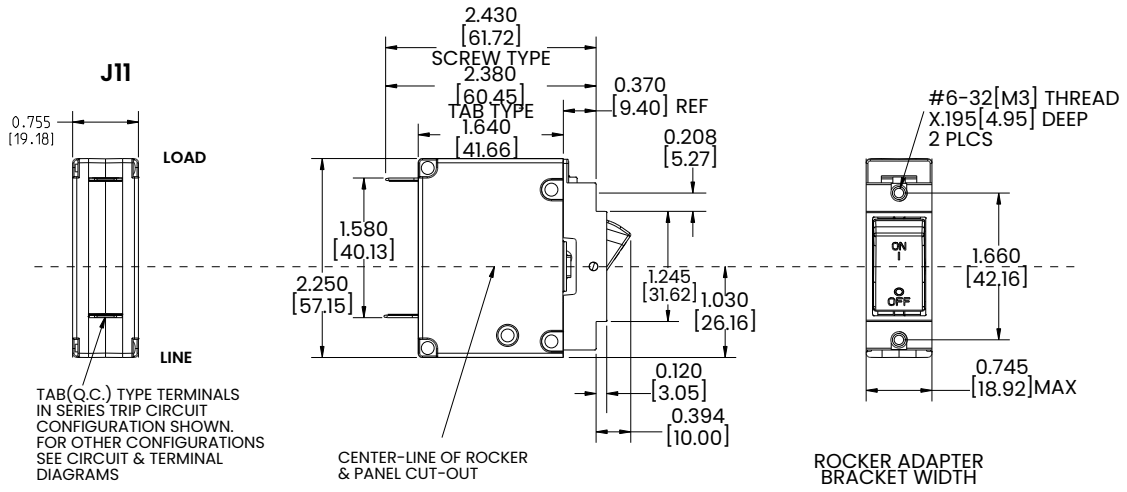
Notes:
1 Tolerance ± 0.020 [.51] unless otherwise specified.

CLA-8138 Rev: C

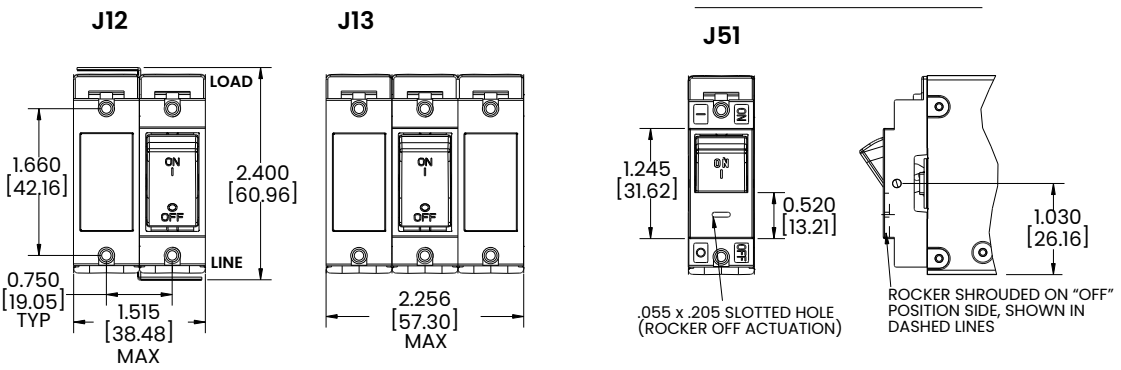
Dimensional Specs Rocker

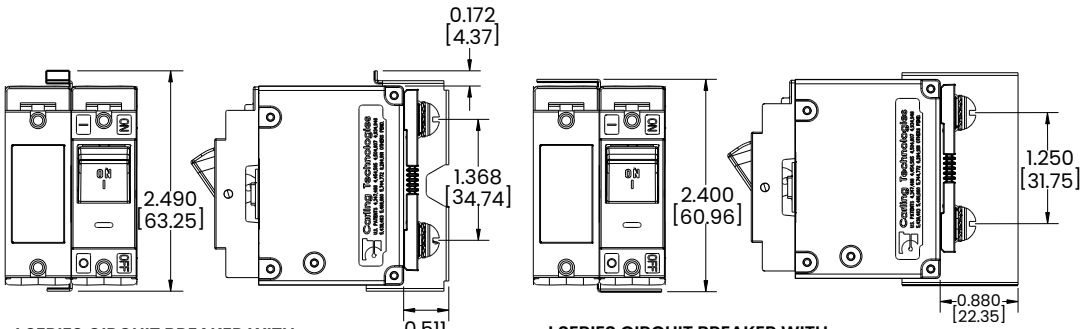
inches [millimeters]

INDICATE "OFF" & SINGLE COLOR (INDICATE "OFF" SHOWN)



PUSH-TO-RESET ACTUATOR





J SERIES CIRCUIT BREAKER WITH 1.368" SPACING TERMINALS AND SCREW TERMINAL BARRIER

J SERIES CIRCUIT BREAKER WITH 1.250" TERMINAL SPACING AND Z-FOLD TERMINAL BARRIER

Notes:
1 Tolerance ± 0.020 [.51] unless otherwise specified.

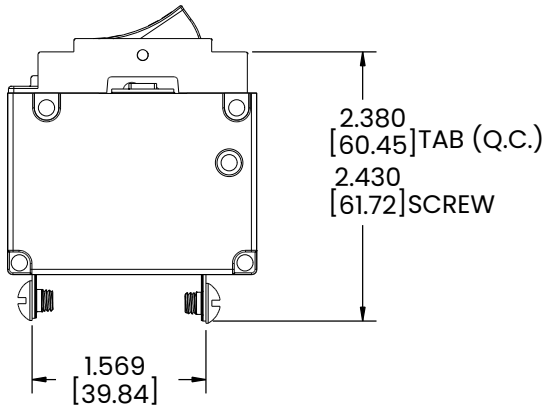
CLA-8138 Rev: C

Dimensional Specs Rocker

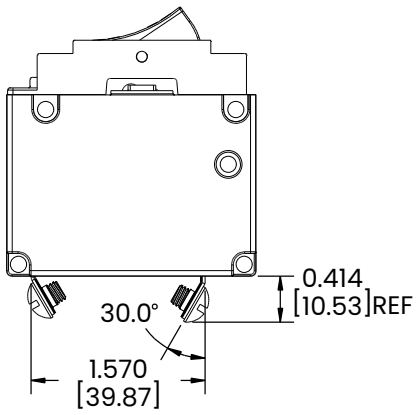
inches [millimeters]

TERMINAL SPACING

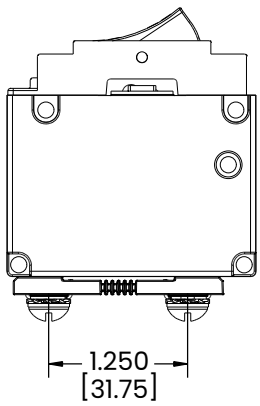
SCREW TERMINAL & PUSH-IN Q.C. TAB



SCREW TERMINAL WITH 30° BEND



BACK CONNECT SCREW TERMINAL WITH RETAINER



BACK CONNECT SCREW TERMINAL WITH RETAINER-ALTERNATIVE SPACING

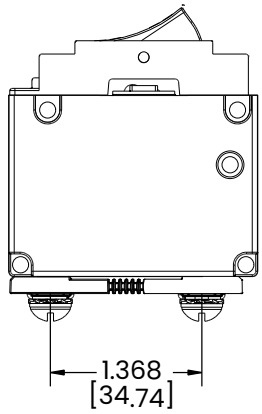


TABLE 1 TIGHTENING TORQUE SPECIFICATIONS	
THREAD SIZE	TORQUE
#6-32 & M3 MOUNTING HARDWARE	7-9 IN-LBS [0.8-1.0 NM]
#8-32 & M4 THREAD TERMINAL SCREW	12-15 IN-LBS [1.4-1.7 NM]
#10-32 & M5 THREAD TERMINAL SCREW	15-20 IN-LBS [1.7-2.3 NM]

Notes:
1 Tolerance ± 0.020 [.51] unless otherwise specified.

CLA-8138 Rev: C

Ordering Scheme

Handle

Sample Part Number	J	A	1	-	B	0	-	24	-	620	-	1	2	1	-	D	3
Selection	1	2	3		4	5		6		7		8	9	10		11	12

1. SERIES

J	J-Series Circuit Breaker

2. ACTUATOR

A	Handle, one per pole
B	Handle, one per mulit-pole unit [1]

3. POLES

1	One	**2**	Two	**3**	Three

4. CIRCUIT

B	Series Trip (Current)

5. AUXILIARY SWITCH

0	without Aux Switch

6. FREQUENCY & TIME DELAY

21	50 / 60Hz Ultra Short
22	50 / 60Hz Short
24	50 / 60Hz Medium
26	50 / 60Hz Long
42	50 / 60Hz Short, Hi-Inrush
44	50 / 60Hz Medium, Hi-Inrush
46	50 / 60Hz Long, Hi-Inrush

7. CURRENT RATING (AMPERES)

CODE	AMPERES							
410	1.00	**435**	3.50	**480**	8.00	**712**	12.50
512	1.25	**440**	4.00	**485**	8.50	**613**	13.00
415	1.50	**445**	4.50	**490**	9.00	**614**	14.00
517	1.75	**450**	5.00	**495**	9.50	**615**	15.00
420	2.00	**455**	5.50	**610**	10.00	**616**	16.00
522	2.25	**460**	6.00	**710**	10.50	**617**	17.00
425	2.50	**465**	6.50	**611**	11.00	**618**	18.00
527	2.75	**470**	7.00	**711**	11.50	**619**	19.00
430	3.00	**475**	7.50	**612**	12.00	**620**	20.00

Notes:
1. Actuator code B (multi-pole only): Handle location as viewed from front of breaker with mounting/barrier code A or B:
   2 pole - right pole 3 pole - center pole
2. Refer to dimensional specifications for alternate back connect terminal spacing dimension.
3. Single pole only
4. ON-OFF markings only available with agency code G. TUV approval requires dual markings
5. Codes 1 and 2 are only available for single pole breaker options
   Codes C and D are only available for 2 pole breakers with actuator code B: Handle location on left pole as viewed from front of breaker

Configure Complete Part Number > Browse Standard Parts >

8. TERMINAL

1	Push-On .250 Tab (Q.C.)
2	Screw 8-32 with upturned lugs
3	Screw 8-32 (Bus Type)
4	Screw 10-32 with upturned lugs
5	Screw 10-32 (Bus Type)
6	Screw 8-32 with upturned lugs and 30˚ Bend
7	Screw 8-32 (Bus Type) and 30˚ Bend
8	Screw 10-32 with upturned lugs and 30˚ Bend
9	Screw 10-32 (Bus Type) and 30˚ Bend
B	Screw M5 with upturned lugs
C	Screw M4 with upturned lugs
F	Screw M5 with upturned lugs and 30˚ Bend
G	Screw M5 (Bus Type) and 30˚ Bend
H	Screw M5 (Bus Type)
J	Screw M5 Back Connect
K	Screw 10-32 Back Connect
L	Screw 10-32 Back Connect, Alt. Spacing [2]
M	Screw M5 Back Connect, Alt. Spacing [2]
N	Screw M4 Back Connect
P	Screw M4 Back Connect, Alt. Spacing [2]
R	Screw 8-32 Back Connect, Alt. Spacing [2]
Y	Screw 8-32 Back Connect

9. ACTUATOR COLOR & LEGEND [4]

Handle Color	ON-OFF	Dual	Legend Color
White	**B**	**1**	Black
Black	**D**	**2**	White
Red	**G**	**3**	White
Yellow	**N**	**6**	Black
Black (Short Handle) [3]	**U**	**9**	White

10. MOUNTING / BARRIERS [5]

		Barriers
1	6-32 x .195 inches threaded inserts	No
A	6-32 x .196 inches threaded inserts	Yes
2	ISO M3 x 5 mm threaded inserts	No
B	ISO M3 x 6 mm threaded inserts	Yes
C	6-32 x .195 inches threaded inserts	Yes
D	ISO M3 x 6 mm threaded inserts	Yes

11. APPLICATION RATING

C	120 / 240 VAC (2 and 3 pole only)
D	240 VAC (1 and 2 pole only)

12. AGENCY APPROVAL

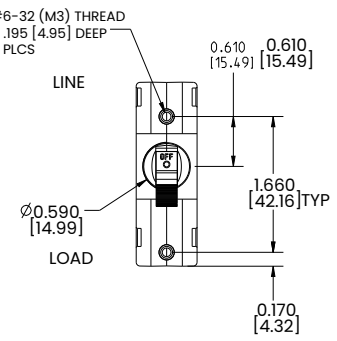
A	Without Approvals
G	UL 489 Listed, cULus Listed
3	UL 489 Listed, cULus Listed, TUV Certified

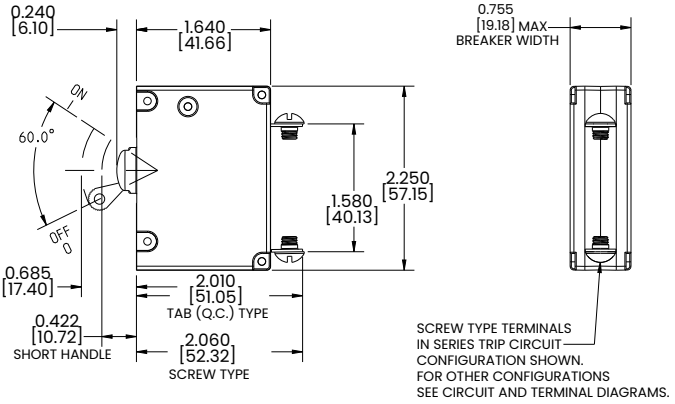
COS-8087 Rev: B

Dimensional Specs Handle

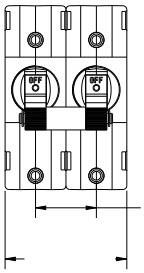
inches [millimeters]

1-POLE (JA1)

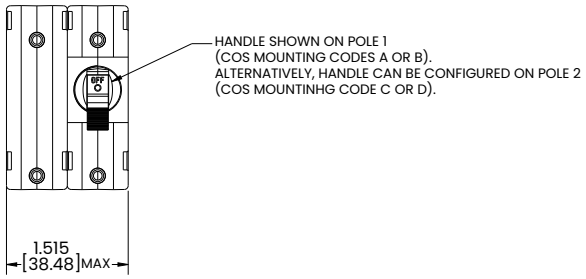




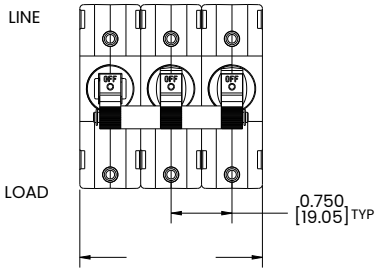
2-POLE (JA2)



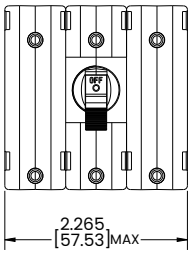
2-POLE (JB2)

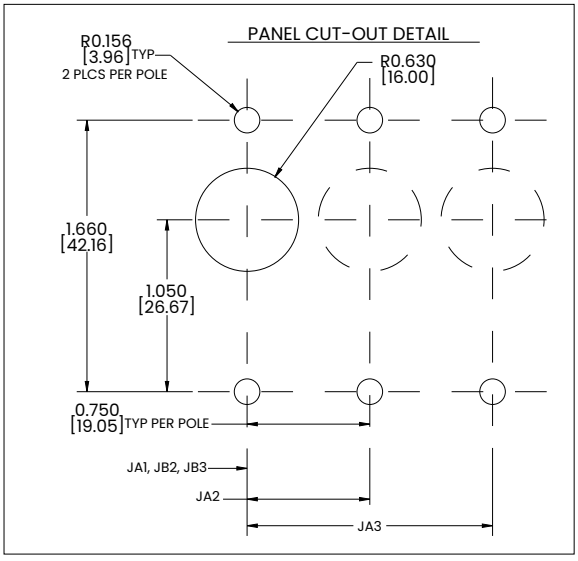


3-POLE (JA3)



3-POLE (JB3)





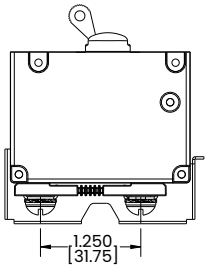
Notes:
1 Tolerance ± 0.020 [.51] unless otherwise specified.

CLA-8138 Rev: C

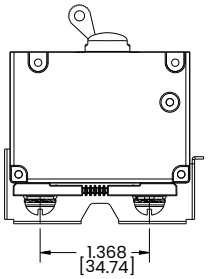
Dimensional Specs Handle

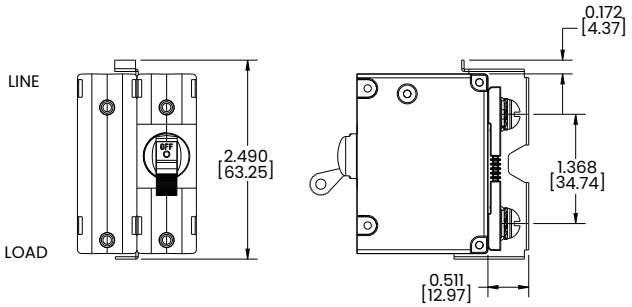
inches [millimeters]

BACK CONNECT SCREW TERMINAL WITH RETAINER

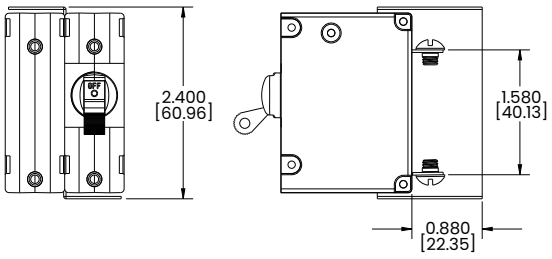


BACK CONNECT SCREW TERMINAL WITH RETAINER -ALTERNATIVE 1.368" SPACING





J SERIES CIRCUIT BREAKER WITH 1.368" TERMINAL SPACING AND SCREW TERMINAL BARRIER



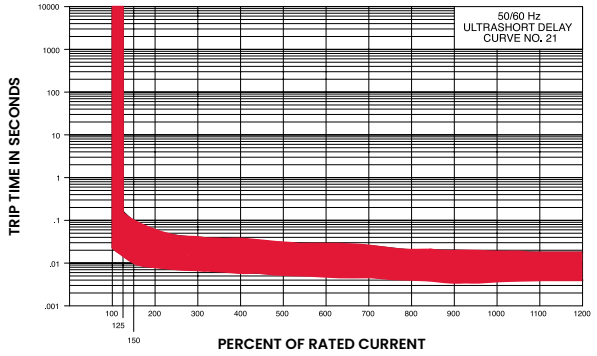
J SERIES CIRCUIT BREAKER WITH 1.250" TERMINAL SPACING AND Z-FOLD TERMINAL BARRIER

Notes:
1 Tolerance ± 0.020 [.51] unless otherwise specified.

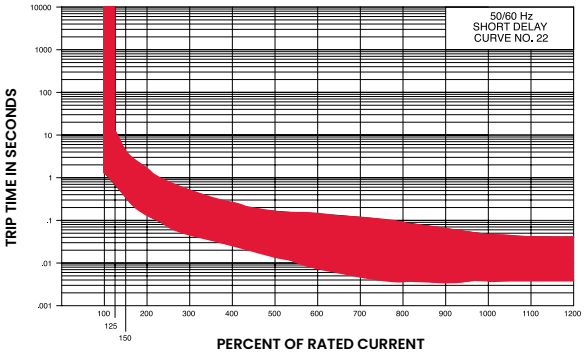
Time Delay

AC

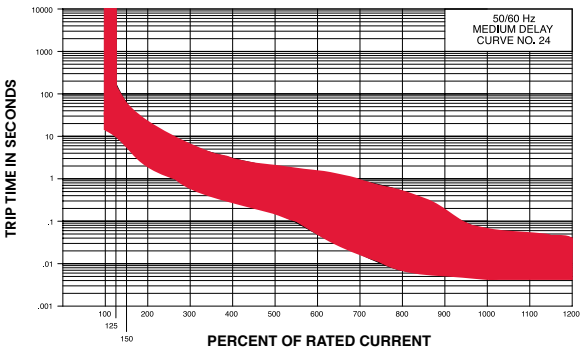
Ultrashort



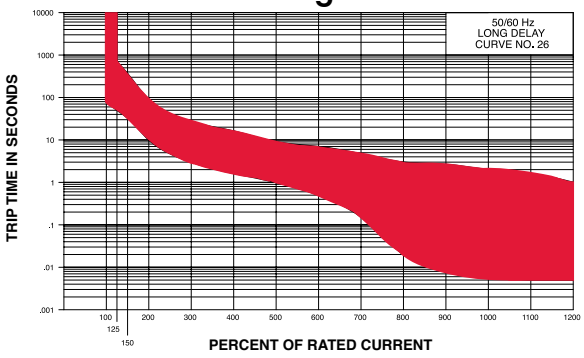
Short



Medium

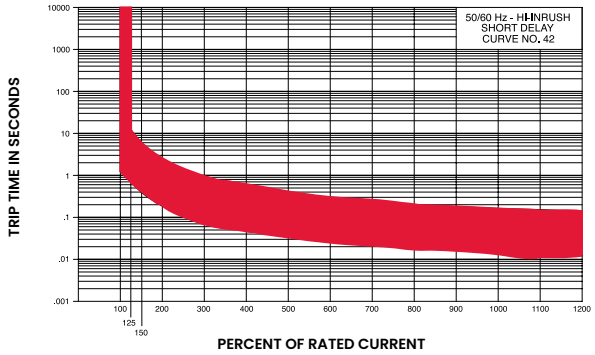


Long



High Inrush AC

Short



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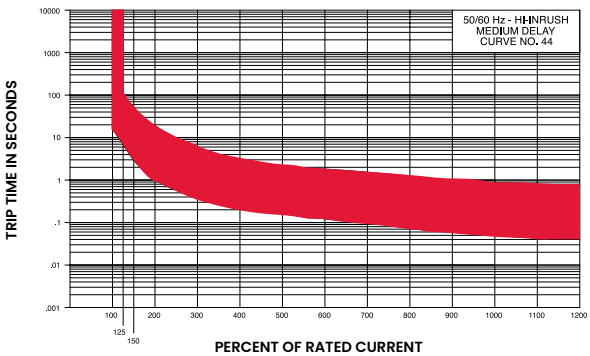
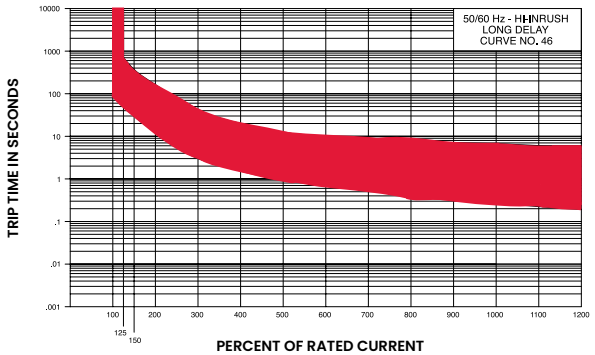


Long



Authorized Sales Representatives and Distributors

Click on a region of the map below to find your local representatives and distributors or visit **www.carlingtech.com/findarep**.

About Carling

Founded in 1920, Carling Technologies is a leading manufacturer of electrical and electronic switches and assemblies, circuit breakers, electronic controls, power distribution units, and multiplexed power distribution systems. With six ISO9001 and IATF16949 registered manufacturing facilities and technical sales offices worldwide, Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! To learn more about Carling please visit **www.carlingtech.com/company-profile**.

To view all of Carling's environmental, quality, health & safety certifications please visit **www.carlingtech.com/environmental-certifications**.

Carling Technologies®

M-Series

Hydraulic-Magnetic Circuit Breaker

PRODUCT WEBPAGE

request sample, configure part

Miniature Circuit Breaker

The M-Series hydraulic-magnetic circuit breakers offer high performance in a compact, front panel mount design. Multiple agency approvals and options for terminals, panel hardware and actuator styles allow for extensive design flexibility. Wiping contacts assure longevity. These miniature circuit breakers are available as a one to two or parallel pole configuration, rated from 0.02 to 50 amps, up to 250VAC/80VDC with a max IC of 1,000 amps; 600 amps TUV and 500 amps VDE.

1-2	0.2-50	125/250	80
Poles	Amps	VAC Max	VDC Max

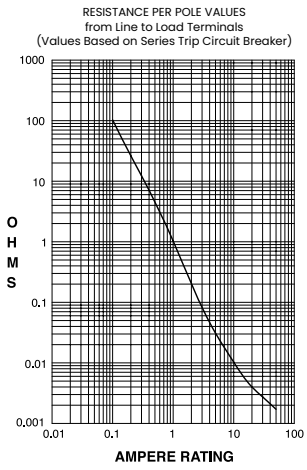
Typical Applications

- Telecom
- Transportation
- Marine
- Generators
- Power Supplies
- Medical Equipment

Tech Specs

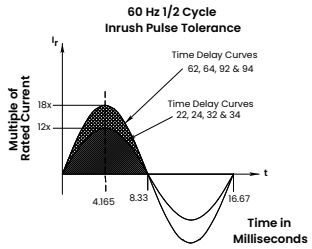
Electrical

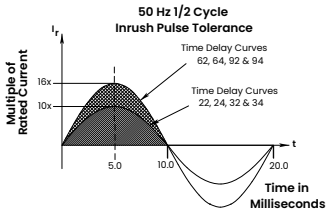
Maximum Voltage	125/250 VAC 50/60 Hz, 80 VDC (See Rating Tables.)
Current Ratings	Standard current coils: 0.100, 0.250, 0.500, 0.750, 1.00 thru 15.0 in 1 amp increments, 18.0, 20.0, 25.0, 30.0. Other ratings available - see Ordering Scheme.
Standard Voltage Coils	DC - 6V, 12V; AC - 120V,other ratings available, see ordering scheme.
Auxiliary Switch Rating	SPDT; 7A 250VAC, 7A (Res) 28VDC, 4A (Ind.) 28VDC, 0.25A 80VDC (Res) (silver contacts), 0.1A 125VAC (gold contacts).
Insulation Resistance	Minimum of 100 Megohms at 500 VDC.
Dielectric Strength	UL, CSA 1500V, 50/60 Hz for one minute between all electrically isolated terminals. M-Series Circuit Breakers comply with the 8mm spacing and 3750 V 50/60Hz dielectric requirements from hazardous voltage to operator accessible surfaces, per Publications IEC 380, 435, 950, EN 60950 and VDE 0805.
Resistance, Impedance	Values from Line to Load Terminal - based on Series Trip Circuit Breaker.



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 20.0	± 25
20.1 - 50.0	± 35

Pulse Tolerance Curves





Mechanical

Endurance	10,000 ON-OFF operations @ 6 per minute with rated Current and Voltage.
Trip Free	All M-Series Circuit Breakers will trip on overload, even when actuator is forcibly held in the ON position.
Trip Indication	The actuator moves positively to the OFF position when an overload causes the circuit breaker to trip.

Physical

Number of Poles	1 or 2
Internal Circuit Config.	Series with or without Auxiliary Switch. Switch Only with or without Auxiliary Switch.
Weight	Approximately 30 grams/pole (Approximately 1.07 ounces/pole)
Standard Colors	See Ordering Scheme

Environmental

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

Shock	Withstands 100 Gs, 6ms, sawtooth while carrying rated current per Method 213, Cond. I.Instantaneous curves tested at 80% of rated current.
Vibration	Withstands 0.060" excursion from 10-55 Hz, and 10 Gs 55-500 Hz, at rated current per Method 204C, Test Condition A. Instantaneous curves tested at 80% 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
Chemical Resistance	Only the outside surfaces of the case and the handles may be cleaned with detergents or alcohol. Organic (hydrocarbon based) solvents are not recommended because they attack plastics. Caution should be taken when solvents are used to clean and remove flux from terminals. Lubricants should not be introduced into the handle/ bushing openings

*Manufacturer reserves the right to change product specification without prior notice.

Tech Specs

Tables

Table A: Lists UL Recognized and CSA Accepted configurations & performance capabilities as a Component Supplementary Protector.

Component Supplementary Protectors										
Circuit Configuration	Voltage			Current Rating		Poles Breaking	Short Circuit Capacity (Amps)		Application Codes	
							UL / CSA			
	Max Rating	Frequency	Phase	Full Load Amps	General Purpose Amps		With Backup Fuse	Without Backup Fuse	UL	CSA
Series	32	DC	---	0.02 - 15	---	1	---	1000	TC1, 2, OL1, U1	TC1, 2, OL1, U1
				---	15.1 - 25				TC1, 2, OL0, U1	TC1, 2, OL0, U1
	50 [2]			0.02 - 7.5	---				TC1, 2, OL0, U1	TC1, 2, OL0, U1
	65			0.02 - 15	---	2			TC1, 2, OL1, U1	TC1, 2, OL1, U1
				---	15.1 - 25				TC1, 2, OL0, U1	TC1, 2, OL0, U1
	65 [1, 2]			0.02 - 15	---	1			TC1, 2, OL1, U1	TC1, 2, OL1, U1
				---	15.1 - 30				TC1, 2, OL0, U1	TC1, 2, OL0, U1
	65			0.02 - 15	---	2	5000 [3]	---	TC1, 2, OL1, C1	TC1, 2, OL1, C1
				---	15.1 - 25				TC1, 2, OL0, C1	TC1, 2, OL0, C1
	80 [1]			0.02 - 15	---	1	---	600	TC1, 2, OL1, U1	TC1, 2, OL1, U1
				---	15.1 - 30				TC1, 2, OL0, U1	TC1, 2, OL0, U1
	125	50 / 60	1	0.02 - 15	---			1000	TC1, 2, OL1, U1	TC1, 2, OL1, U1
				---	15.1 - 30				TC1, 2, OL0, U1	TC1, 2, OL0, U1
				1 - 30	---			360	TC1, OL1, U2	TC3, OL1, U3
	250 [2]			0.02 - 12	---			1000	TC1, 2, OL1, U1	TC1, 2, OL1, U1
	250			---	12.1 - 18		1000 [4]	---	TC1, 2, OL0, C1	TC1, 2, OL0, C1
				0.02 - 15	---	2	---	1000	TC1, 2, OL1, U1	TC1, 2, OL1, U1
				---	15.1 - 30				TC1, 2, OL0, U1	TC1, 2, OL0, U1
				1 - 30	---			360	TC1, OL1, U2	TC3, OL1, U3

Notes:
1 Polarity Sensitive
2 Available only with Special Catalog Number. Consult Factory.
3 Requires Branch Circuit Backup with a UL Listed type K-5 or RK-5 fuse rated 30 Amps maximum
4 Requires Branch Circuit Backup with a UL Listed type K-5 or RK-5 fuse rated 60 Amps maximum

Table B: Lists UL Recognized,CSA Accepted and TUV and VDE Certified configurations and performance capabilities as a Component Supplementary Protector.

Component Supplementary Protectors												
Circuit Configuration	Voltage			Current Rating		Poles Breaking	Short Circuit Capacity (Amps)				Application Codes	
							UL / CSA		VDE / TUV			
	Max Rating	Frequency	Phase	Full Load Amps	General Purpose Amps		With Backup Fuse	Without Backup Fuse	With Backup Fuse	Without Backup Fuse	UL	CSA
Series	32	DC	---	0.02 - 15	---	1	---	1000	3000	500	TC1, 2, OL1, U1	TC1, 2, OL1, U1
				---	15.1 - 25						TC1, 2, OL0, U1	TC1, 2, OL0, U1
	50 [2]			0.02 - 7.5	---						TC1, 2, OL0, U1	TC1, 2, OL0, U1
	65			0.02 - 15		2					TC1, 2, OL1, U1	TC1, 2, OL1, U1
				---	15.1 - 25						TC1, 2, OL0, U1	TC1, 2, OL0, U1
	65 [3]			0.02 - 15	---		5000	---			TC1, 2, OL1, C1	TC1, 2, OL1, C1
				---	15.1 - 30						TC1, 2, OL0, C1	TC1, 2, OL0, C1
	80 [1]			0.02 - 15	---	1	---	600 [4]	---		TC1, 2, OL1, U1	TC1, 2, OL1, U1
				---	15.1 - 30						TC1, 2, OL0, U1	TC1, 2, OL0, U1
	125	50 / 60	1	0.02 - 15	---			1000	3000		TC1, 2, OL1, U1	TC1, 2, OL1, U1
				1 - 15				360			TC1, OL1, U2	TC3, OL1, U3
	250			0.02 - 12	---			1000			TC1, 2, OL1, U1	TC1, 2, OL1, U1
				0.02 - 20		2					TC1, 2, OL0, U1	TC1, 2, OL0, U1
				1 - 12		1		360			TC1, OL1, U2	TC3, OL1, U3

Notes:
1 Polarity Sensitive
2 Available only with Special Catalog Number. Consult Factory.
3 Requires Branch Circuit Backup with a UL Listed type K-5 or RK-5 fuse rated 30 Amps maximum
4 TUV only, not VDE
5 Requires backup protection with a thermal magnetic circuit breaker rated 32 amps and having a Type C trip characteristic per EN60898/DIN VDE 0641 (C32A) for ratings greater than 15amps, and a thermal magnetic circuit breaker rated 16 amps and having a Type C trip characteristic per EN60898/DIN VDE 0641 (C16A) for ratings 15 amps and less

Tech Specs

Tables

Table C: Lists UL489A Listed and TUV Certified configurations and performance capabilities for use in Communications Equipment.

UL489A Listed (Communications Equipment - Polarity Sensitive)						
Circuit Configuration	Voltage		Current Rating General Purpose Amps	Poles Breaking	Interrupting Capacity (Amps) Without Backup Fuse	
	Max Rating	Frequency			UL489A	TUV
Series	80	DC	0.02 - 30	1	600	---
	65[1]				1000	---
	80		0.10 - 30		600	600

Notes:
1. Available only with Special Catalog Number

Table D: Lists UL489A Listed configurations and performance capabilities for use in Communications Equipment.

Parallel Pole Construction UL489A Listed (Communications Equipment - Polarity Sensitive)					
Circuit Configuration	Voltage		Current Rating General Purpose Amps	Poles Breaking	Interrupting Capacity (Amps) Without Backup Fuse
	Max Rating	Frequency			UL489A
Series	80	DC	31 - 50	2	600
	65[1]				1000

Notes:
1. Available only with Special Catalog Number

Agency Approvals

UL 1077	Component Recognition Program as Protectors, Supplementary (Guide CCN/QVNU2, File E75596)
UL 489A	Communications Equipment (Guide CCN/DITT, File E189195)
CSA Accepted	Component Supplementary Protector (Class 3215 30, File 047848 0 000) CSA Standard C22.2 No. 235
VDE Certified	EN60934, VDE 0642 under File 10537
TUV Certified	EN60934, under License No. R9671109

Ordering Scheme

Rocker – Parallel Pole

Sample Part Number	M	E	2	-	P	-	D2	-	650	-	5	-	A	1	2	-	B	-	T
Selection	1	2	3		4		5		6		7		8	9	10		11		12

1. SERIES

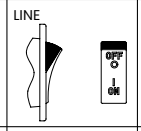
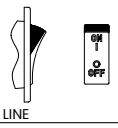
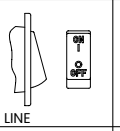
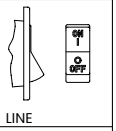
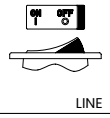
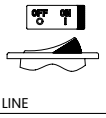
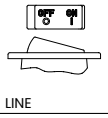
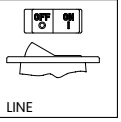
M

2. ACTUATOR [1]

Single Color
A Angled
B Flat

Two Color Visi
D Indicate ON
E Indicate OFF

Single Color Translucent
F Angled
G Flat

STYLE	INDICATE - "ON" (CODE-D)	INDICATE - "OFF" (CODE-E)	FLAT (CODES-B&G)	ANGLED (CODES-A&F)
VERTICAL				
HORIZONTAL				

3. POLES

2 Two

4. CIRCUIT/ AUXILIARY SWITCH [2]

P Series Trip Current (Parallel Pole)
with Auxiliary Switch, Silver Contacts
Q Series Trip Current (Parallel Pole) .110 x 0.20 Q.C
with Auxiliary Switch, Gold Contacts
R Series Trip Current (Parallel Pole) .110 x 0.20 Q.C

5. FREQUENCY & TIME DELAY

D2 DC Short
D4 DC Medium

6. CURRENT RATING (AMPERES)

CODE	AMPERES
631	31.000
635	35.000
640	40.000
645	45.000
650	50.000

7. TERMINAL [9]

A Push in Stud
5 10-32 Screw (Bus Type)

8. ILLUMINATION

Non-Illuminated
A Non-Illuminated

9. ACTUATOR COLOR & LEGEND

	Actuator Visi [1]	Legend
1	White	Black
2	Black	White
3	Red	White
4	Green	White
5	Blue	White
6	Yellow	Black
7	Gray	Black
8	Orange	Black

10. LEGEND

2 ON - OFF Vertical
3 ON - OFF Horizontal
6 Dual Vertical
7 Dual Horizontal

11. BEZEL COLOR

A White without Rockerguard
B Black without Rockerguard
G Gray without Rockerguard
1 White with Rockerguard
2 Black with Rockerguard
7 Gray with Rockerguard

12. AGENCY APPROVAL

T UL 489A Listed

Notes:
1 Reminder of Rocker same color as Visi
2 Aux Switch only available with screw terminals

Configure Complete Part Number > | Browse Standard Parts >

Ordering Scheme

Handle/Pushbutton – Parallel Pole

Sample Part Number	M	M	2	- P	- D2	- 650	- 5	- 1	B	B	- B	- T
Selection	1	2	3	4	5	6	7	8	9	10	11	12

1. SERIES

M

2. ACTUATOR [1]

M	Paddle
T	Push-Pull

3. POLES

2	Two

4. CIRCUIT/ AUXILIARY SWITCH [2]

P	Series Trip Current (Parallel Pole)	
with Auxiliary Switch, Silver Contacts		
Q	Series Trip Current (Parallel Pole)	.110 x 0.20 Q.C
with Auxiliary Switch, Gold Contacts		
R	Series Trip Current (Parallel Pole)	.110 x 0.20 Q.C

5. FREQUENCY & TIME DELAY

D2	DC Short
D4	DC Medium

6. CURRENT RATING (AMPERES)

CODE	AMPERES
631	31.000
635	35.000
640	40.000
645	45.000
650	50.000

7. TERMINAL [9]

A	Push in Stud
5	10-32 Screw (Bus Type)

8. ACTUATOR COLOR & LEGEND

Handle		Push Button	
1	White	**A**	White
2	Black	**B**	Black
3	Red	**C**	Red
4	Green	**D**	Green
5	Blue	**E**	Blue
6	Yellow	**F**	Yellow
7	Gray	**G**	Gray
8	Orange	**H**	Orange

9. FRONT PANEL HARDWARE

Handle	
A	No outer Panel Hardware
B	Knurled Nut, Bright Nickel
C	Knurled Nut, Bright Nickel with Locking Ring
D	Knurled Nut, Black
E	Knurled Nut, Black with Locking Ring
F	Panel Dress, Bright Nickel
G	Panel Dress, Bright Nickel with Locking Ring
H	Panel Dress, Black
J	Panel Dress, Black with Locking Ring
Push Button	
1	No outer Panel Hardware
2	Knurled Nut, Bright Nickel

10. LEGEND PLATE / BUTTON MARKING

Handle Actuator Legend Plate	
B	ON - OFF Vertical
C	ON - OFF Horizontal
Push-Pull Actuator Legend Plate	
2	Rated Amps Horizontal
3	Rated Amps Line Side Down
4	Rated Amps Line Side Up

11. BUSHING COLOR

B	Black

12. AGENCY APPROVAL

T	UL 489A Listed

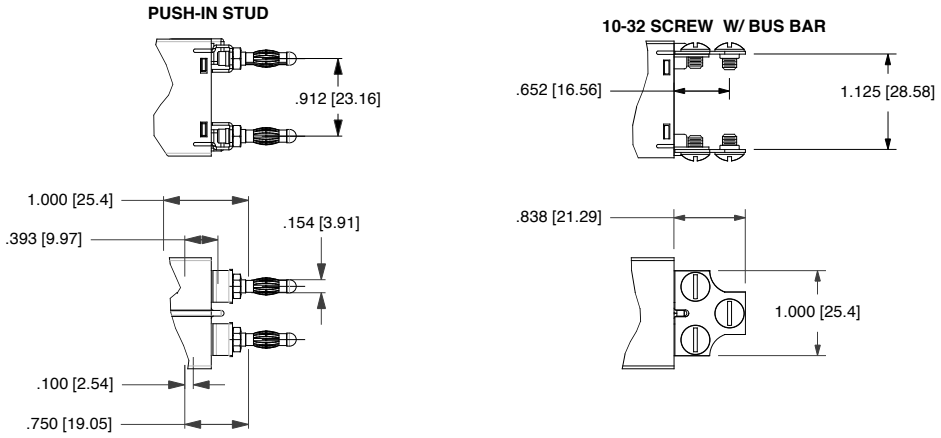
Notes:
1 Aux Switch only available with screw terminals

Configure Complete Part Number > Browse Standard Parts >

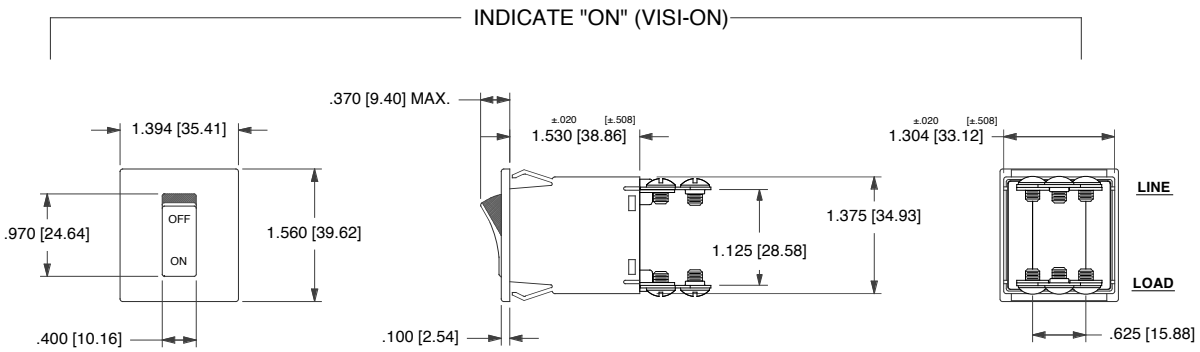
Dimensional Specs Parallel Pole

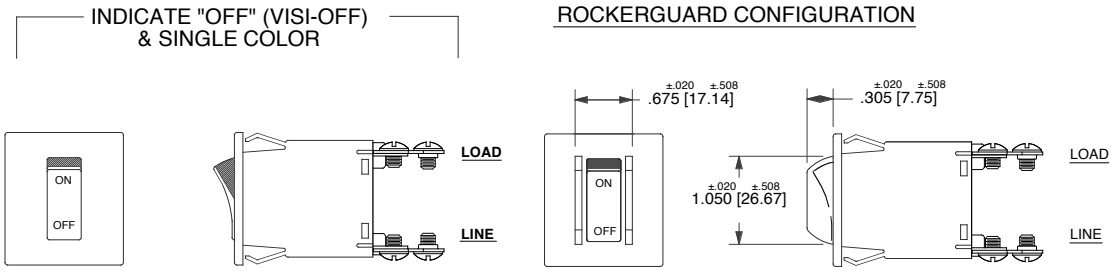
inches [millimeters]

PARALLEL POLE TERMINAL OPTIONS



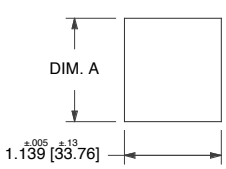
ROCKER ACTUATOR DETAIL





PANEL CUT - OUT DETAIL (ROCKER)

DOUBLE POLE



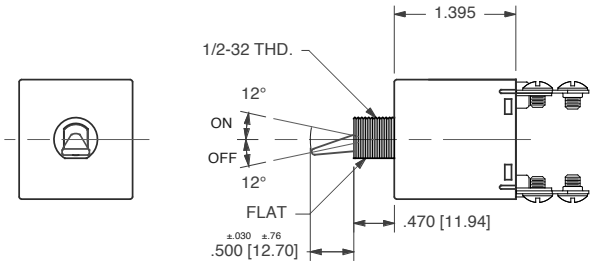
PANEL THICKNESS	DIM. A ±.005/±.13 -.000/-.00
.062 [1.57]	1.385 [35.18]
.093 [2.36]	1.420 [36.07]
.125 [3.18]	1.460 [37.08]

Notes:
1 Tolerance ±.010 [.25] unless otherwise specified.
2 Dimensions apply to both rocker styles.
3 I-o, on-off or dual legends available for vertical or horizontal mounting.
4 Notice that circuit breaker line and load terminal orientation on indicate "off" is opposite that of indicate "on".

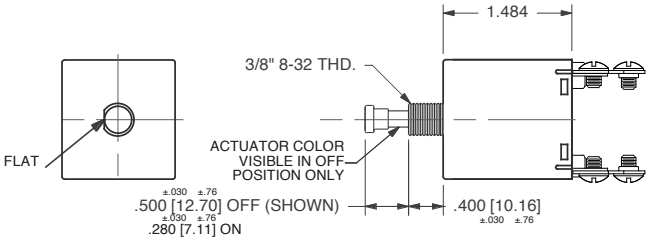
Dimensional Specs Parallel Pole

inches [millimeters]

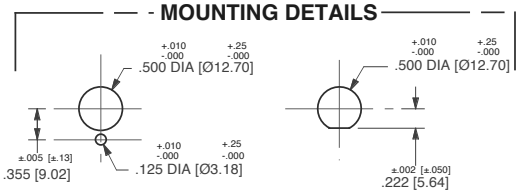
PADDLE ACTUATOR STYLE



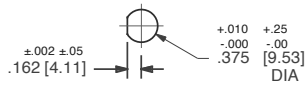
PUSH-PULL ACTUATOR STYLE



MOUNTING DETAILS

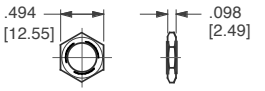


MOUNTING DETAILS



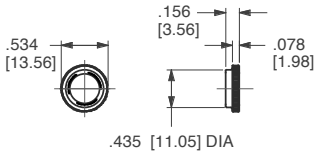
PUSH-PULL,
PUSH TO RESET

PANEL HARDWARE



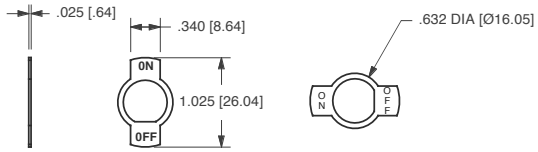
HEX NUT

SNAP-IN BUSHING



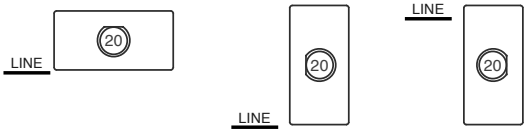
PANEL DRESS NUT

LEGEND PLATES



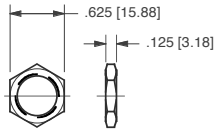
LEGEND CODE: B C

BUTTON MARKING ORIENTATION

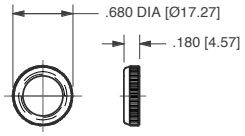


MARKING CODE: 2 3 4

PANEL HARDWARE



HEX NUT



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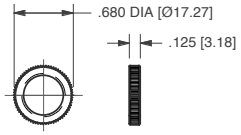
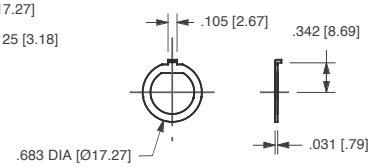
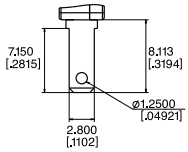


KNURLED NUT



LOCKING RING

.110QC AUXILIARY SWITCH TERMINALS



Notes:
1 Tolerance ±.010 [.25] unless otherwise specified.
2 Dimensions apply to both rocker styles.
3 I-o, on-off or dual legends available for vertical or horizontal mounting.
4 Notice that circuit breaker line and load terminal orientation on indicate “off” is opposite that of indicate “on”.

Ordering Scheme

Rocker - UL 1077 Recognized

Sample Part Number	M	G	2	-	B	-	34	-	620	-	1	-	H	C	6	-	7	-	C
Selection	1		2	3		4		5		6		7		8	9	10		11	12

1. SERIES

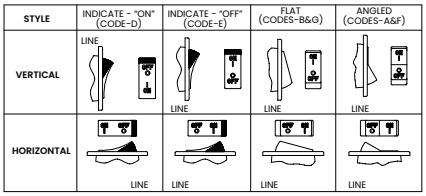
M

2. ACTUATOR [1]

Non-Illuminated single color
A Angled
B Flat

Two Color Visi-Rocker
D Indicate ON
E Indicate OFF

Illuminated single color
F Angled
G Flat



3. POLES

1 One
2 Two

4. CIRCUIT [2]

without Auxiliary Switch
A Switch Only (no coil), Maintained Contacts
B Series Trip (Current)

with Auxiliary Switch, Silver Contacts		**Terminal Type:**
M	Series Trip (Current) Aux Switch	.110 QC x .020 QC
P [3]	Switch Only, Maintained Contacts	.060 Dia, Round Solder Turret
Q [3,4]	Switch Only, Maintained Contacts	.058 Dia, Round Q.C.
R [3,16]	Switch Only, Maintained Contacts	.080 Dia x .020 Flat Q.C.
S [3]	Series Trip (Current)	.060 Dia, Round Solder Turret
T [3,4]	Series Trip (Current)	.058 Dia, Round Q.C.
U [3,16]	Series Trip, Maintained Contacts	.080 Dia x .020 Flat Q.C.
with Auxiliary Switch, Gold Contacts		
2 [3,4]	Switch Only, Maintained Contacts	.058 Dia, Round Q.C.
3 [3,16]	Switch Only, Maintained Contacts	.080 Dia x .020 Flat Q.C.
4 [3,4]	Series Trip (Current)	.058 Dia, Round Q.C.
5 [3,16]	Series Trip, Maintained Contacts	.080 Dia x .020 Flat Q.C.
9	Series Trip (Current) Aux Switch	.110 QC x .020 QC

5. FREQUENCY & TIME DELAY

03	DC 50/60Hz, Switch Only	**32**	DC, 50/60Hz Short
10	DC Instantaneous	**34**	DC, 50/60Hz Medium
12	DC Short	**62**	50/60Hz Short, High-inrush
14	DC Medium	**64**	50/60Hz Medium, High-inrush
20	50/60Hz Instantaneous	**72**	DC, Short, High-inrush
22	50/60Hz Short	**74**	DC,Medium, High-inrush
24	50/60Hz Medium	**92**	DC, 50/60Hz Short, High-inrush
30	DC, 50/60Hz Instantaneous	**94**	DC, 50/60Hz Medium, High-inrush

Voltage			Full Load Amp Rating		General Purpose Amps		Tungsten Lamp Rating		Poles Breaking
Max Rating	Frequency	Phase	Max Amps	Current Coil Rating Code	Max Amps	Choose Current Coil Rating Code	Max Amps	Current Coil Rating Code	
32	DC	-	15	615	25	625	-	-	1
50	DC	-	-	-	7.5	Consult Factory	-	-	1
65	DC	1	15	615	25	625	-	-	2
125	50/60Hz	1	15	615	25	625	15	615	1
250	50/60Hz	1	12	612	-		-	-	1
250	50/60Hz	1	15	615	25	625	-	-	2

Notes:
1 One actuator is located in the center of each multi-pole breaker.
2 For Switch Only circuits, select Current Coil Rating from the above chart:
3 One Auxiliary Switch is supplied per breaker. On two-pole breakers, standard Auxiliary Switch mounting is in pole one. Auxiliary Switch option limited to Series Trip & Switch Only circuits, & is not available in single pole illuminated breakers, or Back Connected Screw or Push-in Stud terminals.
4 Mates with AMP .058" diameter pin receptacles: 60983-1 (gold plated) & 60983-2 (tin plated).
5 For neon bulb applications at 120VAC @ 47K, 1/4 WATT and for 250VAC applications @ 150K, 1/4 WATT, external resistors must be supplied by customer.
6 On Visi-Rockers, Visi portion of rocker cannot be the same color as bezel.
7 For LED (DC or rectified AC) applications, LED is mounted in the center of the rocker actuator with electrical characteristics: 100 millicandela at 20mA; Maximum power dissipation = 75mW at 25°C; Maximum forward current = 25mA; Typical forward voltage = 2.1V at 20mA; Typical reverse current = 100uA at 3V. Customer supplies the proper external resistor limiting current to these values.
8 Rocker color for LED's and green neon lamp must be clear, smoke gray, white translucent or match color of LED or neon lamp.
9 Other colors available. Consult factory.
10 TUV 20A, VDE 15A. UL Recognized and CSA Accepted to 30 amps. Screw Terminals or Push-in Stud recommended above 20 amps.
11 TUV/VDE must have I-O or Dual Legends. Legend required on Visi-Rockers.
12 30 amp rating not available with delay's 30, 32, 34, 92 or 94.
13 Screw Terminals are VDE certified only with use of ring terminal attached to wire.
14 Terminal code A available with circuit codes A & B only.
15 Printed circuit board available with UL recognized approval only.
16 Auxiliary switch (flat Q.C.) available with UL recognized approvals only.

6. CURRENT RATING (AMPERES)

CODE	AMPERES							
020	0.020	**225**	0.250	**420**	2.000	**710**	10.500
025	0.025	**230**	0.300	**522**	2.250	**611**	11.000
030	0.030	**235**	0.350	**425**	2.500	**711**	11.500
035	0.035	**240**	0.400	**527**	2.750	**612**	12.000
040	0.040	**245**	0.450	**430**	3.000	**712**	12.500
045	0.045	**250**	0.500	**435**	3.500	**613**	13.000
050	0.050	**255**	0.550	**440**	4.000	**614**	14.000
055	0.055	**260**	0.600	**445**	4.500	**615**	15.000
060	0.060	**265**	0.650	**450**	5.000	**616**	16.000
065	0.065	**270**	0.700	**455**	5.500	**617**	17.000
070	0.070	**275**	0.750	**460**	6.000	**618**	18.000
075	0.075	**280**	0.800	**465**	6.500	**620**	20.000
080	0.080	**285**	0.850	**470**	7.000	**622**	22.000
085	0.085	**290**	0.900	**475**	7.500	**624**	24.000
090	0.090	**295**	0.950	**480**	8.000	**625**	25.000
095	0.095	**410**	1.000	**485**	8.500	**630** [12]	30.000
210	0.100	**512**	1.250	**490**	9.000		
215	0.150	**415**	1.500	**495**	9.500		
220	0.200	**517**	1.750	**610**	10.000		

7. TERMINAL

1	Push-On 0.250 Tab (Q.C.)	**3**	Screw 8-32 (Bus Type) [10]
2	Screw 8-32 with Upturned Lugs [10]	**A**	Push-In Stud [14]
		P	Printed Circuit Board [15]

8. ROCKER ILLUMINATION

Non-illuminated	**A**		
Neon [5]	Neon	Green Glow [8]	
without resistor, 120VAC/250VAC	**B**	**C**	
LED [7,8]	Red	Green	Amber
without resistor	**D**	**G**	**K**
with resistor, 4-8 VDC	**E**	**H**	**L**
with resistor, 9-16 VDC	**F**	**J**	**M**

9. ACTUATOR & LEGEND COLOR

Solid Color	Actuator	Legend
1	White	Black
2	Black	White
3	Red	White
4	Green	White
5	Blue	White
6	Yellow	Black
7	Gray	Black
8	Orange	Black
Visi-Rocker [6]	Visi & Legend (remainder of rocker same color as bezel)	
1	White	
2	Black	
3	Red	
4	Green	
5	Blue	
6	Yellow	
7	Gray	
8	Orange	
Illuminated [8]	Actuator	Legend
A	Clear	White
B	Red Transparent	White
C	Green Transparent	White
D	Amber Transparent	White
E	Smoke Gray Transparent	White
F	White Translucent	Black

10. LEGEND

1	No Legend	**5**	I - O Horizontal
2	ON - OFF Vertical	**6**	Dual Vertical
3	ON - OFF Horizontal	**7**	Dual Horizontal
4	I - O Vertical		

11. BEZEL COLOR/STYLE [9]

Color	without Rockerguard	with Rockerguard
White	**A**	**1**
Black	**B**	**2**
Gray	**G**	**7**

12. AGENCY APPROVAL

C UL Recognized & CSA Accepted
D VDE Certified, UL Recognized & CSA Accepted
E TUV Certified, UL Recognized & CSA Accepted

Configure Complete Part Number > Browse Standard Parts >

Ordering Scheme

Rocker - UL 489A Listed & 1077 Recognized

Sample Part Number	M	A	1	-	B	-	14	-	620	-	1	-	A	1	6	-	2	-	J
Selection	1	2	3		4		5		6		7		8	9	10		11		12

1. SERIES

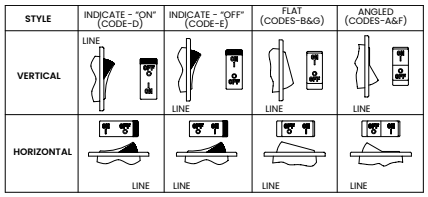
M

2. ACTUATOR [1]

Non-Illuminated single color
A Angled
B Flat

Two Color Visi-Rocker
D Indicate ON
E Indicate OFF

Illuminated single color
F Angled
G Flat



3. POLES

1 One

4. CIRCUIT [2]

without Auxiliary Switch
B Series Trip (Current)

with Auxiliary Switch, Silver Contacts		**Terminal Type:**
M	Series Trip (Current) Aux Switch	.110 QC x .020 QC
S [3]	Series Trip (Current)	.060 Dia, Round Solder Turret
T [3,4]	Series Trip (Current)	.058 Dia, Round Q.C.
U [3,16]	Series Trip, Maintained Contacts	.080 Dia x .020 Flat Q.C.
with Auxiliary Switch, Gold Contacts		
4 [3,4]	Series Trip (Current)	.058 Dia, Round Q.C.
5 [3,16]	Series Trip, Maintained Contacts	.080 Dia x .020 Flat Q.C.
9	Series Trip (Current) Aux Switch	.110 QC x .020 QC

5. FREQUENCY & TIME DELAY

10 DC Instantaneous
12 DC Short
14 DC Medium
72 DC, Short, High-inrush
74 DC,Medium, High-inrush

6. CURRENT RATING (AMPERES)

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
020	0.020	**225**	0.250	**420**	2.000	**710**	10.500
025	0.025	**230**	0.300	**522**	2.250	**611**	11.000
030	0.030	**235**	0.350	**425**	2.500	**711**	11.500
035	0.035	**240**	0.400	**527**	2.750	**612**	12.000
040	0.040	**245**	0.450	**430**	3.000	**712**	12.500
045	0.045	**250**	0.500	**435**	3.500	**613**	13.000
050	0.050	**255**	0.550	**440**	4.000	**614**	14.000
055	0.055	**260**	0.600	**445**	4.500	**615**	15.000
060	0.060	**265**	0.650	**450**	5.000	**616**	16.000
065	0.065	**270**	0.700	**455**	5.500	**617**	17.000
070	0.070	**275**	0.750	**460**	6.000	**618**	18.000
075	0.075	**280**	0.800	**465**	6.500	**620**	20.000
080	0.080	**285**	0.850	**470**	7.000	**622**	22.000
085	0.085	**290**	0.900	**475**	7.500	**624**	24.000
090	0.090	**295**	0.950	**480**	8.000	**625**	25.000
095	0.095	**410**	1.000	**485**	8.500	**630** [12]	30.000
210	0.100	**512**	1.250	**490**	9.000		
215	0.150	**415**	1.500	**495**	9.500		
220	0.200	**517**	1.750	**610**	10.000		

7. TERMINAL [9]

1 Push-On 0.250 Tab (Q.C.)
2 Screw 8-32 with Upturned Lugs [10]
3 Screw 8-32 (Bus Type) [10]
A Push-In Stud [14]
P Printed Circuit Board [15]

8. ROCKER ILLUMINATION

Non-illuminated	**A**		
Neon [4]	Neon	Green Glow [8]	
without resistor, 120VAC/250VAC	**B**	**C**	
LED [7, 8]	Red	Green	Amber
without resistor	**D**	**G**	**K**
with resistor, 4-8 VDC	**E**	**H**	**L**
with resistor, 9-16 VDC	**F**	**J**	**M**

9. ACTUATOR & LEGEND COLOR

Solid Color	Actuator	Legend
1	White	Black
2	Black	White
3	Red	White
4	Green	White
5	Blue	White
6	Yellow	Black
7	Gray	Black
8	Orange	Black
Visi-Rocker [6]	Visi & Legend (remainder of rocker same color as bezel)	
1	White	
2	Black	
3	Red	
4	Green	
5	Blue	
6	Yellow	
7	Gray	
8	Orange	
Illuminated [7]	Actuator	Legend
A	Clear	White
B	Red Transparent	White
C	Green Transparent	White
D	Amber Transparent	White
E	Smoke Gray Transparent	White
F	White Translucent	Black

10. LEGEND

1 No Legend
2 ON - OFF Vertical
3 ON - OFF Horizontal
4 I - O Vertical
5 I - O Horizontal
6 Dual Vertical
7 Dual Horizontal

11. BEZEL COLOR/ STYLE

Color	without Rockerguard	with Rockerguard
White	**A**	**1**
Black	**B**	**2**
Gray	**G**	**7**

12. AGENCY APPROVAL [9]

J UL 489A Listed & TUV Certified
M UL Recognized & CSA Accepted
N TUV Certified, UL Recognized & CSA Accepted
T UL 489A Listed

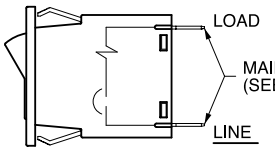
Notes:
1 One actuator is located in the center of each multi-pole breaker.
2 One Auxiliary Switch is supplied per breaker. Auxiliary Switch option limited to Series Trip & Switch Only circuits, and is not available in single pole illuminated breakers, or with Back Connected Screw or Push-in Stud terminals.
3 Mates with AMP .058" diameter pin receptacles: 60983-1 (gold plated) & 60983-1 (tin plated).
4 For neon bulb applications at 120VAC @ 47K, 1/4 WATT and for 250VAC applications @ 150K, 1/4 WATT, external resistors must be supplied by customer.
5 For LED (DC or rectified AC) applications, LED is mounted in the center of the rocker actuator with electrical characteristics as follows: 100 millicandela at 20mA; Maximum power dissipation = 75mW at 25°C; Maximum forward current = 25mA; Typical forward voltage = 2.1V at 20mA; Typical reverse current = 100uA at 3V. Customer supplies the proper external resistor limiting current to these values.
6 On Visi-Rocker breakers, Visi portion of rocker cannot be the same color as the bezel.
7 Rocker color for LED's and green neon lamp must be clear, smoke gray, white translucent or match color of LED or neon lamp.
8 Other colors available. Consult factory.
9 UL Recognized, CSA Accepted, UL489A Listed, and TUV Certified to 30 amps. Screw Terminals recommended above 20 amps. Polarity Sensitive Construction
10 UL489A Listed must have ON-OFF or Dual legends. TUV Certified approvals must have I - O or Dual legends.
11 Terminal code A available with circuit codes A & B only.
12 Printed circuit board available with UL recognized approval only.
13 Auxiliary switch (flat Q.C.) available with UL recognized approvals only.

Configure Complete Part Number >
Browse Standard Parts >

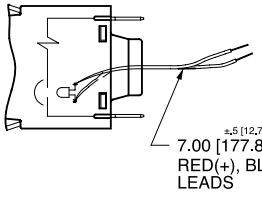
Circuit & Terminal Diagrams Rocker

inches [millimeters]

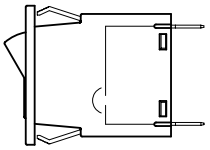
SERIES TRIP



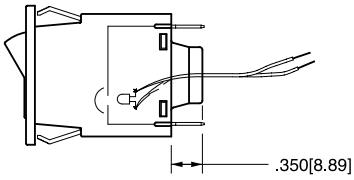
SERIES TRIP W/ ILLUMINATED ROCKER



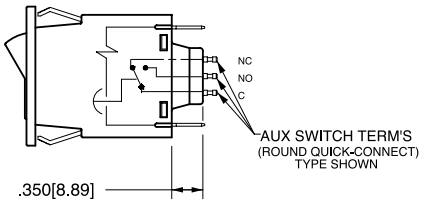
SWITCH ONLY

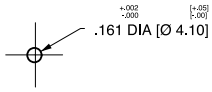


SWITCH ONLY W/ ILLUMINATED ROCKER



SERIES TRIP W/ AUXILIARY SWITCH





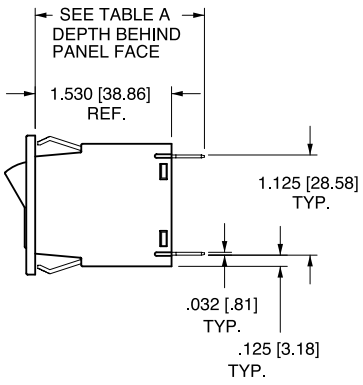
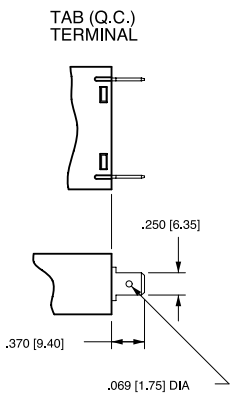


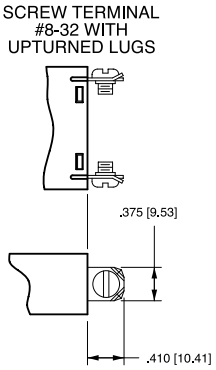
TABLE - A		
TERMINAL DESCRIPTION		DEPTH BEHIND PANEL FACE
MAIN	TAB (Q.C.)	1.900 [48.26]
	SCREW (#8-32)**	1.940 [49.28]
	PUSH-IN STUD	2.530 [64.26]
*AUX. SWITCH	DOUBLE SOLDER TURRET TYPE	2.045 [51.94]
	ROUND Q.C. TYPE	2.035 [51.69]
	FLAT QUICK CONNECT	2.139 [54.33]
	FLAT SOLDER LUG	2.022 [51.36]

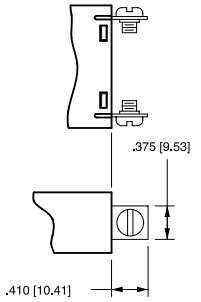
* AUX. SWITCH IS NOT AVAILABLE ON SINGLE POLE ILLUMINATED UNITS. WHEN CALLED FOR ON MULTI-POLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, MOUNTED AS SHOWN ON CLA-8003.

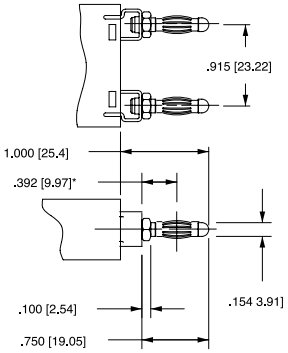
**RECOMMENDED TIGHTENING TORQUE 12-15 IN LBS [1.4-2.7 NM]

TERMINAL DIMENSIONAL DETAIL



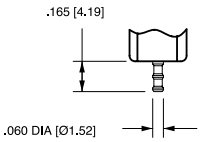




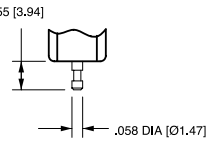


*CENTERLINE OF PUSH-IN STUD CONTACT AREA

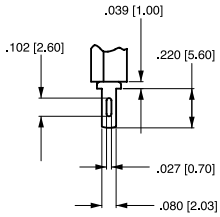
AUXILIARY SWITCH TERMINALS



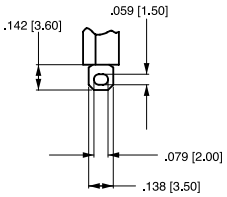
DOUBLE SOLDER TURRET TYPE



ROUND QUICK-CONNECT TYPE



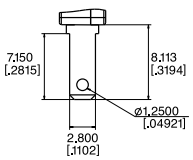
.080 [2.03] X .020 [.51] FLAT QUICK-CONNECT TYPE



FLAT SOLDER LUG TYPE

*AVAILABLE THROUGH SPECAIL CATALOG PART NUMBER

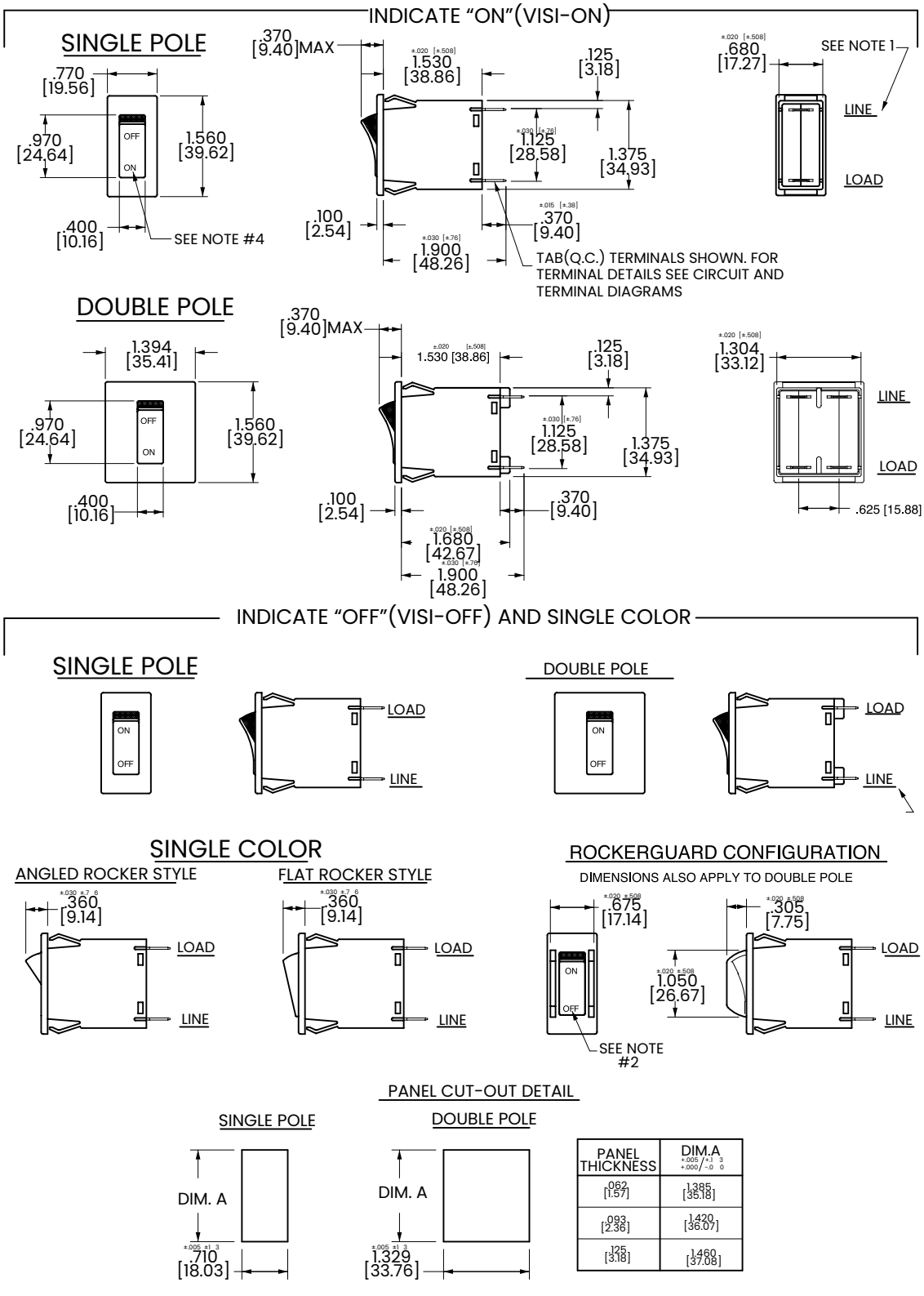
.110 QC



Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.
2 Schematic shown represents current trip circuit.

Dimensional Specs Rocker

inches [millimeters]



PANEL THICKNESS	DIM.A +.005/+.1 +.000/-.0
.062 [1.57]	1.385 [35.18]
.093 [2.36]	1.420 [36.07]
.125 [3.18]	1.460 [37.08]

Notes:
1 Dimensions apply to all variations shown. Notice that circuit breaker line & load terminal orientation on indicate OFF is opposite of indicate ON.
2 I-O, ON-OFF or dual legends available for vertical or horizontal mounting. For pole orientation with horizontal legend, rotate front view clockwise 90°.
3 Tolerance ± 0.20 [.51] unless otherwise specified.

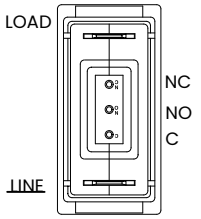
Supplementary Diagrams Rocker

ONE POLE

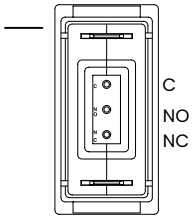
SINGLE POLE/ROCKER BREAKERS SHOWN WITH DOUBLE SOLDER TURRET AND ROUND QC AUX.SWITCH TERMINALS

ROCKER AND AUXILIARY SWITCH OPTIONS

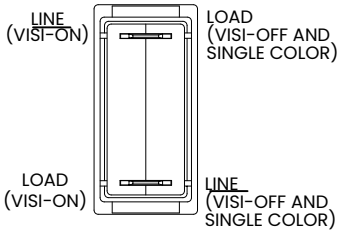
VIS-OFF AND SINGLE COLOR (NON-ILLUMINATED) ROCKER OPTIONS WITH AUXILIARY SWITCH



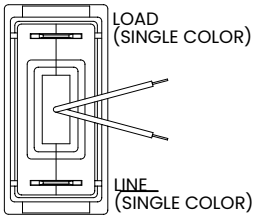
VIS-ON ROCKER WITH AUXILIARY SWITCH



ALL-ROCKER OPTIONS WITHOUT AUXILIARY SWITCH



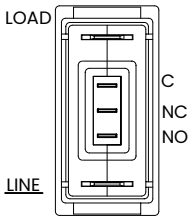
ILLUMINATED ROCKERS WITHOUT AUXILIARY SWITCH



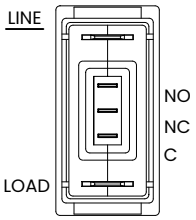
SINGLE POLE/ROCKER BREAKERS SHOWN WITH FLAT QC AND FLAT SOLDER LUG AUX.SWITCH TERMINALS

ROCKER AND AUXILIARY SWITCH OPTIONS

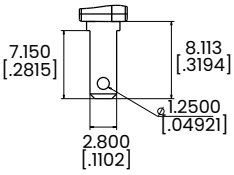
VIS-OFF AND SINGLE COLOR (NON-ILLUMINATED) ROCKER OPTIONS WITH AUXILIARY SWITCH



VISI-ON ROCKER WITH AUXILIARY SWITCH



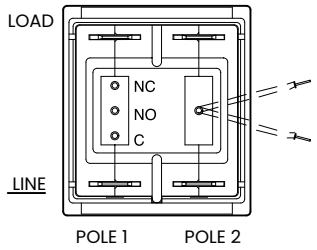
.110 QC



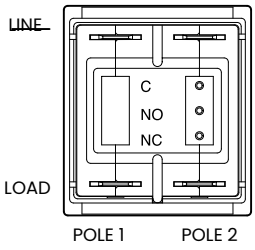
TWO POLE

DOUBLE POLE/ROCKER BREAKERS SHOWN WITH DOUBLE SOLDER TURRET AND ROUND QC AUX.SWITCH TERMINALS

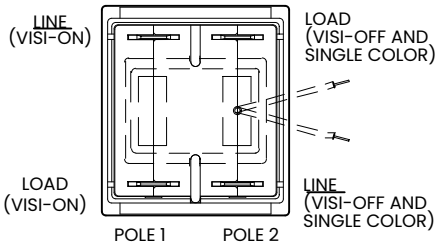
ROCKER AND AUXILIARY SWITCH OPTIONS



VISI-ON ROCKER WITH AUXILIARY SWITCH



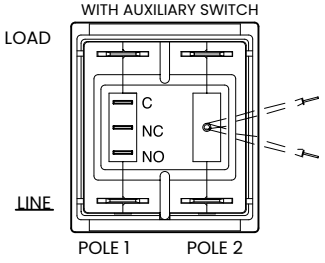
ALL-ROCKER OPTIONS WITHOUT AUXILIARY SWITCH



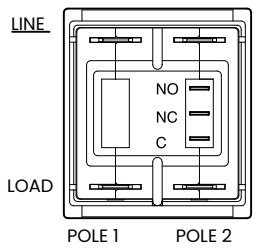
DOUBLE POLE/ROCKER BREAKERS SHOWN WITH FLAT QC AND FLAT SOLDER LUG AUX.SWITCH TERMINALS

ROCKER AND AUXILIARY SWITCH OPTIONS

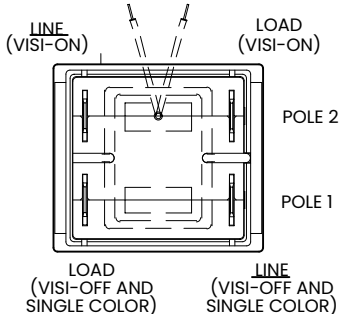
SINGLE COLOR AND VIS-OFF (ILLUMINATED AND NON-ILLUMINATED) ROCKER OPTIONS WITH AUXILIARY SWITCH



VISI-ON ROCKER WITH AUXILIARY SWITCH



POLE DESIGNATIONS FOR HORIZONTAL MOUNTING/LEGEND- ALL ROCKER STYLES



Ordering Scheme

Handle/Pushbutton - UL 1077 Recognized

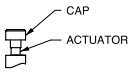
Sample Part Number	M	M	1	-	B	-	34	-	260	-	1	-	1	B	B	-	C	-	B
Selection	1		2		3		4		5		6		7	8	9	10	11		12

1. SERIES

M

2. ACTUATOR [1]

Handle
M Paddle 
N Baton 

Push Button
T Push-Pull 

U Push To Reset 

Push Button with Snap-In Mounting
V Push-Pull 
W Push To Reset 

3. POLES

1	One	**2**	Two

4. CIRCUIT [2]

without Auxiliary Switch
A Switch Only (no coil), Maintained Contacts
B Series Trip (Current)

with Auxiliary Switch, Silver Contacts		**Terminal Type:**
M	Series Trip (Current) Aux Switch	.110 QC x .020 QC
P [3]	Switch Only, Maintained Contacts	.060 Dia, Round Solder Turret
Q [3,4]	Switch Only, Maintained Contacts	.058 Dia, Round Q.C.
R [3,13]	Switch Only, Maintained Contacts	.080 Dia x .020 Flat Q.C.
S [3]	Series Trip (Current)	.060 Dia, Round Solder Turret
T [3,4]	Series Trip (Current)	.058 Dia, Round Q.C.
U [3,13]	Series Trip, Maintained Contacts	.080 Dia x .020 Flat Q.C.
with Auxiliary Switch, Gold Contacts		
2 [3,4]	Switch Only, Maintained Contacts	.058 Dia, Round Q.C.
3 [3,13]	Switch Only, Maintained Contacts	.080 Dia x .020 Flat Q.C.
4 [3,4]	Series Trip (Current)	.058 Dia, Round Q.C.
5 [3,13]	Series Trip, Maintained Contacts	.080 Dia x .020 Flat Q.C.
9	Series Trip (Current) Aux Switch	.110 QC x .020 QC

5. FREQUENCY & TIME DELAY

03	DC 50/60Hz, Switch Only	**32**	DC, 50/60Hz Short
10	DC Instantaneous	**34**	DC, 50/60Hz Medium
12	DC Short	**62**	50/60Hz Short, High-inrush
14	DC Medium	**64**	50/60Hz Medium, High-inrush
20	50/60Hz Instantaneous	**72**	DC, Short,High-inrush
22	50/60Hz Short	**74**	DC,Medium, High-inrush
24	50/60Hz Medium	**92**	DC, 50/60Hz Short, High-inrush
30	DC, 50/60Hz Instantaneous	**94**	DC, 50/60Hz Medium, High-inrush

Voltage			Full Load Amp Rating		General Purpose Amps		Tungsten Lamp Rating		Poles Breaking
Max Rating	Frequency	Phase	Max Amps	Current Coil Rating Code	Max Amps	Choose Current Coil Rating Code	Max Amps	Current Coil Rating Code	
32	DC	-	15	615	25	625	-	-	1
50	DC	-	-	-	7.5	Consult Factory	-	-	1
65	DC	1	15	615	25	625	-	-	2
125	50/60Hz	1	15	615	25	625	15	615	1
250	50/60Hz	1	12	612	-		-	-	1
250	50/60Hz	1	15	615	25	625	-	-	2

Notes:
1 One actuator is located in the center of each multi-pole breaker. Actuator codes V & W limited to single pole breakers only.
2 Switch Only circuits are not available with Push-To-Reset actuators. For Switch Only circuits, select Current Coil Rating from the above chart:
3 One Auxiliary Switch is supplied per breaker. On two-pole breakers, standard Auxiliary Switch mounting is in pole one. Auxiliary Switch option limited to Series Trip and Switch Only circuits. Not available with back connect screw or push-in stud terminals.
4 Mates with AMP .058" diameter pin receptacles including 60983-1 (gold plated) and 60983-2 (tin plated).
5 Actuator color is only visible in the OFF position on Push-Pull actuators.
6 All units except snap-in mounting have one hex nut installed on bushing for use behind the panel.
7 Other colors available. Consult factory.
8 TUV 20A, VDE 15A. UL Recognized and CSA Accepted to 30 amps. Screw Terminals or Push-in Stud recommended above 20 amps.
9 30 amp rating not available with delay's 30, 32, 34, 92 or 94.
10 Screw Terminals are VDE certified only with use of ring terminal attached to wire.
11 Terminal code A available with circuit codes A & B only.
12 Printed circuit board available with UL recognized approval only.
13 Auxiliary switch (flat Q.C.) available with UL recognized approvals only.

Configure Complete Part Number > | Browse Standard Parts >

6. CURRENT RATING (AMPERES)

CODE	AMPERES						
020	0.020	**225**	0.250	**420**	2.000	**710**	10.500
025	0.025	**230**	0.300	**522**	2.250	**611**	11.000
030	0.030	**235**	0.350	**425**	2.500	**711**	11.500
035	0.035	**240**	0.400	**527**	2.750	**612**	12.000
040	0.040	**245**	0.450	**430**	3.000	**712**	12.500
045	0.045	**250**	0.500	**435**	3.500	**613**	13.000
050	0.050	**255**	0.550	**440**	4.000	**614**	14.000
055	0.055	**260**	0.600	**445**	4.500	**615**	15.000
060	0.060	**265**	0.650	**450**	5.000	**616**	16.000
065	0.065	**270**	0.700	**455**	5.500	**617**	17.000
070	0.070	**275**	0.750	**460**	6.000	**618**	18.000
075	0.075	**280**	0.800	**465**	6.500	**620**	20.000
080	0.080	**285**	0.850	**470**	7.000	**622**	22.000
085	0.085	**290**	0.900	**475**	7.500	**624**	24.000
090	0.090	**295**	0.950	**480**	8.000	**625**	25.000
095	0.095	**410**	1.000	**485**	8.500	**630** [12]	30.000
210	0.100	**512**	1.250	**490**	9.000		
215	0.150	**415**	1.500	**495**	9.500		
220	0.200	**517**	1.750	**610**	10.000		

7. TERMINAL [9]

1	Push-On 0.250 Tab (Q.C.)	**3**	Screw 8-32 (Bus Type) [10]
2	Screw 8-32 with Upturned Lugs [10]	**A**	Push-In Stud [11]
		P	Printed Circuit Board [12]

8. ROCKER ILLUMINATION

Gloss Handle	Push-Button	Actuator Color
1	**A**	White
2	**B**	Black
3	**C**	Red
4	**D**	Green
5	**E**	Blue
6	**F**	Yellow
8	**H**	Orange

9. ACTUATOR & LEGEND COLOR

	Handle	Push-Button
No outer Panel Hardware	**A**	**1**
Knurled Nut		
Bright nickel	**B**	**2**
Bright nickel with locking ring	**C**	
Black	**D**	
Black with locking ring	**E**	
Panel Dress Nut		
Bright nickel	**F**	
Bright nickel with locking ring	**G**	
Black	**H**	
Black with locking ring	**J**	

10. LEGEND

Handle Actuator Legend Plate (Actuator Styles M & N)
A No Legend Plate
B ON - OFF Vertical
C ON - OFF Horizontal
D I - O Vertical
E I - O Horizontal

Push-Pull Actuator Button Cap (Actuator Styles T & V)
1 No Marking
2 Rated Amps Horizontal
3 Rated Amps Line Side Down
4 Rated Amps Line Side Up

Push-to-Reset Actuator Button (Actuator Styles U & W)
1 No Marking

11. BUSHING COLOR [7]

B Black

12. AGENCY APPROVAL [8]

C UL Recognized & CSA Accepted
D VDE Certified, UL Recognized & CSA Accepted
E TUV Certified, UL Recognized & CSA Accepted

Ordering Scheme

Handle/Pushbutton - UL 489A Listed & 1077 Recognized

Sample Part Number	M	M	1	-	B	-	14	-	620	-	1	-	1	B	B	-	B	-	J
Selection	1		2		3		4		5		6		7		8	9	10		11		12

1. SERIES

M

2. ACTUATOR [1]

Handle
M Paddle

N Baton

Push Button
T Push-Pull

U Push To Reset

Push Button with Snap-In Mounting
V Push-Pull

W Push To Reset

3. POLES

1 One

4. CIRCUIT [2]

without Auxiliary Switch
B Series Trip (Current)

with Auxiliary Switch, Silver Contacts		**Terminal Type:**
M	Series Trip (Current) Aux Switch	.110 QC x .020 QC
S [3]	Series Trip (Current)	.060 Dia, Round Solder Turret
T [3,4]	Series Trip (Current)	.058 Dia, Round Q.C.
U [3,13]	Series Trip, Maintained Contacts	.080 Dia x .020 Flat Q.C.
with Auxiliary Switch, Gold Contacts		
4 [3,4]	Series Trip (Current)	.058 Dia, Round Q.C.
5 [3,13]	Series Trip, Maintained Contacts	.080 Dia x .020 Flat Q.C.
9	Series Trip (Current) Aux Switch	.110 QC x .020 QC

5. FREQUENCY & TIME DELAY

03	DC 50/60Hz, Switch Only	**32**	DC, 50/60Hz Short
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20	50/60Hz Instantaneous	**72**	DC, Short,High-inrush
22	50/60Hz Short	**74**	DC,Medium, High-inrush
24	50/60Hz Medium	**92**	DC, 50/60Hz Short, High-inrush
30	DC, 50/60Hz Instantaneous	**94**	DC, 50/60Hz Medium, High-inrush

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030	0.030	**235**	0.350	**425**	2.500	**711**	11.500
035	0.035	**240**	0.400	**527**	2.750	**612**	12.000
040	0.040	**245**	0.450	**430**	3.000	**712**	12.500
045	0.045	**250**	0.500	**435**	3.500	**613**	13.000
050	0.050	**255**	0.550	**440**	4.000	**614**	14.000
055	0.055	**260**	0.600	**445**	4.500	**615**	15.000
060	0.060	**265**	0.650	**450**	5.000	**616**	16.000
065	0.065	**270**	0.700	**455**	5.500	**617**	17.000
070	0.070	**275**	0.750	**460**	6.000	**618**	18.000
075	0.075	**280**	0.800	**465**	6.500	**620**	20.000
080	0.080	**285**	0.850	**470**	7.000	**622**	22.000
085	0.085	**290**	0.900	**475**	7.500	**624**	24.000
090	0.090	**295**	0.950	**480**	8.000	**625**	25.000
095	0.095	**410**	1.000	**485**	8.500	**630**	30.000
210	0.100	**512**	1.250	**490**	9.000		
215	0.150	**415**	1.500	**495**	9.500		
220	0.200	**517**	1.750	**610**	10.000		

1 One actuator is located in the center of each multi-pole breaker. Actuator codes V & W limited to single pole breakers only.
2 One Auxiliary Switch is supplied per breaker. On two-pole breakers, standard Auxiliary Switch mounting is in pole one. Auxiliary Switch option limited to Series Trip and Switch Only circuits.
Not available with Back Connected Screw or Push-in Stud terminals.
3 Mates with AMP .058" diameter pin receptacles including 60983-1 (gold plated) and 60983-3 (tin plated).
4 Screw terminals or Push-in Stud recommended above 20 amps.
5 Actuator color is only visible in the OFF position on Push-Pull actuators.
6 All units have one hex nut installed on bushing for use behind the panel.
7 Other colors available. Consult factory.
8 Not available with UL489A Listed breakers.
9 UL Recognized, CSA Accepted and UL Listed to 30 amps.
Polarity Sensitive Construction
10 Terminal code A available with circuit codes A & B only.
11 Printed circuit board available with UL recognized approval only.
12 Auxiliary switch (flat Q.C.) available with UL recognized approvals only.

7. TERMINAL [9]

1	Push-On 0.250 Tab (Q.C.)	**3**	Screw 8-32 (Bus Type)
2	Screw 8-32 with Upturned Lugs	**A**	Push-In Stud [10]
		P	Printed Circuit Board [11]

8. ROCKER ILLUMINATION

Gloss Handle	Push-Button	Actuator Color
1	**A**	White
2	**B**	Black
3	**C**	Red
4	**D**	Green
5	**E**	Blue
6	**F**	Yellow
8	**H**	Orange

9. ACTUATOR & LEGEND COLOR

	Handle	Push-Button
No outer Panel Hardware	**A**	**1**
Knurled Nut		
Bright nickel	**B**	**2**
Bright nickel with locking ring	**C**	
Black	**D**	
Black with locking ring	**E**	
Panel Dress Nut		
Bright nickel	**F**	
Bright nickel with locking ring	**G**	
Black	**H**	
Black with locking ring	**J**	

10. LEGEND

Handle Actuator Legend Plate (Actuator Styles M & N)
A No Legend Plate
B ON - OFF Vertical
C ON - OFF Horizontal
D I - O Vertical
E I - O Horizontal
Push-Pull Actuator Button Cap (Actuator Styles T & V)
1 No Marking
2 Rated Amps Horizontal
3 Rated Amps Line Side Down
4 Rated Amps Line Side Up
Push-to-Reset Actuator Button (Actuator Styles U & W)
1 No Marking

11. BUSHING COLOR [7]

B Black

12. AGENCY APPROVAL [9]

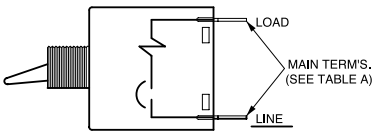
J UL 489A Listed, TUV Certified
M UL Recognized, CSA Accepted
N UL Recognized, TUV Certified
T UL 489A Listed

Configure Complete Part Number >
Browse Standard Parts >

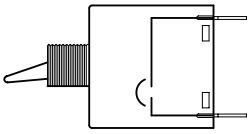
Circuit & Terminal Diagrams Handle

inches [millimeters]

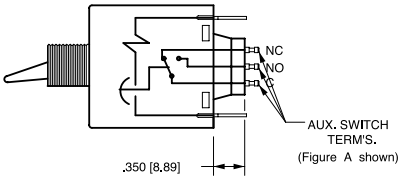
SERIES TRIP



SWITCH ONLY



SERIES TRIP W/ AUXILIARY SWITCH



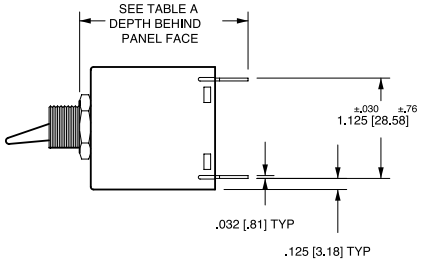


TABLE A		
TERMINAL DESCRIPTION		DEPTH BEHIND PANEL FACE *
MAIN	TAB (Q.C)	1.890 [48.00]
	SCREW (#8-32)	1.930 [49.03]
	PUSH-IN STUD	2.520 [64.00]
AUX. ** SWITCH	DOUBLE SOLDER TURRET TYPE	2.035 [51.69]
	ROUND Q.C TYPE	2.025 [51.44]
	FLAT QUICK-CONNECT	2.129 [54.08]
	FLAT SOLDER LUG	2.012 [51.10]

*DEPTH INCLUDES BEHIND PANEL HEX NUT AS SUPPLIED ON ALL UNITS.

**WHEN CALLED FOR ON MULTI-POLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, MOUNTED AS SHOWN IN FIG. A

MULTI-POLE IDENTIFICATION SCHEME

SOLDER TURRET AND ROUND QC AUX SWITCH TERMINALS

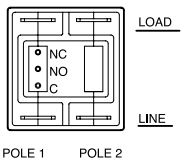


FIG. A

FLAT QC AND SOLDER LUG AUX SWITCHTERMINALS

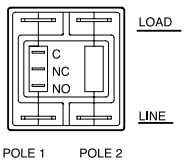
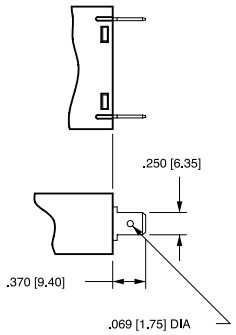


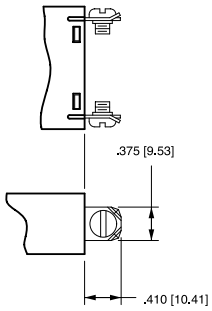
FIG. B

TERMINAL DIMENSIONAL DETAIL

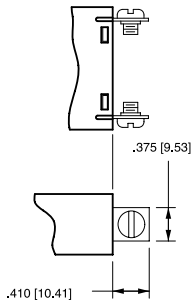
TAB (Q.C.) TERMINAL



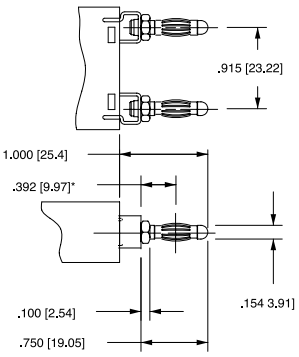
SCREW TERMINAL #8-32 WITH UPTURNED LUGS

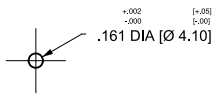


SCREW TERMINAL #8-32 BUS



PUSH-IN STUD TERMINAL

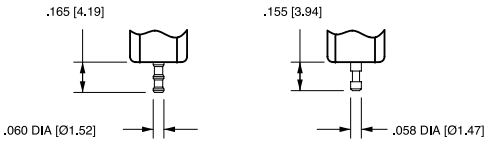




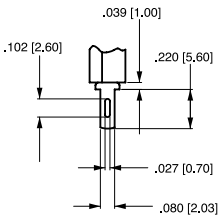
PUSH-IN STUD MATING HOLE

*CENTERLINE OF PUSH-IN STUD CONTACT AREA

AUXILIARY SWITCH TERMINALS

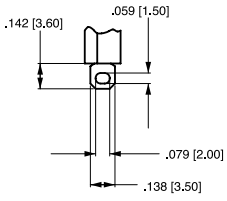


DOUBLE SOLDER TURRET TYPE



.080 [2.03] X .020 [.51] FLAT QUICK-CONNECT TYPE

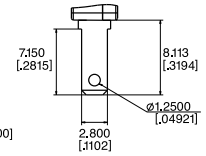
ROUND QUICK-CONNECT TYPE



FLAT SOLDER LUG TYPE

*AVAILABLE THROUGH SPECAIL CATALOG PART NUMBER

.110 QC

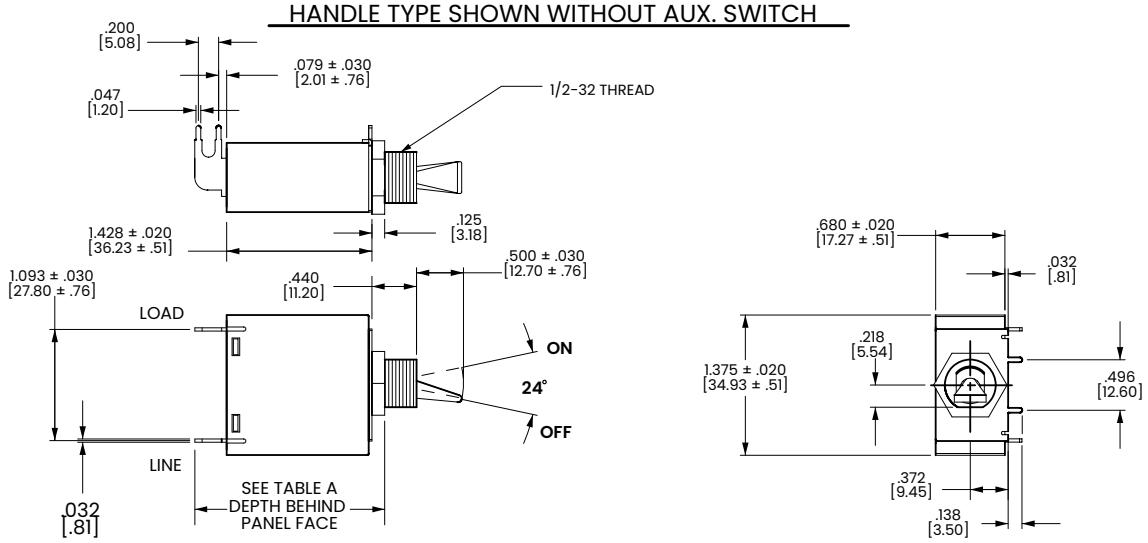


Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

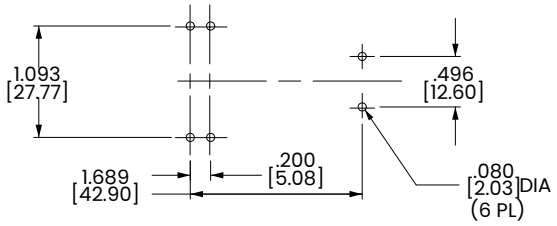
PC Terminal Diagrams Handle

inches [millimeters]

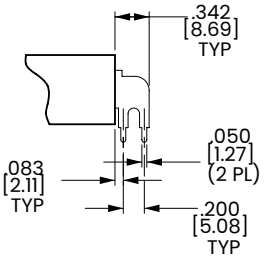
HANDLE TYPE SHOWN WITHOUT AUX. SWITCH



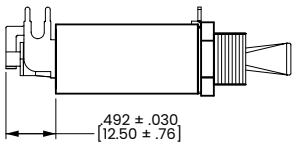
P.C. FOOTPRINT



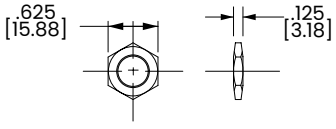
P.C. TERMINAL

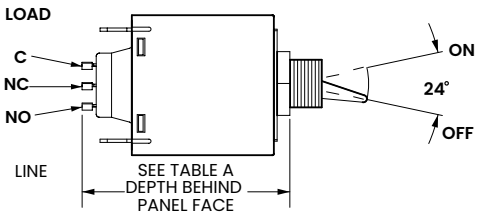


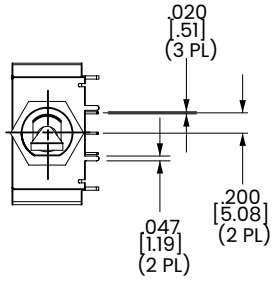
HANDLE TYPE SHOWN WITH AUX. SWITCH



PANEL HARDWARE







P.C. FOOTPRINT

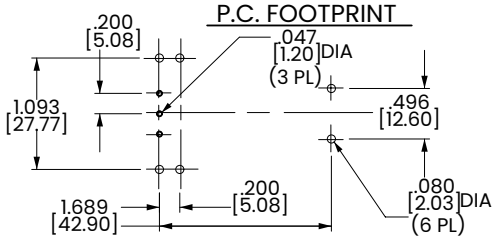


TABLE A		
TERMINAL DESCRIPTION		DEPTH BEHIND PANEL FACE *
	PRINTED CIRCUIT BOARD	1.957 [49.71]
AUX. SWITCH	PRINTED CIRCUIT BOARD	2.449 [62.20]

*DEPTH INCLUDES BEHIND PANEL HEX NUT AS SUPPLIED ON ALL UNITS

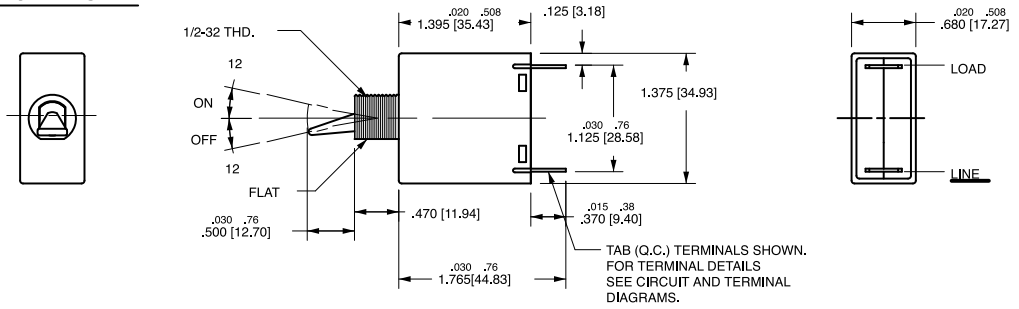
Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Dimensional Specs Handle

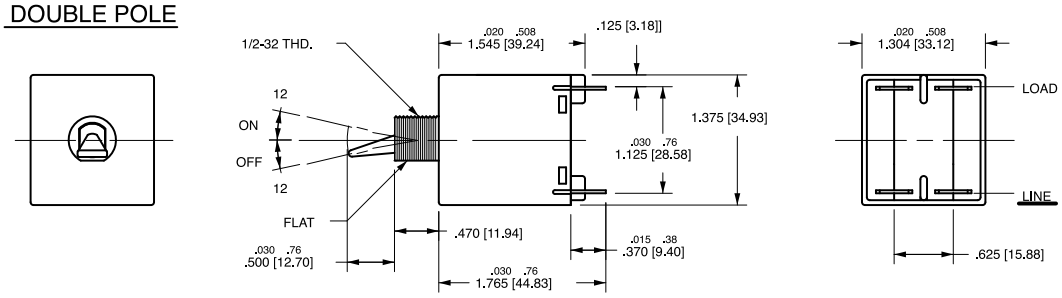
inches [millimeters]

PADDLE ACTUATOR STYLE

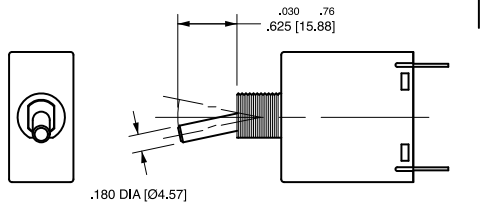
SINGLE POLE



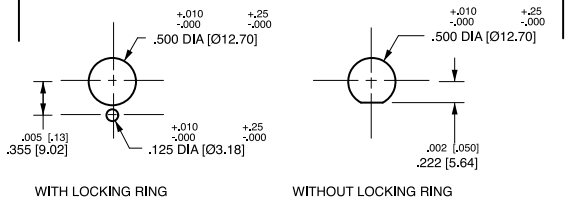
DOUBLE POLE



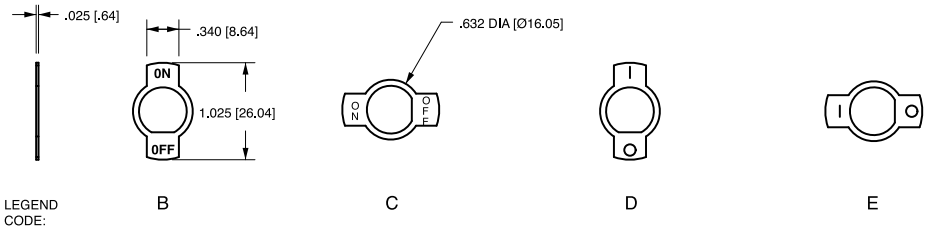
BATON ACTUATOR STYLE



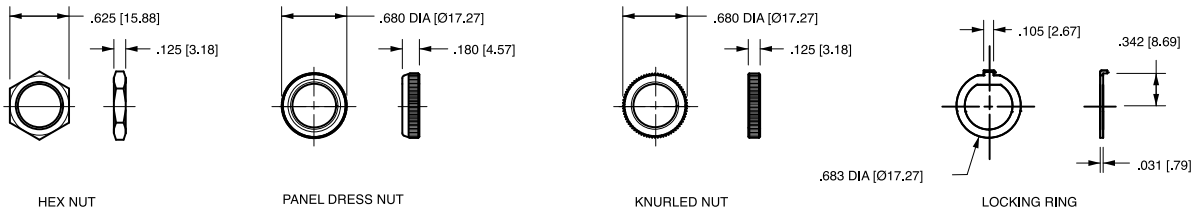
MOUNTING DETAILS



LEGEND PLATES



PANEL HARDWARE

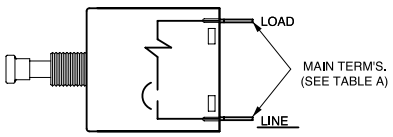


Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

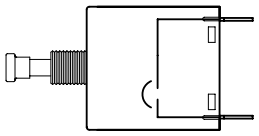
Circuit & Terminal Diagrams Pushbutton

inches [millimeters]

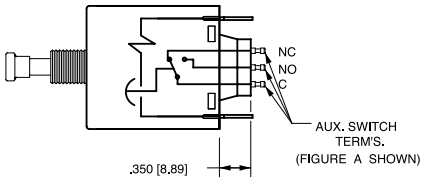
SERIES TRIP



SWITCH ONLY



SERIES TRIP W/ AUXILIARY SWITCH



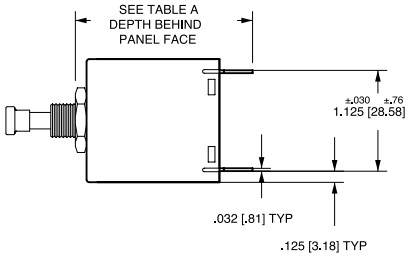


TABLE A		
TERMINAL DESCRIPTION		DEPTH BEHIND PANEL FACE *
MAIN	TAB (Q.C)	1.952 [49.57]
	SCREW (#8-32)	1.992 [50.60]
	PUSH-IN STUD	2.582 [65.58]
AUX. ** SWITCH	DOUBLE SOLDER TURRET TYPE	2.097 [53.26]
	ROUND Q.C TYPE	2.087 [53.01]
	FLAT QUICK-CONNECT	2.191 [55.65]
	FLAT SOLDER LUG	2.074 [52.68]

*DEPTH INCLUDES BEHIND PANEL HEX NUT AS SUPPLIED ON ALL UNITS.

**WHEN CALLED FOR ON MULTI-POLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, MOUNTED AS SHOWN IN FIG. A

MULTI-POLE IDENTIFICATION SCHEME

SOLDER TURRET AND ROUND QC AUX SWITCH TERMINALS

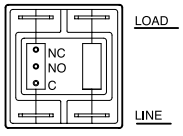


FIG. A

FLAT QC AND SOLDER LUG AUX SWITCHTERMINALS

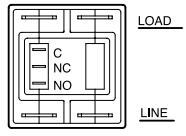
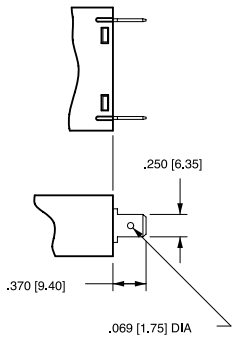


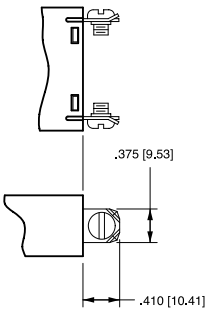
FIG. B

TERMINAL DIMENSIONAL DETAIL

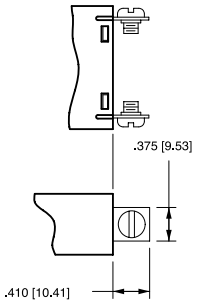
TAB (Q.C.) TERMINAL



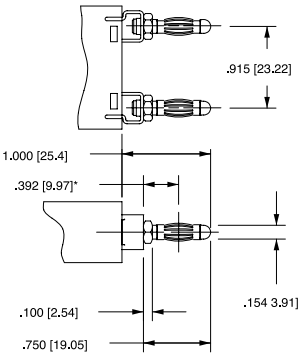
SCREW TERMINAL #8-32 WITH UPTURNED LUGS

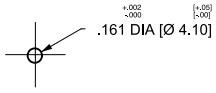


SCREW TERMINAL #8-32 BUS



PUSH-IN STUD TERMINAL

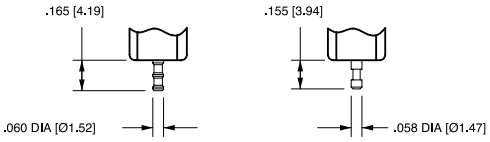




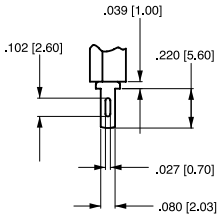
PUSH-IN STUD MATING HOLE

*CENTERLINE OF PUSH-IN STUD CONTACT AREA

AUXILIARY SWITCH TERMINALS

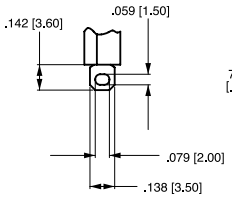


DOUBLE SOLDER TURRET TYPE



.080 [2.03] X .020 [.51] FLAT QUICK-CONNECT TYPE

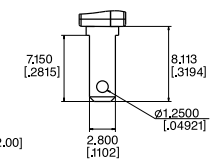
ROUND QUICK-CONNECT TYPE



FLAT SOLDER LUG TYPE

*AVAILABLE THROUGH SPECAIL CATALOG PART NUMBER

.110 QC



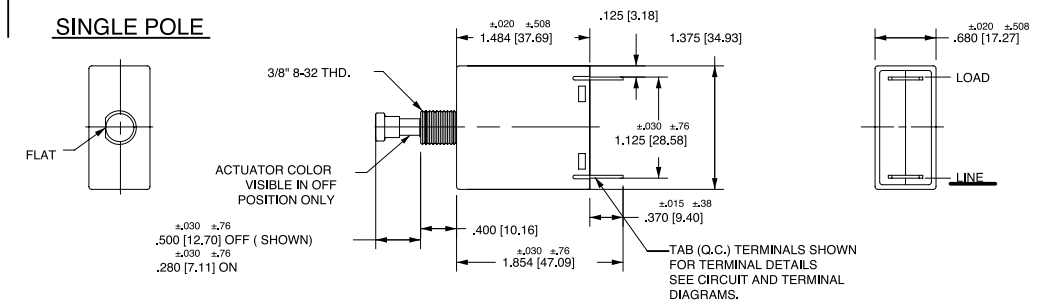
Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Dimensional Specs Pushbutton

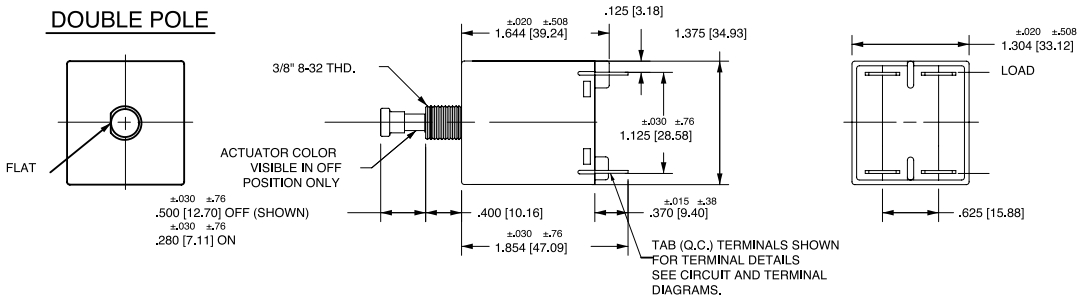
inches [millimeters]

PUSH-PULL ACTUATOR STYLE

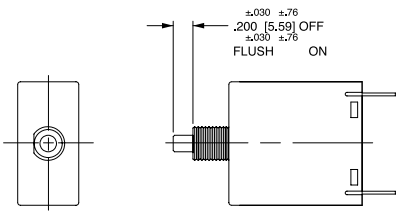
SINGLE POLE



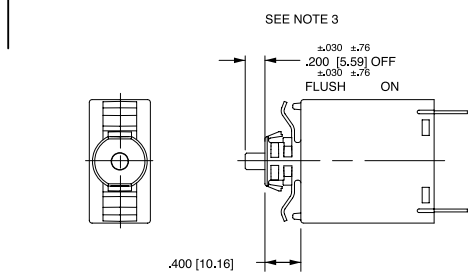
DOUBLE POLE



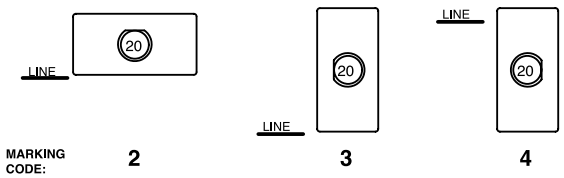
PUSH-TO-RESET ACTUATOR STYLE



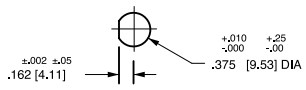
SNAP-IN BUSHING ACTUATOR STYLE



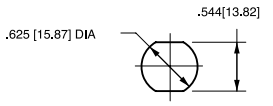
BUTTON MARKING ORIENTATION (PUSH-PULL ONLY)



MOUNTING DETAILS



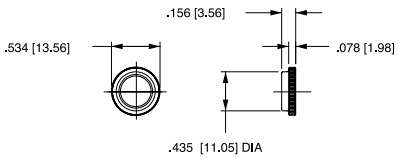
PUSH-PULL,
PUSH TO RESET



SNAP-IN BUSHING

PANEL HARDWARE

HEX NUT



PANEL DRESS NUT

Notes:
1 All dimensions are in inches [millimeters].
2 Available with Push-Pull or Push-to-Reset Actuators

PC Terminal Diagrams Push-Pull

inches [millimeters]

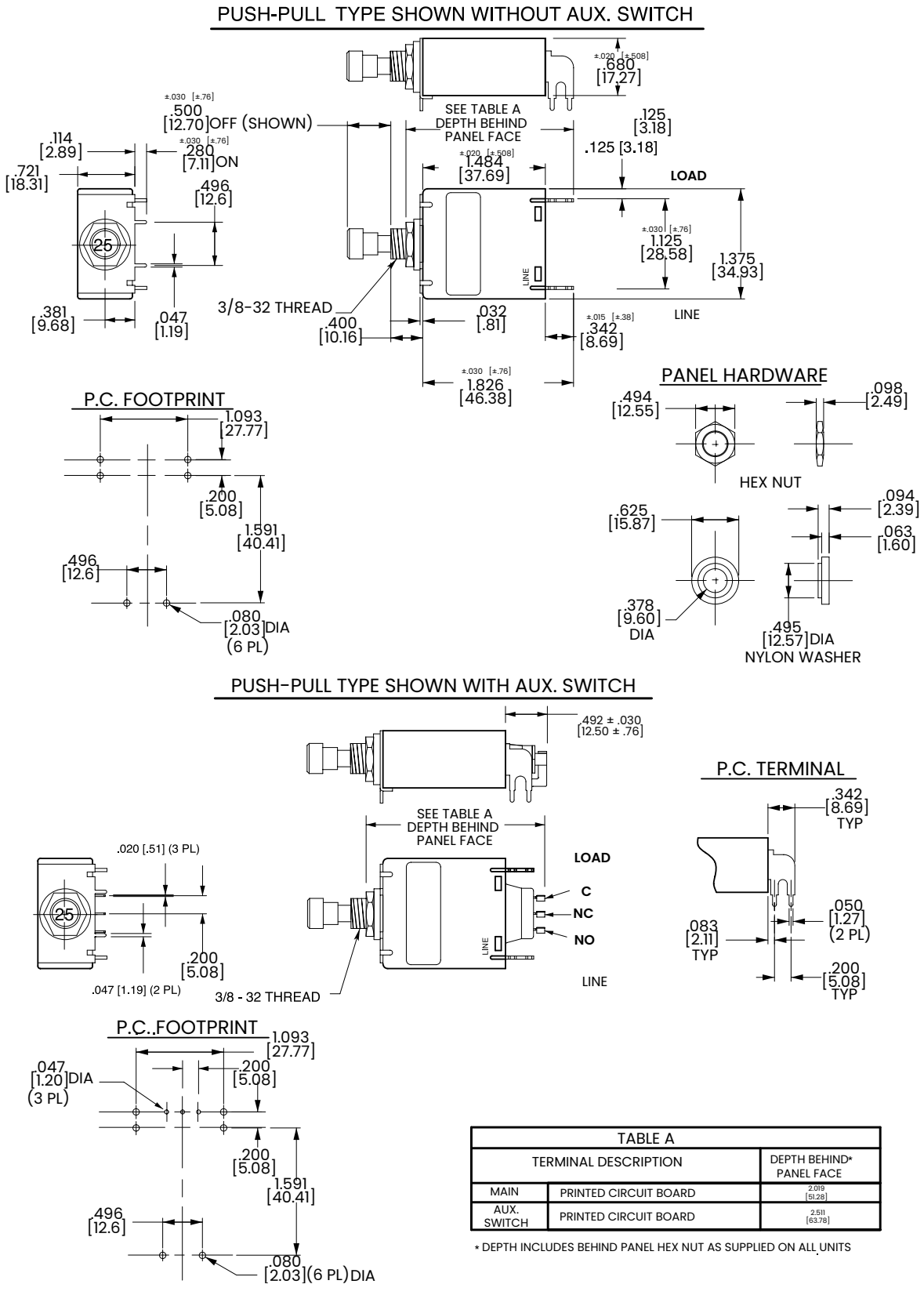


TABLE A		
TERMINAL DESCRIPTION		DEPTH BEHIND* PANEL FACE
MAIN	PRINTED CIRCUIT BOARD	2.019 [51.28]
AUX. SWITCH	PRINTED CIRCUIT BOARD	2.511 [63.78]

* DEPTH INCLUDES BEHIND PANEL HEX NUT AS SUPPLIED ON ALL UNITS

Notes:
1 Tolerance ±.020 [.51] unless otherwise specified.

Time Delay

M, MS-SERIES TIME DELAY VALUES										
	PERCENT OF RATED CURRENT									
	Delay	100%	135%	150%	200%	400%	600%	800%	1000%	1200%
TRIP	10, 20, 30	No Trip	May Trip	.100 Max	.100 Max	.100 Max	.100 Max	.100 Max	.100 Max	.100 Max
TIME	12, 22, 32, 62, 72, 92	No Trip	.300 - 7.00	.200 - 5.00	.100 - 2.00	.030 - .500	.008 - .300	.006 - .150	.005 - .100	.005 - .100
SECONDS	14, 24, 34, 64, 74, 94	No Trip	3.00 - 70.0	2.00 - 40.0	1.00 - 15.0	.100 - 4.00	.008 - 2.00	.006 - .800	.005 - .350	.005 - .160

Notes:

1 Delay Curves 12,14, 22, 24, 32, 34, 62, 64, 72, 74, 92, 94: Breakers to hold 100% and must trip at 135% of rated current and greater within the time limit shown in this curve.

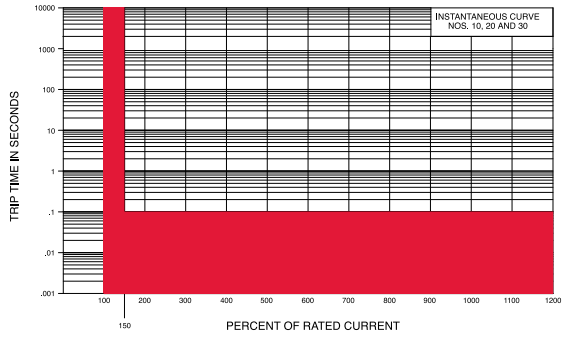
2 Delay Curves 10, 20, 30: Breakers to hold 100% and must trip at 150% of rated current and greater within the time limit shown in this curve.

3 All Curves: Curve data shown represents breaker response at ambient temperature of 77°F (25°C) with no preloading. Breakers are mounted in standard wall-mount position.

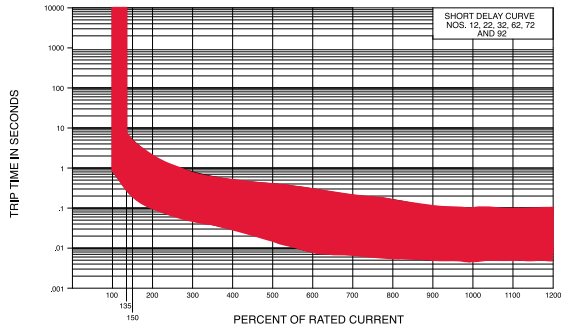
4 The minimum inrush pulse tolerance handling capability is 12 times the rated current on standard delays and 18 times the rated current on high inrush delays. These values are based on a 60 Hz 1/2 cycle, 8.33 ms pulse. High inrush delays should be specified for applications with high initial surge currents of short duration, such as switching power supplies, highly capacitive loads and transformer loads.

Dual Rated AC/DC

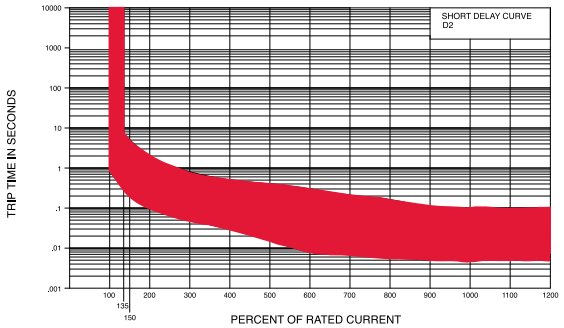
Instantaneous



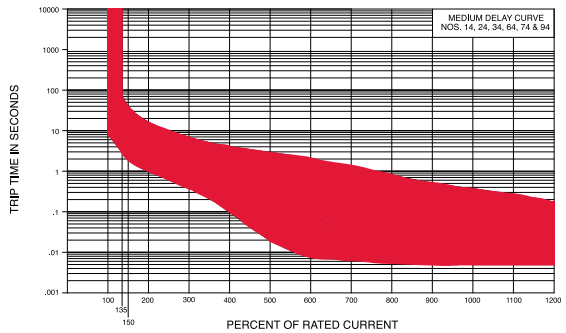
Short



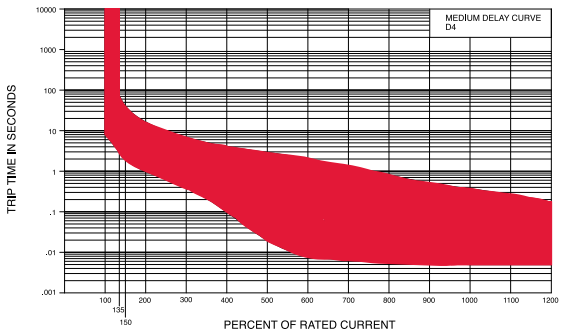
Short D2



Medium



Medium D4



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