



Product Type

Hydraulic / Magnetic Circuit Breaker

Product Series

A-Series

Description

[A-Series PDF eLibrary](#) ↓

The A-Series hydraulic/magnetic circuit breakers are compact and temperature stable designed for precision operation in OEM markets requiring general purpose as well as full load amp applications. These circuit breakers are available with handle actuators for 1- 6 poles. When front panel operation and aesthetics demand a clean, contemporary design, two color Visi-Rocker which can indicate either the ON mode or the TRIPPED/OFF mode, and solid color rocker actuators are available. Rocker actuators are available in 1-3 pole construction. The new Rockerguard™ bezel and push-to-reset bezel help prevent inadvertent actuation. A-Series circuit breakers are offered from in 0.02 to 50 amps, up to 277VAC or 80VDC. They are available with a choice of time delays, terminals, actuator styles, with a wide range of standard colors, & imprinting.

Series PDF eLibrary	• A-Series Cir. Breaker PDF (3.5 MB) • Cir. Breaker Time Delays for A,B,C,D & PD-Series PDF (2.3 MB) • Cir. Breaker Accessories PDF (49.5 KB)
Certifications	UL recognized, CSA, TUV, VDE - 0642, UL-1500, UL489A listed (Telecom)
Number of Poles	1-6 poles
Available Delays	Instant, Ultra-Short, Short, Medium, Long (motor loads), AC/DC, AC/DC; High Inrush - Short, Medium, Long
Maximum Current and Voltage Ratings	0.02-30A @ 277VAC, 80VDC 31.0-50A @ 125/250VAC, 80VDC 0.1 - 50A @ 80VDC (UL489A)
Maximum Interrupting Capacity	3,000A @ 65VDC (UL only) 3,500A @ 65VDC w/fuse back up 3,000A @ 125/250VAC (UL only) 5,000A @ 277VAC w/fuse back up 5,000A @ 80VDC (UL489A)
Auxiliary Switch Ratings	10.1A @ 250VAC 0.1A @ 125VAC (gold contacts) 5A @ 30VDC 0.5A @ 80VDC 1.0A @ 65VDC
Available Circuits	Series, Shunt, Relay, Switch Only, Series w/Remote Shutdown, Relay and Shunt Trip Dual Coil
Actuator Style	Solid Color Curved Rocker (1 per unit) Two Color Visi-Rocker (1 per unit) Handle (1 per pole or 1 per unit) Mid Trip Handle (1 per pole or 1 per unit)

Terminal Options	.250 QC Tabs 8-32 Screw w/ Upturned Lugs 8-32 Screw (Bus Type) 10-32 Screw w/ Upturned Lugs 10-32 Screw (Bus Type) M4 & M5 Screw (Bus Type) M4 & M5 Screw w/ Upturned Lugs Push in Stud Terminals
Mounting Method	Front Panel Snap-in Front Panel (handle actuator)
Value Added	Custom actuator colors PC Terminals available Non-standard amp ratings Panel hole plug available and more



Compact size and well known for its proven reliability, the A-Series utilizes the hydraulic magnetic principle which provides precise operation and performance even when exposed to extremely hot and/or cold application environments. When aesthetics demand a clean contemporary and functional design, the visi-rocker two-color actuator can be specified. A rockerguard and push-to-reset bezel help prevent inadvertent actuation. A specially constructed version is now available for applications requiring CE markings. The A-Series is used in many telecommunications and marine applications. In addition, these breakers meet CSA Standard 22.2 No. 100 for the Generator & Welder markets.

1-6 poles (handle), 1-3 poles (rocker). 0.02 - 50 amps, up to 277 VAC or 80 VDC, with a choice of time delays, terminals and actuator colors.

Agency Certifications

UL Recognized

UL Standard 1077



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

UL Standard 508



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

UL Standard 1500



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

UL Listed

UL Standard 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

TUV Certified



EN60934, under License No.
R72040875

VDE Certified

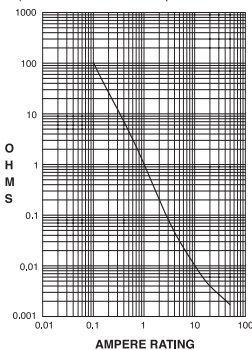


EN60934, VDE 0642 under File No.
10537

Electrical

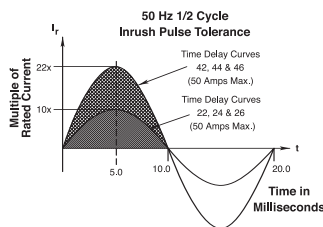
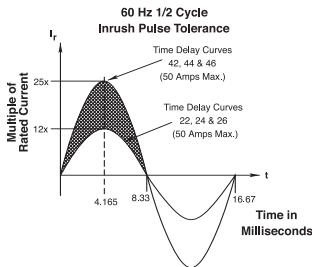
Maximum Voltage	277VAC 50/60 Hz, 80VDC
Current Ratings	Standard current coils: 0.100, 0.250, 0.500, 0.750, 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, 50.0. Other ratings available - consult ordering scheme.
Standard Voltage Coils	DC-6V, 12V; AC-120V, Other ratings available, consult 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, 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 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.

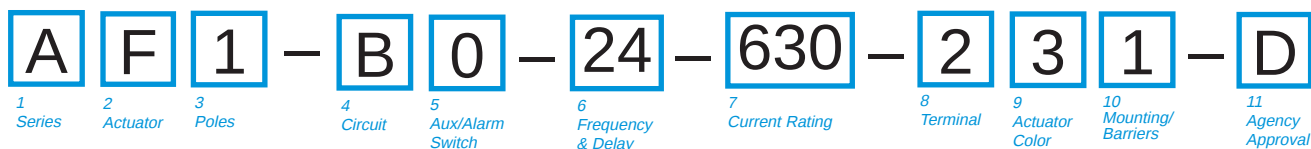
Physical

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 Configurations	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



1 SERIES

A

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, Single color

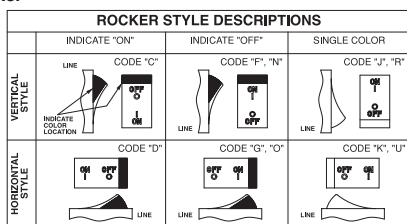
- R Vertical legend
- U Horizontal legend
- V No legend

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



3 POLES ²

- 1 One
- 2 Two
- 3 Three

4 CIRCUIT

- A ³ Switch Only (No Coil)
- B ³ Series Trip (Current)
- C ³ 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 w/o Aux Switch
- 1 S.P.D.T., 0.093 Q.C. Term.
- 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., 0.093 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

- 03 DC 50/60Hz, Switch Only
- 10 ⁸ DC Instantaneous
- 11 DC Ultra Short
- 12 DC Short
- 14 DC Medium
- 16 DC Long
- 20 ⁸ 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, Hi-Inrush
- 44 ⁹ 50/60Hz Medium, Hi-Inrush
- 46 ⁹ 50/60Hz Long, Hi-Inrush
- 52 ⁹ DC, Short, Hi-Inrush
- 54 ⁹ DC, Medium, Hi-Inrush
- 56 DC, Long, Hi-Inrush

Notes:

- 1 Push-To-Reset actuators have OFF portion of rocker shrouded.
- 2 Multi-pole breakers have all breakers identical except when specifying Aux. switch and/or mixed poles, and have one rocker per breaker.
- 3 Switch Only circuits, rated up to 50 amps & 3 poles, are 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.
- 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 aux. 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 and 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 & 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 and 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/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.

7 CURRENT RATING (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 ¹⁰	35.000
210	0.100	512	1.250	495	9.500	640 ¹⁰	40.000
215	0.150	415	1.500	610	10.000	645 ¹⁰	45.000
220	0.200	517	1.750	710	10.500	650 ¹⁰	50.000

OR VOLTAGE COIL (NOMINAL RATED VOLTAGE)

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

8 TERMINAL ¹¹

- 1 ¹² Push-On 0.250 Tab (Q.C.)
- 2 Screw 8-32 w/upturned lugs
- 3 ¹³ Screw 8-32 (Bus Type)
- 4 Screw 10-32 w/upturned lugs
- 5 ¹³ Screw 10-32 (Bus Type)
- 6 Screw 8-32 w/upturned lugs and 30° bend
- 7 Screw 8-32 (Bus Type) and 30° bend
- 8 Screw 10-32 w/upturned lugs and 30° bend
- 9 Screw 10-32 (Bus Type) and 30° bend
- B Screw M5 w/upturned lugs
- C Screw M4 w/upturned lugs
- E ¹³ Screw M4 (Bus Type)
- F Screw M5 w/upturned lugs and 30° bend
- G Screw M5 (Bus Type) and 30° bend
- H ¹³ Screw M5 (Bus Type)
- L ¹⁴ 0.250 Q.C./ Solder Lug
- M ¹³ M6 Threaded Studs
- P ¹⁵ Printed Circuit Board Terminals
- Q ¹⁶ Push-In Stud
- R Screw M4 w/upturned lugs and 30° bend
- S ¹⁷ Push-On 0.110 Tab (Q.C.)
- T Screw M4 (Bus Type) and 30° bend

9 ACTUATOR COLOR & LEGEND

Actuator or Visi-Color ¹²	Marking:			Marking Color:	
	I-O	ON-OFF	Dual ¹²	Single 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
ROCKERGARD & 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" 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" wide bezel	
9 without Rockerguard (single pole units only)	no
J with Rockerguard (single pole units only)	no

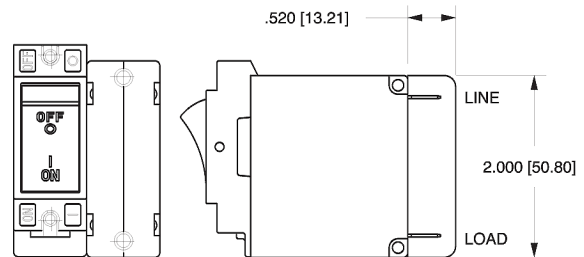
11 AGENCY APPROVAL

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

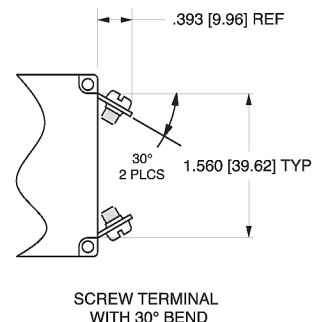
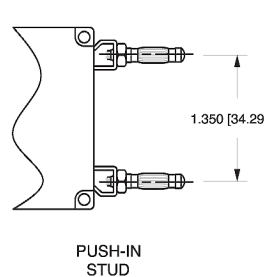
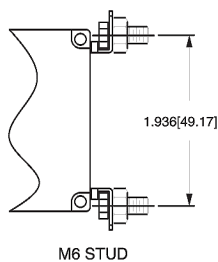
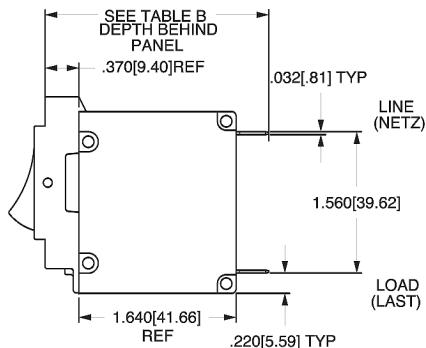
CIRCUIT BREAKER PROFILE		CIRCUIT SCHEMATIC		CIRCUIT CODE	AUX SWITCH CODE	CIRCUIT SCHEMATIC		CIRCUIT CODE	AUX SWITCH CODE
		ANSI	IEC			ANSI	IEC		
2 TERMINALS		SWITCH ONLY (NO COIL)		A	0	SERIES TRIP		B C	0
		LINE LOAD	LINE (NETZ) LOAD (LAST)			LINE LOAD	LINE (NETZ) (3) LOAD (LAST)		
5 TERMINALS		SWITCH ONLY (NO COIL) WITH AUXILIARY SWITCH (4)		A	1 2 3 4	SERIES TRIP WITH AUXILIARY SWITCH (4)		B C	1 2 3 4
		LINE LOAD	LINE (NETZ) LOAD (LAST)			LINE LOAD	LINE (NETZ) (3) LOAD (LAST)		
3 TERMINALS		SHUNT TRIP		D E	0	DUAL COIL; SERIES TRIP CURRENT COIL, SHUNT TRIP VOLTAGE COIL		H	0
		LINE LOAD	LINE (NETZ) (3) LOAD (LAST)			LINE LOAD	LINE (NETZ) LOAD (LAST)		
4 TERMINALS		RELAY TRIP		F G	0	DUAL COIL; SERIES TRIP CURRENT COIL, RELAY TRIP VOLTAGE COIL		K	0
		LINE LOAD RELAY	LINE (NETZ) (3) LOAD (LAST)			LINE LOAD VOLTAGE COIL	LINE (NETZ) LOAD (LAST) VOLTAGE COIL		

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 VIEWED IN MULTI-POLE IDENTIFICATION SCHEME.

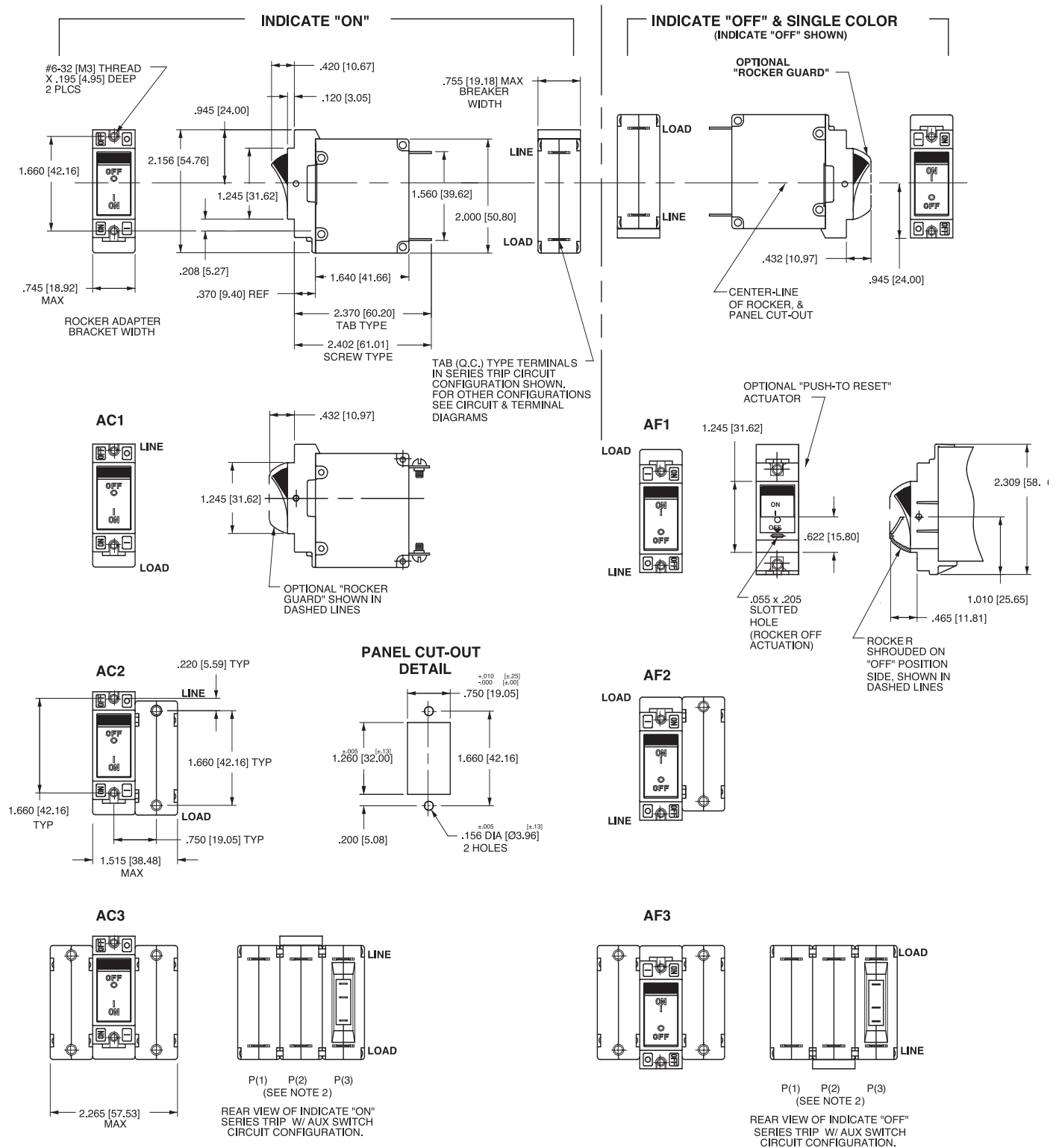


**BARRIER FOR
UL-RECOGNIZED MULTI-POLE
BREAKERS**



Notes:

- 1 All dimensions are in inches [millimeters].
- 2 Tolerance $\pm .020$ [5.1] unless otherwise specified.
- 3 Schematic shown represents current trip circuit.
- 4 Circuits shown for >30 amps / VDE.



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 All dimensions are in inches [millimeters].
- 4 Tolerance ± 0.20 [5.1] unless otherwise specified.