Circuit Breakers

Fuse Blocks and Fuse Holders

Rotary Disconnect Switches

For our complete product offering, see Volume 4—Circuit Protection, CA08100005E and Volume 5—Motor Control and Protection, CA08100006E.

1

Product Overview

Circuit Breaker Selection Guide

Description	Series G Molded Case Circuit Breaker		Universal Molded Case Circuit Breakers		QUICKLAG® Type QC Miniature Circuit Breakers
	Page V9-T1-5		Page V9-T1-13		Page V9-T1-19
General Applications					
	Line protection—molded case switch, motor circuit protection (combination tested with Eaton starters and contactors) thermal-magnetic and electronic trip units.		Line protection—feeder and branch thermal-magnetic trip unit.		Used to provide branch circuit protection in cable-in/out panel or DIN rail mount applications.
Technical Data					
Maximum current rating	2500A		600A		100A
Maximum voltage—AC	690 Vac		480 Vac		240 Vac
Maximum voltage—DC	250 Vdc		250 Vdc		80 Vdc
Poles	1, 2, 3, 4		1, 2, 3		QC = 1, 2, 3, 4 QCD = 1, 2, 3 QCR/QCF = 1, 2, 3
Max. interrupting capacities See individual catalogs for limitations and back-up protection requirements.	Three-pole at 240V E = 200 kA J = 200 kA L = 200 kA	Three-pole at 480V E = 100 kA J = 200 kA L = 200 kA	Three-pole at 240V G = 25 kA (480/277) F = 25 kA J = 35 kA K = 35 kA L = 35 kA	Three-pole at 480V GI = 14 kA (480/277) GD = 22 kA F = 14 kA J = 20 kA K = 20 kA L = 20 kA	65 kA at 240 Vac 5 kA at 80 Vdc
Approvals					
	UL® 489 IEC 60947-2 CE	CSA® KEMA-KEUR CCC	UL 489CE IEC 60947-2	CE CSA	UL 489 CSA 22.2
Environmental Data					
Humidity	Non-condensing 100% relative humidity		Non-condensing 100% relative humidity		—
Shock	—		—		—
Vibration	—		—		—
Operating temperature	–20° to 70°C (–4° to 158°F) derating applies		–20° to 70°C (–4° to 158°F) derating applies		40°C (104°F)
Dielectric strength	Below 250A 6 kV Above 250A 8 kV		Below 250A 6 kV Above 250A 8 kV		1960 Vac (acc. to UL 489)
Insulation resistance	750 Vac		750 Vac		—
Endurance/life	250A: EG, JG = 8,000 operations 630A: LG = 6,000 operations		250A: Gi = 10,000 operations Fi = 8,000 operations 400A: Ji, Ki, Li = 6,000 operations		>10,000 operations
Approximate weight	E Three-pole—2.88 lbs (1.04 kg) J Three-pole—5.06 lbs (2.30 kg) L Three-pole—12.36 lbs (5.61 kg)		G Three-pole—2.10 lbs (0.95 kg) F Three-pole—4.5 lbs (2.0 kg) J Three-pole—12.50 lbs (5.7 kg) K Three-pole—11.50 lbs (5.2 kg)		QC Single-pole—0.36 lbs (162.8 g) Two-pole—0.61 lbs (274.9 g) Three-pole—1.14 lbs (518.3 g) QCD Single-pole—0.43 lbs (195.3 g) Two-pole—0.89 lbs (401.9 g) Three-pole—1.34 lbs (605.6 g) QCR Single-pole—0.22 lbs (97.9 g) Two-pole—0.48 lbs (215.8 g) Three-pole—0.70 lbs (315.6 g) QCF Single-pole—0.24 lbs (109.9 g) Two-pole—0.50 lbs (225.2 g) Three-pole—0.74 lbs (335.1 g)
Mounting configuration	Backpan, plug-in adapter, DIN rail (E)		Backpan, DIN rail (G)		Panel mount, front mount, 35 mm DIN rail mountable

For our complete product offering, see Volume 4—Circuit Protection, CA08100005E.

Circuit Breaker Selection Guide, continued

Description	FAZ-NA UL 489 Miniature Circuit Breakers	FAZ UL 1077 Miniature Circuit Breakers— Supplementary Protectors
	Page V9-T1-25	**Page V9-T1-28**
General Applications		
	Used to provide branch circuit protection in cable-in/out DIN rail mount applications.	Used to provide overcurrent protection where branch protection (for example UL 489 MCCB) is already provided or not required. Replacement for fuses used as supplementary protectors.
Technical Data		
Maximum current rating	40A	63A
Maximum voltage—AC	480/277 Vac (240/415 Vac IEC)	480/277 Vac
Maximum voltage—DC	48 Vdc	65 Vac Single-pole 130 Vac Two-pole
Poles	1, 2, 3	1, 2, 3
Max. interrupting capacities See individual catalogs for limitations and back-up protection requirements.	10 kA UL/CSA; 15 kA IEC/EN 60947-2	IEC 240/415V 10 kA UL/CSA 120V 10 kA 240V 10 kA 277V 6 kA 480V 6 kA
Approvals		
	UL 489 CE; IEC/EN 60947-2 CSA 22.2	UL 1077 CE; IEC/EN 60947-2; IEC/EN 60898 CSA 22.2 235
Environmental Data		
Humidity	Acc. IEC 60068-2 (25° to 55°C/ 77° to 131°F, 90–95% RH)	—
Shock	Acc. IEC 60068-2-27 (40g half sine wave for 10 ms—3 axes) (15g half sine wave for 20 ms—3 axes)	—
Vibration	Acc. to IEC 60068-2-6 5–100 Hz/1.0 mm/0.7g (3 axes)	—
Operating temperature	30°C (86°F)	—
Dielectric strength	1960 Vac (acc. to UL 489)	—
Insulation resistance	100M ohms at 500 Vdc	—
Endurance/life	>20,000 operations	—
Approximate weight	Single-pole—0.27 lbs (121.0g) Two-pole—0.53 lbs (242.0g) Three-pole—0.80 lbs (363.0g)	Single-pole—0.26 lbs (120.0g) Two-pole—0.54 lbs (244.9g) Three-pole—0.83 lbs (376.5g)
Mounting contribution	35 mm DIN rail mountable	35 mm DIN rail mountable

For our complete product offering, see Volume 4—Circuit Protection, CA08100005E.

Circuit Breaker Selection Guide, continued

Description	Series NRX Low Voltage Power Breakers	Magnum Low Voltage Power Breakers
	Page V9-T1-33	Page V9-T1-36
General Applications		
	Solution for where space is at a premium or when equipment dimensions are critical when upgrading or retrofitting current systems. Offering the power and performance of a power breaker in the compact size of a molded case breaker. With its reduced weight and compact dimensions, you can mount two times as many feeder breakers and reduce the overall enclosure density up to 50%.	Enables comprehensive solutions to meet and exceed the unique and wide-ranging requirements of today's global power distribution systems. Designed and engineered for ultimate custom configuration and application flexibility in metal enclosed switchgear and power distribution enclosures.
Technical Data		
Maximum current rating	630–1600A	800–6300A
Maximum voltage—AC	220–690 Vac	Up to 690 Vac
Maximum voltage—DC	—	—
Poles	3, 4	3, 4
Max. interrupting capacities See individual catalogs for limitations and back-up protection requirements.	65 kAIC at 480 Vac Max. withstand capacities 42 kAIC	200 kA at 480 Vac Max. withstand capacities 100 kAIC CL fuseless 200 kA at 635 Vac with integral limiters
Approvals		
	UL 1006 Component UL 489 Component IEC 60947-2	UL 1066 IEC 60947-2 KEMA
Environmental Data		
Humidity	—	—
Shock	—	—
Vibration	—	—
Operating temperature	–25° to 70°C	–25° to 70°C
Dielectric strength	—	—
Insulation resistance	—	—
Endurance/life	10,000 electrical operations 20,000 mechanical operations	—
Approximate weight	Three-pole breaker + cassette—85 lbs (39 kg) Three-pole breaker—53 lbs (24 kg) Four-pole breaker + cassette—104 lbs (47 kg) Four-pole breaker—67 lbs (30 kg)	—
Mounting configuration	Rear-connected, front-connected, surface mounting, mounting bracket, fixed, drawout breaker with cassette	Fixed or drawout with cassette rear-connected, front-connected

For our complete product offering, see Volume 4—Circuit Protection, CA08100005E.

Series G Molded Case Circuit Breakers

Features

- Field-fit accessories
- Common accessories through 630A
- Space-saving footprint
- High-performance current limiting designs up to 200 kAIC at 480V
- Global ready: UL, CSA, CE, IEC, KEMA-KEUR listings
- Complete breaker includes frame, trip unit, standard terminals and mounting hardware

Catalog Number Selection

Series G® Molded Case Circuit Breakers

EG Frame

E G H 3 015 FF G

Frame
E

Standard/Application
G = IEC/CE/UL/CSA

Performance				
	600Y/347	**480**	**415**	**240**
B	—	18	18	25
E	18	25	25	35
S	22	35	40	85
H	25	65	70	100
C	35	100	100	200
K	Molded case switch ①			

Number of Poles
1 = One
2 = Two
3 = Three
4 = Four—Neutral 0% Protected
7 = Four—Neutral 100% Protected

Amperes
016 ②
015
020
025
030
032 ②
035
040
045
050
060
063 ②
070
080
090
100
110
125

Trip Unit
FF = Fixed fixed
AF = Adjustable thermal fixed magnetic
KS = Molded case switch

Terminations/Hardware	
Terminals	**Mounting Hardware**
M = Metric end caps	Metric
E = Imperial end caps	Imperial
G = Line/load standard	Metric
B = Bolt-on	—

Notes

① Available only as 125 and 160A sizes.

② Is not UL rated.

JG Frame

J G S 3 250 FA G C

Frame

J

Standard/Application

G = IEC/CE/UL/CSA

Performance

	600	480	415	240
E	18	25	25	65
S	18	35	40	85
H	25	65	70	100
C	35	100	100	200
U	50	150	150	200
X	50	200	200	200
K	Molded case switch			

Number of Poles

2 = Two
3 = Three
4 = Four—Neutral 0% protected
8 = Four—Neutral 0–60% protected
9 = Four—Neutral 100% protected

Amperes

050
070
080
090
100
125
150
160
175
200
225
250

Trip Unit

AA = Adjustable thermal Adjustable magnetic
FA = Fixed thermal Adjustable magnetic
KS = Molded case switch
33 = 310+ electronic LS
32 = 310+ electronic LSI
35 = 310+ electronic LSG
36 = 310+ electronic LSIG
NN = Frame only (no trip)

Terminations/Hardware

Terminals	Mounting Hardware
M = Metric end caps	Metric
E = Imperial end caps	Imperial
G = Line/load standard	Metric

Rating

Blank = 80% rated
C = 100% rated

LG Frame

L G S 3 600 FA G C

Frame

L

Standard/Application

G = IEC/CE/UL/CSA

Performance

	600	480	415	240
E	18	35	35	65
S	25	50	50	85
H	35	65	70	100
C	50	100	100	200
U	65	150	150	200
X	65	200	200	200
K	Molded case switch			

Number of Poles

3 = Three
4 = Four—Neutral 0% protected
6 = Four—Neutral 60% protected
7 = Four—Neutral 100% protected
8 = Four—Neutral 0–60% protected
9 = Four—Neutral 0–100 protected

Amperes

250
300
350
400
500
600
630

Trip Unit ①

AA = Adjustable thermal Adjustable magnetic
FA = Fixed thermal Adjustable magnetic
KS = Molded case switch
33 = 310+ electronic LS
32 = 310+ electronic LSI
35 = 310+ electronic LSG
36 = 310+ electronic LSIG
38 = 310+ electronic ALSI
39 = 310+ electronic ALSIG
NN = Frame only (no trip)

Terminations/Hardware

Terminals	Mounting Hardware
M = Metric end caps	Metric
E = Imperial end caps	Imperial
G = Line/load standard	Metric
W = Without terminals	—

Rating

Blank = 80% rated
C = 100% rated

Note

① A = Arc reduction, L = Long, S = Short, I = Instantaneous, G = Ground.

Product Selection

Series G Molded Case Circuit Breakers

Approximate Dimensions are in Inches

EG Frame

Maximum Continuous Amperes at 40°C ①	Three-Pole 3.00 W x 5.50 H x 2.99 D Fixed Thermal Fixed Magnetic
IC Rating: 25 kAIC at 415 and 480 Vac	
15	**EGE3015FFG**
20	**EGE3020FFG**
25	**EGE3025FFG**
30	**EGE3030FFG**
35	**EGE3035FFG**
40	**EGE3040FFG**
45	**EGE3045FFG**
50	**EGE3050FFG**
60	**EGE3060FFG**
70	**EGE3070FFG**
80	**EGE3080FFG**
90	**EGE3090FFG**
100	**EGE3100FFG**
125	**EGE3125FFG**

Maximum Continuous Amperes at 40°C	Three-Pole 3.00 W x 5.50 H x 2.99 D Fixed Thermal Fixed Magnetic
IC Rating: 70 kAIC at 415 Vac, 65 kAIC at 480 Vac	
15	**EGH3015FFG**
20	**EGH3020FFG**
25	**EGH3025FFG**
30	**EGH3030FFG**
35	**EGH3035FFG**
40	**EGH3040FFG**
45	**EGH3045FFG**
50	**EGH3050FFG**
60	**EGH3060FFG**
70	**EGH3070FFG**
80	**EGH3080FFG**
90	**EGH3090FFG**
100	**EGH3100FFG**
125	**EGH3125FFG**

JG Frame

Maximum Continuous Amperes	Three-Pole 4.13 W x 7.00 H x 3.57 D Magnetic Range	Fixed Thermal Adjustable Magnetic
IC Rating: 25 kAIC at 415 and 480 Vac		
70	350–700	**JGE3070FAG**
90	450–900	**JGE3090FAG**
100	500–1000	**JGE3100FAG**
125	625–1250	**JGE3125FAG**
150	750–1550	**JGE3150FAG**
175	875–1750	**JGE3175FAG**
200	1000–2000	**JGE3200FAG**
225	1125–2250	**JGE3225FAG**
250	1250–2500	**JGE3250FAG**

Maximum Continuous Amperes	Three-Pole 4.13 W x 7.00 H x 3.57 D Magnetic Range	Fixed Thermal Adjustable Magnetic
IC Rating: 70 kAIC at 415 Vac, 65 kAIC at 480 Vac		
70	350–700	**JGH3070FAG**
90	450–900	**JGH3090FAG**
100	500–1000	**JGH3100FAG**
125	625–1250	**JGH3125FAG**
150	750–1550	**JGH3150FAG**
175	875–1750	**JGH3175FAG**
200	1000–2000	**JGH3200FAG**
225	1125–2250	**JGH3225FAG**
250	1250–2500	**JGH3250FAG**

LG Frame

Ampere Rating	Three-Pole 5.48 W x 10.13 H x 4.09 D Fixed Thermal Adjustable Magnetic
IC Rating: 35 kAIC at 415 and 480 Vac	
250	**LGE3250FAG**
300	**LGE3300FAG**
350	**LGE3350FAG**
400	**LGE3400FAG**
500	**LGE3500FAG**
600	**LGE3600FAG**

Ampere Rating	Three-Pole 3.00 W x 5.50 H x 2.99 D Fixed Thermal Adjustable Magnetic
IC Rating: 70 kAIC at 415 Vac, 65 kAIC at 480 Vac	
250	**LGH3250FAG**
300	**LGH3300FAG**
350	**LGH3350FAG**
400	**LGH3400FAG**
500	**LGH3500FAG**
600	**LGH3600FAG**

Note

① 16, 32, 63A are not UL listed ratings.

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Series G Motor Circuit Protector

Features

- Instantaneous only protector
- Designed for use in combination with motor starters
- Adjustable to motor FLA
- UL recognized component, File E7819 motor circuit protectors

Product Selection

Series G Motor Circuit Protectors

EG Frame—480 Vac, 600Y/347 Vac Maximum

Continuous Amperes	Cam Setting	Motor Full Load Current Amperes ①	MCP Trip Setting ②	MCP Catalog Number
3	A	0.69–0.91	9	**HMCPE003A0C**
	B	1.1–1.3	15	
	C	1.6–1.7	21	
	D	2.0–2.2	27	
	E	2.3–2.5	30	
	F	2.6–2.8	33	
7	A	1.5–2.0	21	**HMCPE007C0C**
	B	2.6–3.1	35	
	C	3.7–3.9	49	
	D	4.8–5.2	63	
	E	5.3–5.7	70	
	F	5.8–6.1	77	
15	A	3.4–4.5	45	**HMCPE015E0C**
	B	5.7–6.8	75	
	C	8.0–9.1	105	
	D	10.4–11.4	135	
	E	11.5–12.6	150	
	F	12.7–13.0	165	
30	A	3.9–9.1	90	**HMCPE030H1C**
	B	11.5–13.7	150	
	C	16.1–18.3	210	
	D	20.7–22.9	270	
	E	23.0–25.2	300	
	F	25.3–26.1	330	
50	A	11.5–15.2	150	**HMCPE050K2C**
	B	19.2–22.9	250	
	C	26.9–30.6	350	
	D	34.6–38.3	450	
	E	38.4–42.1	500	
	F	42.2–43.5	550	
70	A	16.1–30.6	210	**HMCPE070M2C**
	B	26.9–32.2	350	
	C	37.6–42.9	490	
	D	48.4–53.7	630	
	E	53.8–59.1	700	
	F	59.2–60.9	770	
100	A	23.0–30.6	300	**HMCPE100R3C**
	B	38.4–46.0	500	
	C	53.8–61.4	700	
	D	69.2–76.8	900	
	E	76.9–84.5	1000	
	F	84.6–87.0	1100	
100	A	38.4–46.0	500	**HMCPE100T3C**
	B	57.6–65.2	750	
	C	76.9–84.5	1000	
	D	③	1250	
	E	③	1375	
	F	③	1500	

Notes

① Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

② For DC applications, actual trip levels are approximately 40% higher than values shown.

③ Settings above 10 x I_n are for special applications, where the ampere rating of the disconnecting means cannot be less than 115% of the motor full load ampere rating.

JG Frame—600 Vac Maximum, 250 Vdc Maximum

Continuous Amperes	MCP Trip Range Amperes	MCP Catalog Number
250	500–1000	**HMCPJ250D5L**
	625–1250	**HMCPJ250F5L**
	750–1500	**HMCPJ250G5L**
	875–1750	**HMCPJ250J5L**
	1000–2000	**HMCPJ250K5L**
	1125–2250	**HMCPJ250L5L**
	1250–2500	**HMCPJ250W5L**

LG Frame—600 Vac Maximum, 250 Vdc Maximum

Continuous Amperes	MCP Trip Range Amperes	MCP Catalog Number
600	1250–2500	**HMCPL600L6G**
	1500–3000	**HMCPL600N6G**
	1750–3500	**HMCPL600R6G**
	2000–4000	**HMCPL600X6G**
	2250–4500	**HMCPL600Y6G**
	2500–5000	**HMCPL600P6G**
	3000–6000	**HMCPL600M6G**

1

Series G Motor Protector Breakers

Features

- Eliminates need for separate overload relay
- Can be used with contactor to eliminate need for overload relay and still create manual motor control
- Meets requirement for motor branch protection, including:
  - Disconnecting means
  - Branch circuit short-circuit protection
  - Overload protection
- UL 489 listed, IEC 60947-02 rated
- Phase unbalance, phase loss protection and high load alarm
- Optional pre-detection trip relay

Product Selection

Series G Motor Protector Breakers

For pre-trip alarm option, order Style Number 5721B31G02.

JG Frame Motor Protector Circuit Breakers, 250A Maximum Rated Current

Continuous Amperes	35 kAIC Catalog Number	65 kAIC Catalog Number
50	**JGMPS050G**	**JGMPH050G**
100	**JGMPS100G**	**JGMPH100G**
160	**JGMPS160G**	**JGMPH160G**
250	**JGMPS250G**	**JGMPH250G**

LG Frame Motor Protector Circuit Breakers, 630A Maximum Rated Current

Continuous Amperes	50 kAIC Catalog Number	65 kAIC Catalog Number
250	**LGMPS250G**	**LGMPH250G**
400	**LGMPS400G**	**LGMPH400G**
600	**LGMPS600G**	**LGMPH600G**
630 ①	**LGMPS630G**	**LGMPH630G**

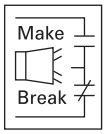
Note

① 630A is not a UL listed rating. 600A is the maximum UL or CSA rating for LG breaker.

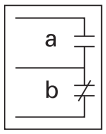
Accessories

Field Fit Kit Catalog Numbers

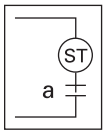
Alarm Lockout



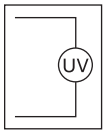
Auxiliary Switch



Shunt Trip



Undervoltage Release Mechanism



Description	Pole Location	Frame—EG, JG and LG
Alarm Lockout		
Make/break	Right	**ALM1M1BEPK** ①
2 make/2 break	Right	**ALM2M2BEPK** ②
Auxiliary Switch		
1A, 1B	Right	**AUX1A1BPK**
2A, 2B	Right	**AUX2A2BPK**
Auxiliary Switch/Alarm Lockout		
—	Right	**AUXALRMEPK** ③
Shunt Trip—Standard		
120 Vac	Left	**SNT120CPK** ④
240 Vac	Left	**SNT120CPK** ④
12 Vdc	Left	**SNT012CPK**
24 Vdc	Left	**SNT060CPK**
48 Vdc	Left	**SNT060CPK**
380–600 Vac	Left	**SNT480CPK** ⑤
Undervoltage Release Mechanism		
110–127 Vac	Left	**UVR120APK**
208–240 Vac	Left	**UVR240APK**
24 Vac	Left	**UVR024APK**
24 Vdc	Left	**UVR024DPK**
48–60 Vdc	Left	**UVR048DPK**
12 Vac/Vdc	Left	**UVR012CPK**
48–60 Vac	Left	**UVR048APK**
120 Vdc	Left	**UVR125DPK**
220–250 Vdc	Left	**UVR250DPK**
380–500 Vac	Left	**UVR480APK**
525–600 Vac	Left	**UVR600APK**

Multiwire Connectors Ordering Information (Package of 3)

High SCCR ratings are available for Power Distribution blocks with Series G MCCBs. See **Tab 6**.

Maximum Amperes	Wires per Terminal	Wire Size Range AWG Cu	Frame	Kit Catalog Number
125	3	14–2	EG	**3TA125E3K**
125	6	14–6	EG	**3TA125E6K**
250	3	14–2	JG	**3TA250FJ3**
250	6	14–6	JG	**3TA250FJ6**

Terminal Shields

Location	Number of Poles	Frame	IP30 Protection Catalog Number
Line	3	EG	**EFTS3K**
Line	4	EG	**EFTS4K**
Line or load	2, 3	JG	**FJTS3K**
Line or load	4	JG	**FJTS4K**

Interphase Barriers (Package of 2)

Number of Poles	Frame	Catalog Number
3 or 4	EG	**EIPBK**
3	JG	**FJIPBK**
4	JG	**FJIPBK4**
3 or 4	LG	**IPB3**

Flex Shaft Handles

Flex Shaft Handle Mechanisms

Breaker Frame	Flexible Shaft Length in ft (m) 4 (1.2) Catalog Number	7 (2.1) Catalog Number
EG	**EHMFS04**	**EHMFS07**
JG	**JHMFS04**	**JHMFS07**
LG	**LHMFS04**	**LHMFS07**

Universal Direct Handle Mechanism

Universal Direct Handle Mechanisms

Frame	With Interlock Catalog Number	Without Interlock Catalog Number
Black Handle Color		
EG	**EHMCCBI**	**EHMCCB**
JG	**JHMCCBI**	**JHMCCB**
LG	**LHMCCBI**	**LHMCCB**
Red Handle Color		
EG	**EHMCCRI**	**EHMCCR**
JG	**JHMCCRI**	**JHMCCR**
LG	**LHMCCRI**	**LHMCCR**

Notes

① Part number for JG and LG is ALM1M1BJPK.
② Part number for JG and LG is ALM2M2BJPK.
③ Part number for JG and LG is AUXALRMJPK.
④ 110–125 Vdc, 50/60 Hz.
⑤ 380–600 Vdc, 50/60 Hz.

1

Rotary Handle Mechanisms

High Performance Rotary Handle Mechanisms (Complete Kit Includes Handle, Shaft and Mechanism)

Color	Rating Type UL	IP	EG Frame ① Catalog Number	JG Frame Catalog Number	LG Frame Catalog Number
Black/blue	1/12/3R	20/54/55	**EGHMVD06B**	**JGHMVD06B**	**LGHMVD06B**
			EGHMVD12B	**JGHMVD12B**	**LGHMVD12B**
			EGHMVD24B	**JGHMVD24B**	**LGHMVD24B**
Red/yellow	1/12/3R	20/54/55	**EGHMVD06R**	**JGHMVD06R**	**LGHMVD06R**
			EGHMVD12R	**JGHMVD12R**	**LGHMVD12R**
			EGHMVD24R	**JGHMVD24R**	**LGHMVD24R**
Black/blue	4/4X	66	**EGHMVD06BX**	**JGHMVD06BX**	**LGHMVD06BX**
			EGHMVD12BX	**JGHMVD12BX**	**LGHMVD12BX**
			EGHMVD24BX	**JGHMVD24BX**	**LGHMVD24BX**
Red/yellow	4/4X	66	**EGHMVD06RX**	**JGHMVD06RX**	**LGHMVD06RX**
			EGHMVD12RX	**JGHMVD12RX**	**LGHMVD12RX**
			EGHMVD24RX	**JGHMVD24RX**	**LGHMVD24RX**

External Accessories

Description	Fit Type	Frame EG	JG	LG
Non-padlockable handle block	Field	**EFHB**	—	—
Padlockable handle block	Field	**EFPHB**	—	—
Padlockable handle block off-only	Field	**EFPHBOFF**	**FJPHBOFF**	**LBHPOFF**
Padlockable handle lock hasp	Field	**EFPHL**	**FJPHL**	**LPHL**
Padlockable handle lock hasp off-only	Field	**EFPHLOFF**	**FJPHLOFF**	**LPHLOFF**
Kirk key interlock kit ②③	Field	—	**KYKJG**	**KYKLG**
Castell key interlock kit ③④	Field	—	**CTKJG**	**CTKLG**
Slide bar interlock ⑤	Field	**EFSBI**	**FJSBI**	**LGSBI**
Walking beam interlock	Three-pole	**EG3WBI**	**JG3WBI**	**LG3WBI**
	Four-pole	**EG4WBI**	**JG4WBI**	**LG4WBI**
Electrical operator	120/240 Vac	**MOPEG240C**	**MOPJG240C**	**MOPLG240C**
	125 Vdc	**MOPEG240C**	**MOPJG240C**	**MOPLG240C**
Plug-in adapters	Three-pole	**PAD3E**	**PAD3J**	**PAD3L**
	Four-pole	**PAD4E**	**PAD4J**	**PAD4L**
Rear connecting studs	Field	**EFRCSDL**	**FJRCSDL**	**3P–LRCS3WK**
		EFRCSDS	**FJRCSDS**	**4P–LRCS4WK**
		EFRCSWL	**FJRCSWL**	—
		EFRCSWS	**FJRCSWS**	—

Notes

① Compatible with three-pole and four-pole EG breakers only.
② Provision only.
③ See Volume 4—Circuit Protection, CA08100005E, Tab 2, for bolt projection dimensions.
④ Castell bolt mounting hole must be 10 mm.
⑤ Requires two breakers.

Universal Molded Case Circuit Breakers

Features

- Universal design for both NEMA® (UL 489) and IEC (IEC 947-2) standards
- Suitable for 50°C application
- Factory-sealed thermal magnetic trip unit
- Standard interrupting ratings
- Includes mounting hardware and terminals

Catalog Number Selection

Universal Molded Case Circuit Breakers

Universal Molded Case

Gi 2 070

Frame Size
Gi= G*i* Frame
Fi= F*i* Frame
Ji= J*i* Frame
Ki= K*i* Frame
Li= L*i* Frame

Number of Poles				
G*i* Frame	F*i* Frame	J*i* Frame	K*i* Frame	L*i* Frame
1 = Single-pole **2** = Two-pole **3** = Three-pole	**2** = Two-pole **3** = Three-pole	**3** = Three-pole	**3** = Three-pole	**3** = Three-pole

Ampere Rating				
G*i* Frame	F*i* Frame	J*i* Frame	K*i* Frame	L*i* Frame
015 = 15 amp **020** = 20 amp **030** = 30 amp **040** = 40 amp **050** = 50 amp **060** = 60 amp **070** = 70 amp **080** = 80 amp **100** = 100 amp **125** = 125 amp	**015** = 15 amp **020** = 20 amp **030** = 30 amp **040** = 40 amp **050** = 50 amp **060** = 60 amp **070** = 70 amp **080** = 80 amp **100** = 100 amp **125** = 125 amp **150** = 150 amp **160** = 160 amp **175** = 175 amp **200** = 200 amp **225** = 225 amp	**250** = 250 amp	**300** = 300 amp **350** = 350 amp **400** = 400 amp	**500** = 500 amp **600** = 600 amp **630** = 630 amp

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Product Selection

Universal Molded Case Circuit Breakers

Three-Pole

Approximate Dimensions are in Inches

Universal G Frame

Description	Amperes	Catalog Number ①
3 W x 4-7/8 H x 2-13/16 D (optional DIN rail kit available catalog number GDIN, package of ten)	15	**Gi3015**
	20	**Gi3020**
	25	**Gi3025**
	30	**Gi3030**
	35	**Gi3035**
	40	**Gi3040**
	45	**Gi3045**
	50	**Gi3050**
	60	**Gi3060**

Voltage	Interrupting Rating
380–415	18/5K
480/277	14K

Universal F Frame

Description	Amperes	Catalog Number ①
4-1/8 W x 6 H x 3-3/8 D	15	**Fi3015L**
	20	**Fi3020L**
	30	**Fi3030L**
	35	**Fi3035L**
	40	**Fi3040L**
	50	**Fi3050L**
	60	**Fi3060L**
	70	**Fi3070L**
	80	**Fi3080L**
	90	**Fi3090L**
	100	**Fi3100L**
	125	**Fi3125L**
	150	**Fi3150L**
	175	**Fi3175L**
	200	**Fi3200L**
	225	**Fi3225L**

Voltage	Interrupting Rating
415	18/9K
480	20K

Universal J Frame

Description	Amperes	Catalog Number ①
4-1/8 W x 10 H x 4-1/16 D	225	**Ji3225L**
	250	**Ji3250L**

Voltage	Interrupting Rating
415	25/13K
480	20K

Universal K Frame

Description	Amperes	Catalog Number ①
5-1/2 W x 10-1/8 H x 4-1/16 D	300	**Ki3300L**
	350	**Ki3350L**
	400	**Ki3400L**

Voltage	Interrupting Rating
415	25/13K
480	20K

Universal L Frame

Description	Amperes	Catalog Number ①
8-1/4 W x 10-3/4 H x 4.37 D	500	**Li3500**
	600	**Li3600**

Voltage	Interrupting Rating
415	25/13K
480	20K

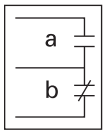
Note

① Metric mounting hardware.

Accessories

Internal Accessories

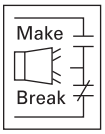
Auxiliary Switch (Right-Pole Mounted)



Configuration	Add This Suffix to Catalog Number
1NO/1NC	**A3**
2NO/2NC	**A6**

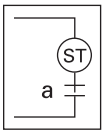
If both an auxiliary switch and bell alarm are required, add B13 to the catalog number (right-pole mounted). Auxiliary switch and bell alarm are 240V rated.

Bell Alarm (Right-Pole Mounted)



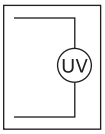
Configuration	Add This Suffix to Catalog Number
1 make/1 break	**B3**

Shunt Trip (Left-Pole Mounted)



Voltage Range	Add This Suffix to Catalog Number
24 Vac	**S7**
120 Vac	**S1**
240 Vac	**S2**
12 Vdc	**S3**
24 Vdc	**S4**
12–24 Vac/Vdc	**S02**
48–127 Vac or 48–60 Vdc	**S06**
208–380 Vac or 110–127 Vdc	**S10**
415–600 Vac or 220–250 Vdc	**S14**
48–60 Vac/Vdc	**S50**
110–240 Vac or 110–125 Vdc	**S10**
380–440 Vac or 220–50 Vdc	**S14**
480–600 Vac	**S18**

UVR (Left-Pole Mounted)



Voltage Range	Add This Suffix to Catalog Number
24 Vac 50/60 Hz	**T2**
48 Vac 50/60 Hz	**T3**
60 Vac 50/60 Hz	**T4**
120 Vac 50/60 Hz	**T1**
240 Vac 50/60 Hz	**T8**
220 Vac 50 Hz	**T7**
440 Vac 50 Hz	**T11**
480 Vac 60 Hz	**T12**
12 Vac	**U02**
24 Vac	**U06**
48 Vac/Vdc	**U38**
110–127 Vac	**U14**
208–240 Vac	**U18**
380–480 Vac	**U22**
525–600 Vac	**U26**
12 Vdc	**U30**
24 Vdc	**U34**
125 Vdc	**U42**
220–250 Vdc	**U46**
12 Vac	**U06**
24 Vac	**U10**
48–60 Vac	**U14**
110–127 Vac	**U18**
208–240 Vac	**U22**
380–480 Vac	**U26**
12 Vdc	**T02**
24 Vdc	**T06**
48–60 Vdc	**T10**
110–125 Vdc	**T14**
220–250 Vdc	**T18**

Universal G Frame

Universal F Frame

If both an auxiliary switch and bell alarm are required, add C05 to the catalog number (right-pole mounted). Auxiliary switch and bell alarm are 600V rated.

Universal J Frame

If both an auxiliary switch and bell alarm are required, add C05 to the catalog number (right-pole mounted). Auxiliary switch and bell alarm are 600V rated.

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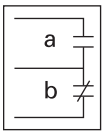
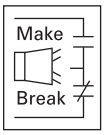
Internal Accessories, continued

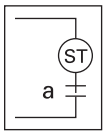
Auxiliary Switch (Right-Pole Mounted)



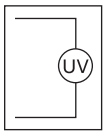
Bell Alarm (Right-Pole Mounted)



Shunt Trip (Left-Pole Mounted)



UVR (Left-Pole Mounted)



Configuration	Add This Suffix to Catalog Number	Configuration	Add This Suffix to Catalog Number	Voltage Range	Add This Suffix to Catalog Number	Voltage Range	Add This Suffix to Catalog Number
Universal K Frame							
1NO/1NC	**A06**	1 make/1 break	**B06**	12–24 Vac/Vdc	**S42**	12 Vac	**U06**
2NO/2NC	**A13**			48–60 Vac/Vdc	**S50**	24 Vac	**U10**
If both an auxiliary switch and bell alarm are required, add CO5 to the catalog number (right-pole mounted). Auxiliary switch and bell alarm are 600V rated.				110–240 Vac or 110–125 Vdc	**S10**	48–60 Vac	**U14**
						110–127 Vac	**U18**
				380–440 Vac or 220–250 Vdc	**S14**	208–240 Vac	**U22**
						380–480 Vac	**U26**
				480–600 Vac	**S18**	12 Vdc	**T02**
						24 Vdc	**T06**
						48–60 Vdc	**T10**
						110–125 Vdc	**T14**
						220–250 Vdc	**T18**
Universal L Frame							
1NO/1NC	**A06**	1 make/1 break	**B06**	12–24 Vac/Vdc	**S02**	12 Vac	**U06**
2NO/2NC	**A13**			48–60 Vdc	**S06**	24 Vac	**U10**
If both an auxiliary switch and bell alarm are required, add CO5 to the catalog number (right-pole mounted). Auxiliary switch and bell alarm are 600V rated.				48–60 Vac	**S86**	48–60 Vac	**U14**
				110–240 Vac	**S10**	110–127 Vac	**U18**
				110–125 Vdc	**S42**	208–240 Vac	**U22**
				380–440 Vac or 220–250 Vdc	**S14**	380–480 Vac	**U26**
						12 Vdc	**T02**
				480–600 Vac	**S18**	24 Vdc	**T06**
						48–60 Vdc	**T10**
						110–125 Vdc	**T14**
						220–250 Vdc	**T18**

Handle Mechanisms

Type 1/12 Universal Rotary

Ordering Information ①

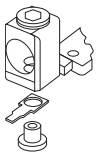
Shaft Length in Inches (mm)	Handle Color	Complete Catalog Number	Flange Flex Shaft Type 1, 3R, 12 Versions
Universal G Frame			
6 (152.4)	Black	**GHMVD06B**	3-ft length; order **F0S03C**
12 (304.8)	Black	**GHMVD12B**	4-ft length; order **F0S04C**
6 (152.4)	Red	**GHMVD06R**	5-ft length; order **F0S05C**
12 (304.8)	Red	**GHMVD12R**	6-ft length; order **F0S06C**
Universal F Frame			
6 (152.4)	Black	**FHMVD06B**	3-ft length; order **F1S03C**
12 (304.8)	Black	**FHMVD12B**	4-ft length; order **F1S04C**
6 (152.4)	Red	**FHMVD06R**	5-ft length; order **F1S05C**
12 (304.8)	Red	**FHMVD12R**	6-ft length; order **F1S06C**
			7-ft length; order **F1S07C**
			8-ft length; order **F1S08C**
			9-ft length; order **F1S09C**
			10-ft length; order **F1S10C**
Universal J Frame			
6 (152.4)	Black	**JHMVD06B**	3-ft length; order **F2S03C**
12 (304.8)	Black	**JHMVD12B**	4-ft length; order **F2S04C**
6 (152.4)	Red	**JHMVD06R**	5-ft length; order **F2S05C**
12 (304.8)	Red	**JHMVD12R**	6-ft length; order **F2S06C**
			7-ft length; order **F2S07C**
			8-ft length; order **F2S08C**
			9-ft length; order **F2S09C**
			10-ft length; order **F2S10C**
Universal K Frame			
6 (152.4)	Black	**KHMVD06B**	3-ft length; order **F3S03C**
12 (304.8)	Black	**KHMVD12B**	4-ft length; order **F3S04C**
6 (152.4)	Red	**KHMVD06R**	5-ft length; order **F3S05C**
12 (304.8)	Red	**KHMVD12R**	6-ft length; order **F3S06C**
			7-ft length; order **F3S07C**
			8-ft length; order **F3S08C**
			9-ft length; order **F3S09C**
			10-ft length; order **F3S10C**

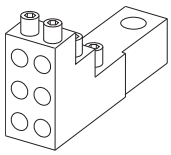
Note

① Only available as complete handle mechanism. Parts not sold separately.

Terminals and Termination Accessory Devices

Terminal/Termination Devices





Universal G Frame

Terminals (Included with Breaker)		Optional Multiwire Lugs (Load End Only)	
15–20 A	**25–100A**	**Three-Hole Version**	**Six-Hole Version**
14–2 AWG Cu/Al	10–1/0 AWG Cu/Al	(3) 14–2 AWG Order **3TA100G3K**	(6) 14–6 AWG Order **3TA100G6K**
2.5–4 mm² Cu/Al	4–50 mm² Cu/Al		

Universal F Frame

Terminals (Included with Breaker)			Optional Multiwire Lugs (Load End Only)	
10–20A	**25–100A**	**110–225A**	**Three-Hole Version**	**Six-Hole Version**
14–10 AWG Cu/Al	14–1/0 AWG Cu/Al	4–4/0 AWG Cu/Al	(3) 14–2 AWG Order **3TA150F3K**	(6) 14–6 AWG Order 3TA150F6K
2.5–4 mm² Cu/Al	2.5–50 mm² Cu/Al	25–95 mm² Cu/Al		

Universal J Frame

Terminals (Included with Breaker)	Optional Multiwire Lugs (Load End Only)	
70–250A	**Three-Hole Version**	**Six-Hole Version**
4–350 kcmil AWG Cu/Al	(3) 14–2 AWG Order **3TA250J3K**	(6) 14–6 AWG Order **3TA250J6K**
25–150 mm² Cu/Al		

Universal K Frame

Terminals (Included with Breaker)		Optional Multiwire Lugs (Load End Only)	
300–350A	**400A**	**Three-Hole Version**	**Six-Hole Version**
250–500 kcmil AWG Cu/Al	3/0–200 (2) AWG Cu/Al	(3) 12–2/0 AWG Order **3TA400K3K**	(6) 14–2/0 AWG Order **3TA400K6K**
120–240 mm² Cu/Al	95–120 mm² Cu/Al		

Universal L Frame

Terminals (Included with Breaker)		Optional Multiwire Lugs (Load End Only)	
500A	**600A**	**Three-Hole Version**	**Six-Hole Version**
(2) 250–300 kcmil Cu/Al	(2) 400–500 kcmil Cu/Al	—	—
120–150 mm² Cu/Al	185–250 mm² Cu/Al		

QUICKLAG Type QC Miniature Circuit Breakers—Cable-In/Cable-Out Type QC

Features

For Cable-In/Cable-Out Panel Mount Applications

- Single-, two-, three- and four-pole options
- Built and listed to UL 489
- All products UL and CSA listed
- All products 10–100A are HACR rated

Catalog Number Selection

QUICKLAG Type QC Miniature Circuit Breakers—Cable-In/Cable-Out Type QC

Type QC Miniature Circuit Breakers

QC 3 020 H

Ampere Rating	Number of Poles	Ampere Rating		Construction
QC = QC breaker	**1** = Single-pole **2** = Two-pole **3** = Three-pole **4** = Four-pole	**010** = 10 amp **015** = 15 amp **020** = 20 amp **025** = 25 amp **030** = 30 amp **035** = 35 amp **040** = 40 amp **045** = 45 amp	**050** = 50 amp **055** = 55 amp **060** = 60 amp **070** = 70 amp **080** = 80 amp **090** = 90 amp **100** = 100 amp	**H** = 240V (two-, three- and four-pole only)

Product Selection

QUICKLAG Type QC 10,000 Ampere I.C. Thermal-Magnetic Breakers

Note: For non-automatic switches, see Volume 4—Circuit Protection, CA08100005E, Tab 1.

Continuous Ampere Rating at 40°C	Single-Pole, 120/240 Vac Catalog Number	Two-Pole, 120/240 Vac Catalog Number	Three-Pole, 240 Vac Catalog Number
10	**QC1010**	**QC2010**	—
15	**QC1015** ①②	**QC2015**	**QC3015H**
20	**QC1020** ①②	**QC2020**	**QC3020H**
30	**QC1030**	**QC2030**	**QC3030H**
40	**QC1040**	**QC2040**	**QC3040H**
50	**QC1050**	**QC2050**	**QC3050H**
60	—	**QC2060**	**QC3060H**
70	—	**QC2070**	**QC3070H**
100	**QC1100**	**QC2100**	**QC3100H**

Notes

① Switching duty rated for 120 Vac fluorescent light applications only.
② For special low-magnetic breaker, order QC1015L1 or QC1020L1.

1

QUICKLAG Type QC Miniature Circuit Breakers—Cable-In/Cable-Out Type QCD

Features

For Cable-In/Cable-Out DIN rail Mount HVAC Applications

- Single-, two- and three-pole options
- Modular construction
- DIN mounted (symmetrical rail 35 in x 7.5 in DIN/EN 50 022)
- Flexible power feed connection: wire size, position
- Same breaker size for entire rating range
- Field-mountable accessories: finger-shroud proof, quick connect terminals, jumper units

Catalog Number Selection

QUICKLAG Type QC Miniature Circuit Breakers—Cable-In/Cable-Out Type QCD

QCD 3 020 H

Breaker Type	Number of Poles	Ampere Rating		Construction
QCD = QCD breaker	**1** = Single-pole **2** = Two-pole **3** = Three-pole	**010** = 10 amp **015** = 15 amp **020** = 20 amp **025** = 25 amp **030** = 30 amp **035** = 35 amp **040** = 40 amp **045** = 45 amp	**050** = 50 amp **055** = 55 amp **060** = 60 amp **070** = 70 amp **080** = 80 amp **090** = 90 amp **100** = 100 amp	**H** = 240V (two- and three-pole only)

Product Selection

QUICKLAG Type QCD 10,000 Ampere I.C. Thermal-Magnetic Breakers

Continuous Ampere Rating at 40°C	Single-Pole, 120/240 Vac Catalog Number	Two-Pole, 120/240 Vac Catalog Number	Three-Pole, 240 Vac Catalog Number
10	**QCD1010**	**QCD2010**	—
15	**QCD1015**	**QCD2015**	**QCD3015H**
20	**QCD1020**	**QCD2020**	**QCD3020H**
30	**QCD1030**	**QCD2030**	**QCD3030H**
40	**QCD1040**	**QCD2040**	**QCD3040H**
50	**QCD1050**	**QCD2050**	**QCD3050H**
60	**QCD1060**	**QCD2060**	**QCD3060H**
70	—	**QCD2070**	**QCD3070H**
100	—	**QCD2100**	**QCD3100H**

QUICKLAG Type QC Miniature Circuit Breakers—Cable-In/Cable-Out 1/2-Inch Wide Types QCR, QCF

Features

When Space is at a Premium

- QCR: For DIN rail mount cable-in/cable-out applications
- QCF: For front-mount through-the-door cable-in/cable-out applications
- 1/2 in (12.7 mm) wide per pole
- Three-position handle: ON, tripped (center), OFF
- Thermal-magnetic protection
- Single-, two- and three-pole
- 10 kAIC at 120/240 Vac, 10–60A
- 10 kAIC at 240 Vac, 10–30A

Catalog Number Selection

QUICKLAG Type QC Miniature Circuit Breakers—Cable-In/Cable-Out 1/2-Inch Wide Types QCR, QCF

QCR 1 020 T

Breaker Type
QCR = QCD Breaker (rear mount)
QCF = QCF Breaker (front mount)

Number of Poles
1 = Single-pole
2 = Two-pole
3 = Three-pole

Ampere Rating		
010 = 10 amp	**030** = 30 amp	**050** = 50 amp
015 = 15 amp	**035** = 35 amp	**055** = 55 amp
020 = 20 amp	**040** = 40 amp	**060** = 60 amp
025 = 25 amp	**045** = 45 amp	

Construction/Terminals
H = 240V (two- and three-pole only)
T = Ring or spade terminals (10–30A only)

Product Selection

QUICKLAG Type QCR Breakers 10 kAIC Interrupting Ratings ①②③④

Continuous Ampere Rating at 40°C	Single-Pole 120/240 Vac Catalog Number	Two-Pole 120/240 Vac Catalog Number	Three-Pole 240 Vac Catalog Number
10	**QCR1010**	**QCR2010**	—
	QCR1010T	**QCR2010T**	—
15	**QCR1015** ⑤	**QCR2015**	**QCR3015H**
	QCR1015T ⑤	**QCR2015T**	**QCR3015HT**
20	**QCR1020** ⑤	**QCR2020**	**QCR3020H**
	QCR1020T ⑤	**QCR2020T**	**QCR3020HT**
25	**QCR1025**	**QCR2025**	**QCR3025H**
	—	—	**QCR3025HT**
30	**QCR1030**	**QCR2030**	**QCR3030H**
	—	—	**QCR3030HT**
35	**QCR1035**	**QCR2035**	—
40	**QCR1040**	**QCR2040**	—
45	**QCR1045**	**QCR2045**	—
50	**QCR1050**	**QCR2050**	—
55	**QCR1055**	—	—
60 ⑥	**QCR1060**	**QCR2060**	—

QUICKLAG Type QCF Breakers 10 kAIC Interrupting Ratings ①②③

Continuous Ampere Rating at 40°C	Single-Pole 120/240 Vac Catalog Number	Two-Pole 120/240 Vac Catalog Number	Three-Pole 240 Vac Catalog Number
10	**QCF1010**	**QCF2010**	—
	QCF1010T	**QCF2010T**	—
15	**QCF1015** ⑤	**QCF2015**	**QCF3015H**
	—	—	**QCF3015HT**
20	**QCF1020** ⑤	**QCF2020**	**QCF3020H**
	—	—	**QCF3020HT**
25	**QCF1025**	**QCF2025**	**QCF3025H**
	—	—	**QCF3025HT**
30	**QCF1030**	**QCF2030**	**QCF3030H**
	—	—	**QCF3030HT**
40	**QCF1040**	**QCF2040**	—
50	**QCF1050**	**QCF2050**	—
60 ⑥	**QCF1060**	**QCF2060**	—

Notes

① Standard breaker terminals are box type lugs.
② Breakers with "T" catalog number suffix are suitable for line and load side ring terminal connection (#10-32 plus/minus terminal screw provided).
③ Breakers with "P" catalog number suffix are suitable for terminating two 10 AWG quick-connect type terminals per phase on breaker load side.
④ Breakers with shunt trip (extra pole required on breaker right-hand side) are available on single-, two- and three-pole.
⑤ All 15 and 20A single-pole breakers are SWD (switching duty) rated for fluorescent lighting applications.
⑥ 60/75°C Cu/Al wire on all ratings except 60A, which requires Cu only conductor.

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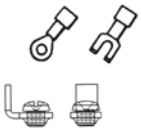
Accessories

Type QCR and QCF

Description	Catalog Number
Steel mounting clip mounts QCR breaker if individual mounting is required. Quantity two required for single- and two-pole and four required for three-pole breakers.	**QCRMTGFT**
Removable padlock device for single-pole QCR or QCF breaker.	**QCRFPL1P**
Removable padlock device for multi-pole QCR or QCF breaker.	**QCRFPLMP**
Padlock bracket assembly for QCR or QCF single- or multi-pole breakers (OFF only).	**QCRFLOFF**
Padlock bracket for QCR, lock-off only.	**QCRPLOFF**
QUICKLAG Type C Spacer  QUICKLAG Type C Spacer	**QCRSPACER**
QCR and QCF Ring or Spade Lug Terminals  QCR and QCF ring or spade lug terminals (10–30A ratings only). Factory installed line and load side terminals each equipped with a #10-32 screw suitable for terminating one 10 AWG wire with insulated ring or spade type terminal as shown.	**Suffix "T"**

QUICKLAG Type QC Miniature Circuit Breakers—Cable-In/Cable-Out
1/2-Inch Wide Types QCGF, QCGFEP

Features

For Cable-In/Cable-Out Panel-Mount Applications

- QUICKLAG ground fault circuit breakers, Class A GFCI:
- Built and tested to UL 943
- 5 mA trip sensitivity
- QUICKLAG ground fault equipment protectors:
  - Built and tested to UL 1053
  - 30 mA trip sensitivity
- All products UL and CSA listed

Catalog Number Selection

QUICKLAG Type QC Miniature Circuit Breakers— Cable-In/Cable-Out Ground Fault and Equipment Protector Types QCGF, QCGFEP

QCGFEP 1 020

Breaker Type	Number of Poles	Ampere Rating	
QCGF = QC ground fault circuit protector **QCGFEP** = QC ground fault equipment protector	**1** = Single-pole **2** = Two-pole	**015** = 15 amp **020** = 20 amp **025** = 25 amp	**030** = 30 amp **040** = 40 amp **050** = 50 amp

Product Selection

Types QCGF and QCGFEP Thermal-Magnetic Breakers

Continuous Ampere Rating at 40°C	Single-Pole, 120/240 Vac Catalog Number	Two-Pole, 120/240 Vac Catalog Number
Ground Fault Circuit Breakers—5 mA Sensitivity QUICKLAG Type: QCGF 10,000 Ampere I.C.		
15	**QCGF1015**	**QCGF2015**
20	**QCGF1020**	**QCGF2020**
30	**QCGF1030**	**QCGF2030**
40	**QCGF1040**	**QCGF2040**
50	—	**QCGF2050**
Ground Fault Equipment Protectors—30 mA Sensitivity QUICKLAG Type: QCGFEP 10,000 Ampere I.C.		
15	**QCGFEP1015**	**QCGFEP2015**
20	**QCGFEP1020**	**QCGFEP2020**
30	**QCGFEP1030**	**QCGFEP2030**
40	**QCGFEP1040**	**QCGFEP2040**
50	—	**QCGFEP2050**

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Accessories

Type QC Miniature Circuit Breakers

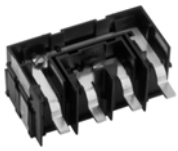
Handle Locks

Accessory ①	Description	Catalog Number
Handle locks: Non-padlockable ②	QUICKLAG type P, B, C—single-pole	**QL1NPL**
	QUICKLAG type P, B, C—two-, three-pole	**QL23NPL**
Handle locks: Padlockable	QUICKLAG type P, B, C—single-pole	**QL1PL**
	QUICKLAG type C—single-, two-, three-pole	**QC123PL**
	QUICKLAG type C—single-, two-, three-pole (off only)	**QCD123PLOFF**

Handle Tie

Handle tie	QUICKLAG handle tie—single-pole	**QL1HT**
	QUICKLAG handle tie—three-pole	**QL3HT**

Hardware



Mounting hardware	QUICKLAG type C face mounting clip	**QCFCLIP**
	QUICKLAG type C face mounting plate—single-pole	**QC1FP**
	QUICKLAG type C face mounting plate —two-pole	**QC2FP**
	QUICKLAG type C face mounting plate —three-pole	**QC3FP**
	QUICKLAG type C face mounting plate and lock-off (off only)—two-pole ③	**QC2FPLOFF**
	QUICKLAG type C face mounting plate and lock-off (off only)—three-pole	**QC3FPLOFF**
	QUICKLAG type C base mounting clamp	**QCBCLIP**
	QUICKLAG base mounting plate—six poles total	**QC6BP**
	QUICKLAG type C base mounting plate, six-poles total—heavy-duty screw-secured	**QC6BPS**
	QUICKLAG type C (QCD) two-way jumper unit with cover	**QCDJ2**
	QUICKLAG type C (QCD) four-way jumper unit with cover	**QCDJ4**
	QUICKLAG type C (QCD) six-way jumper unit with cover	**QCDJ6**
	QUICKLAG type C (QCD) two-way jumper unit, no cover	**QCDJ2T**
	QUICKLAG type C (QCD) four-way jumper unit, no cover	**QCDJ4T**
	QUICKLAG type C (QCD) six-way jumper unit, no cover	**QCDJ6T**
	QUICKLAG type QCD finger protection attachment	**QCDFP**
	QUICKLAG type C DIN rail adapter	**QCDINADAPT**

Notes

① See **Page V9-T1-22** for QCR and QCF accessories.
② Can lock in ON or OFF position.
③ Suitable for ground fault breakers.

FAZ-NA UL 489 Circuit Breakers

Features

- UL 489 listed DIN rail mounted miniature circuit breakers up to 40A current rating
- Current limiting design provides fast short-circuit interruption that reduces let-through energy
- Thermal-magnetic overcurrent protection
  - Three levels of short-circuit protection, categorized by B, C and D curves
- Ring-tongue terminals available
- Complete line of accessories

Catalog Number Selection

FAZ-NA UL 489 Circuit Breakers

FAZ-NA UL 489

FAZ C 6 / 1 NA SP

Breaker Family	Trip Characteristics ①	Ampere Rating ②	Number of Poles	Terminal	Single Package
FAZ = FAZ UL circuit breaker	**B** = 3–5X I_n **C** = 5–10X I_n **D** = 10–20X I_n	**0.5** = 0.5A **1** = 1A **1.5** = 1.5A **2** = 2A **3** = 3A **4** = 4A **5** = 5A **6** = 6A **7** = 7A **8** = 8A **10** = 10A **13** = 13A **15** = 15A **16** = 16A **20** = 20A **25** = 25A **30** = 30A **32** = 32A **35** = 32A **40** = 40A	**1** = Single-pole **2** = Two-pole **3** = Three-pole	**NA** = UL 489 branch circuit with screw terminals **RT** = UL 489 branch circuit with ring tongue terminals **DC** = UL 489 branch circuit at 125 Vdc per pole	**SP** = Single package for C and D curve single-pole only **Blank** = Standard packaging

Notes

① I_n = Rated current for instantaneous trip characteristics.

② B curve starts at 1 ampere.

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Product Selection

FAZ-NA UL 489 Circuit Breakers—10 kAIC, 14 kAIC B Curve (15–25A)

Amperes	Single-Pole ① Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number
B Curve (3–5X I_n Current Rating)			
1	FAZ-B1/1-NA	FAZ-B1/2-NA	FAZ-B1/3-NA
1.5	FAZ-B1.5/1-NA	FAZ-B1.5/2-NA	FAZ-B1.5/3-NA
2	FAZ-B2/1-NA	FAZ-B2/2-NA	FAZ-B2/3-NA
3	FAZ-B3/1-NA	FAZ-B3/2-NA	FAZ-B3/3-NA
4	FAZ-B4/1-NA	FAZ-B4/2-NA	FAZ-B4/3-NA
5	FAZ-B5/1-NA	FAZ-B5/2-NA	FAZ-B5/3-NA
6	FAZ-B6/1-NA	FAZ-B6/2-NA	FAZ-B6/3-NA
7	FAZ-B7/1-NA	FAZ-B7/2-NA	FAZ-B7/3-NA
8	FAZ-B8/1-NA	FAZ-B8/2-NA	FAZ-B8/3-NA
10	FAZ-B10/1-NA	FAZ-B10/2-NA	FAZ-B10/3-NA
13	FAZ-B13/1-NA	FAZ-B13/2-NA	FAZ-B13/3-NA
15	FAZ-B15/1-NA	FAZ-B15/2-NA	FAZ-B15/3-NA
16	FAZ-B16/1-NA	FAZ-B16/2-NA	FAZ-B16/3-NA
20	FAZ-B20/1-NA	FAZ-B20/2-NA	FAZ-B20/3-NA
25	FAZ-B25/1-NA	FAZ-B25/2-NA	FAZ-B25/3-NA
30	FAZ-B30/1-NA	FAZ-B30/2-NA	FAZ-B30/3-NA
32	FAZ-B32/1-NA	FAZ-B32/2-NA	FAZ-B32/3-NA
35 ②	FAZ-B35/1-NA	FAZ-B35/2-NA	FAZ-B35/3-NA
40 ②	FAZ-B40/1-NA	FAZ-B40/2-NA	FAZ-B40/3-NA

FAZ-RT UL 489 Circuit Breakers with Ring-Tongue Terminals—10 kAIC, 14 kAIC B Curve (15–25A)

Amperes	Single-Pole ① Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number
B Curve with Ring-Tongue Terminals (3–5X I_n Current Rating)			
1	FAZ-B1/1-RT	FAZ-B1/2-RT	FAZ-B1/3-RT
1.5	FAZ-B1.5/1-RT	FAZ-B1.5/2-RT	FAZ-B1.5/3-RT
2	FAZ-B2/1-RT	FAZ-B2/2-RT	FAZ-B2/3-RT
3	FAZ-B3/1-RT	FAZ-B3/2-RT	FAZ-B3/3-RT
4	FAZ-B4/1-RT	FAZ-B4/2-RT	FAZ-B4/3-RT
5	FAZ-B5/1-RT	FAZ-B5/2-RT	FAZ-B5/3-RT
6	FAZ-B6/1-RT	FAZ-B6/2-RT	FAZ-B6/3-RT
7	FAZ-B7/1-RT	FAZ-B7/2-RT	FAZ-B7/3-RT
8	FAZ-B8/1-RT	FAZ-B8/2-RT	FAZ-B8/3-RT
10	FAZ-B10/1-RT	FAZ-B10/2-RT	FAZ-B10/3-RT
13	FAZ-B13/1-RT	FAZ-B13/2-RT	FAZ-B13/3-RT
15	FAZ-B15/1-RT	FAZ-B15/2-RT	FAZ-B15/3-RT
16	FAZ-B16/1-RT	FAZ-B16/2-RT	FAZ-B16/3-RT
20	FAZ-B20/1-RT	FAZ-B20/2-RT	FAZ-B20/3-RT
25	FAZ-B25/1-RT	FAZ-B25/2-RT	FAZ-B25/3-RT
30	FAZ-B30/1-RT	FAZ-B30/2-RT	FAZ-B30/3-RT
32	FAZ-B32/1-RT	FAZ-B32/2-RT	FAZ-B32/3-RT
35 ②	FAZ-B35/1-RT	FAZ-B35/2-RT	FAZ-B35/3-RT
40 ②	FAZ-B40/1-RT	FAZ-B40/2-RT	FAZ-B40/3-RT

FAZ-NA UL 489 Circuit Breakers—10 kAIC, 14 kAIC C Curve (15–25A)

Amperes	Single-Pole ③ Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number
C Curve (5–10X I_n Current Rating)			
0.5	FAZ-C0.5/1-NA-SP	FAZ-C0.5/2-NA	FAZ-C0.5/3-NA
1	FAZ-C1/1-NA-SP	FAZ-C1/2-NA	FAZ-C1/3-NA
1.5	FAZ-C1.5/1-NA-SP	FAZ-C1.5/2-NA	FAZ-C1.5/3-NA
2	FAZ-C2/1-NA-SP	FAZ-C2/2-NA	FAZ-C2/3-NA
3	FAZ-C3/1-NA-SP	FAZ-C3/2-NA	FAZ-C3/3-NA
4	FAZ-C4/1-NA-SP	FAZ-C4/2-NA	FAZ-C4/3-NA
5	FAZ-C5/1-NA-SP	FAZ-C5/2-NA	FAZ-C5/3-NA
6	FAZ-C6/1-NA-SP	FAZ-C6/2-NA	FAZ-C6/3-NA
7	FAZ-C7/1-NA-SP	FAZ-C7/2-NA	FAZ-C7/3-NA
8	FAZ-C8/1-NA-SP	FAZ-C8/2-NA	FAZ-C8/3-NA
10	FAZ-C10/1-NA-SP	FAZ-C10/2-NA	FAZ-C10/3-NA
13	FAZ-C13/1-NA-SP	FAZ-C13/2-NA	FAZ-C13/3-NA
15	FAZ-C15/1-NA-SP	FAZ-C15/2-NA	FAZ-C15/3-NA
16	FAZ-C16/1-NA-SP	FAZ-C16/2-NA	FAZ-C16/3-NA
20	FAZ-C20/1-NA-SP	FAZ-C20/2-NA	FAZ-C20/3-NA
25	FAZ-C25/1-NA-SP	FAZ-C25/2-NA	FAZ-C25/3-NA
30	FAZ-C30/1-NA-SP	FAZ-C30/2-NA	FAZ-C30/3-NA
32	FAZ-C32/1-NA-SP	FAZ-C32/2-NA	FAZ-C32/3-NA
35 ②	FAZ-C35/1-NA-SP	FAZ-C35/2-NA	FAZ-C35/3-NA
40 ②	FAZ-C40/1-NA-SP	FAZ-C40/2-NA	FAZ-C40/3-NA

FAZ-RT UL 489 Circuit Breakers with Ring-Tongue Terminals—10 kAIC, 14 kAIC C Curve (15–25A)

Amperes	Single-Pole ③ Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number
C Curve with Ring-Tongue Terminals (5–10X I_n Current Rating)			
0.5	FAZ-C0.5/1-RT-SP	FAZ-C0.5/2-RT	FAZ-C0.5/3-RT
1	FAZ-C1/1-RT-SP	FAZ-C1/2-RT	FAZ-C1/3-RT
1.5	FAZ-C1.5/1-RT-SP	FAZ-C1.5/2-RT	FAZ-C1.5/3-RT
2	FAZ-C2/1-RT-SP	FAZ-C2/2-RT	FAZ-C2/3-RT
3	FAZ-C3/1-RT-SP	FAZ-C3/2-RT	FAZ-C3/3-RT
4	FAZ-C4/1-RT-SP	FAZ-C4/2-RT	FAZ-C4/3-RT
5	FAZ-C5/1-RT-SP	FAZ-C5/2-RT	FAZ-C5/3-RT
6	FAZ-C6/1-RT-SP	FAZ-C6/2-RT	FAZ-C6/3-RT
7	FAZ-C7/1-RT-SP	FAZ-C7/2-RT	FAZ-C7/3-RT
8	FAZ-C8/1-RT-SP	FAZ-C8/2-RT	FAZ-C8/3-RT
10	FAZ-C10/1-RT-SP	FAZ-C10/2-RT	FAZ-C10/3-RT
13	FAZ-C13/1-RT-SP	FAZ-C13/2-RT	FAZ-C13/3-RT
15	FAZ-C15/1-RT-SP	FAZ-C15/2-RT	FAZ-C15/3-RT
16	FAZ-C16/1-RT-SP	FAZ-C16/2-RT	FAZ-C16/3-RT
20	FAZ-C20/1-RT-SP	FAZ-C20/2-RT	FAZ-C20/3-RT
25	FAZ-C25/1-RT-SP	FAZ-C25/2-RT	FAZ-C25/3-RT
30	FAZ-C30/1-RT-SP	FAZ-C30/2-RT	FAZ-C30/3-RT
32	FAZ-C32/1-RT-SP	FAZ-C32/2-RT	FAZ-C32/3-RT
35 ②	FAZ-C35/1-RT-SP	FAZ-C35/2-RT	FAZ-C35/3-RT
40 ②	FAZ-C40/1-RT-SP	FAZ-C40/2-RT	FAZ-C40/3-RT

Notes

① Two-piece order. Quantities of two per box.

② 240 Vac rated only.

③ Option for single packaging on single-pole C and D curves only; add suffix SP when ordering.

FAZ-NA UL 489 Circuit Breakers—10 kAIC, 14 kAIC D Curve (13–20A)

Amperes	Single-Pole ① Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number
D Curve (10–20X I_n Current Rating)			
0.5	FAZ-D0.5/1-NA-SP	FAZ-D0.5/2-NA	FAZ-D0.5/3-NA
1	FAZ-D1/1-NA-SP	FAZ-D1/2-NA	FAZ-D1/3-NA
1.5	FAZ-D1.5/1-NA-SP	FAZ-D1.5/2-NA	FAZ-D1.5/3-NA
2	FAZ-D2/1-NA-SP	FAZ-D2/2-NA	FAZ-D2/3-NA
3	FAZ-D3/1-NA-SP	FAZ-D3/2-NA	FAZ-D3/3-NA
4	FAZ-D4/1-NA-SP	FAZ-D4/2-NA	FAZ-D4/3-NA
5	FAZ-D5/1-NA-SP	FAZ-D5/2-NA	FAZ-D5/3-NA
6	FAZ-D6/1-NA-SP	FAZ-D6/2-NA	FAZ-D6/3-NA
7	FAZ-D7/1-NA-SP	FAZ-D7/2-NA	FAZ-D7/3-NA
8	FAZ-D8/1-NA-SP	FAZ-D8/2-NA	FAZ-D8/3-NA
10	FAZ-D10/1-NA-SP	FAZ-D10/2-NA	FAZ-D10/3-NA
13	FAZ-D13/1-NA-SP	FAZ-D13/2-NA	FAZ-D13/3-NA
15	FAZ-D15/1-NA-SP	FAZ-D15/2-NA	FAZ-D15/3-NA
16	FAZ-D16/1-NA-SP	FAZ-D16/2-NA	FAZ-D16/3-NA
20	FAZ-D20/1-NA-SP	FAZ-D20/2-NA	FAZ-D20/3-NA
25	FAZ-D25/1-NA-SP	FAZ-D25/2-NA	FAZ-D25/3-NA
30	FAZ-D30/1-NA-SP	FAZ-D30/2-NA	FAZ-D30/3-NA
32	FAZ-D32/1-NA-SP	FAZ-D32/2-NA	FAZ-D32/3-NA
35 ②	FAZ-D35/1-NA-SP	FAZ-D35/2-NA	FAZ-D35/3-NA
40 ②	FAZ-D40/1-NA-SP	FAZ-D40/2-NA	FAZ-D40/3-NA

FAZ-RT UL 489 Circuit Breakers with Ring-Tongue Terminals—10 kAIC, 14 kAIC D Curve (13–20A)

Amperes	Single-Pole ① Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number
D Curve with Ring-Tongue Terminals (10–20X I_n Current Rating)			
0.5	FAZ-D0.5/1-RT-SP	FAZ-D0.5/2-RT	FAZ-D0.5/3-RT
1	FAZ-D1/1-RT-SP	FAZ-D1/2-RT	FAZ-D1/3-RT
1.5	FAZ-D1.5/1-RT-SP	FAZ-D1.5/2-RT	FAZ-D1.5/3-RT
2	FAZ-D2/1-RT-SP	FAZ-D2/2-RT	FAZ-D2/3-RT
3	FAZ-D3/1-RT-SP	FAZ-D3/2-RT	FAZ-D3/3-RT
4	FAZ-D4/1-RT-SP	FAZ-D4/2-RT	FAZ-D4/3-RT
5	FAZ-D5/1-RT-SP	FAZ-D5/2-RT	FAZ-D5/3-RT
6	FAZ-D6/1-RT-SP	FAZ-D6/2-RT	FAZ-D6/3-RT
7	FAZ-D7/1-RT-SP	FAZ-D7/2-RT	FAZ-D7/3-RT
8	FAZ-D8/1-RT-SP	FAZ-D8/2-RT	FAZ-D8/3-RT
10	FAZ-D10/1-RT-SP	FAZ-D10/2-RT	FAZ-D10/3-RT
13	FAZ-D13/1-RT-SP	FAZ-D13/2-RT	FAZ-D13/3-RT
15	FAZ-D15/1-RT-SP	FAZ-D15/2-RT	FAZ-D15/3-RT
16	FAZ-D16/1-RT-SP	FAZ-D16/2-RT	FAZ-D16/3-RT
20	FAZ-D20/1-RT-SP	FAZ-D20/2-RT	FAZ-D20/3-RT
25	FAZ-D25/1-RT-SP	FAZ-D25/2-RT	FAZ-D25/3-RT
30	FAZ-D30/1-RT-SP	FAZ-D30/2-RT	FAZ-D30/3-RT
32	FAZ-D32/1-RT-SP	FAZ-D32/2-RT	FAZ-D32/3-RT
35 ②	FAZ-D35/1-RT-SP	FAZ-D35/2-RT	FAZ-D35/3-RT
40 ②	FAZ-D40/1-RT-SP	FAZ-C40/2-RT	FAZ-D40/3-RT

FAZ-NA-DC UL 489 Circuit Breakers—10 kAIC at 125 Vdc Per Pole

Amperes	Single-Pole ③ Catalog Number	Two-Pole Catalog Number
C Curve (5–10X I_n Current Rating)		
2	FAZ-C2/1-NA-DC-SP	FAZ-C2/2-NA-DC
3	FAZ-C3/1-NA-DC-SP	FAZ-C3/2-NA-DC
4	FAZ-C4/1-NA-DC-SP	FAZ-C4/2-NA-DC
5	FAZ-C5/1-NA-DC-SP	FAZ-C5/2-NA-DC
6	FAZ-C6/1-NA-DC-SP	FAZ-C6/2-NA-DC
7	FAZ-C7/1-NA-DC-SP	FAZ-C7/2-NA-DC
8	FAZ-C8/1-NA-DC-SP	FAZ-C8/2-NA-DC
10	FAZ-C10/1-NA-DC-SP	FAZ-C10/2-NA-DC
13	FAZ-C13/1-NA-DC-SP	FAZ-C13/2-NA-DC
15	FAZ-C15/1-NA-DC-SP	FAZ-C15/2-NA-DC
16	FAZ-C16/1-NA-DC-SP	FAZ-C16/2-NA-DC
20	FAZ-C20/1-NA-DC-SP	FAZ-C20/2-NA-DC
25	FAZ-C25/1-NA-DC-SP	FAZ-C25/2-NA-DC
30	FAZ-C30/1-NA-DC-SP	FAZ-C30/2-NA-DC
32	FAZ-C32/1-NA-DC-SP	FAZ-C32/2-NA-DC
35	FAZ-C35/1-NA-DC-SP	FAZ-C35/2-NA-DC
40	FAZ-C40/1-NA-DC-SP	FAZ-C40/2-NA-DC

Notes

① Option for single packaging on single-pole C and D curves only; add suffix SP when ordering.
② 240 Vac rated only.
③ Option for single packaging on single-pole C curves only; add suffix SP when ordering.

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FAZ UL 1077 Circuit Breakers

Features

- UL 1077 recognized DIN rail mounted supplemental protectors up to 63A
- Current limiting design provides fast short-circuit interruption that reduces let-through energy
- Thermal-magnetic overcurrent protection
  - Three levels of short-circuit protection, categorized by B, C and D curves
- Ideal replacement for fuses that are applied as supplemental protection
- Complete line of accessories

Catalog Number Selection

FAZ UL 1077 Circuit Breakers

FAZ UL 1077

FAZ C 6 / 1 SP

Breaker Family
FAZ = Supplementary protector

Trip Characteristics ①
B = 3–5X I_n
C = 5–10X I_n
D = 10–20X I_n
K = 8–12X I_n
S = 13–17X I_n
Z = 2–3X I_n

Ampere Rating	
0.5 = 0.5A	**13** = 13A
1 = 1A	**15** = 15A
2 = 2A	**16** = 16A
3 = 3A	**20** = 20A
4 = 4A	**25** = 25A
5 = 5A	**30** = 30A
6 = 6A	**32** = 32A
7 = 7A	**40** = 40A
8 = 8A	**50** = 50A
10 = 10A	**63** = 63A

Number of Poles	
1 = Single-pole	**4** = Single-pole
2 = Two-pole	**1N** = Single-pole + neutral
3 = Three-pole	**3N** = Three-pole + neutral

Single Package
SP = Single packaging of single-pole curve B, C and D for select amperes only
Blank = Standard packaging

Note

① I_n = Rated current for instantaneous trip characteristics.

Product Selection

B Curve (3–5X I_n Current Rating)—Designed for Resistive or Slightly Inductive Loads ①

Amperes	Single-Pole ② Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number
1	**FAZ-B1/1-SP**	**FAZ-B1/2**	**FAZ-B1/3**
2	**FAZ-B2/1-SP**	**FAZ-B2/2**	**FAZ-B2/3**
3	**FAZ-B3/1-SP**	**FAZ-B3/2**	**FAZ-B3/3**
4	**FAZ-B4/1-SP**	**FAZ-B4/2**	**FAZ-B4/3**
5	**FAZ-B5/1-SP**	**FAZ-B5/2**	**FAZ-B5/3**
6	**FAZ-B6/1-SP**	**FAZ-B6/2**	**FAZ-B6/3**
7	**FAZ-B7/1-SP**	**FAZ-B7/2**	**FAZ-B7/3**
8	**FAZ-B8/1-SP**	**FAZ-B8/2**	**FAZ-B8/3**
10	**FAZ-B10/1-SP**	**FAZ-B10/2**	**FAZ-B10/3**
12	**FAZ-B12/1-SP**	**FAZ-B12/2**	**FAZ-B12/3**
13	**FAZ-B13/1-SP**	**FAZ-B13/2**	**FAZ-B13/3**
15	**FAZ-B15/1-SP**	**FAZ-B15/2**	**FAZ-B15/3**
16	**FAZ-B16/1-SP**	**FAZ-B16/2**	**FAZ-B16/3**
20	**FAZ-B20/1-SP**	**FAZ-B20/2**	**FAZ-B20/3**
25	**FAZ-B25/1-SP**	**FAZ-B25/2**	**FAZ-B25/3**
30	**FAZ-B30/1-SP**	**FAZ-B30/2**	**FAZ-B30/3**
32	**FAZ-B32/1-SP**	**FAZ-B32/2**	**FAZ-B32/3**
40	**FAZ-B40/1-SP**	**FAZ-B40/2**	**FAZ-B40/3**
50	**FAZ-B50/1-SP**	**FAZ-B50/2**	**FAZ-B50/3**
63	**FAZ-B63/1-SP**	**FAZ-B63/2**	**FAZ-B63/3**

B Curve (3–5X I_n Current Rating)—Designed for Resistive or Slightly Inductive Loads, continued ①

Amperes	Four-Pole	Single-Pole + Neutral	Three-Pole + Neutral
1	**FAZ-B1/4**	**FAZ-B1/1N**	**FAZ-B1/3N**
2	**FAZ-B2/4**	**FAZ-B2/1N**	**FAZ-B2/3N**
3	**FAZ-B3/4**	**FAZ-B3/1N**	**FAZ-B3/3N**
4	**FAZ-B4/4**	**FAZ-B4/1N**	**FAZ-B4/3N**
5	**FAZ-B5/4**	**FAZ-B5/1N**	**FAZ-B5/3N**
6	**FAZ-B6/4**	**FAZ-B6/1N**	**FAZ-B6/3N**
7	**FAZ-B7/4**	**FAZ-B7/1N**	**FAZ-B7/3N**
8	**FAZ-B8/4**	**FAZ-B8/1N**	**FAZ-B8/3N**
10	**FAZ-B10/4**	**FAZ-B10/1N**	**FAZ-B10/3N**
12	**FAZ-B12/4**	**FAZ-B12/1N**	**FAZ-B12/3N**
13	**FAZ-B13/4**	**FAZ-B13/1N**	**FAZ-B13/3N**
15	**FAZ-B15/4**	**FAZ-B15/1N**	**FAZ-B15/3N**
16	**FAZ-B16/4**	**FAZ-B16/1N**	**FAZ-B16/3N**
20	**FAZ-B20/4**	**FAZ-B20/1N**	**FAZ-B20/3N**
25	**FAZ-B25/4**	**FAZ-B25/1N**	**FAZ-B25/3N**
30	**FAZ-B30/4**	**FAZ-B30/1N**	**FAZ-B30/3N**
32	**FAZ-B32/4**	**FAZ-B32/1N**	**FAZ-B32/3N**
40	**FAZ-B40/4**	**FAZ-B40/1N**	**FAZ-B40/3N**
50	**FAZ-B50/4**	**FAZ-B50/1N**	**FAZ-B50/3N**
63	**FAZ-B63/4**	**FAZ-B63/1N**	**FAZ-B63/3N**

Notes

① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.

② Option for single packaging on single-pole B, C and D curves only; add suffix SP when ordering.

C Curve (5–10X I_n Current Rating)—Designed Inductive Loads ①

Amperes	Single-Pole ② Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number
0.5	**FAZ-C0.5/1-SP**	**FAZ-C0.5/2**	**FAZ-C0.5/3**
1	**FAZ-C1/1-SP**	**FAZ-C1/2**	**FAZ-C1/3**
1.6	**FAZ-C1.6/1-SP**	**FAZ-C1.6/2**	**FAZ-C1.6/3**
2	**FAZ-C2/1-SP**	**FAZ-C2/2**	**FAZ-C2/3**
3	**FAZ-C3/1-SP**	**FAZ-C3/2**	**FAZ-C3/3**
4	**FAZ-C4/1-SP**	**FAZ-C4/2**	**FAZ-C4/3**
5	**FAZ-C5/1-SP**	**FAZ-C5/2**	**FAZ-C5/3**
6	**FAZ-C6/1-SP**	**FAZ-C6/2**	**FAZ-C6/3**
7	**FAZ-C7/1-SP**	**FAZ-C7/2**	**FAZ-C7/3**
8	**FAZ-C8/1-SP**	**FAZ-C8/2**	**FAZ-C8/3**
10	**FAZ-C10/1-SP**	**FAZ-C10/2**	**FAZ-C10/3**
13	**FAZ-C13/1-SP**	**FAZ-C13/2**	**FAZ-C13/3**
15	**FAZ-C15/1-SP**	**FAZ-C15/2**	**FAZ-C15/3**
16	**FAZ-C16/1-SP**	**FAZ-C16/2**	**FAZ-C16/3**
20	**FAZ-C20/1-SP**	**FAZ-C20/2**	**FAZ-C20/3**
25	**FAZ-C25/1-SP**	**FAZ-C25/2**	**FAZ-C25/3**
30	**FAZ-C30/1-SP**	**FAZ-C30/2**	**FAZ-C30/3**
32	**FAZ-C32/1-SP**	**FAZ-C32/2**	**FAZ-C32/3**
40	**FAZ-C40/1-SP**	**FAZ-C40/2**	**FAZ-C40/3**
50	**FAZ-C50/1-SP**	**FAZ-C50/2**	**FAZ-C50/3**
63	**FAZ-C63/1-SP**	**FAZ-C63/2**	**FAZ-C63/3**

C Curve (5–10X I_n Current Rating)—Designed Inductive Loads, continued ①

Amperes	Four-Pole	Single-Pole + Neutral	Three-Pole + Neutral
0.5	**FAZ-C0.5/4**	**FAZ-C0.5/1N**	**FAZ-C0.5/3N**
1	**FAZ-C1/4**	**FAZ-C1/1N**	**FAZ-C1/3N**
1.6	**FAZ-C1.6/4**	**FAZ-C1.6/1N**	**FAZ-C1.6/3N**
2	**FAZ-C2/4**	**FAZ-C2/1N**	**FAZ-C2/3N**
3	**FAZ-C3/4**	**FAZ-C3/1N**	**FAZ-C3/3N**
4	**FAZ-C4/4**	**FAZ-C4/1N**	**FAZ-C4/3N**
5	**FAZ-C5/4**	**FAZ-C5/1N**	**FAZ-C5/3N**
6	**FAZ-C6/4**	**FAZ-C6/1N**	**FAZ-C6/3N**
7	**FAZ-C7/4**	**FAZ-C7/1N**	**FAZ-C7/3N**
8	**FAZ-C8/4**	**FAZ-C8/1N**	**FAZ-C8/3N**
10	**FAZ-C10/4**	**FAZ-C10/1N**	**FAZ-C10/3N**
13	**FAZ-C13/4**	**FAZ-C13/1N**	**FAZ-C13/3N**
15	**FAZ-C15/4**	**FAZ-C15/1N**	**FAZ-C15/3N**
16	**FAZ-C16/4**	**FAZ-C16/1N**	**FAZ-C16/3N**
20	**FAZ-C20/4**	**FAZ-C20/1N**	**FAZ-C20/3N**
25	**FAZ-C25/4**	**FAZ-C25/1N**	**FAZ-C25/3N**
30	**FAZ-C30/4**	**FAZ-C30/1N**	**FAZ-C30/3N**
32	**FAZ-C32/4**	**FAZ-C32/1N**	**FAZ-C32/3N**
40	**FAZ-C40/4**	**FAZ-C40/1N**	**FAZ-C40/3N**
50	**FAZ-C50/4**	**FAZ-C50/1N**	**FAZ-C50/3N**
63	**FAZ-C63/4**	**FAZ-C63/1N**	**FAZ-C63/3N**

Notes

① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.

② Option for single packaging on single-pole B, C and D curves only; add suffix SP when ordering.

D Curve (10–20X I_n Current Rating)—Designed for Inductive Loads ①

Amperes	Single-Pole ② Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number
0.5	**FAZ-D0.5/1-SP**	**FAZ-D0.5/2**	**FAZ-D0.5/3**
1	**FAZ-D1/1-SP**	**FAZ-D1/2**	**FAZ-D1/3**
2	**FAZ-D2/1-SP**	**FAZ-D2/2**	**FAZ-D2/3**
3	**FAZ-D3/1-SP**	**FAZ-D3/2**	**FAZ-D3/3**
4	**FAZ-D4/1-SP**	**FAZ-D4/2**	**FAZ-D4/3**
5	**FAZ-D5/1-SP**	**FAZ-D5/2**	**FAZ-D5/3**
6	**FAZ-D6/1-SP**	**FAZ-D6/2**	**FAZ-D6/3**
7	**FAZ-D7/1-SP**	**FAZ-D7/2**	**FAZ-D7/3**
8	**FAZ-D8/1-SP**	**FAZ-D8/2**	**FAZ-D8/3**
10	**FAZ-D10/1-SP**	**FAZ-D10/2**	**FAZ-D10/3**
13	**FAZ-D13/1-SP**	**FAZ-D13/2**	**FAZ-D13/3**
15	**FAZ-D15/1-SP**	**FAZ-D15/2**	**FAZ-D15/3**
16	**FAZ-D16/1-SP**	**FAZ-D16/2**	**FAZ-D16/3**
20	**FAZ-D20/1-SP**	**FAZ-D20/2**	**FAZ-D20/3**
25	**FAZ-D25/1-SP**	**FAZ-D25/2**	**FAZ-D25/3**
30	**FAZ-D30/1-SP**	**FAZ-D30/2**	**FAZ-D30/3**
32	**FAZ-D32/1-SP**	**FAZ-D32/2**	**FAZ-D32/3**
40	**FAZ-D40/1-SP**	**FAZ-D40/2**	**FAZ-D40/3**
50 ③	**FAZ-D50/1-SP**	**FAZ-D50/2**	**FAZ-D50/3**
63 ③	**FAZ-D63/1-SP**	**FAZ-D63/2**	**FAZ-D63/3**

D Curve (10–20X I_n Current Rating)—Designed for Inductive Loads, continued ①

Amperes	Four-Pole	Single-Pole + Neutral	Three-Pole + Neutral
0.5	**FAZ-D0.5/4**	**FAZ-D0.5/1N**	**FAZ-D0.5/3N**
1	**FAZ-D1/4**	**FAZ-D1/1N**	**FAZ-D1/3N**
2	**FAZ-D2/4**	**FAZ-D2/1N**	**FAZ-D2/3N**
3	**FAZ-D3/4**	**FAZ-D3/1N**	**FAZ-D3/3N**
4	**FAZ-D4/4**	**FAZ-D4/1N**	**FAZ-D4/3N**
5	**FAZ-D5/4**	**FAZ-D5/1N**	**FAZ-D5/3N**
6	**FAZ-D6/4**	**FAZ-D6/1N**	**FAZ-D6/3N**
7	**FAZ-D7/4**	**FAZ-D7/1N**	**FAZ-D7/3N**
8	**FAZ-D8/4**	**FAZ-D8/1N**	**FAZ-D8/3N**
10	**FAZ-D10/4**	**FAZ-D10/1N**	**FAZ-D10/3N**
13	**FAZ-D13/4**	**FAZ-D13/1N**	**FAZ-D13/3N**
15	**FAZ-D15/4**	**FAZ-D15/1N**	**FAZ-D15/3N**
16	**FAZ-D16/4**	**FAZ-D16/1N**	**FAZ-D16/3N**
20	**FAZ-D20/4**	**FAZ-D20/1N**	**FAZ-D20/3N**
25	**FAZ-D25/4**	**FAZ-D25/1N**	**FAZ-D25/3N**
30	**FAZ-D30/4**	**FAZ-D30/1N**	**FAZ-D30/3N**
32	**FAZ-D32/4**	**FAZ-D32/1N**	**FAZ-D32/3N**
40	**FAZ-D40/4**	**FAZ-D40/1N**	**FAZ-D40/3N**
50 ③	**FAZ-D50/4**	**FAZ-D50/1N**	**FAZ-D50/3N**
63 ③	**FAZ-D63/4**	**FAZ-D63/1N**	**FAZ-D63/3N**

Notes

① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.

② Option for single packaging on single-pole B, C and D curves only; add suffix SP when ordering.

③ IEC 60947-2 only.

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Accessories

FAZ-NA UL 489 Breakers

Description	Catalog Number
Two-pole contact or auxiliary contact/trip indicating contact	**Z-NHK** ①
Auxiliary contact	**Z-IHK-NA**
Shunt trip 110–415 Vac	**FAZ-XAA-NA110-415VAC**
Shunt trip 12–110 Vac	**FAZ-XAA-NA12-110VAC**
Padlock hasp	**IS/SPE-1TE**
Busbar—single-pole, 6 terminals ②③④⑤	**Z-SV/UL-16/1P-1TE/6**
Busbar—single-pole, 12 terminals ②③④⑤	**Z-SV/UL-16/1P-1TE/12**
Busbar—single-pole, 18 terminals ②③④⑤	**Z-SV/UL-16/1P-1TE/18**
Busbar—two-pole, 6 terminals ②③④⑤	**Z-SV/UL-16/2P-2TE/6**
Busbar—two-pole, 12 terminals ②③④⑤	**Z-SV/UL-16/2P-2TE/12**
Busbar—two-pole, 18 terminals ②③④⑤	**Z-SV/UL-16/2P-2TE/18**
Busbar—three-pole, 6 terminals ②③④⑤	**Z-SV/UL-16/3P-3TE/6**
Busbar—three-pole, 12 terminals ②③④⑤	**Z-SV/UL-16/3P-3TE/12**
Busbar—three-pole, 18 terminals ②③④⑤	**Z-SV/UL-16/3P-3TE/18**
Three-pole busbar shroud	**ZV-BS-UL**
Extension terminal—35 mm^2 (2–14 AWG)	**Z-EK/35/UL**
Bus connector—conductors up to 50 mm^2 (~1/0 AWG)	**Z-EB/50/UL**

FAZ UL 1077 Auxiliary Contacts

Description	Rated Operational Voltage	Catalog Number
Standard Auxiliary Contacts		
1NO/1NC Installs on left side of FAZ or shunt trip Max. one per FAZ (1077) device Switches when FAZ is tripped electrically or manually	230 Vac	**FAZ-XHIN11**
1 changeover contact Installs on left side of FAZ or shunt trip Max. one per FAZ (1077) device Switches when FAZ is tripped electrically or manually	230 Vac	**FAZ-XHINW1**
Auxiliary/Trip Indicating Contact		
Small selector screw changes mode Two Form C (changeover) contacts Installs on left side of FAZ or shunt trip Auxiliary contacts switch when FAZ is tripped electrically or manually Trip indicating contact switches only when FAZ is tripped electrically	230 Vac	**FAZ-XAM002**
Undervoltage Trip		
Prevents FAZ from operating unless voltage is present Installs on left side of FAZ Includes test button	115 Vac	**FAZ-XUA(115VAC)**
	230 Vac	**FAZ-XUA(230VAC)**
	400 Vac	**FAZ-XUA(400VAC)**
Shunt Trip		
Allows remote trip of FAZ Installs on left side of FAZ	12–110 Vac 12–60 Vdc	**FAZ-XAA-C-12-110VAC**
	110–415 Vac 110–230 Vdc	**FAZ-XAA-C-110-415VAC**

FAZ UL 1077 Busbar System

Rated Operational Current	Number of Poles per Device	Number of Terminals	Catalog Number ⑤
Without Auxiliary Contacts			
80A	1	57	**BB-UL-18/1P-1M/57**
	2	56	**BB-UL-18/2P-2M/56**
	3	57	**BB-UL-18/3P-3M/57**
100A	1	57	**BB-UL-25/1P-1M/57**
	2	56	**BB-UL-25/2P-2M/56**
	3	57	**BB-UL-25/3P-3M/57**
Auxiliary/Trip Indicating Contacts			
80A	1	37	**BB-UL-18/1P-1,5M/37**
	2	46	**BB-UL-18/2P+AS-2,5M/46**
	3	48	**BB-UL-18/3P+AS-3,5M/48**
100A	1	37	**BB-UL-25/1P-1,5M/37**
	2	46	**BB-UL-25/2P+AS-2,5M/46**
	3	48	**BB-UL-25/3P+AS-3,5M/48**

Pin Type Incoming Supply Terminals

Description	Catalog Number
Accommodates conductors from 6–35 mm^2/#10–2 AWG 4–5.5 Nm/35–50 lb-in / Two- and three-pole	**BB-UL-TEP/35**

Pin Type Incoming Supply Terminals—Single-Phase Only

Description	Catalog Number
Accommodates conductors from 6–35 mm^2/#10–2 AWG 4–5.5 Nm/35–50 lb-in	**BB-UL-TEPA/35**

Protective Accessories

Description	Catalog Number
For covering unused terminals	**BB-IP/5**
Prevents reactivation of the device during maintenance Holds one padlock	**IS/SPE-1TE**

Bus Incoming Supply Terminals

Description	Catalog Number
50 mm^2 #14–1 AWG 75 Deg wire 115 A/Y, 480V UL 160 A/Y 690V IEC	**BB-UL-TE/50**

Busbar End Cap

Description	Poles	Catalog Number
Install after cutting busbar Protects end of busbar	2 and 3	**BB-UL-EC/3**
	1	**BB-UL-EC/1**

Notes

① Voltage of FAZ-NA circuit breaker is limited to 300V with this auxiliary contact installed.
② Do not cut commoning link.
③ A maximum of three commoning links may be used in conjunction. Each breaker connected to the commoning link must have the same number of poles for proper use.
④ Not for use with ring-tongue circuit breakers.
⑤ Bus may be center fed for high current capacity.

Series NRX Low Voltage Power Breakers

Features

- Rogowski coil does not saturate like iron core sensors, and one sensor accommodates 200–1600A range. Never change a sensor, and NO CTs are required
- Tension clamp secondary terminals—10A continuous rating at 600V meets UL/CSA/RoHS and UL-94 V0. Mounted directly to fixed breaker or drawout cassette they reduce wiring and provide clean, organized wiring schemes
- Breaker mounted communication modules for INCOM™, Modbus® and PROFIBUS® mount directly to the cassette, reducing the space and room required for communication capability
- With the patent pending simple design of the fold-up cassette, all items in a cassette are replaceable without removing the cassette from the cell
- Plug-and-play accessories—no special tools needed. Accessories come with plug and wires ready to install

Series NRX™ Low Voltage Power Breakers

1

Catalog Number Selection

Series NRX Power Breakers (Exclusionary Rules Apply)

N S S6 08 3 W 52 8 A B A N 4 X N D X

Breaker Frame Size
N = Type NF, 630–1600A, (70 mm pole spacing)

Standard, Mechanism, Device
S = UL 1066, stored energy, power breaker
X = UL 489, stored energy, insulated case breaker
E = IEC 60947-2, stored energy, air breaker

Fault Current Rating
S4 = 42 kA at 480 Vac UL or 415 Vac IEC
S5 = 50 kA at 480 Vac UL or 415 Vac IEC
S6 = 65 kA at 480 Vac UL or 415 Vac IEC

Frame Rating (Amperes)

07 = 630 (IEC only)	**12** = 1200 (UL only)
08 = 800	**13** = 1250 (IEC only)
10 = 1000 (IEC only)	**16** = 1600 (On NF: IEC only)

Poles, Phasing
3 = Three-pole, ABC
4 = Four-pole, NABC

Mounting Configuration
W = Drawout
B = Fixed mount rear connect, mounting bracket, with secondary terminal row
R = Fixed mount rear connect, surface mount, with secondary terminal row
T = Fixed mount front connect, surface mount, cable connect, with secondary terminal row
F = Fixed mount front connect, mounting bracket, bus connect, with secondary terminal row
S = Fixed mount front connect, surface mount, bus connect, with secondary terminal row

Trip Unit
52 = 520 LSI, no ZSI
53 = 520 LSI, with ZSI
5G = 520 LSIG, no ZSI
5H = 520 LSIG, with ZSI
M2 = 520M LSI, no ZSI, 24 Vdc
M3 = 520M LSI, with ZSI, 24 Vdc
MA = 520M LSIA, no ZSI, 24 Vdc
MB = 520M LSIA, with ZSI, 24 Vdc
MG = 520M LSIG, no ZSI, 24 Vdc
MH = 520M LSIG, with ZSI, 24 Vdc
R2 = 520M LSI, no ZSI, 24 Vdc, with Arcflash Reduction Maintenance System™
R3 = 520M LSI, with ZSI, 24 Vdc, with Arcflash Reduction Maintenance System
RA = 520M LSIA, no ZSI, 24 Vdc, with Arcflash Reduction Maintenance System
RB = 520M LSIA, with ZSI, 24 Vdc, with Arcflash Reduction Maintenance System
RG = 520M LSIG, no ZSI, 24 Vdc, with Arcflash Reduction Maintenance System
RH = 520M LSIG, with ZSI, 24 Vdc, with Arcflash Reduction Maintenance System
SW = Non-auto switch

Rating Plug (Amperes)

1 = 200	**7** = 630
2 = 250	**8** = 800
3 = 300	**A** = 1000
4 = 400	**B** = 1200
5 = 500	**C** = 1250
6 = 600	**D** = 1600

Shunt Trip ①
N = No shunt trip
A = 110–127 Vac/Vdc
R = 208–240 Vac/Vdc
L = 24 Vdc
H = 48 Vdc

Motor Operator ①
M = Manually operated
B = 110–125 Vac
W = 110–125 Vdc
T = 208–250 Vac
P = 220–250 Vdc
L = 24 Vdc
H = 48 Vdc

Spring Release, Latch Check Switch ①
N = No spring release, no LCS
A = 110–127 Vac/Vdc, no LCS
R = 208–240 Vac/Vdc, no LCS

UVR, Second Shunt Trip ①
N = None
A = 110–125 Vac/Vdc UVR
R = 220–250 Vac/Vdc UVR
1 = 110–127 Vac/Vdc second shunt trip
2 = 208–240 Vac/Vdc second shunt trip

Auxiliary, Switches, Label Language ①
E = No auxiliary switches, no label (parent)
2 = 2 Form C, English
4 = 4 Form C, English

Trip Indicator and Bell Alarm/OTS, Secondary Terminal Blocks ①
N = No indicator, no OTS, secondary terminal blocks per breaker options
X = Trip indicator provided, no OTS, secondary terminal blocks per breaker options
Z = Trip indicator provided, 2 Form C OTS, secondary terminal blocks per breaker options
M = Interlock trip indicator provided, no OTS, secondary terminal blocks per breaker options
Y = Trip indicator provided, 2 Form C OTS, secondary terminal blocks per breaker options
1 = No indicator, no OTS, full complement secondary terminal blocks
2 = Trip indicator, no OTS, full complement secondary terminal blocks
3 = Trip indicator provided, 2 Form C OTS, full complement secondary terminal blocks
4 = Interlock trip indicator provided, no OTS, full complement secondary terminal blocks
5 = Interlock trip indicator provided, 2 Form C, full complement secondary terminal blocks

Padlock Provisions, Key Lock Provisions, Operations Counter ①
N = No PB covers, none, no counter

Drawout Breaker Shipping, Fixed Breaker Terminals, Door Frame Kit
D = Drawout (or parent) breaker shipping alone, without door frame kit
C = Drawout breaker in cassette, no shutters, no terminals, with door frame kit
K = Fixed breaker, no adapters, rear connector, with door frame kit, with mounting feet, with door frame kit
A = Terminal adapters for rear connect, short vertical/horizontal, with door frame kit
E = Terminal adapters for rear connect, long vertical/horizontal, with door frame kit
F = Terminal adapters for rear connect, with mounting feet, short vertical/horizontal, with door frame kit
H = Terminal adapters for rear connect, with mounting feet, long vertical/horizontal, with door frame kit
1 = Drawout breaker in cassette, no shutters, short vertical/horizontal, with door frame kit
2 = Drawout breaker in cassette, no shutters, long vertical/horizontal, with door frame kit
4 = Drawout breaker in cassette, with shutters, short vertical/horizontal, with door frame kit
5 = Drawout breaker in cassette, with shutters, long vertical/horizontal, with door frame kit
9 = Drawout breaker in cassette, with shutters, no terminals, with door frame kit

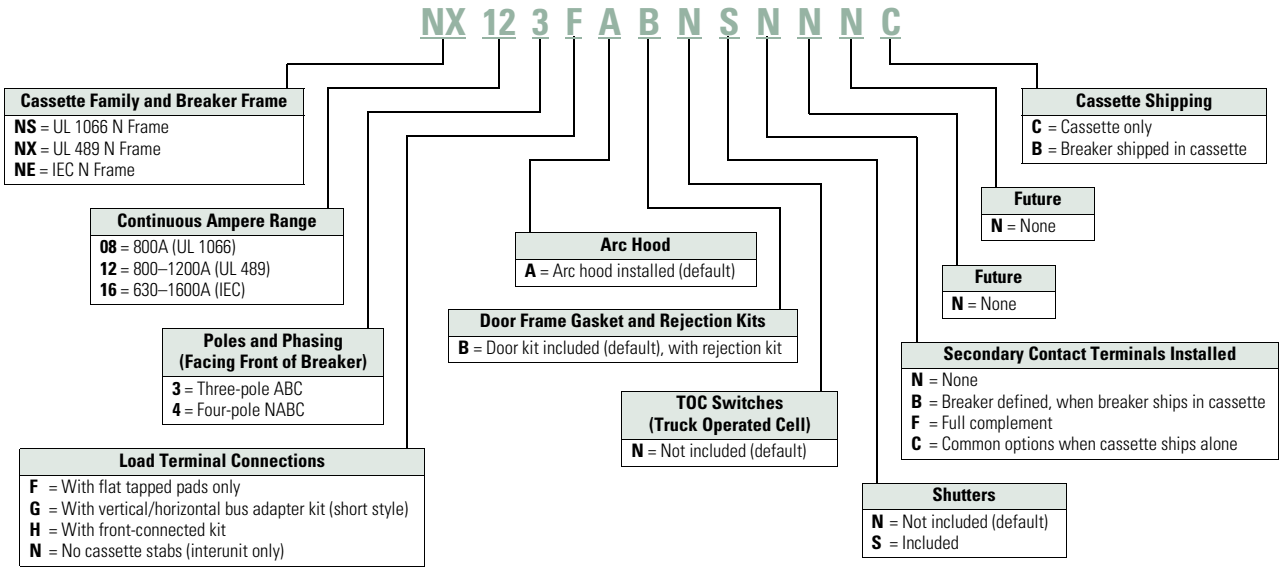
Future Use
X = All product

Note

① Contact Eaton for available voltages. Not all voltages are currently available.

Catalog Number Selection

Series NRX Cassettes



Product Selection

Series NRX Low Voltage Power Breakers

Breaker Frame	Industry Standard	Fault Current Rating (kAIC)	Frame Rating in Amperes	Poles	Mounting	Trip Unit	Rating Plug	Part Number ②
N	UL 1066	42	800	3	Drawout ①	520 LSI (No ZSI)	800	**NSS4083W528**
N	UL 1066	42	800	4	Fixed	520 LSI (No ZSI)	800	**NSS4084B528**
N	UL 1066	50	800	3	Drawout ①	520 LSI (No ZSI)	800	**NSS5083W528**
N	UL 1066	50	800	4	Fixed	520 LSI (No ZSI)	800	**NSS5084B528**
N	UL 1066	65	800	3	Drawout ①	520 LSI (No ZSI)	800	**NSS6083W528**
N	UL 1066	65	800	3	Fixed	520 LSI (No ZSI)	800	**NSS6083B528**
N	UL 1066	65	800	4	Drawout ①	520 LSI (No ZSI)	800	**NSS6084W528**
N	UL 1066	65	800	4	Fixed	520 LSI (No ZSI)	800	**NSS6084B528**
N	UL 489	42	800	3	Drawout ①	520 LSI (No ZSI)	800	**NXS4083W528**
N	UL 489	42	1200	4	Drawout ①	520 LSI (No ZSI)	1200	**NXS4124W52B**
N	UL 489	50	800	3	Fixed	520 LSI (No ZSI)	800	**NXS5083B528**
N	UL 489	50	1200	4	Fixed	520 LSI (No ZSI)	1200	**NXS5124B528**
N	UL 489	65	800	3	Drawout ①	520 LSI (No ZSI)	800	**NXS6083W528**
N	UL 489	65	800	4	Fixed	520 LSI (No ZSI)	800	**NSS6084B528**
N	UL 489	65	1200	3	Drawout ①	520 LSI (No ZSI)	1200	**NXS6123W52B**
N	UL 489	65	1200	4	Fixed	520 LSI (No ZSI)	1200	**NXS6124B52B**
N	IEC	42	630	3	Drawout ①	520 LSI (No ZSI)	630	**NES4073W527**
N	IEC	42	1600	4	Drawout ①	520 LSI (No ZSI)	1600	**NES4164W52D**
N	IEC	50	630	3	Fixed	520 LSI (No ZSI)	630	**NES5073B527**
N	IEC	50	1600	4	Fixed	520 LSI (No ZSI)	1600	**NES5164B52D**
N	IEC	65	630	3	Drawout ①	520 LSI (No ZSI)	630	**NES6073W527**
N	IEC	65	800	4	Fixed	520 LSI (No ZSI)	800	**NES6084B528**
N	IEC	65	1250	3	Fixed	520 LSI (No ZSI)	1250	**NES6133B52C**
N	IEC	65	1600	4	Drawout ①	520 LSI (No ZSI)	1600	**NES6164W52D**

Notes

① See **Page V9-T1-34** for cassette selection for drawout breakers.

② See selection above for accessories in positions 12–20.

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Magnum Low Voltage Power Breakers

Features

- Rated up to 6300A with interrupting ratings up to 200 kAIC and withstand ratings up to 100 kAIC
- Magnum® DS is UL 1066 listed for one-half second short-time withstand rating, and rated for 30 cycles. It is a switchgear class product to meet UL 1558 switchgear standards
- Magnum SB is a UL 1066 listed product with one-half second short-time withstand rating at three cycles to meet switchboard class product specifications, such as UL 891
- Magnum DS MDDX is the highest interrupting performance in a non-current limiting breaker construction rated up to 200 kAIC with 100 kAIC short-time withstand
- The Magnum DS, Magnum SB and Magnum IEC lines all offer the smallest double narrow 4000A frame available

Magnum Low Voltage Power Breakers

Catalog Number Selection

Magnum ANSI/UL Low Voltage Power Breakers

MD S 4 12 3 V E A 06 MU A W C H N E H K L A X

Breaker Type
MD = Magnum DS
SB = Magnum switchboard

Frame Type
S = Standard or double
N = Narrow
D = Double (MDDX only)

Interrupting/ Withstand Rating
4 = 42
5 = 50
6 = 65
8 = 85
C = 100
E = 150 (DSE)
X = 200 (DSX)
L = 200 (DSL)

Continuous Amperes and Phasing (Facing Front of Breaker)
08 = 800 ABC
12 = 1200 ABC
16 = 1600 ABC
20 = 2000 ABC
25 = 2500 ABC
30 = 3000 ABC
32 = 3200 ABC or ABCABC
3N = 3200 AABBCC
4N = 4000 AABBCC
5N = 5000 AABBCC
6N = 6000 AABBCC
40 = 4000 ABCABC
50 = 5000 ABCABC
60 = 6000 ABCABC

Poles and Neutral (Facing Front of Breaker)
3 = Three-pole
4 = Four-pole, neutral left

Mounting Configuration and Load Terminals
H = Fixed horizontal
V = Fixed vertical
L = Drawout (MDN)
W = Drawout (MDS)

Nameplate Language
E = English
A = Spanish

Current Limiter Selection

A = Non-DSL (no limiter)	**H** = MA800
D = MA250	**K** = MB1200
E = MA300	**L** = MB1600
F = MA400	**M** = MB2000
G = MA600	**N** = MD2500
	P = MD3000

Sensor and Rating Plug Rating

NN = None	**13** = 1250
01 = 100	**16** = 1600
02 = 200	**20** = 2000
05 = 250	**25** = 2500
03 = 300	**30** = 3000
04 = 400	**32** = 3200
06 = 600	**40** = 4000
08 = 800	**50** = 5000
10 = 1000	**60** = 6000
12 = 1200	

Trip Unit and Protection (and External Control Voltage When Required)
NN = Non-automatic (no trip unit)
22 = 220 + LI
52 = 520 LSI
5G = 520 LSIG
M2 = 520M LSI
MT = 520M LSI (24/48 Vdc)
MU = 520M LSI (120 Vac)
MV = 520M LSI (240 Vac)
MQ = 520M LSI (125 Vac)
MG = 520M LSIG
MH = 520M LSIG (24/48 Vdc)
MM = 520M LSIG (120 Vac)
MN = 520 LSIG (240 Vac)
MX = 520M LSIG (125 Vac)
ME = 520M LSIA (24/48 Vdc)
MC = 520 LSIA (120 Vac)
MF = 520M LSIA (240 Vac)
MZ = 520M LSIA (125 Vac)
CT = 520MC LSI (24/48 Vdc)
CU = 520MC LSI (120 Vac)
CV = 520MC LSI (240 Vac)
CQ = 520MC LSI (125 Vac)
CH = 520MC LSIG (24/48 Vdc)
CM = 520MC LSIG (120 Vac)
CN = 520MC LSIG (240 Vac)
CX = 520MC LSIG (125 Vac)
CE = 520MC LSIA (24/48 Vdc)
CC = 520MC LSIA (120 Vac)
CF = 520MC LSIA (240 Vac)
CY = 520MC LSIA (125 Vac)
1A = 1150 LSI (24/48 Vdc)
1C = 1150 LSI (120 Vac)
1E = 1150 LSI (240 Vac)
1Q = 1150 LSI (125 Vac)
1F = 1150 LSIG (24/48 Vdc)
1G = 1150 LSIG (120 Vac)
1H = 1150 LSIG (240 Vac)
1X = 1150 LSIG (125 Vac)
1J = 1150 LSIA (24/48 Vdc)
1K = 1150 LSIA (120 Vac)
1M = 1150 LSIA (240 Vac)
1Y = 1150 LSIA (125 Vac)

Shunt Trip (ST)
N = None
A = 110–127 Vac/Vdc
R = 208–240 Vac/Vdc
C = 24 Vdc
H = 48 Vdc

Motor Operator
M = Manual operated
N = 110–125 Vac
W = 110–125 Vdc
T = 220–250 Vdc
P = 220–240 Vac
L = 24 Vdc
K = 48 Vdc

Spring Release Device (SRD)
N = None
A = 110–127 Vac/Vdc
R = 208–240 Vac/Vdc
C = 24 Vdc
H = 48 Vdc

Undervoltage Release (UVR) or 2nd Shunt Trip (ST)
N = None
A = UVR (110–127 Vac)
R = UVR (208–240 Vac)
C = UVR (24 Vdc)
H = UVR (48 Vdc)
E = UVR (110–125 Vdc)
F = UVR (220–250 Vdc)
J = UVR (480 Vac)
K = UVR (600 Vac)
1 = 2nd ST (110–127 Vac/Vdc)
2 = 2nd ST (208–240 Vac/Vdc)
3 = 2nd ST (24 Vdc)
4 = 2nd ST (48 Vdc)

Auxiliary Switch
N = None
2 = 2A/2B
4 = 4A/4B
6 = 6A/6B

Bell Alarms Switch (OTS) with 2a/2b Contacts and/or Mechanical Trip Indicator

	OTS 2a/2b	Trip Indicator
E =	No OTS	No indicator
N =	No OTS	With indicator
Y =	With OTS	With indicator

Frame Use
X = All breakers

Breaker Shipping Options and Instructions
A = Fixed breaker alone with door kit
F = Fixed breaker alone without door kit
A = Drawout breaker alone without door frame kit
C = Drawout breaker in cassette (unwired)
P = Drawout breaker in cassette (prewired)
S = Drawout breaker in cassette (shutters)
W = Drawout breaker in cassette (prewired and shutters)
Double frame drawout breakers ship without cassette drawout. ACBs ship in narrow and universal cassettes only.

Latch Check Switch/Trip Unit Metering Voltage Connection for Digitrip 1150 Trip Unit

	Latch Check Switch	1150 Voltage Connection
N =	None	Upper terminals
M =	None	Lower terminals
L =	LCS wired to SRD	Upper terminals
Y =	LCS wired to SRD	Lower terminals
C =	LCS wired external	Upper terminals
D =	LCS wired external	Lower terminals

Operations Counter and/or Keylock Provisions

	Counter	Keylock Provisions
N =	No counter	No lock
K =	No counter	Kirk lock
C =	No counter	Castell lock
R =	No counter	Ronis lock
A =	Counter	No lock
Y =	Counter	Kirk lock
L =	Counter	Castell lock
H =	Counter	Ronis lock

Padlock Provisions for Blocking Close and/or Open ACB Manual Pushbuttons
N = None
M = Metal (block close and open)
P = Plastic (block close and open)
C = Metal (block close only)
H = Plastic (block close only)
S = Metal swbd lock-off (block close, depress open)

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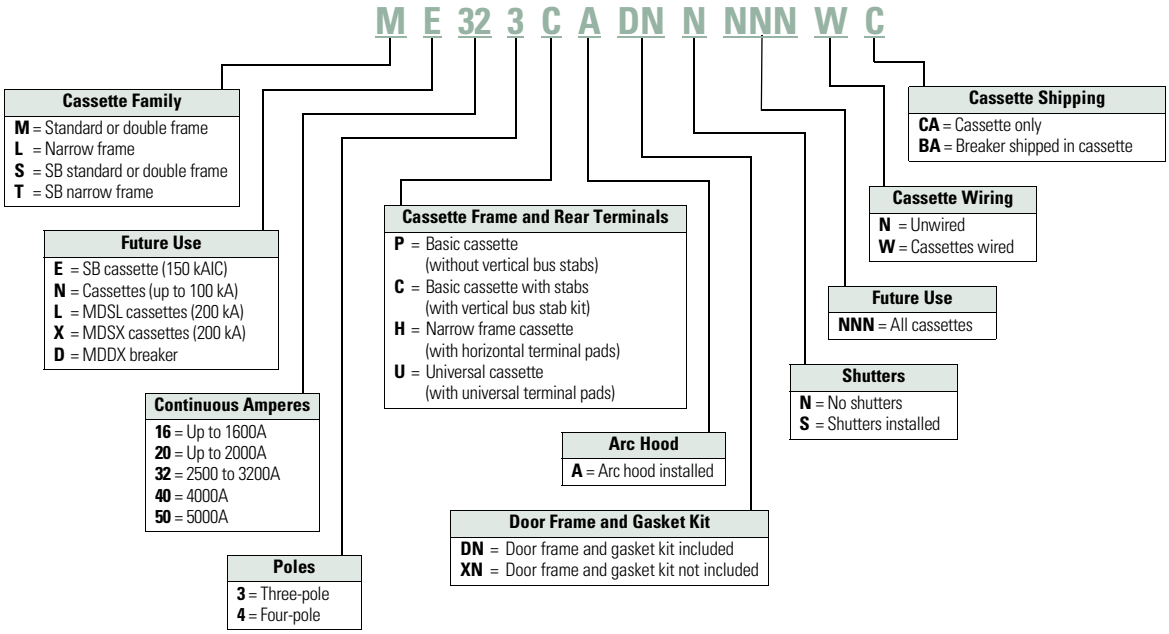
Magnum ANSI/UL Low Voltage Air Circuit Breaker Cassettes



Magnum IEC Low Voltage Air Circuit Breakers

MW I 4 08 3 H E A – 02 22 A M A A 2 E M K L A X

Breaker Frame
- **I** = Standard or double
- **N** = Narrow
- **K** = Special 1100 Vac ACB

Interrupting I_{CU}
- **4** = 40 kA
- **5** = 50 kA
- **6** = 65 kA
- **8** = 85 kA
- **C** = 100 kA
- **2** = 25 kA (1100 Vac MWK)

Continuous Amperes and Phasing (Facing Front of Breaker)
- **08** = 800 ABC
- **10** = 1000 ABC
- **12** = 1250 ABC
- **16** = 1600 ABC
- **20** = 2000 ABC
- **25** = 2500 ABC
- **32** = 3200 ABC
- **4N** = 4000 AABBCC
- **5N** = 5000 AABBCC
- **6N** = 6300 AABBCC
- **40** = 4000 ABCABC
- **50** = 5000 ABCABC
- **60** = 6300 ABCABC

Poles and Neutral (Facing Front of Breaker)
- **3** = Three
- **4** = Four (neutral left)
- **R** = Four (reserved for neutral right)

Mounting Configuration and Load Terminals
- **H** = Fixed horizontal
- **V** = Fixed vertical
- **L** = Drawout horizontal

Nameplate Language
- **E** = English
- **A** = Spanish

Sensor and Rating Plug Rating

NN = None	**13** = 1250
02 = 200	**16** = 1600
05 = 250	**20** = 2000
03 = 300	**25** = 2500
04 = 400	**30** = 3000
06 = 600	**32** = 3200
07 = 630	**40** = 4000
08 = 800	**50** = 5000
10 = 1000	**63** = 6300
12 = 1200	

Trip Unit Protection, (and External Control Voltage When Required)
- **NN** = Non-automatic (no trip unit)
- **22** = 220 LI
- **52** = 520 LSI
- **5W** = 520i LSIG
- **M2** = 520M LSI
- **MT** = 520M LSI (24–48 Vdc)
- **MU** = 520M LSI (120 Vac)
- **MV** = 520M LSI (240 Vac)
- **MW** = 520Mi LSIG
- **MJ** = 520Mi LSIG (24–48 Vdc)
- **MK** = 520Mi LSIG (120 Vac)
- **ML** = 520Mi LSIG (240 Vac)
- **ME** = 520M LSIA (24–48 Vdc)
- **MC** = 520M LSIA (120 Vac)
- **MF** = 520M LSIA (240 Vac)
- **CT** = 520MC LSI
- **CU** = 520MC LSI
- **CV** = 520MC LSI
- **CE** = 520MC LSIA
- **CC** = 520MC LSIA
- **CF** = 520MC LSIA
- **CJ** = 520MCi LSIG
- **CK** = 520MCi LSIG
- **CL** = 520MCi LSIG
- **1W** = 1150i LSI (24–48 Vdc)
- **1N** = 1150i LSI (120 Vac)
- **1P** = 1150i LSI (240 Vac)
- **1R** = 1150i LSIG/A (24–48 Vdc)
- **1S** = 1150i LSIG/A (120 Vac)
- **1T** = 1150i LSIG/A (240 Vac)

Auxiliary Switch
- **N** = None
- **2** = 2A/2B
- **4** = 4A/4B
- **6** = 6A/6B

Undervoltage Release (UVR) or 2nd Shunt Trip Attachment (STA)
- **N** = None
- **A** = 110–127 Vac
- **R** = 208–240 Vac
- **C** = 24 Vdc
- **H** = 48 Vdc
- **E** = 110–125 Vdc
- **F** = 220–250 Vdc
- **G** = 32 Vdc
- **X** = 380–415 Vac
- **J** = 480 Vac
- **K** = 600 Vac
- **1** = 2nd STA (110–127 Vac/Vdc)
- **2** = 2nd STA (208–250 Vac/Vdc)
- **3** = 2nd STA (24 Vdc)
- **4** = 2nd STA (48 Vdc)

Spring Release Device (SRD)
- **N** = None
- **A** = 110–127 Vac/Vdc
- **R** = 208–240 Vac/Vdc
- **C** = 24 Vdc
- **H** = 48 Vdc

Motor Operator
- **M** = Manual operated
- **N** = 110–125 Vac
- **W** = 110–125 Vdc
- **T** = 220–250 Vdc
- **P** = 220–250 Vac
- **L** = 24 Vdc
- **K** = 48 Vdc

Shunt Trip Attachment (STA)
- **N** = None
- **A** = 110–127 Vac
- **R** = 208–240 Vac
- **C** = 24 Vdc
- **H** = 48 Vdc

Future Use
- **X** = All ACBs

ACB Shipping Instructions
- **A** = Fixed ACB with door kit
- **F** = Fixed ACB without door kit
- **A** = D/O ACB only without door kit
- **C** = D/O ACB in cassette (unwired)
- **P** = D/O ACB in cassette (prewired)
- **S** = D/O ACB in cassette (shutters)
- **W** = D/O ACB in cassette (prewired and shutters)

Double frame D/O ACBs ship without cassette

Latch Checking Switch/Trip Unit Metering Voltage Connection for Digitrip 1150 Trip Unit

	Latch Check Switch	1150 Voltage Connection
N =	None	Upper terminals
M =	None	Lower terminals
L =	LCS wired to SRD	Upper terminals
Y =	LCS wired to SRD	Lower terminals
C =	LCS wired external	Upper terminals
D =	LCS wired external	Lower terminals

Operations Counter and/or Keylock Provisions

	Counter	Keylock Provisions
N =	No counter	No lock
K =	No counter	Kirk lock
C =	No counter	Castell lock
R =	No counter	Ronis lock
A =	Counter	No lock
T =	Counter	Kirk lock
L =	Counter	Castell lock
H =	Counter	Ronis lock

Padlock Provisions for Blocking Close and/or Open ACB Manual Pushbuttons
- **N** = None
- **M** = Metal (block close and open)
- **P** = Plastic (block close and open)
- **C** = Metal (block close only)
- **H** = Plastic (block close only)

Bell Alarms Switch (OTS) with 2a/2b Contacts and/or Mechanical Trip Indicator

	OTS 2a/2b	Trip Indicator
E =	No OTS	No indicator
N =	No OTS	With indicator
Y =	With OT	With indicator

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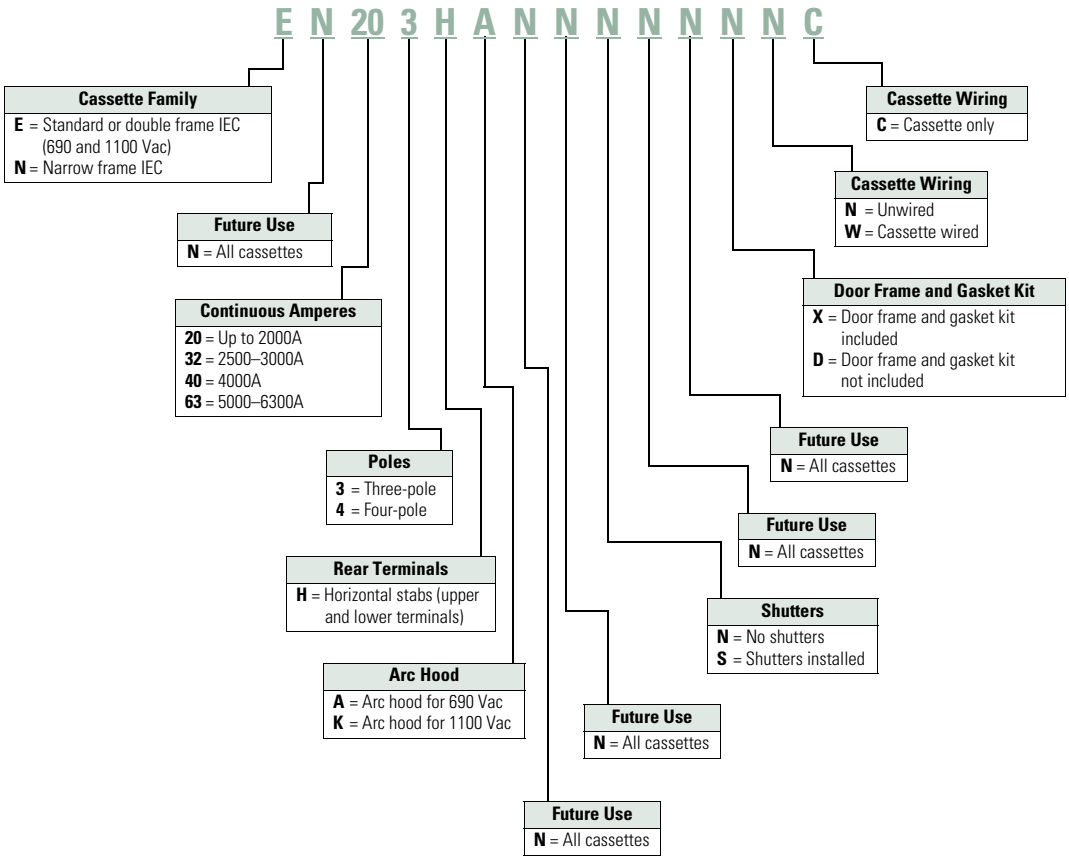
Magnum IEC Low Voltage Air Circuit Breaker Cassettes



Product Selection

Magnum DS Switchgear Class UL 1066 Low Voltage Power Circuit Breakers

Frame Type	RMS Symmetrical Current Ratings kA 50/60 Hz ① Interrupting at 254 Vac	Interrupting at 508 Vac	Interrupting at 635 Vac	Short Time Current Rating	Frame Amperes	Breaker Type ②
Narrow	42	42	42	42	800	**MDN-408**
	50	50	50	50		**MDN-508**
	65	65	65	65		**MDN-608**
	100	100	65	20		**MDN-C08**
Standard	42	42	42	42	800	**MDS-408**
	65	65	65	65		**MDS-608**
	85	85	85	85		**MDS-808**
	100	100	100	85		**MDS-C08**
	200	200	200	—		**MDS-L08** ③
	200	200	④	30		**MDS-X08** ⑤⑥
Narrow	42	42	42	42	1600	**MDN-416**
	50	50	50	50		**MDN-516**
	65	65	65	65		**MDN-616**
	100	100	65	30		**MDN-C16**
Standard	65	65	65	65	1600	**MDS-616**
	85	85	85	85		**MDS-816**
	100	100	100	85		**MDS-C16**
	200	200	200	—		**MDS-L16** ③
	200	200	④	30		**MDS-X16** ⑤
Narrow	65	65	65	65	2000	**MDN-620**
	100	100	65	35		**MDN-C20**
Standard	65	65	65	65	2000	**MDS-620**
	85	85	85	85		**MDS-820**
	100	100	100	85		**MDS-C20**
	200	200	200	—		**MDS-L20** ③
	200	200	④	30		**MDS-X20** ⑤
	65	65	65	65	3200	**MDS-632**
	85	85	85	85		**MDS-832**
	100	100	100	85		**MDS-C32**
Double	200	200	④	50	3200	**MDS-X32** ⑤
Double (N)	85	85	④	85	4000	**MDN-840**
	100	100	④	100		**MDN-C40**
Double	85	85	85	85	4000	**MDS-840**
	100	100	100	100		**MDS-C40**
	200	200	④	50		**MDS-X40** ⑤
	200	200	④	100	4000	**MDD-X40**
	85	85	85	85	5000	**MDS-850**
	100	100	100	100		**MDS-C50**
	200	200	④	50		**MDS-X50** ⑤⑦
	200	200	④	100		**MDD-X50**
	100	100	100	100	6000	**MDS-C60** ⑦
	200	200	④	100		**MDD-X60**

Notes

① Interrupting ratings shown based on breaker equipped with integral Digitrip RMS trip unit. Interruption ratings for non-automatic breakers are equal to the published short time current rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

② See **Page V9-T1-40** for selection of trip unit and accessories. See **Page V9-T1-40** for cassette selection for drawout breakers.

③ Magnum MDSL current limiting power circuit breaker with integral current limiters. Current limiter selected determines short time and maximum instantaneous trip rating. Maximum voltage rating is 600 Vac.

④ Product to be tested. Contact Eaton for product rating.

⑤ Magnum MDSX current limiting power circuit breaker with fast opening contacts.

⑥ Contact Eaton for availability.

⑦ Breaker applied in a tested fan-cooled enclosure.

Magnum SB Switchboard Class UL 1066 Insulated Case Low Voltage Power Circuit Breakers

Frame Type	RMS Symmetrical Current Ratings kA 50/60 Hz ① Interrupting at 254 Vac	Interrupting at 508 Vac	Interrupting at 635 Vac	Short Time Current Rating	Frame Amperes	Breaker Type ②
Narrow	50	50	35	20	800	**SBN-508**
	65	65	42	20		**SBN-608**
	100	100	65	20		**SBN-C08**
Standard	65	65	65	20	800	**SBS-608**
	100	100	85	20		**SBS-C08**
	200	150	②	30		**SBS-E08** ③
Narrow	50	50	35	25	1200	**SBN-512**
	65	65	42	25		**SBN-612**
	100	100	65	25		**SBN-C12**
Standard	65	65	65	25	1200	**SBS-612**
	100	100	85	25		**SBS-C12**
	200	150	②	30		**SBS-E12** ③
Narrow	50	50	35	30	1600	**SBN-516**
	65	65	42	30		**SBN-616**
	100	100	65	30		**SBN-C16**
Standard	65	65	65	30	1600	**SBS-616**
	100	100	85	30		**SBS-C16**
	200	150	②	30		**SBS-E16** ③
Narrow	65	65	65	35	2000	**SBN-620**
	100	100	65	35		**SBN-C20**
Standard	65	65	65	35	2000	**SBS-620**
	100	100	85	35		**SBS-C20**
	200	150	②	30		**SBS-E20** ③
	65	65	65	45	2500	**SBS-625**
	100	100	85	45		**SBS-C25**
Double	200	150	②	50		**SBS-E25** ③
Standard	65	65	65	50	3000	**SBS-630**
	100	100	85	50		**SBS-C30**
Double	200	150	②	50		**SBS-E30** ③
Double (N)	85	85	③	85	4000	**SBN-840**
	100	100	③	100		**SBN-C40**
Double	85	85	85	85		**SBS-840**
	100	100	100	100		**SBS-C40**
	200	150	②	50		**SBS-E40** ③
	85	85	85	85	5000	**SBS-850**
	100	100	100	100		**SBS-C50**
	200	150	②	50		**SBS-E50** ③④
	100	100	100	100	6000	**SBS-C60** ④

Notes

① Interrupting ratings shown based on breaker equipped with integral Digitrip RMS trip unit. Interruption ratings for non-automatic breakers are equal to the published short time current rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

② Product to be tested. Contact Eaton for product rating.

③ Magnum SBSE current limiting power circuit breaker with fast opening contacts.

④ Breaker applied in a tested fan-cooled enclosure.

Magnum IEC 60947-2 Rated Low Voltage Air Circuit Breakers

Frame Amperes	Breaker Type	Frame Type	rms Symmetrical Current Ratings kA ① Interrupting at 240 Vac $I_{CU} = I_{CS}$	Interrupting at 440 Vac $I_{CU} = I_{CS}$	Interrupting at 690 Vac $I_{CU} = I_{CS}$	Withstand Rating I_{CW} 1-Sec/3-Sec	Fixed Internal Inst. Trip	Available Current Sensor and Rating Plugs for Digitrip RMS Trip Unit (Establishes Breaker I_n Rating)
800	MWN-408	Narrow	40	40	40	40/—	—	200, 250, 300, 400, 630, 800
	MWN-508	Narrow	50	50	50	50/—	—	
	MWN-608	Narrow	65	65	65	65/40	—	
	MWI-608	Standard	65	65	65	65/—	—	
	MWI-808	Standard	85	85	85	85/65	—	
	MWI-C08	Standard	100	100	85	85/65	85	
1000	MWN-410	Narrow	40	40	40	40/—	—	200, 250, 300, 400, 630, 800, 1000
	MWN-510	Narrow	50	50	50	50/—	—	
	MWN-610	Narrow	65	65	65	65/40	—	
	MWI-610	Standard	65	65	65	65/—	—	
	MWI-810	Standard	85	85	85	85/65	—	
	MWI-C10	Standard	100	100	85	85/65	85	
1250	MWN-412	Narrow	40	40	40	40/—	—	200, 250, 300, 400, 630, 800, 1000, 1250
	MWN-512	Narrow	50	50	50	50/—	—	
	MWN-612	Narrow	65	65	65	65/40	—	
	MWI-612	Standard	65	65	65	65/—	—	
	MWI-812	Standard	85	85	85	85/65	—	
	MWI-C12	Standard	100	100	85	85/65	85	
1600	MWN-516	Narrow	50	50	50	50/—	—	200, 250, 300, 400, 630, 800, 1000, 1250, 1600
	MWN-616	Narrow	65	65	65	65/40	—	
	MWI-616	Standard	65	65	65	65/—	—	
	MWI-816	Standard	85	85	85	85/65	—	
	MWI-C16	Standard	100	100	85	85/65	85	
2000	MWN-520	Narrow	50	50	50	50/30	—	200, 250, 300, 400, 630, 800, 1000, 1250, 1600, 2000
	MWN-620	Narrow	65	65	65	65/40	—	
	MWI-620	Standard	65	65	65	65/50	—	
	MWI-820	Standard	85	85	85	85/65	—	
	MWI-C20	Standard	100	100	85	85/65	85	
2500	MWI-625	Standard	65	65	65	65/—	—	200, 250, 300, 400, 630, 800, 1000, 1250, 1600, 2000, 2500
	MWI-825	Standard	85	85	85	85/65	—	
	MWI-C25	Standard	100	100	85	85/65	85	
3200	MWI-632	Standard	65	65	65	65/50	—	200, 250, 300, 400, 630, 800, 1000, 1250, 1600, 2000, 2500, 3200
	MWI-832	Standard	85	85	85	85/65	—	
	MWI-C32	Standard	100	100	85	85/65	85	
4000	MWI-64N	Double	65	65	65	65/—	—	2000, 2500, 3200, 4000
	MWI-84N	Double	85	85	85	85/—	—	
	MWI-C4N	Double	100	100	100	100/—	—	
5000	MWI-85N	Double	85	85	85	85/—	—	2500, 3200, 4000, 5000
	MWI-C5N	Double	100	100	100	100/—	—	
6300	MWI-86N	Double	85	85	85	85/—	—	3200, 4000, 5000, 6300
	MWI-C6N	Double	100	100	100	100/—	—	

Note

① Interrupting ratings shown based on breaker equipped with integral Digitrip RMS trip unit. Interruption ratings for non-automatic breakers are equal to the published breaker I_{cw} rating.

1

Product Overview

Fuse Blocks and Fuse Holders

Description	C350 Series
	Page V9-T1-45
Technical Data	
Number of poles	Up to 3
Mounting	35 mm flat or 32 mm asymmetrical DIN rail (with optional adapter)
Terminal ratings	600V, 30A
Housing construction	Thermoplastic UL 94VO flammability rating
Clip/terminal construction	Tin-plated copper alloy
Screw/pressure plate construction	Zinc-plated steel
Dielectric strength	1200V
Approvals	
	UL, CSA

For our complete product offering, see Volume 4—Circuit Protection, CA08100005E.

C350 Series Fuse Blocks and Fuse Holders

Features

- Space-saving design
- Rated 600V, 30A
- UL approved for motor loads

Product Selection

C350 Series

Fuse Blocks and Fuse Holders

Wire Termination	Number of Poles	250V 30A Catalog Number	Carton Qty.	60A Catalog Number	Carton Qty.	600V 30A Catalog Number	Carton Qty.	60A Catalog Number	Carton Qty.
Class H Fuse Holders									
Single collar (box lug)—sized to ampere rating	1	**W231HA**	10	**W261HA**	10	**W631HA**	10	**W661HA**	1
	2	**W232HA**	5	**W262HA**	5	**W632HA**	5	**W662HA**	1
	3	**W233HA**	5	**W263HA**	5	**W633HA**	1	**W663HA**	2
Class M Fuse Holders									
Combination of double quick-connect, 20A max., and binding head screw, #10 max., Cu/Al	1	—	—	—	—	**WM631F**	10	—	—
	2	—	—	—	—	**WM632F**	8	—	—
	3	—	—	—	—	**WM633F**	6	—	—
Combination of double quick-connect, 20A max., and pressure plate screw, #10 max., Cu only	1	—	—	—	—	**WM631G**	10	—	—
	2	—	—	—	—	**WM632G**	8	—	—
	3	—	—	—	—	**WM633G**	6	—	—
Class R Fuse Holders									
Single collar (box lug)—sized to ampere rating	1	**WR231HA**	10	—	—	**WR631HA**	10	—	—
	2	—	—	—	—	**WR632HA**	5	—	—
	3	**WR233HA**	5	**WR263HA**	1	**WR633HA**	5	**WR663HA**	5
Combination of double quick-connect, 20A max., and binding head screw, #10 max., Cu/Al	1	—	—	—	—	—	—	—	—
	2	—	—	—	—	**WMR632F**	1	—	—
	3	—	—	—	—	**WMR633F**	6	—	—
Combination of double quick-connect, 20A max., and pressure plate screw, #10 max., Cu only	1	—	—	—	—	**WMR631G**	10	—	—
	3	—	—	—	—	**WMR633G**	6	—	—
Class R Fuse Holder, Type WRR Control Transformer Fuse Block									
Combination of double quick-connect, 20A max., and pressure plate screw, #14–#10 Cu only	3	—	—	—	—	**WRR633G**	6	—	—

1

Rotary Disconnects

Contents

Introduction

UL/CSA Standards for Disconnect Switches

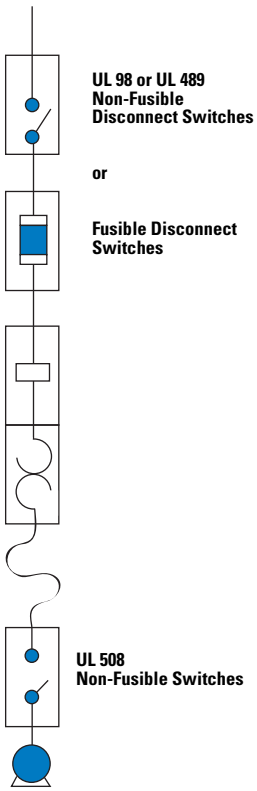
UL® 98—Enclosed and Deadfront Switches (CSA® C22.2 No. 4)

These requirements cover enclosed or deadfront switches, with or without provision for fuses, at 600 V or less. These products are used as disconnecting means without restrictions; they are heavy-duty products requiring 2.00 inches (50.0 mm) minimum of creepage distance between phases, which gives maximum safety for users and installation. The short-circuit withstand of those products goes up to 200 kA.

UL 489—Molded Case Switches (CSA C22.22 No. 5)

These requirements cover molded case circuit breakers, molded case switches and fused molded case switches, rated at 600 V or less and 6000 A or less.

Typical Control Panel



UL Standards for Electrical Machinery

UL 508—Industrial Control Equipment (CSA C22.2 No. 14)

These requirements cover manual, magnetic and solid-state starters and controllers, overload relays, pushbuttons, selector switches and control lights.

These products are smaller, requiring only a creepage distance between phases of 0.50 inch (12.7 mm). Their use as a disconnecting means is limited to local disconnection of motors. These products can be used as a disconnect means only when they have been additionally tested "suitable as motor disconnect." This additional testing ensures that the switch has a proper closing capacity on a short circuit. UL 508 devices cannot be used as main disconnect of an electrical panel, for example, at the entrance of control panels.

A manual motor controller marked "suitable as motor disconnect" shall be installed only on the load side of the branch circuit protective device [UL 508A 30.33 and NEC® 430.109 (6)].

NFPA 79 Electrical Standard for Industrial Machinery

The following types of machines are identified as industrial machinery:

- Metalworking machine tools, including machines that cut or form metal
- Plastics machinery
- Wood machinery, including woodworking, laminating and sawmill machines
- Assembly machines
- Material handling machines, including industrial robots and transfer machines
- Inspection and testing machines, including coordinate measuring and in-process gauging machines

Eaton Solutions for UL 508A and NFPA 79

The changes in UL 508A and NFPA® 79 impact the design and construction of your equipment. Important modifications concern major safety issues, the disconnect means and the interlocking of the enclosure door.

The disconnect shall be operable independent of the door position.

The disconnect must be operable, by qualified persons, independent of the door position without the use of accessory tools or devices.

Note: NFPA 79; Paragraph 5.3.3.1 (5) T.

An operating mechanism for the disconnecting means shall be operable independent of the door position without the use of accessory tools or devices.

Note: UL 508A; Paragraph 66.6.3 c.

Operable independent of the position of the door

Door closed: Operation with the external handle through the door.

Door open: A robust optional kit with a handle directly fitted on the shaft of the switch allows the operation when the door is open.

The disconnect means is not closable with the enclosure door open, unless an interlock is operated by deliberate action.

The interlocking means shall fulfill the following requirement: Prevent closing of the disconnect means while the enclosure door is open, unless an interlock is operated by deliberate action.

Note: NFPA 79; Paragraph 6.2.3.1.2.

The disconnecting means is not closable with the enclosure door open, unless an interlock is operated by deliberate action.

Note: UL 508A; Paragraph 66.1.5.

Operated by a deliberate action

① Push

Door open: It is necessary to push the handle from OFF to ON. This deliberate action permits the operator to turn and switch ON. This action is necessary as in most cases there is no padlock on the switch when somebody opens the door of an enclosure.

② Turn

ON to OFF action permits the operator to turn and switch ON. That is a major safety issue; switching ON directly without any other action is extremely dangerous. The use of a padlock does not comply with the request of the standard; when the panel door is opened, there is generally no padlock, and anybody can turn the switch ON.

1

The disconnect means shall be able to be locked in the OPEN position independent of the door position.

The circuit disconnecting device shall be provided with a permanent means, permitting it to be locked in the OFF position only independent of the door position. When locked, remote as well as local closing shall be prevented.

Note: NFPA 79; Paragraph 5.3.3.1 (3).

An operating mechanism for the disconnecting means shall be able to be locked in the OFF position independent of the door position. When locked, closing of the disconnect is not possible.

Note: UL 508A; Paragraph 66.6.3 d.

Locked in the open position independent of the door position

Door close: The external through-the-door handle is padlocked when locked closing of the disconnect is not possible.

Door open: A strong metallic padlock kit allows up to three padlocks. The padlocking means is easily accessible, when locked closing of the disconnect is not possible.

The interlocking of the enclosure door shall be provided with means to defeat the interlock without removing the power.

The interlocking means required by 66.1.5 shall be provided with all of the following:

- Means to defeat the interlock without removing power, and requires the use of a tool to operate
- Reactivated automatically when all the doors are closed

Note: Added 66.1.5.1 effective March 1, 2007. UL 508A; Paragraph 66.1.5.1.

NFPA 79; Paragraph 6.2.3.1.2 states that the [enclosure] interlocking means shall meet the following requirements:

- Use a device or tool to allow qualified persons to defeat the interlock
- Be reactivated automatically when the door is closed

Defeat the interlock without removing the power

A tool allows defeat of the interlock without removing power. The interlocking is reactivated automatically when the door is closed.

R5 Series Non-Fusible 16–100 A

Contents

R5 Series Non-Fusible 16–100 A

Product Description

R5 Series (UL 508 listed) products are manually operated modular switches. Load break switching and isolation provide safety solutions for any low-voltage circuit, particularly for machine and control circuits. The R5 Series products are manual motor controllers suitable as motor disconnect.

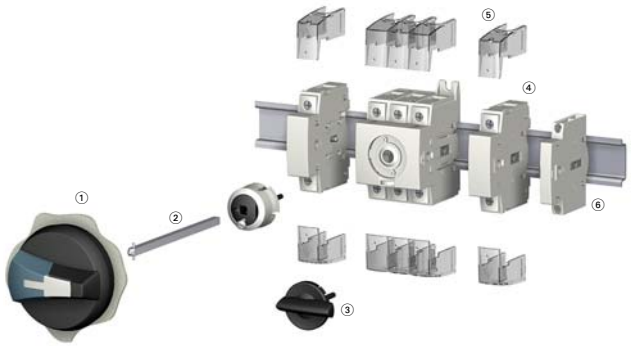
Features, Benefits and Functions

- Up to 65 kAIC short-circuit rating
- Direct or external operation
- Compact footprint
- DIN rail or base mount
- Wide range of accessories
- Up to eight-pole or four-pole MTS
- Open and enclosed devices
- Modular design
- Integrated terminals for additional safety
- Padlockable design (direct, toggle and external handles)
- Product can be reverse fed

Standards and Certifications

Conformity to Standards

- UL 508 listed, Guide NLRV, File E165150
- CSA C22.2 No.14, File 217736
- IEC 60947-3, EN 60947-3
- CCC
- CE



Product Identification

① External front handle
② Shaft extension for external handle
③ Direct handle
④ Switched fourth-pole module
⑤ Terminal shroud
⑥ Auxiliary contacts

Note: For further details, please see the installation instructions supplied with each device.

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Product Selection

Direct Operation

Switch body + Direct handle

External Operation

Switch body + Shaft + External handle

R5 Series







Ampere Rating	Three-Pole Toggle Switch Only ①	Three-Pole Rotary Switch Only	Direct Handle	Front and Right External Handle SH00 (Choose one)	Front and Right External Handle SH0 (Choose one)	Three-Position Front External Handle SH00 (Black) ②	Front and Right External Handle SH1 (Choose one)	Shaft for SH0 and SH00—5 x 5 mm— In (mm)	Shaft for SH1—5 x 5 mm— In (mm)
16	—	**R5A3016U**	**DHR5**	SH00 Black 3R, 12 **SHB00N12**	SH0 Black 3R, 12 **SHB0N12**	SH00 4, 4X I–0–II Open transition **SHB00MTSOT**	SH1 Black 4, 4X **SHB1N4X**	2.20 (55.5) **SF55SH5X5**	7.90 (200.0) **SF200SH5X5SH1**
25	—	**R5A3025U**							
30	**T5A3030U**	**R5A3030U**						3.50 (90.0) **SF90SH5X5**	12.60 (320.0) **SF320SH5X5SH1**
40	**T5A3040U**	**R5A3040U**		SH00 Red 3R, 12 **SHR00N12**	SH0 Red 3R, 12 **SHR0N12**		SH1 Red 4, 4X **SHR1N4X**	5.90 (150.0) **SF150SH5X5**	15.70 (400.0) **SF400SH5X5SH1**
60	**T5B3060U**	**R5B3060U**						7.90 (200.0) **SF200SH5X5**	
80	**T5B3080U**	**R5B3080U**		SH00 Black 4, 4X **SHB00N4X**	SH0 Black 4, 4X **SHB0N4X**			12.60 (320.0) **SF320SH5X5**	
100	—	**R5B3100U**		SH00 Red 4, 4X **SHR00N4X**	SH0 Red 4, 4X **SHR0N4X**				

Accessories







Ampere Rating	Switched Fourth-Pole Module	Unswitched Neutral Module	Protective Earth Module	Auxiliary Contacts (Choose one)	Terminal Shrouds	Conversion Kit (Choose one)	Door Mounting Kit ③
16	**S4PR516**	**UNMR5A**	**PEMR5A**	1NO + 1NC **AC1NONC**	1P **TS1R5A**	6/8 pole **CKR568**	**DMK**
25	**S4PR525**						
30	**S4PR530**				3P **TS3R5A**		
40	**S4PR540**			2NO **AC2N0**		Changeover switch Open transition I–0–II **MTSCKR50T**	
60	—	**UNMR5B**	**PEMR5B**		1P **TS1R5B**		
80							
100					3P **TS3R5B**		

Notes

① Toggle version includes direct handle.

② For use with conversion kits on **Page V9-T1-53**.

③ Includes shaft and accessory cap.

Handles

Direct Handle

Direct Handle

Ampere Rating	Handle Color	Catalog Number
16–100	Black	**DHR5**

Size 00 Handle

Size 0 Handle

Size 1 Handle ②

Door Interlocked External Handle (Defeatable) ①

Ampere Rating	Handle Color	Handle Size	NEMA Type Rating	Catalog Number
Front and Right Side Operation I–0				
16–100	Black	SH00	3R, 12	**SHB00N12**
16–100	Black	SH00	4, 4X	**SHB00N4X**
16–100	Red/Yellow	SH00	3R, 12	**SHR00N12**
16–100	Red/Yellow	SH00	4, 4X	**SHR00N4X**
16–100	Black	SH0	3R, 12	**SHB0N12**
16–100	Black	SH0	4, 4X	**SHB0N4X**
16–100	Red/Yellow	SH0	3R, 12	**SHR0N12**
16–100	Red/Yellow	SH0	4, 4X	**SHR0N4X**
16–100	Black	SH1	4, 4X	**SHB1N4X**
16–100	Red/Yellow	SH1	4, 4X	**SHR1N4X**
For R5 Series Changeover Switches—Front Operation I–0–I				
16–100	Black	SH00	4, 4X	**SHB00MTSOT**

Shafts

Shaft 5 x 5

Shaft Extensions for External Handle

Description	Ampere Rating	Use with Handle Type	Shaft Length In (mm)	Catalog Number
Standard lengths: 55 mm, 90 mm, 150 mm, 200 mm, 320 mm For 3/4-pole switches: shafts are for external front and side handle For 6/8-pole switches and changeover switches: shafts are for external front and side handle	16–100	SH00/SH0	2.17 (55.0)	**SF55SH5X5**
	16–100	SH00/SH0	3.54 (90.0)	**SF90SH5X5**
	16–100	SH00/SH0	5.91 (150.0)	**SF150SH5X5**
	16–100	SH00/SH0	7.87 (200.0)	**SF200SH5X5**
	16–100	SH00/SH0	12.60 (320.0)	**SF320SH5X5**
	16–100	SH1	7.87 (200.0)	**SF200SH5X5SH1**
	16–100	SH1	12.60 (320.0)	**SF320SH5X5SH1**
	16–100	SH1	15.70 (400.0)	**SF400SH5X5SH1**

Guide Cone

Guide Cone

Description	Ampere Rating	Use with Handle Type	Catalog Number
The guide cone facilitates an easier connection between the shaft and a Size 00 or Size 0 external selector handle. It allows the shaft up to 10 mm of vertical play when making the connection	16–100	SH00 and SH0	**SFGAB**

Notes

① Allows door to be opened when switch is in the ON position.

② Contains all metal internal parts.

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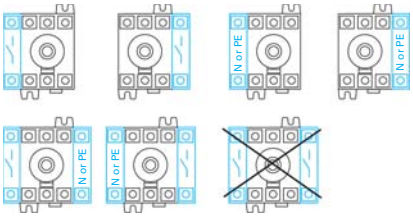
Additional Pole Configurations



Switched Fourth-Pole Module

Switched Fourth-Pole Module

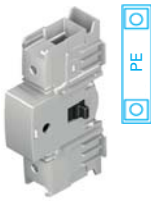
Description	Ampere Rating	Number of Poles	Type	Catalog Number
Add one or two poles and transform: • Three-pole R5 Series load break switch into a four-pole • Six-pole R5 Series switch into an eight-pole • Three-pole changeover switch into a four-pole	16	1	Switched	**S4PR516**
	25	1	Switched	**S4PR525**
	30	1	Switched	**S4PR530**
	40	1	Switched	**S4PR540**

Unswitched Neutral Module

Unswitched Neutral Module

Description	Ampere Rating	Number of Poles	Type	Catalog Number
Transforms a three-pole switch into a three-pole + solid neutral	16–40	1	Unswitched	**UNMR5A**
	60–100	1	Unswitched	**UNMR5B**

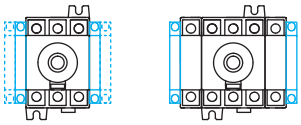
Protective Earth Module



Protective Earth Module

Description	Ampere Rating	Number of Poles	Catalog Number
Adds 1 protective earth module pole to the disconnect	16–40	1	**PEMR5A**
	60–100	1	**PEMR5B**

Auxiliary Contact Configurations



Auxiliary Contact Module

Description	Ampere Rating	Type	Catalog Number
Early-break/same-make and signalization of positions 0 and I by NO + NC or 2NO auxiliary contacts. They can be mounted on the left or on the right side of the device. Two modules maximum. For use with A, B and C frames.	10 A (240 V)	1NO + NC	**AC1N0NC**
	10 A (240 V)	2NO	**AC2NO**

Terminal Shrouds

Description	Ampere Rating	Number of Poles	Position	Catalog Number
Line and load protection against direct contact with the terminals or connection parts: single- or three-pole. Advantage: Perforations allowing thermographic inspection.	16–40	1	Line and load	**TS1R5A**
	16–40	3	Line and load	**TS3R5A**
	60–100	1	Line and load	**TS1R5B**
	60–100	3	Line and load	**TS3R5B**

Conversion Kits ①②

Conversion Kit to Create a Six- or Eight-Pole Load Break Switch

Description	Ampere Rating	Type	Catalog Number
This accessory kit enables the assembly of two three-pole switches plus additional poles in order to achieve: • Six- or eight-pole load break switches • Direct handle included	16–100	6/8-pole load break switches	**CKR568**

Conversion Kit to Create Three- or Four-Pole Changeover/ Transfer Switch

Description	Ampere Rating	Type	Catalog Number
This accessory kit enables the assembly of two three-pole switches to create a changeover (transfer) switch. R5 Series changeover switches ensure switching, transfer of sources (I–0–I) with the continuity of power supply. • Direct handle included	16–100	Changeover switches (I–0–II) Open transition	**MTSCKR5OT**

Door/Panel Mounting Kit

Description	Ampere Rating	Number of Poles	Catalog Number
This kit enables direct mounting of the switch on the door panel. Moreover, the connection clamps of the switch are always accessible. The external handle is quick and easy to install due to an internal locking nut mounted on the inside of the enclosure.	16–100	3 and 4	**DMK** ③

Notes

① When external handle is required, please see options on **Page V9-T1-51**.

② For use with two three-pole R5 Series switches (plus optional fourth-pole, if desired).

③ Includes shaft and accessory cap.

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Technical Data and Specifications

UL 508 (CSA 22.2 No. 14) Manual Motor Controller "Suitable as Motor Disconnect" from 16–80 A

General Use Rating	16 A	25 A	30 A	40 A	60 A	80 A	100 A
Approvals	UL 508/ CSA 22.2 No. 14	UL 508/ CSA 22.2 No. 14	UL 508/ CSA 22.2 No. 14	UL 508/ CSA 22.2 No. 14	UL 508/ CSA 22.2 No. 14	UL 508/ CSA 22.2 No. 14	UL 508/ CSA 22.2 No. 14
Short-circuit rating at 600 Vac (kA) ①	10/65	10/65	10/65	10/65	50/65	50/65	50
Branch circuit fuse type	J	J	J	J	J	J	J
Maximum fuse rating	60/30 A	60/30 A	60/30 A	60/30 A	100/60 A	100/60 A	100 A
Maximum UL Horsepower Ratings/Maximum Motor FLA Current, Three-Phase							
208 Vac	3/10.6	7.5/24.2	7.5/24.2	7.5/24.2	15/46.2	15/46.2	15/46.2
220–240 Vac	5/15	7.5/22	7.5/22	7.5/22	15/42	20/54	20/54
440–480 Vac	10/14	15/21	15/21	20/27	30/40	40/52	40/52
600 Vac	10/11	20/22	20/22	25/27	30/32	40/41	40/41
Connection							
Wire range (AWG), solid, single cable	#14–#10	#14–#10	#14–#10	#14–#10	#14–#10	#14–#10	#14–#10
Wire range (AWG), solid, two cables	2x #12	2x #12	2x #12	2x #12	2x #12	2x #12	2x #12
Wire range (AWG), stranded, single cable	#14–#4	#14–#4	#14–#4	#14–#4	#14–#1	#14–#1	#14–#1
Wire range (AWG), stranded, two cables	2x (#14–#12)	2x (#14–#12)	2x (#14–#12)	2x (#14–#12)	2x (#10–#6)	2x (#10–#6)	2x (#10–#6)
Mechanical Characteristics							
Endurance, number of mechanical cycles	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Operating torque (lb-in/Nm)	7/0.8	7/0.8	7/0.8	7/0.8	8.9/1	8.9/1	8.9/1
Auxiliary Contacts							
Electrical characteristics	A300	A300	A300	A300	A300	A300	A300

IEC 60947-3 Characteristics

General Use Rating		16 A	25 A	32 A	40 A	63 A	80 A	100 A
Rated Operational Currents I_e (A)								
Rated Voltage	**Load Duty Category**	**A/B ②**	**A/B ②**	**A/B ②**	**A/B ②**	**A/B ②**	**A/B ②**	**A/B ②**
415 Vac	AC-23 A/AC-23 B	16/16	25/25	32/32	40/40	63/63	80/80	80/80
500 Vac	AC-22 A/AC-22 B	16/16	25/25	32/32	40/40	63/63	80/80	—
500 Vac	AC-23 A/AC-23 B	16/16	25/25	25/25	25/25	63/63	63/63	—
690 Vac	AC-21 A/AC-21 B	16/16	25/25	32/32	40/40	63/63	80/80	100/100
690 Vac	AC-22 A/AC-22 B	16/16	25/25	32/32	32/40	40/63	63/80	—
690 Vac	AC-23 A/AC-23 B	16/16	25/25	25/25	25/25	40/40	40/40	—
Thermal Current I_{th} at 40 °C (A)								
Thermal current I_{th} (40 °C) ④		16	25	32	40	63	80	100
Rated insulation voltage U_i (V)		800	800	800	800	800	800	800
Rated impulse withstand voltage U_{imp} (kV)		8	8	8	8	8	8	8
Operational Power in AC-23 (kW)								
At 400 Vac without prebreaking AC in AC-23 (kW) ②③		7.5	11	15	18.5	30	37	—
At 500 Vac without prebreaking AC in AC-23 (kW) ②③		7.5	11	15	15	30	37	—
At 690 Vac without prebreaking AC in AC-23 (kW) ②③		7.5	15	18.5	18.5	30	37	—
Fuse Protected Short-Circuit Withstand (kA rms Prospective)								
Prospective short-circuit current (kA rms) ⑤		50	50	50	50	50	50	25
Associated fuse rating (A) ⑤		16	25	32	40	63	80	100
Overload Capacity (U_e 415 Vac)								
Rated short-time withstand current 0.3 s. I_{CW} (kA rms) ⑤		2.5	2.5	2.5	2.5	3	3	1.5
Rated short-circuit making capacity Icm (kA peak) ⑤		6	6	6	6	9	9	2.1
Connection								
Minimum Cu cable cross section (mm^2)		1.5	1.5	1.5	1.5	2.5	2.5	2.5
Maximum Cu cable section (mm^2)		16	16	16	16	35	35	35
Tightening torque minimum/maximum (Nm)		2/2.2	2/2.2	2/2.2	2/2.2	3.5/3.85	3.5/3.85	3.5/3.85

Notes

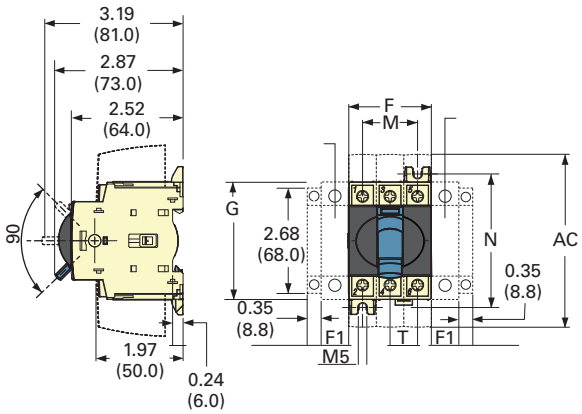
① Short-circuit rating achieved when used with respective fuse type and maximum fuse rating.
② A/B: Category with index A = frequent operation; category with index B = infrequent operation.
③ The power value is given for information only; the current values vary from one manufacturer to another.
④ De-rate 1% per °C above 40 °C, max. 70 °C.
⑤ For a rated operating voltage, U_e = 400 Vac.

Dimensions

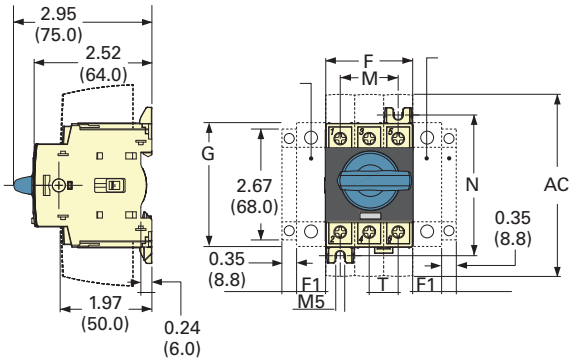
Approximate Dimensions in Inches (mm)

R5 Series 16–100 A

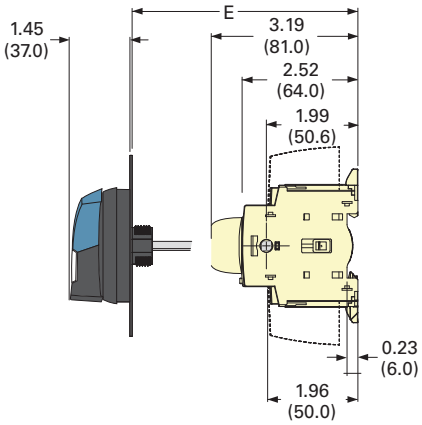
Toggle Operation



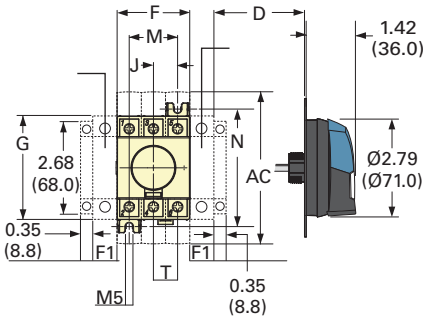
Direct Operation with Handle



External Front Operation



External Side Operation

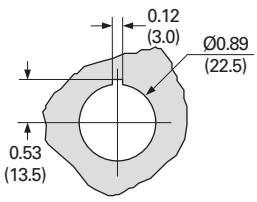


R5 Series ②

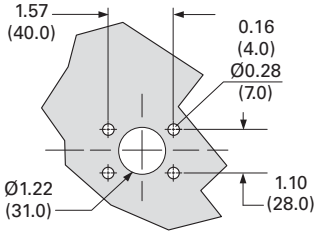
Ampere Rating	Overall Dimensions D Min.	D Max.	E Min.	E Max.	Terminal Shrouds AC	Switch Body F	F1	G	J	Switch Mounting M	N	Connection Terminal T
16–40	1.18 (30.0)	9.25 (235.0)	3.94 (100.0)	14.65 (372.0)	4.33 (110.0)	1.77 (45.0)	0.59 (15.0)	2.68 (68.0)	0.59 (15.0)	1.18 (30.0)	2.95 (75.0)	0.59 (15.0)
63–100	1.18 (30.0)	9.25 (235.0)	3.94 (100.0)	14.65 (372.0)	4.33 (110.0)	2.06 (52.5)	0.69 (17.5)	2.99 (76.0)	0.69 (17.5)	1.38 (35.0)	3.35 (85.0)	0.69 (17.5)

Door Drilling—SH00/SH0

With Fixing Nut

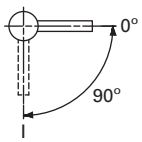


With Four Fixing Screws

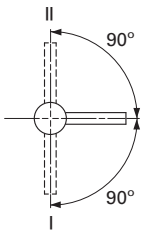


Operating Handle—SH00/SH0

Front and Right Side Operation



Front Operation for R5 Changeover Switches I–0–II or I–I+II–II



Notes

① One switched fourth-pole module (one per device maximum) or one unswitched neutral pole or one auxiliary contact.

② Maximum four additional blocks.

1

Non-Fusible 30–100 A Compact

Contents

R9 Series (UL 98) Non-Fusible 30–100 A Compact

Product Description

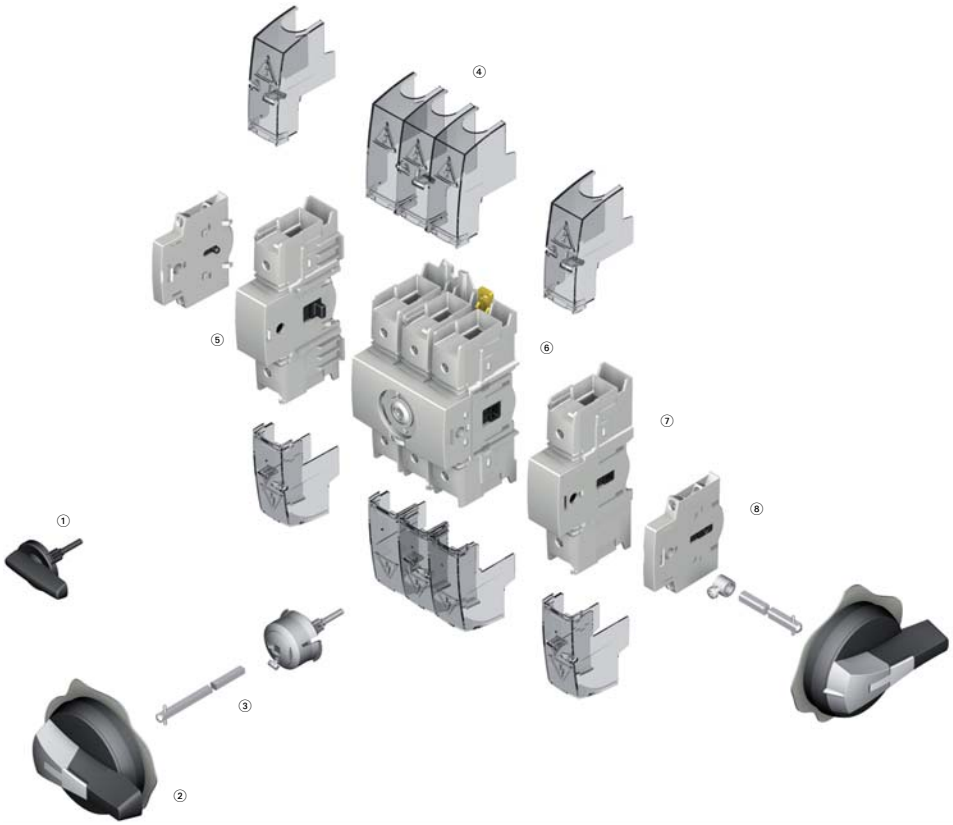
The R9 Series (UL 98 listed) non-fusible 30–100 A compact range ensures making or breaking on load and safety isolation for low-voltage electrical circuits, particularly for machine control circuits up to 600 V.

Features, Benefits and Functions

- Rating three-pole from 30 A to 100 A
- Direct or external operation handle (padlockable in ON position)
- Double breaking per phase

Standards and Certifications

- UL 98, File E222859
- CSA 22.2 No. 4, File 217736
- IEC 60947-3
- EN 60947-3
- CE



Product Identification

① Direct handle
② Door interlocked external handle
③ Shaft extension
④ Terminal shrouds
⑤ Unswitched neutral pole
⑥ Switch body
⑦ Switched fourth-pole module
⑧ Modular type auxiliary contacts

Note: For further details, please see the installation instructions supplied with each device.

Product Selection

Direct Operation

Switch body + Direct handle

External Operation

Switch body + Shaft + External handle

R9 Series 30–100 A

Ampere Rating (Frame)	Number of Poles	Switch Body Only	Direct Handle	Front and Right External Handle SH00 (Choose one)	Front and Right External Handle SH0 (Choose one)	Shaft for SH0 and SH00 Handles—In (mm) (Choose one)	Shaft for SH1—5 x 5 mm—In (mm)	Switched Fourth-Pole Module	Auxiliary Contacts (Choose one)	Terminal Shrouds (Choose one)
30 (C-Frame)	3	**R9C3030U**	**DHR9**	SH00 Black 3R, 12 **SHB00N12**	SH0 Black 3R, 12 **SHB0N12**	2.20 (55.5) **SF55SH5X5**	7.90 (200.0) **SF200SH5X5SH1**	**S4PR930**	1NO + 1NC **AC1NONC**	1P **TS1R9**
60 (C-Frame)	3	**R9C3060U**				3.50 (90.0) **SF90SH5X5**	12.60 (320.0) **SF320SH5X5SH1**	**S4PR960**	2NO **AC2N0**	3P **TS3R9CV**
100 (C-Frame)	3	**R9C3100U**		SH00 Red 3R, 12 **SHR00N12**	SH0 Red 3R, 12 **SHR0N12**	5.91 (150.0) **SF150SH5X5**	15.70 (400.0) **SF400SH5X5SH1**	**S4PR9100**		
				SH00 Black 4, 4X **SHB00N4X**	SH0 Black 4, 4X **SHB0N4X**	7.87 (200.0) **SF200SH5X5** 12.60 (320.0) **SF320SH5X5**				
				SH00 Red 4 4X **SHR00N4X**	SH0 Red 4 4X **SHR0N4X**					

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Handles

Direct Handle

Direct Handle

Ampere Rating	Handle Color	Catalog Number
30–100	Black	**DHR9**

Door Interlocked External Handle ①

Size 00 Handle

Size 0 Handle

Size 1 Handle ②

Ampere Rating	Handle Color	Handle Size	NEMA Type Rating	Catalog Number
Front and Right External Handle				
30–100	Black	SH00	3R, 12	**SHB00N12**
30–100	Black	SH00	4, 4X	**SHB00N4X**
30–100	Red	SH00	3R, 12	**SHR00N12**
30–100	Red	SH00	4, 4X	**SHR00N4X**
30–100	Black	SH0	3R, 12	**SHB0N12**
30–100	Black	SH0	4, 4X	**SHB0N4X**
30–100	Red	SH0	3R, 12	**SHR0N12**
30–100	Red	SH0	4, 4X	**SHR0N4X**
16–100	Black	SH1	4, 4X	**SHB1N4X**
16–100	Red/Yellow	SH1	4, 4X	**SHR1N4X**

Shafts

Shaft Extensions for External Handle

Shaft 5 x 5

Description	Ampere Rating	Use with Handle Type	Shaft Length In (mm)	Catalog Number
Standard lengths: 55 mm, 90 mm, 150 mm, 200 mm, 320 mm Shafts are for external front and right side handles	30–100	SH00/SH0	2.20 (55.5)	**SF55SH5X5**
	30–100	SH00/SH0	3.50 (90.0)	**SF90SH5X5**
	30–100	SH00/SH0	5.91 (150.0)	**SF150SH5X5**
	30–100	SH00/SH0	7.87 (200.0)	**SF200SH5X5**
	30–100	SH00/SH0	12.60 (320.0)	**SF320SH5X5**
	16–100	SH1	7.87 (200.0)	**SF200SH5X5SH1**
	16–100	SH1	12.60 (320.0)	**SF320SH5X5SH1**
	16–100	SH1	15.70 (400.0)	**SF400SH5X5SH1**

Guide Cone

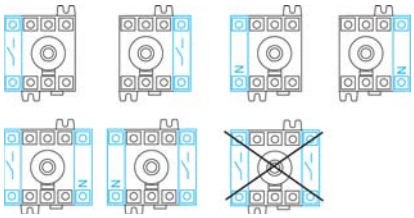
SFGAB

Description	Ampere Rating	Use with Handle Type	Catalog Number
The guide cone facilitates an easier connection between the shaft and a Size 00 or Size 0 external selector handle. It allows the shaft up to 10 mm of vertical play when making the connection	16–80	SH00 and SH0	**SFGAB**

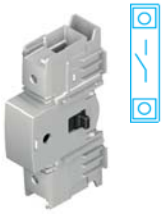
Notes

① Allows door to be opened when switch is in the ON position.
② Contains all metal internal parts.

Additional Pole Configurations

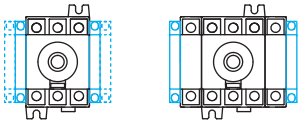


Switched Fourth-Pole Module

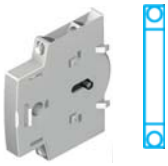


Description	Ampere Rating	Number of Poles	Type	Catalog Number
Transforms a three-pole, R9 Series load break switch into a four-pole	30	1	Switched	**S4PR930**
	60	1	Switched	**S4PR960**
	100	1	Switched	**S4PR9100**

Auxiliary Contact Configurations



Auxiliary Contacts



Description	Ampere Rating	Type	Catalog Number
Early-break/same-make and signalization of positions 0 and I by NO + NC or 2NO auxiliary contacts. They can be mounted on the left or on the right side of the device. Maximum four auxiliary contacts (two modules). For use with A, B and C frames.	10 A (240 V)	1NO + 1NC	**AC1N0NC**
	10 A (240 V)	2NO	**AC2NO**

Terminal Shrouds

Description	Ampere Rating	Number of Poles	Position	Catalog Number
Line and load protection against direct contact with the terminals or connection parts: single- or three-pole.Advantage: Perforations allowing thermographic inspection	30–100	1	Line and load	**TS1R9**
	30–100	3	Line and load	**TS3R9CV**

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Technical Data and Specifications

UL and CSA Characteristics

UL 98/CSA 22.2 No. 4

Technical Characteristics	30 A	60 A	100 A
Short-circuit rating at 480 Vac (kA) ①	100 kA	100 kA	100 kA
Short-circuit rating at 600 Vac (kA) ①	100 kA	100 kA	25 kA
Fuse type	J	J	J
Maximum fuse rating (A)	30	60	100
Maximum Horsepower Rating/Maximum Motor FLA Three-Phase			
220–240 Vac	10/28	20/54	20/54
440–480 Vac	20/27	40/52	50/65
600 Vac	25/27	50/52	50/52
Maximum Horsepower Rating/Maximum Motor FLA Single-Phase			
120 Vac	2/24	3/34	5/56
240 Vac	5/28	10/50	10/50
Connection			
Solid, 1 wire	#12–10	#12–10	#12–10
Stranded, 1 wire	#12–2/0	#12–2/0	#12–2/0
Auxiliary Contacts			
Electrical characteristic	A300	A300	A300

IEC 60647-3 Characteristics

Technical Characteristics		32 A	63 A	100 A
Thermal Current I_{th} at 40 °C (A)				
Thermal current I_{th} (40 °C)		30	60	100
Rated insulation voltage U_i (V)		800	800	800
Rated impulse withstand voltage U_{imp} (kV)		8	8	8
Rated Operation Currents I_e (A)				
Load Duty Category	**Rated Voltage**	**A** ②	**A** ②	**A** ②
400 Vac	AC-22A	32	63	100
400 Vac	AC-23A	32	63	100
690 Vac	AC-22A	32	63	80
690 Vac	AC-23A	32	63	63
Operational Power in AC-23 (kW)				
At 400 Vac without prebreak AC in AC-23 (kW) ③④		15	30	45
At 500 Vac without prebreak AC in AC-23 (kW) ③④		15	30	45
At 690 Vac without prebreak AC in AC-23 (kW) ③④		18.5	30	45
Overload Capacity (U_e 415 Vac)				
Rated short-time making capacity I_{cm} (kA peak) ⑤		12	12	12
Connection				
Minimum Cu cable cross section (mm^2)		2.5	2.5	10
Maximum Cu cable section (mm^2)		70	70	70

Notes

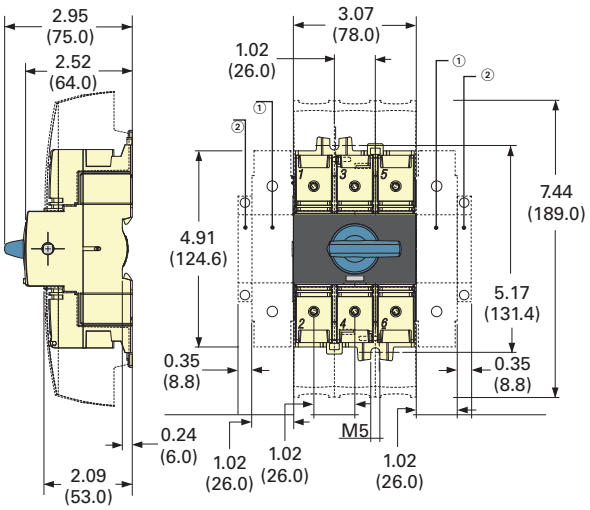
① Short-circuit rating achieved when used with respective fuse type and maximum fuse rating.
② Category with index A = frequent operation.
③ A/B: Category with index A = frequent operation; category with index B = infrequent operation.
④ The power value is given for information only; the current values vary from one manufacturer to another.
⑤ For a rated operating voltage, U_e = 400 Vac.

Dimensions

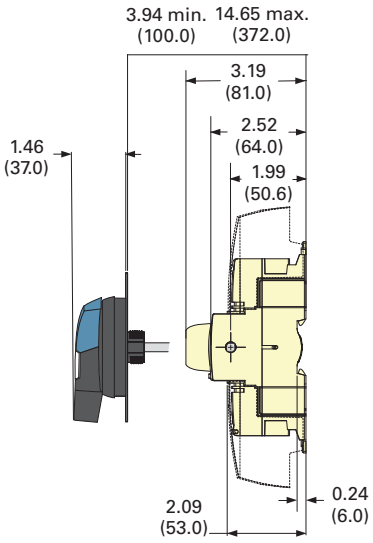
Approximate Dimensions in Inches (mm)

R9 Series 30–100 A Compact

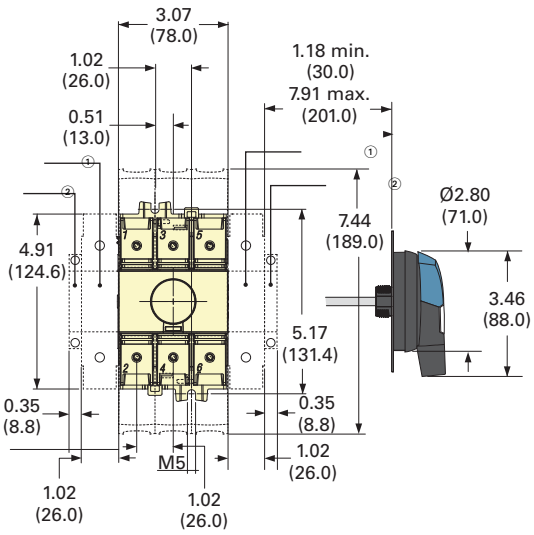
Direct Operation



External Front Operation

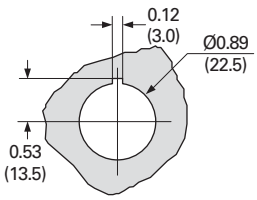


External Side Operation

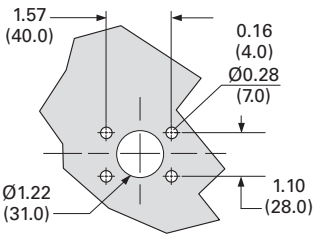


Door Drilling—SH00/SH0

With Fixing Nut

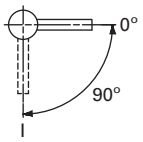


With Four Fixing Screws



Operating Handle—SH00/SH0

Front and Right Side Operation



Notes

① One switched fourth-pole module (one per device maximum) and/or one unswitched neutral pole.

② Auxiliary contact.

1

Non-Fusible 100–1200 A

Contents

Non-Fusible 100–1200 A

Product Description

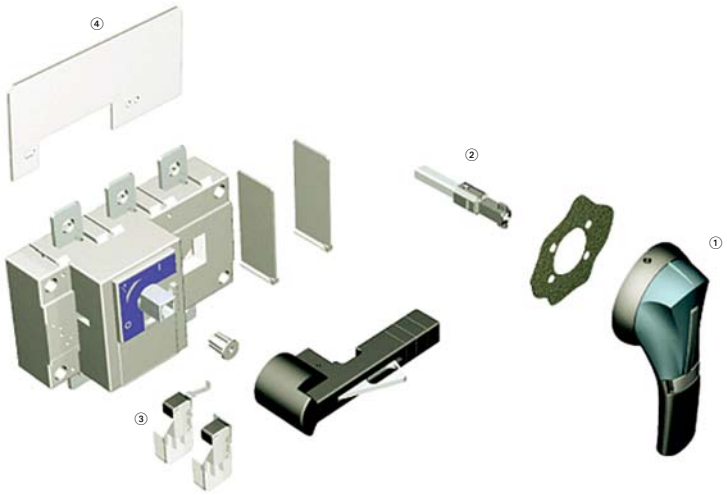
The R9 Series (UL 98 listed) non-fusible 100–1200 A are manually operated multi-pole load-break switches. Quick-make, quick-break design provides safety isolation for any low-voltage circuit.

Features, Benefits and Functions

- High thermal and dynamic withstand ratings
- Arduous categories of applications
- High electrical and mechanical endurances

Standards and Certifications

- UL 98, File E222859
- CSA 22.2 No. 4, File 217736
- IEC 60947-3
- EN 60947-3



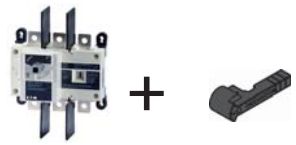
Product Identification

① External front handle
② Shaft extensions for external handle
③ Configurable U-type ACs, for pre-break and signalling or TEST
④ Terminal Screens

Note: For further details, please see the installation instructions supplied with each device.

Product Selection

Direct Operation



External Operation

R9 Series Non-Fusible 100–1200 A






Ampere Rating (Frame)	Number of Poles	Switch Body Only	Direct Handle	Door Interlocked External Pistol Handle (Choose one)	Shaft Extensions for External Handle—In (mm) (Choose one)	Auxiliary Contacts	Terminal Screens (Choose one)	Terminal Lugs ③
100 (D-Frame)	3	**R9D3100U**	**DHR9DE**	Size 2, Black 1, 3R, 12 Defeatable **PHB2N12F** Size 2, Red 1, 3R, 12 Defeatable **PHR2N12F** Size 2, Black 4, 4X Defeatable **PHB2N4XF** Size 2, Red 4, 4X Defeatable **PHR2N4XF**	7.90 (200.0) **SF200PH10X10** 12.60 (320.0) **SF320PH10X10** 15.70 (400.0) **SF400PH10X10** 19.70 (500.0) **SF500PH10X10**	1NO + 1NC **AC1N0NCDE** **AC1N0NCDELL** 2NO + 2NC **AC2N0NCDE** **AC2N0NCDELL**	3-pole, Line side only **TS3R9DT** 3-pole, Load side only **TS3R9DB** 4-pole, Line or load side **TS4R9DTB**	**LK3R9DL**
	4	**R9D4100U**						**LK4R9DL**
200 (D-Frame)	3	**R9D3200U**						**LK3R9DL**
	4	**R9D4200U**						**LK4R9DL**
400 (E-Frame)	3	**R9E3400U**					3-pole, Line side only **TS3R9ET** 3-pole, Load side only **TS3R9EB** 4-pole, Line or load side **TS4R9ETB**	**LK3R9EM**
	4	**R9E4400U**						**LK4R9EM**
600 (F-Frame)	3	**R9F3600U**	**DHR9FG**	Size 3, Black 4, 4X Defeatable **PHB3N4XF** Size 3, Red 4, 4X Defeatable **PHR3N4XF** Size 4, Black 4, 4X Defeatable **PHB4N4XF** Size 4, Red 4, 4X Defeatable **PHR4N4XF**	7.90 (200.0) **SF200PH15X12** 12.60 (320.0) **SF320PH15X12** 1.70 (400.0) **SF400PH15X12**	1NO AC U Type **AC1N0R9** ② 1NC AC U Type **AC1NCR9** ②	**TS3R9F** ① **TS4R9F** ① **TS3R9FFS** ④ **TS3R9G** ① **TS4R9G** ① **TS3R9GFS** ④	**LK3R9FN** **LK4R9FN** **LK6R9G** **LK8R9G**
	4	**R9F4600U**						
800 (G-Frame)	3	**R9G3800U**						
	4	**R9G4800U**						
1000 (G-Frame)	3	**R9G31000U**						
	4	**R9G41000U**						
1200 (G-Frame)	3	**R9G31200U**						
	4	**R9G41200U**						

Notes

① Top (line side) supplied as standard.
② Auxiliary contact requires holder (catalog number ACHFG) when used on F and G-Frame switches (non-fusible 600–1200 A).
③ Each catalog number is for line or load side. For both line and load, please order two sets.
④ FS suffix = Finger Safe.

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Accessories

Direct Handle

Direct Handle

Description	Ampere Rating	Handle Color	Catalog Number
Front operation	100–400	Black	**DHR9DE**
	600–1200	Black	**DHR9FG**

PH2 and PH3 Types

PH4 Type

Door Interlocked External Handle—Front Operation

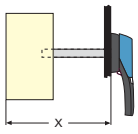
Description	Ampere Rating	Switch Frame	Handle Type	Handle Color	NEMA Type	Defeatable ①	Catalog Number
The door interlocked external handle includes one lockable handle and one escutcheon. For Dimensions, see **Page V9-T1-67**.	100–400	D/E	PH2	Black	1,3R,12	Yes	**PHB2N12F**
	100–400	D/E	PH2	Red	1,3R,12	Yes	**PHR2N12F**
	100–400	D/E	PH2	Black	4,4X	Yes	**PHB2N4XF**
	100–400	D/E	PH2	Red	4,4X	Yes	**PHR2N4XF**
	600–1200	F/G	PH3	Black	4,4X	Yes	**PHB3N4XF**
	600–1200	F/G	PH3	Red	4,4X	Yes	**PHR3N4XF**
	600–1200	F/G	PH4	Black	4,4X	Yes	**PHB4N4XF**
	600–1200	F/G	PH4	Red	4,4X	Yes	**PHR4N4XF**

Shaft Extensions

Shaft Extensions for External Front Handle

Front Operation

Use	Ampere Rating (Frame)	Handle Type	Shaft Length In (mm)	Catalog Number
Standard lengths: 200 mm, 320 mm, 400 mm, 500 mm	100–400 (D-, E-Frame)	PH2	7.90 (200.0)	**SF200PH10X10**
	100–400 (D-, E-Frame)	PH2	12.60 (320.0)	**SF320PH10X10**
	100–400 (D-, E-Frame)	PH2	15.70 (400.0)	**SF400PH10X10**
	100–400 (D-, E-Frame)	PH2	19.70 (500.4)	**SF500PH10X10**
	600–1200 (F-, G-Frame)	PH3/PH4	7.90 (200.0)	**SF200PH15X12**
	600–1200 (F-, G-Frame)	PH3/PH4	12.60 (320.0)	**SF320PH15X12**
	600–1200 (F-, G-Frame)	PH3/PH4	15.70 (400.0)	**SF400PH15X12**



Shaft Length Minimum Dimensions (X)—Inches (mm)

Description	Ampere Rating (Frame)	X	Length	Catalog Number
Standard lengths: • 7.90 (200.6) • 12.60 (320.0) • 5.70 (398.8)	100–400 (D-, E-Frame)	5.31–10.43 (135.0–265.0)	7.90 (200.6)	**SF200PH10X10**
		5.31–10.43 (135.0–385.0)	12.60 (320.0)	**SF320PH10X10**
		5.31–10.43 (135.0–465.0)	15.70 (398.8)	**SF400PH10X10**
		5.31–22.20 (135.0–565.0)	19.70 (500.4)	**SF500PH10X10**
	600–1200 (F-, G-Frame)	8.70–13.50 (221.0–343.0)	7.90 (200.6)	**SF200PH15X12**
		8.70–18.23 (221.0–463.0)	12.60 (320.0)	**SF320PH15X12**
		8.70–21.38 (221.0–543.0)	15.70 (398.8)	**SF400PH15X12**

Note

① Allow the door to be opened when the switch is in 1 (ON) position.

Auxiliary Contacts ①

Description	Ampere Rating (Frame)	Number of AC	AC Type	Catalog Number
100–200 A, up to two ACs max.	100–400 (D-, E-Frame)	1NO / 1NC	Standard	**AC1NONCDE**
400 A, up to two ACs max.		1NO / 1NC	Low Level ②	**AC1NONCDELL**
		2NO / 2NC	Standard	**AC2NONCDE**
		2NO / 2NC	Low Level ②	**AC2NONCDELL**
600–1200 A, up to four ACs max.	600–1200 (F-, G-Frame)	1NO	Standard	**AC1NOR9** ③
		1NC	Standard	**AC1NCR9** ③
Auxiliary contact holder (for use with AC1NOR9 and AC1NCR9)	600–1200 (F-, G-Frame)	—	—	**ACHFG**

Terminal Screens

Description	Maximum Ampere Rating (Frame)	Number of Poles	Line/Load Side	Catalog Number
Line and load protection against direct contact with terminals or connection parts. Line side terminal shrouds are included standard on 600–1200 A non-fusible switches. Shrouds are not included on the 100–400 A.	100–200 (D-Frame)	3	Line	**TS3R9DT**
		3	Load	**TS3R9DB**
		4	Line or load	**TS4R9DTB**
	400 (E-Frame)	3	Line	**TS3R9ET**
		3	Load	**TS3R9EB**
	600 (F-Frame)	4	Line or load	**TS4R9ETB**
		3	Line or load	**TS3R9F**
	800–1200 (G-Frame)	4	Line or load	**TS4R9F**
		3	Line or load	**TS3R9G**
		4	Line or load	**TS4R9G**

Line and Load Terminal Lugs

Description	Maximum Ampere Rating (Frame)	Number of Poles	Number of Lugs/Pole	Lug Capacity/Phase	Cable Type	Catalog Number
Connection of copper cables on to the terminals (no spade lugs). Each kit includes lugs for line or load side. For line and load side, order two kits. For Dimensions, see **Page V9-T1-67**.	100–200 (D-Frame)	3	1	#6–300 kcmil	Cu/Al	**LK3R9DL**
		4	1	#6–300 kcmil	Cu/Al	**LK4R9DL**
	400 (E-Frame)	3	1	(1) #4–600 kcmil or (2) 1/0–250 kcmil	Cu/Al	**LK3R9EM**
		4	1	(1) #4–600 kcmil or (2) 1/0–250 kcmil	Cu/Al	**LK4R9EM**
	600 (F-Frame)	3	1	(2) #2–600 kcmil	Cu/Al	**LK3R9FN**
		4	1	(2) #2–600 kcmil	Cu/Al	**LK4R9FN**
	800–1200 (G-Frame)	3	2	2x (2) #2–600 kcmil	Cu/Al	**LK6R9G**
		4	2	2x (2) #2–600 kcmil	Cu/Al	**LK8R9G**

Notes

① Early-break/same-make.
② Gold plated for minimal resistance—for PLC applications.
③ Requires use of ACHFG auxiliary contact holder for F- and G-Frame switches.

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Technical Data and Specifications

UL and CSA Characteristics

Technical Characteristics		100 A	200 A	400 A	600 A	800 A	1000 A	1200 A
Short circuit rating at 600 Vac (kA) ①		200 kA	200 kA	200 kA	200 kA	200 kA	100 kA	100 kA
Fuse type		J	J	J	J	L	L	L
Maximum fuse rating (A)		100	200	400	600	800	1000	1200
Maximum Horsepower Rating/Maximum Motor FLA Three-Phase								
220–240 Vac		30/80	75/192	125/312	200/480	200/480	200/480	200/480
440–480 Vac		75/96	150/180	250/302	400/477	500/590	500/590	500/590
600 Vac		100/99	200/192	350/336	350/336	500/472	500/472	500/472
Maximum Horsepower Rating/Maximum Motor FLA Direct Current								
125 Vdc	Two-pole in series	10/76	15/112	20/148	20/148	—	—	—
250 Vdc	Three-pole in series	15/55	15/55	50/173	50/173	—	—	—
Connection								
Minimum connection section/AWG		#6	#6	#2	2 x #2	2 x #2	4 x #2	4 x #2
Maximum connection section/AWG		300 kcmil	300 kcmil	600 kcmil	2 x 600 kcmil	2 x 600 kcmil	4 x 600 kcmil	4 x 600 kcmil
Auxiliary Contacts								
Electrical characteristics		A300	A300	A300	A600	A600	A600	A600

IEC 60947-3 Characteristics

Technical Characteristics		100 A	200 A	400 A	600 A	800 A	1000 A	1200 A
Rated insulation voltage U_i (V)		1000	1000	1000	1000	1000	1000	1000
Rated impulse withstand voltage U_{imp} (kV)		8	8	8	12	12	12	12
Rated Operational Currents I_e (A)								
Rated Voltage	**Load Duty Category**	**A** ②	**A** ②	**A** ②	**A** ②	**A** ②	**A** ②	**A** ②
400 Vac	AC-22A	100	200	400	630	800	1000	1200
400 Vac	AC-23A	100	200	400	630	800	1000	1000
690 Vac	AC-22A	100	200	400	500	630	630	630
690 Vac	AC-23A	100	200	315	200	400	400	400
Connection								
Minimum Cu cable cross section (mm^2)		35	70	185	2 x 150	2 x 185	2 x 240	—
Minimum Cu busbar section (mm^2)		—	—	—	2 x 30 x 5	2 x 40 x 5	2 x 50 x 5	2 x 60 x 5
Operational Power in AC-23 (kW)								
At 400 Vac without prebreaking AC in AC23 (kW) (2 x 3)		51	100	220	355	450	560	560
At 500 Vac without prebreaking AC in AC23 (kW) (2 x 3)		63	140	280	450	560	560	560
At 690 Vac without prebreaking AC in AC23 (kW) (2 x 3)		90	185	185	185	400	400	400
Overload Capacity (U_e 415 Vac)								
Rated short-circuit making capacity Icm (kA peak) ③		17.6	32	48	48	75	48	75

Notes

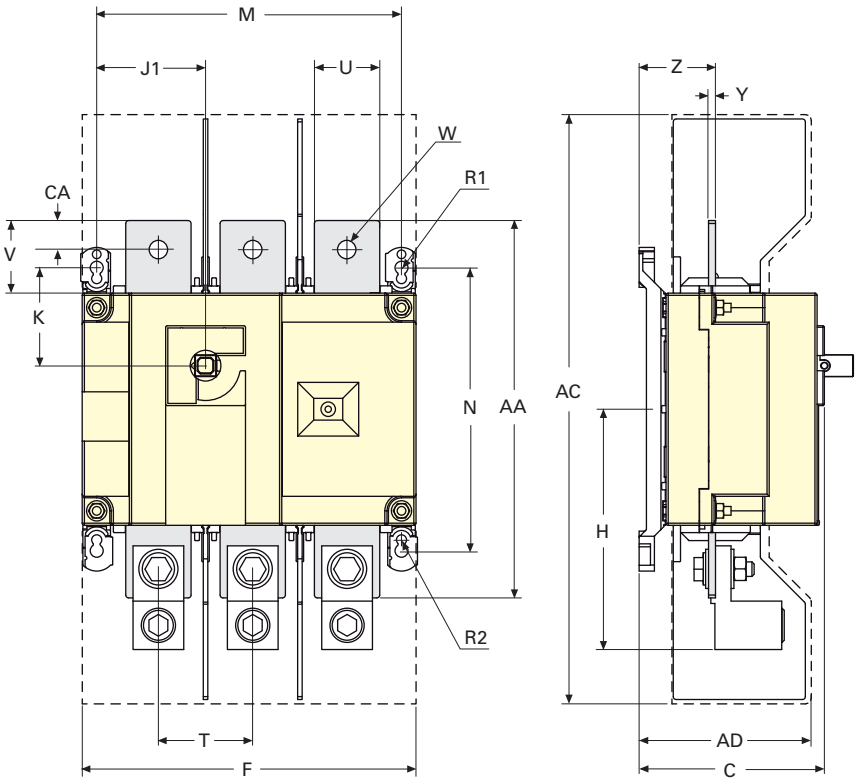
① Short-circuit rating achieved when used with respective fuse type and maximum fuse rating.
② Category with index A = frequent operation.
③ For a rated operating voltage, U_i = 400 Vac.

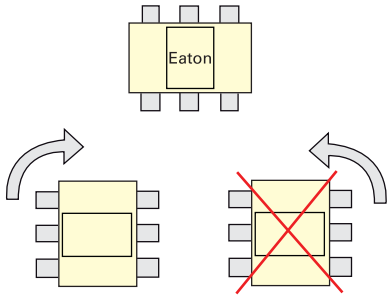
Dimensions

Approximate Dimensions in Inches (mm)

Front Operation—D- and E-Frames

R9 Series Non-Fusible 100–400 A





The switch will operate correctly when rotated clockwise 90 degrees.

The switch will not operate correctly when rotated counterclockwise 90 degrees.

Ampere Rating (A)	Overall Dimensions	Terminal Shrouds AC	Terminal Shrouds AD	Switch Body F 3P	Switch Body F 4P	H	J1 3P	J1 4P	K
100	3.72 (94.6)	10.10 (256.0)	3.05 (77.5)	7.09 (180.0)	9.06 (230.0)	4.22 (107.0)	2.17 (55.0)	4.13 (105.0)	1.80 (45.6)
200	3.72 (94.6)	10.10 (256.0)	3.05 (77.5)	7.09 (180.0)	9.06 (230.0)	4.22 (107.0)	2.17 (55.0)	4.13 (105.0)	1.80 (45.6)
400	4.92 (128.0)	16.00 (406.0)	4.15 (115.0)	9.05 (230.0)	11.40 (290.0)	6.53 (166.0)	2.95 (75.0)	5.31 (135.0)	2.65 (67.5)

Ampere Rating (A)	Switch Mounting M 3P	Switch Mounting M 4P	N	R1	R2	Connection T	U	V	W	Y	Z	AA	AC
100	6.30 (160.0)	8.27 (210.0)	5.31 (135.0)	0.35 (9.0)	0.27 (7.0)	1.97 (50.0)	0.98 (25.0)	1.18 (30.0)	0.43 (11.0)	0.14 (3.5)	1.35 (34.4)	6.30 (160.0)	0.60 (15.0)
200	6.30 (160.0)	8.27 (210.0)	5.31 (135.0)	0.35 (9.0)	0.27 (7.0)	1.97 (50.0)	0.98 (25.0)	1.18 (30.0)	0.43 (11.0)	0.14 (3.5)	1.35 (34.4)	6.30 (160.0)	0.60 (15.0)
400	8.26 (210.0)	10.60 (270.0)	7.67 (195.0)	0.35 (9.0)	0.27 (7.0)	2.56 (65.0)	1.77 (45.0)	1.97 (50.0)	0.43 (13.0)	0.20 (5.0)	2.08 (53.0)	10.20 (260.0)	0.80 (20.0)

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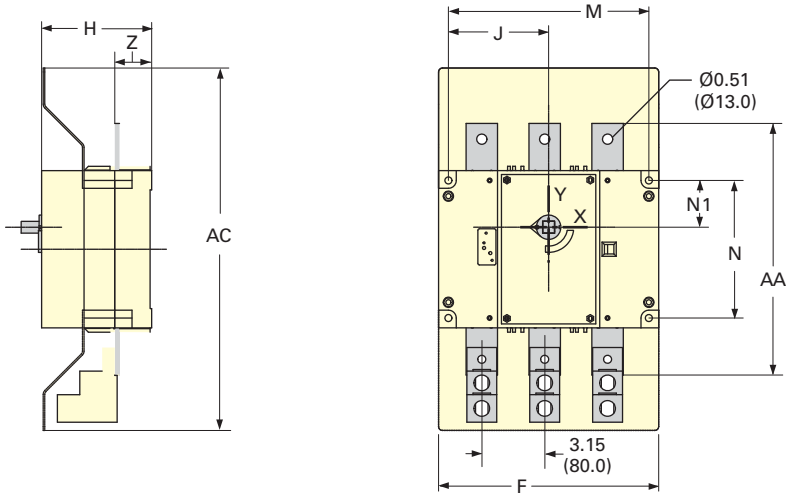
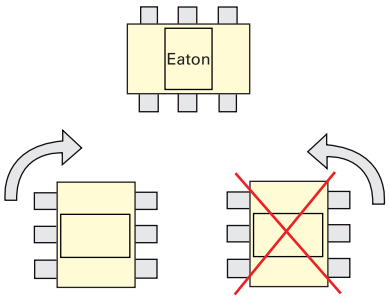
Approximate Dimensions in Inches (mm)

Front Operation—F- and G-Frames

R9 Series Non-Fusible 600 A



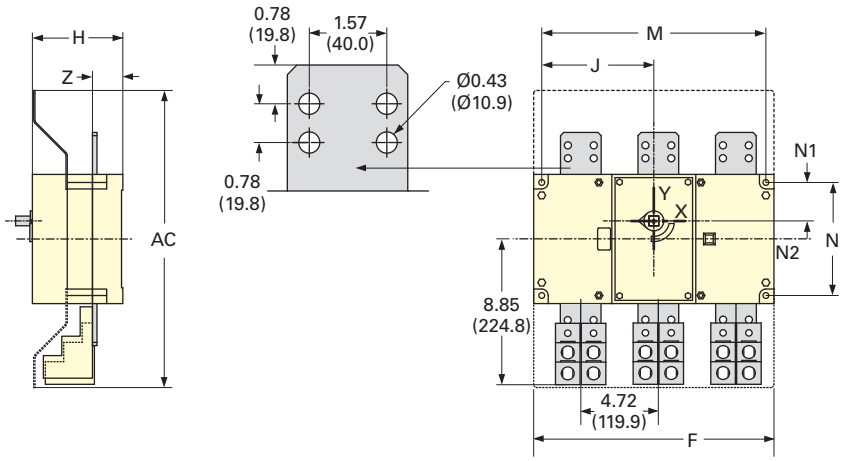


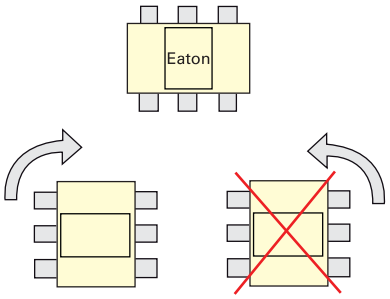
The switch will operate correctly when rotated clockwise 90 degrees.

The switch will not operate correctly when rotated counterclockwise 90 degrees.

Terminal Screens		Switch Body					Switch Mounting			Connection Terminals	
AC	F 3P	F 4P	H	J 2P	J 4P	M 4P	M 4 P	N	N1	AA	Z
18.11 (460.0)	11.02 (280.0)	14.17 (360.0)	5.51 (140.0)	5.00 (127.5)	6.59 (167.5)	10.03 (255.0)	13.19 (335.0)	6.89 (175.0)	2.34 (59.5)	12.6 (320.0)	1.85 (47.0)

R9 Series Non-Fusible 800–1200 A





The switch will operate correctly when rotated clockwise 90 degrees.

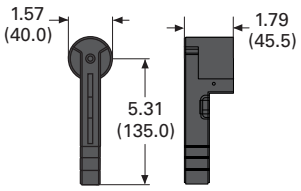
The switch will not operate correctly when rotated counterclockwise 90 degrees.

Terminal Screens		Switch Body					Switch Mounting			Connection Terminals	
AC	F 3P	F 4P	H	J 3P	J 4P	M 3P	M 4P	N	N1	N2	Z
18.12 (460.0)	14.64 (372.0)	19.37 (492.0)	5.51 (140.0)	6.83 (173.5)	9.19 (233.5)	13.66 (347.0)	18.38 (467.0)	6.89 (175.0)	2.34 (59.5)	1.10 (28.0)	1.85 (47.0)

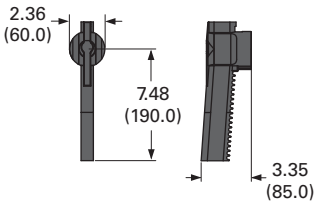
Approximate Dimensions in Inches (mm)

Direct Handle—Front Operation

R9 Series Non-Fusible 400 A

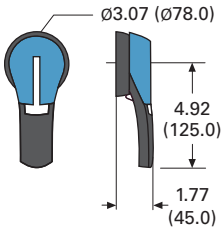


R9 Series Non-Fusible 600–1200 A

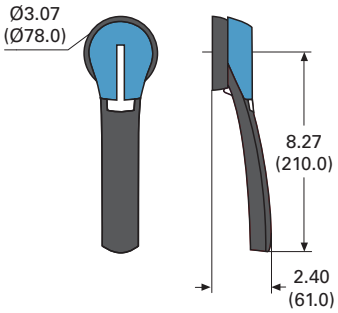


Door Interlocked External Handle

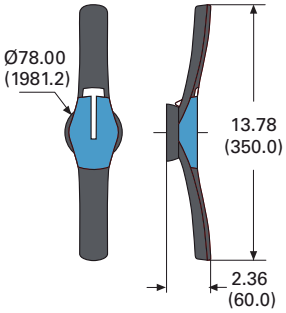
PH2 Type Handle



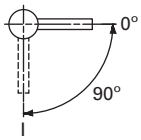
PH3 Type Handle

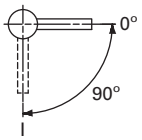


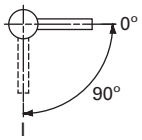
PH4 Type Handle



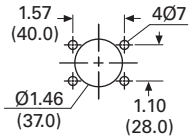
Direction of Operation

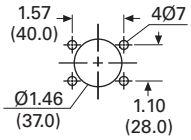


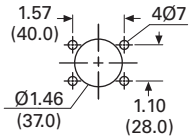




Door Drilling Templates

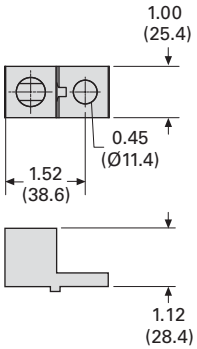




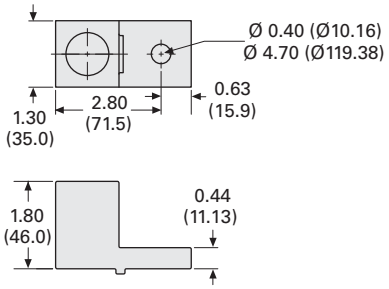


Top and Bottom Terminal Lugs

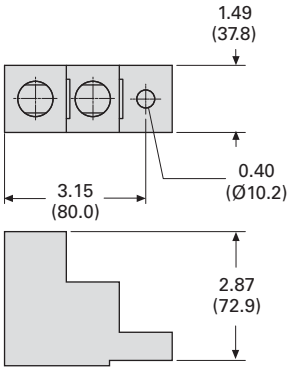
R9 Series Non-Fusible 100–200 A



R9 Series Non-Fusible 400 A



R9 Series Non-Fusible 600–1200 A



1

Fusible 30–800 A

Contents

Fusible 30–800 A

Product Description

R9 Series (UL 98 listed) Fusible 30–800 A manual operated multi-pole fusible disconnect switches use double break contacts per pole that ensure complete isolation of the fuse when the switch is in the OFF position.

When installed with fuses, they provide protection for low-voltage electrical installations against short circuit and overload.

Features, Benefits and Functions

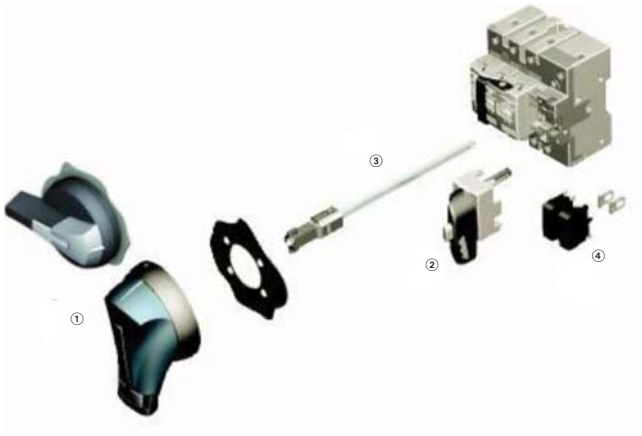
- Load break functionality
- Double break contacts
- Up to 200 kA short-circuit rating with Class CC, J or L fuses
- Compact footprints
- The optional TEST position function (up to 400 A) enables testing of the control circuit auxiliaries without switching the main contacts. This function provides a simple alternative to a separately wired pushbutton
- Defeatable pistol handles automatically re-latch when the panel door is closed
- Front or side operation
- Flange operation
- NFPA 79 compliant kits
- Two-, three- and four-pole devices

Standards and Certifications

- UL 98, File E222859 for 30 to 800 A ratings
- UL 489, File E305341 for H-Frame switches
- CSA 22.2 No. 4, File 217736
- CSA 22.2 No. 5, File 217736, H-Frame only
- IEC 60947-1, EN 60947-1
- IEC 60947-3, EN 60947-3
- NFPA 79

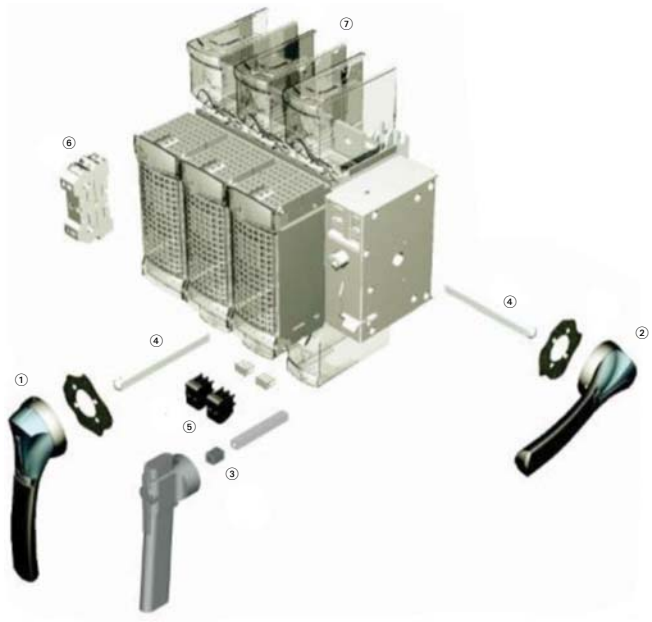
Product Identification

R9 Fusible 30 A/CC and 30 A/J H-Frame—Direct and External Operation



① External front handles
② Direct handle
③ Shaft extensions for external handles
④ Configurable U Type ACs, for pre-break and signaling or TEST

R9 Fusible 30 A/J–800 A/L (I–N-Frames)—Direct and External Operation



① External front handles
② External right side handle (not applicable for N-Frame 600/800 A)
③ Direct handle
④ Shaft extensions for external handles
⑤ Configurable U Type ACs, for pre-break and signaling or TEST
⑥ Side auxiliary contacts
⑦ Terminal shrouds

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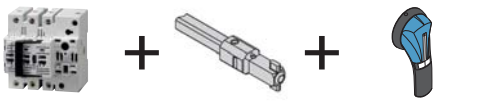
Product Selection

Direct Operation

Switch body + Direct handle

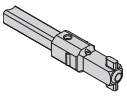
External Operation



Switch body + Shaft + External handle

Front and Right Side Operation



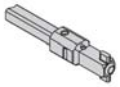



Ampere Rating (Frame) (Fuse Class)	Number of Poles	Switch Body Only	Direct Handle	External Selector Handle (Choose one)	Shaft Extension for Selector Handle Only (Choose one)	External Front Pistol Handle	External Right Side Pistol Handle
30 ① Compact (H-Frame) (CC)	3	**R4H3030FCC**	**DHR9HC**	Black 1,3R,12 **SHB0N12HV**	7.90 (200.0) **SF200SH5X5H**	Black 1,3R,12 **PHB1N12F**	—
30 ① (H-Frame) (CC)	3 + switched neutral	**R4H3030FCCSN**		Red 1,3R,12 **SHR0N12HV**	12.60 320.0) **SF320SH5X5H**	Red 1,3R,12 **PHR1N12F**	
30 ① Compact (H-Frame) (J)	3	**R4H3030FJ**	**DHR9HJ**	Black 4,4X **SHB0N4XHV**	15.70 (400.0) **SF400SH5X5H**	Black 4,4X **PHB1N4XF**	
30 ① (H-Frame) (J)	3 + switched neutral	**R4H3030FJSN**		Red 4,4X **SHR0N4XHV**		Red 4,4X **PHR1N4XF**	
30 (I-Frame) (CC)	3	**R9I3030FCC**	**DHR9J2M**	—	—		
	4	**R9I4030FCC**					
30 (J-Frame) (J)	2	**R9J2030FJ**				Black 4,4X (w/ TEST Position) **PHB1N4XFT**	Black 4, 4X **PHB1N4XS**
	3	**R9J3030FJ**					
	4	**R9J4030FJ**					
60 ① (J-Frame) (J)	2	**R9J2060FJ**				Red 4,4X (w/ TEST Position) **PHR1N4XFT**	Red 4, 4X **PHR1N4XS**
	3	**R9J3060FJ**					
	4	**R9J4060FJ**					

Note

① 100 kA short-circuit rating.

Front and Right Side Operation, continued

Ampere Rating (Frame) (Fuse Class)	Number of Poles	Switch Body Only	Shaft Extensions for Pistol Handle Only In (mm) (Choose one)	NFPA 79 Kit	Auxiliary Contacts (Choose one)	S Type Auxiliary Contacts (Choose one)	Terminal Shrouds
30 Compact (H-Frame) (CC)	3	**R4H3030FCC**	7.90 (200.0) **SF200PH5X5**	**NFPA79H**	1 AC NO **AC1NOR9** 1 AC NC **AC1NCR**	—	Integral to switch
30 (H-Frame) (CC)	3 + switched neutral	**R4H3030FCCSN**	12.60 (320.0) **SF320PH5X5**				
30 Compact (H-Frame) (J)	3	**R4H3030FJ**	15.70 (400.0) **SF400PH5X5**				
30 (H-Frame) (J)	3 + switched neutral	**R4H3030FJSN**					
30 (I-Frame) (CC)	3	**R9I3030FCC**	7.90 (200.0) **SF200PH10X10**	**NFPA79JKL**		1 AC NO + NC **AC1NO1NCJ2N** 2 AC NO + NC **AC2NO2NCJ2N** 1 AC NO + NC w/ TEST **AC1NO1NCJ2NT** 2 AC NO + NC w/ TEST **AC2NO2NCJ2NT**	
	4	**R9I4030FCC**					
30 (J-Frame) (J)	2	**R9J2030FJ**	12.60 (320.0) **SF320PH10X10**				
	3	**R9J3030FJ**					
	4	**R9J4030FJ**	15.70 (400.0) **SF400PH10X10**				
60 ① (J-Frame) (J)	2	**R9J2060FJ**					
	3	**R9J3060FJ**	19.70 (500.0) **SF500PH10X10**				
	4	**R9J4060FJ**					

Note

① 100 kA short-circuit rating.

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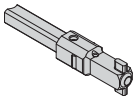
Front and Right Side Operation, continued

Ampere Rating (Frame) (Fuse Class)	Number of Poles	Switch Body Only	Direct Handle (Black)	External Front Pistol Handle (Choose one)	External Right Side Pistol Handle (Choose one)
60 ① (K-Frame) (J)	2	**R9K2060FJ**	**DHR9J2M**	Black 1,3R,12 **PHB2N12F**	Black 4, 4X **PHB2N4XS**
	3	**R9K3060FJ**			
	4	**R9K4060FJ**		Red 1,3R,12 **PHR2N12F**	Red 4, 4X **PHR2N4XS**
100 (K-Frame) (J)	2	**R9K2100FJ**			
	3	**R9K3100FJ**			
	4	**R9K4100FJ**		Black 4,4X **PHB2N4XF**	
200 (L-Frame) (J)	2	**R9L2200FJ**			
	3	**R9L3200FJ**			
	4	**R9L4200FJ**		Red 4,4X **PHR2N4XF**	—
400 (M-Frame) (J)	3	**R9M3400FJN** ②			
	4	**R9M4400FJN** ②		Black 4,4X (w/ TEST Position) **PHB2N4XFT** ③	
				Red 4,4X (w/ TEST Position) **PHR2N4XFT** ③	
600 (N-Frame) (J)	2	**R9N2600FJ**	**DHR9N**	Black 4, 4X **PHB3N4XF**	
	3	**R9N3600FJ**			
	4	**R9N4600FJ**		Red 4,4X **PHR3N4XF**	
800 (N-Frame) (L)	2	**R9N2800FL**			
	3	**R9N3800FL**			
	4	**R9N4800FL**			

Notes

① 200 kA short-circuit rating.
② Replaces R9M3400FJ and R9M4400FJ. New version does not include line and load terminal shrouds.
③ Requires test handle.

Front and Right Side Operation, continued



Ampere Rating (Frame) (Fuse Class)	Number of Poles	Switch Body Only	Shaft Extensions for External Handle In (mm) (Choose one)	NFPA 79 Kit ①	Auxiliary Contacts (Choose one) ①	Auxiliary Contacts (Choose one)	Terminal Shrouds
60 ② (K-Frame) (J)	2	**R9K2060FJ**	7.90 (200.0) Pistol **SF200PH10X10**	**NFPA79JKL**	1 AC NO **AC1NOR9**	1 AC NO + NC **AC1NO1NCJ2N**	Integral to switch
	3	**R9K3060FJ**					
	4	**R9K4060FJ**	12.60 (320.0) Pistol **SF320PH10X10**		1 AC NC **AC1NCR9**	2 AC NO + NC **AC2NO2NCJ2N**	
100 (K-Frame) (J)	2	**R9K2100FJ**					
	3	**R9K3100FJ**					
	4	**R9K4100FJ**	15.70 (400.0) Pistol **SF400PH10X10**			1 AC NO + NC w/ TEST **AC1NO1NCJ2NT** ④	**TSR9L2**
200 (L-Frame) (J)	2	**R9L2200FJ**					**TSR9L3**
	3	**R9L3200FJ**					
	4	**R9L4200FJ**	19.70 (500.0) Pistol **SF500PH10X10**				**TSR9L4**
400 (M-Frame) (J)	3	**R9M3400FJN** ③				2 AC NO + NC w/ TEST **AC2NO2NCJ2NT** ④	**TSR9M3N**
	4	**R9M4400FJN** ③					**TSR9M4N**
600 (N-Frame) (J)	2	**R9N2600FJ**	7.90 (200.0) Pistol **SF200PH12X12**	**NFPA79N**		1 AC NO + NC **AC1NO1NCJ2N**	**TSR9N2**
	3	**R9N3600FJ**					**TSR9N3**
	4	**R9N4600FJ**	12.60 (320.0) Pistol **SF320PH12X12**				**TSR9N4**
800 (N-Frame) (L)	2	**R9N2800FL**				2 AC NO + NC **AC2NO2NCJ2N**	**TSR9N2**
	3	**R9N3800FL**					**TSR9N3**
	4	**R9N4800FL**	15.70 (400.0) Pistol **SF400PH12X12**				**TSR9N4**
			19.70 (500.0) Pistol **SF500PH12X12**				

Notes

① Not applicable for 400 A.
② 200 kA short-circuit rating.
③ Replaces R9M3400FJ and R9M4400FJ.
④ Requires test handle.

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Accessories

NFPA 79 Compliant

"Flange" Handle for Flange-Operated Switches

Description	Ampere Rating (Frame)	Handle Type	NEMA Type	Catalog Number
For side-operated switches only. Provides heavy-duty flange style operation. Meets both UL 508A and NFPA 79 requirements. Please order cable or rod link between handle and switch.	30–200 (J-, K-, L-Frame)	Standard handle	1, 3, 3R, 4, 12	**FHS** ①
	30–200 (J-, K-, L-Frame)	Chrome-plated handle	1, 3, 3R, 4, 4X, 12	**FHCP** ①

Cable Operator

Mechanism for Flange Handle

Description	Ampere Rating (Frame)	NEMA Type	Cable Length In (mm)	Catalog Number
Link between "Flange" handle and side-operated switches. Please order mechanism and "Flange" handle.	30–200 (J-, K-, L-Frame)	Mechanism for "Flange" handle	—	**CFM1**
			36.00 (914.4)	**CFC36**
			60.00 (1524.0)	**CFC60**
			120.00 (3048.0)	**CFC120**

Rod Operator

Description	Ampere Rating (Frame)	For Enclosure Depth In (mm)	Catalog Number
Link between "Flange" handle and side-operated switches. Mechanism included. Please order "Flange" handle.	30–200 (J-, K-, L-Frame)	8.00–24.00 (203.2–609.6)	**RFM1**

NFPA 79 "Through the Door" Kit

Description	Ampere Rating (Frame)	Catalog Number
For front-operated switches only. Meets both UL 508A and NFPA 79 requirements. Kit includes mechanism, shaft and internal handle. Please also order a "PH" type external pistol handle.	30 (H-Frame)	**NFPA79H**
	30–200 (J-, K-, L-Frame)	**NFPA79JKL**
	400 (M-Frame)	**NFPA79M**
	600–800 (N-Frame)	**NFPA79N**

Shaft Support

Description	Ampere Rating (Frame)	Catalog Number
Front operation shaft support accessory—This support maintains shaft position for extension shafts greater than 320 mm in length.	30–400 (J-, K-, L-, M-Frame)	**SSR9J2M**

Note

① Defeatable.

Direct Handle

Description	Ampere Rating (Frame)	Fuse	Catalog Number
Front operation. Black.	30 (H-Frame)	CC	**DHR9HC**
	30 (H-Frame)	J	**DHR9HJ**
	30 (I-Frame)	CC	**DHR9J2M**
	30–400 (J-, K-, L-, M-Frame)	J	**DHR9J2M**
	600–800 (N-Frame)	J/L	**DHR9N**

Door Interlocked External Front Handles

SO Type Handle

PH1 Type Handle

PH2 Type Handle

PH3 Type Handle

Description	Ampere Rating (Frame)	Handle Type	NEMA Type	Color	Standard Catalog Number
The handle locking function of the front external operation handle prevents the user from opening the door of the enclosure when the switch is in the ON position, and when the switch is padlocked in the OFF position (PH1, PH2 and PH3 type handles only). Opening the door when the switch is in the OFF position is possible by defeating the locking function with the use of a tool (authorized persons only). The locking function is restored when the door is closed back.	30 (H-Frame)	SO	1, 3R, 12	Black	**SHB0N12HV**
	30 (H-Frame)	SO	1, 3R, 12	Red/yellow	**SHR0N12HV**
	30 (H-Frame)	SO	4, 4X	Black	**SHB0N4XHV**
	30 (H-Frame)	SO	4, 4X	Red/yellow	**SHR0N4XHV**
	30–60 (H-, I-, J-Frame)	PH1	1, 3R, 12	Black	**PHB1N12F**
	30–60 (H-, I-, J-Frame)	PH1	1, 3R, 12	Red/yellow	**PHR1N12F**
	30–60 (H-, I-, J-Frame)	PH1	4, 4X	Black	**PHB1N4XF**
	30–60 (H-, I-, J-Frame)	PH1	4, 4X	Red/yellow	**PHR1N4XF**
	30–60 (H-, I-, J-Frame)	PH1	4, 4X	Black	**PHB1N4XFT** ①
	30–60 (H-, I-, J-Frame)	PH1	4, 4X	Red/yellow	**PHR1N4XFT** ①
	60–400 (K-, L-, M-Frame)	PH2	1, 3R, 12	Black	**PHB2N12F**
	60–400 (K-, L-, M-Frame)	PH2	1, 3R, 12	Red/yellow	**PHR2N12F**
	60–400 (K-, L-, M-Frame)	PH2	4, 4X	Black	**PHB2N4XF**
	60–400 (K-, L-, M-Frame)	PH2	4, 4X	Red/yellow	**PHR2N4XF**
	60–400 (K-, L-, M-Frame)	PH2	4, 4X	Black	**PHB2N4XFT** ①
	60–400 (K-, L-, M-Frame)	PH2	4, 4X	Red/yellow	**PHR2N4XFT** ①
	600–800 (N-Frame)	PH3	4, 4X	Black	**PHB3N4XF**
	600–800 (N-Frame)	PH3	4, 4X	Red/yellow	**PHR3N4XF**

Right Side External Handles

Ampere Rating (Frame)	Handle Type	NEMA Type	Color	Standard Catalog Number
30–60 (J-Frame)	PH1	4, 4X	Black	**PHB1N4XS**
30–60 (J-Frame)	PH1	4, 4X	Red/yellow	**PHR1N4XS**
60–400 (K-, L-, M-Frame)	PH2	4, 4X	Black	**PHB2N4XS**
60–400 (K-, L-, M-Frame)	PH2	4, 4X	Red/yellow	**PHR2N4XS**

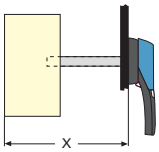
Note

① Includes TEST position.

Shaft Extensions for External Handles

Ampere Rating (Frame)	Handle Type	Shaft Length In (mm)	Catalog Number
30 (H-Frame)	SH0	7.90 (200.0)	**SF200SH5X5H**
30 (H-Frame)	SH0	12.60 (320.0)	**SF320SH5X5H**
30 (H-Frame)	SH0	15.70 (400.0)	**SF400SH5X5H**
30 (H-Frame)	PH1	7.90 (200.0)	**SF200PH5X5**
30 (H-Frame)	PH1	12.60 (320.0)	**SF320PH5X5**
30 (H-Frame)	PH1	15.70 (400.0)	**SF400PH5X5**
30–400 (I-, J-, K-, L-, M-Frame)	PH2	7.90 (200.0)	**SF200PH10X10**
30–400 (I-, J-, K-, L-, M-Frame)	PH2	12.60 (320.0)	**SF320PH10X10**
30–400 (I-, J-, K-, L-, M-Frame)	PH2	15.70 (400.0)	**SF400PH10X10**
30–400 (I-, J-, K-, L-, M-Frame)	PH3	19.70 (500.0)	**SF500PH10X10**
600–800 (N-Frame)	PH3	7.90 (200.0)	**SF200PH12X12**
600–800 (N-Frame)	PH3	12.60 (320.0)	**SF320PH12X12**
600–800 (N-Frame)	PH3	15.70 (400.0)	**SF400PH12X12**
600–800 (N-Frame)	PH3	19.70 (500.0)	**SF500PH12X12**

Handle Types SH and PH, X Minimum Dimensions



Ampere Rating (Frame)	Dimensions X In (mm)	Handle Type	Shaft Length In (mm)	Catalog Number
30 (H-Frame)	4.02–9.65 (102.0–245.0)	SH0	7.90 (200.0)	**SF200SH5X5H**
30 (H-Frame)	4.02–14.37 (102.0–365.0)	SH0	12.60 (320.0)	**SF320SH5X5H**
30 (H-Frame)	4.02–17.52 (102.0–445.0)	SH0	15.70 (400.0)	**SF400SH5X5H**
30 (H-Frame)	4.02–9.65 (102.0–245.0)	PH1	7.90 (200.0)	**SF200PH5X5**
30 (H-Frame)	4.02–14.37 (102.0–365.0)	PH1	12.60 (320.0)	**SF320PH5X5**
30 (H-Frame)	4.02–17.52 (102.0–445.0)	PH1	15.70 (400.0)	**SF400PH5X5**
30–100 (I-, J-, K-Frame)	5.30–9.06 (135.0–230.0)	PH2, PH3	7.90 (200.0)	**SF200PH10X10**
200 (L-Frame)	5.70–9.06 (145.0–230.0)	PH2, PH3	7.90 (200.0)	**SF200PH10X10**
400 (M-Frame)	7.87–10.63 (200.0–270.0)	PH2, PH3	7.90 (200.0)	**SF200PH10X10**
30–100 (I-, J-, K-Frame)	5.30–13.78 (135.0–350.0)	PH2, PH3	12.60 (320.0)	**SF320PH10X10**
200 (L-Frame)	5.70–13.78 (145.0–350.0)	PH2, PH3	12.60 (320.0)	**SF320PH10X10**
400 (M-Frame)	7.87–10.63 (200.0–395.0)	PH2, PH3	12.60 (320.0)	**SF320PH10X10**
30–100 (I-, J-, K-Frame)	5.30–16.93 (135.0–430.0)	PH2, PH3	15.70 (400.0)	**SF400PH10X10**
200 (L-Frame)	5.70–16.93 (145.0–430.0)	PH2, PH3	15.70 (400.0)	**SF400PH10X10**
400 (M-Frame)	7.87–18.72 (200.0–475.0)	PH2, PH3	15.70 (400.0)	**SF400PH10X10**
30–100 (I-, J-, K-Frame)	5.30–20.87 (135.0–530.0)	PH2, PH3	19.70 (500.0)	**SF500PH10X10**
200 (L-Frame)	5.70–20.87 (145.0–530.0)	PH2, PH3	19.70 (500.0)	**SF500PH10X10**
400 (M-Frame)	7.87–22.66 (200.0–575.0)	PH2, PH3	19.70 (500.0)	**SF500PH10X10**
600–800 (N-Frame)	10.63–11.97 (270.0–304.0)	PH3	12.60 (320.0)	**SF320PH12X12**
600–800 (N-Frame)	10.63–16.69 (270.0–424.0)	PH3	12.60 (320.0)	**SF320PH12X12**
600–800 (N-Frame)	10.63–19.84 (270.0–504.0)	PH3	15.70 (400.0)	**SF400PH12X12**
600–800 (N-Frame)	10.63–23.78 (270.0–604.0)	PH3	19.70 (50.00)	**SF500PH12X12**

Auxiliary Contacts—NO + NC ①

Description	Ampere Rating (Frame)	Number of ACs	Operating Current I_e (Amperes) Nominal Current (Amperes)	Catalog Number
For the R9 Series Fusible 30–800 A, indication of the O and I positions by 1 to 4 NO + NC auxiliary contacts. Electrical principle: Cabling by terminal cage with #16 AWG maximum. High electrical characteristics: A600/D600	600–800 (N-Frame)	1NO + 1NC	10	**AC1NO1NCJ2N** ②
	600–800 (N-Frame)	2NO + 2NC	10	**AC2NO2NCJ2N** ②
	30–200 (J-, K-, L-Frame)	1NO + 1NC (w/ TEST)	10	**AC1NO1NCJ2NT**
	30–200 (J-, K-, L-Frame)	2NO + 2NC (w/ TEST)	10	**AC2NO2NCJ2NT**

Auxiliary Contacts—NO or NC ③

Description	Ampere Rating (Frame)	Number of ACs	Catalog Number
The different functions (pre-break, 0 and 1 indication, TEST feature) are easily configurable with pegs (one or two pegs per position). Two superposed auxiliary contacts maximum. For 30 A/CC (H-Frame), maximum of four ACs. For 30 A/J (H-Frame), maximum of two ACs. For 30 to 100 A/J (I, J and K-Frame), maximum of four ACs. For 200 to 600 A/J (L and M-Frame), maximum of eight ACs. Cabling to the control circuit by terminals with a maximum section of 2 x 2.5 mm^2. Electrical characteristics: A300	**NO Auxiliary Contact**		
	30–600 (H–M-Frame)	1	**AC1NOR9**
	NC Auxiliary Contact		
	30–600 (H–M-Frame)	1	**AC1NCR9**

Characteristics for Pre-Break Auxiliary Contacts

Ampere Rating	Contact Type	Nominal Current Amperes	Operating Current I_e (Amperes) 250 Vac AC-13	400 Vac AC-13	24 Vdc DC-13	48 Vdc DC-13
30–800	NO + NC	10	6	4	5	3

Terminal Shrouds

Terminal Shrouds

Description	Ampere Rating (Frame)	Number of Poles	Catalog Number
Line or load side protection against direct contact with terminals or the connection parts	30–100 (H-, J-, K-Frame)	2/3/4	Integral to switch
	200 (L-Frame)	2	**TSR9L2**
	200 (L-Frame)	3	**TSR9L3**
	200 (L-Frame)	4	**TSR9L3**
	400 (M-Frame)	2	**TSR9M2N**
	400 (M-Frame)	3	**TSR9M3N**
	400 (M-Frame)	4	**TSR9M4N**
	600–800 (N-Frame)	2	**TSR9N2**
	600–800 (N-Frame)	3	**TSR9N3**
	600–800 (N-Frame)	4	**TSR9N4**

Notes

① Same-make/same-break auxiliary contacts.
② Auxiliary contacts without "Test" cannot be used on J–M-Frame switches.
③ Early-break/same-make auxiliary contacts.

Line and Load Terminal Lugs

Description	Ampere Rating (Frame)	Fuse	Number of Lugs	Lug Capacity/ Phase	Cable Type	Catalog Number
Connection of bare copper cables on to the terminals (no spade lugs).	30 (H-, I-Frame)	CC/J	—	#14–#10	Cu	Integral to switch
	30 (H-, I-Frame)	CC/J	—	#14–#10	Cu	Integral to switch
	30–60 (J-Frame)	J	—	#10–#6	Cu	Integral to switch
	60–100 (K-Frame)	J	—	#12–#1	Cu	Integral to switch
	200 (L-Frame)	J	2	#6–300 kcmil	Cu/Al	**LK2R9DL**
	200 (L-Frame)	J	3	#6–300 kcmil	Cu/Al	**LK3R9DL**
	200 (L-Frame)	J	4	#6–300 kcmil	Cu/Al	**LK4R9DL**
	400 (M-Frame)	J	3	(1) #4–600 kcmil or (2) 1/0–250 kcmil	Cu/Al	**LK3R9EM**
	400 (M-Frame)	J	4	(1) #4–600 kcmil or (2) 1/0–250 kcmil	Cu/Al	**LK4R9EM**
	600–800 (N-Frame)	J/L	2	(2) #2–600 kcmil	Cu/Al	**LK2R9FN**
	600–800 (N-Frame)	J/L	3	(2) #2–600 kcmil	Cu/Al	**LK3R9FN**
	600–800 (N-Frame)	J/L	4	(2) #2–600 kcmil	Cu/Al	**LK4R9FN**

Shorting Links

Ampere Rating (Frame)	Fuse	Pack Quantity	Catalog Number
60 (J-,K-Frame)	J	3	**SLJK360**
100 (K-Frame)	J	3	**SLK3100**
200 (L-Frame)	J	3	**SLL3**
400 (M-Frame)	J	3	**SLM3**
600–800 (N-Frame)	J/L	3	**SLN3**

Technical Data and Specifications

UL and CSA Characteristics

R9 Series Fusible 30–800 A

Description	30 A	30 A	30 A	30 A	60 A	60 A	100 A
General Use Ratings							
Switch frame	H	H	I	J	J	K	K
600 Vac (A)	30	30	30	30	60	60	100
600 Vdc (A)	—	—	—	—	—	—	—
Short-Circuit Ratings							
Short-circuit rating at 600 Vac (kA)	100	100	100	200	100	200	200
Fuse type	CC	J	CC	J	J	J	J
Maximum fuse rating (A)	30	30	30	30	60	60	100
Maximum Horsepower Rating/Maximum Motor FLA Three-Phase							
220–240 Vac	7.5/22	7.5/22	7.5/22	7.5/22	15/42	15/42	30/80
440–480 Vac	15/21	15/21	15/21	15/21	30/40	30/40	60/77
600 Vac	20/22	20/22	20/22	20/22	50/52	50/52	75/77
Maximum Horsepower Rating/Maximum Motor FLA Single-Phase							
220–240 Vac	—	—	3/17	3/17	10/50	10/50	10/50
440–480 Vac	—	—	7.5/21	7.5/21	10/26	10/26	10/26
600 Vac	—	—	10/20	10/20	10/20	10/20	10/20
Maximum Horsepower Rating/Maximum Motor FLA DC							
125 Vdc ①	3/25	3/25	3/25	3/25	5/40	5/40	7.5/58
250 Vdc ②	5/20	5/20	5/20	5/20	10/38	10/38	20/72
Mechanical Characteristics							
Endurance (number of operating cycles)	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Terminal Lugs							
Type	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated
Minimum conn. section	#14	#14	#14	#10	#10	#12	#12
Maximum conn. section	#10	#10	#10	#6	#6	#1	#1

Notes

① Two-pole in series.
② Three-pole in series.

1

R9 Series Fusible 30–800 A, continued

Description	200 A	400 A	600 A	800 A
General Use Ratings				
Switch Frame	L	M	N	N
600 Vac (A)	200	400	600	800
600 Vdc (A)	—	—	600 ②	800 ②
Short-Circuit Ratings				
Short-circuit rating at 600 Vac (kA)	200	200	200	200
Fuse type	J	J	J	L
Maximum fuse rating (A)	200	400	600	800
Maximum Horsepower Rating/Maximum Motor FLA Single-Phase				
220–240 Vac	—	—	—	—
440–480 Vac	—	—	—	—
600 Vac	—	—	—	—
Maximum Horsepower Rating/Maximum Motor FLA Three-Phase				
220–240 Vac	60/154	125/312	200/480	200/480
440–480 Vac	125/156	250/302	500/590	500/590
600 Vac	150/144	350/336	500/472	500/472
Maximum Horsepower Rating/Maximum Motor FLA DC				
125 Vdc ①	—	20/148	—	—
250 Vdc ②	—	50/173 ②	—	—
Mechanical Characteristics				
Endurance (number of operating cycles)	8000	6000	5000	5000
Terminal Lugs				
Type	Option	Option	Option	Option
Minimum conn. section	#6	#2	2x#2	2x#2
Maximum conn. section	3/0	300 kcmil	2 x 600 kcmil	2 x 600 kcmil

Notes

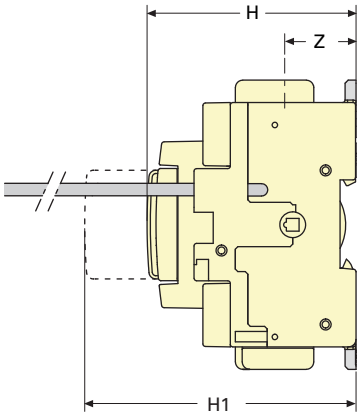
① Two-pole in series.
② Three-pole in series.

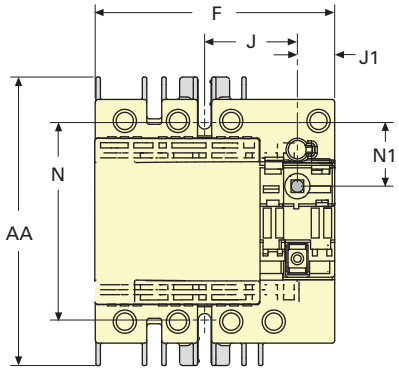
Dimensions

Approximate Dimensions in Inches (mm)

Front Operation

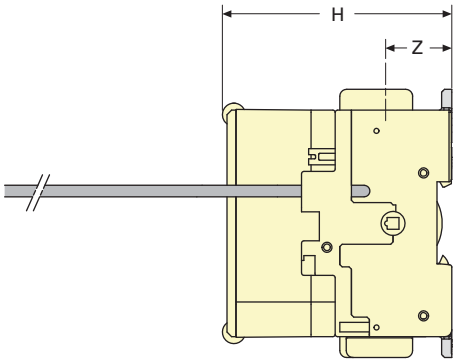
R9 Series Fusible 30 A/CC—H-Frame

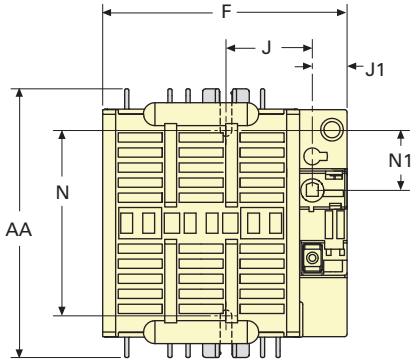




	Switch Body				Switch Mounting		Connection Terminals	
F	**H**	**H1**	**J**	**J1**	**N**	**N1**	**AA**	**Z**
3.78 (96.0)	3.28 (83.3)	5.19 (131.8)	1.47 (37.3)	0.59 (15.0)	3.13 (79.5)	1.00 (25.4)	4.56 (115.8)	1.12 (28.4)

R9 Series Fusible 30 A/J—H-Frame





	Switch Body			Switch Mounting		Connection Terminals	
F	**H**	**J**	**J1**	**N**	**N1**	**AA**	**Z**
4.13 (104.9)	3.89 (98.8)	1.47 (37.3)	0.59 (15.0)	3.30 (83.8)	1.00 (25.4)	4.56 (115.8)	1.12 (28.4)

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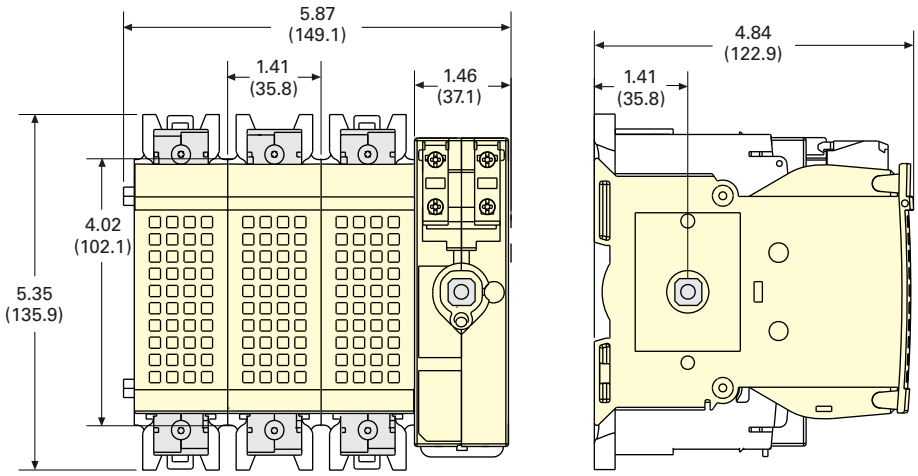
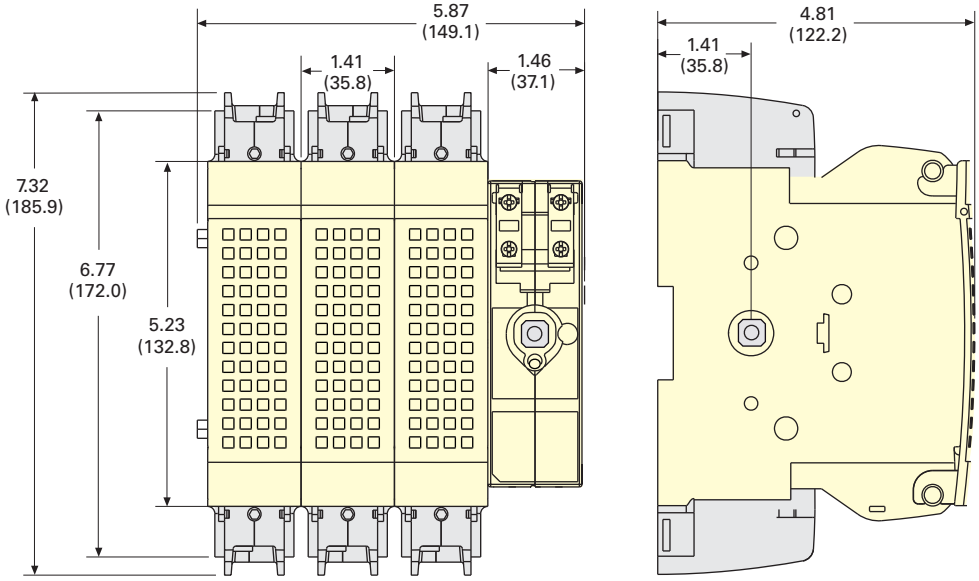
Approximate Dimensions in Inches (mm)

R9 Series Fusible 30 A/J and 60 A/J (100 kA)—J-Frame

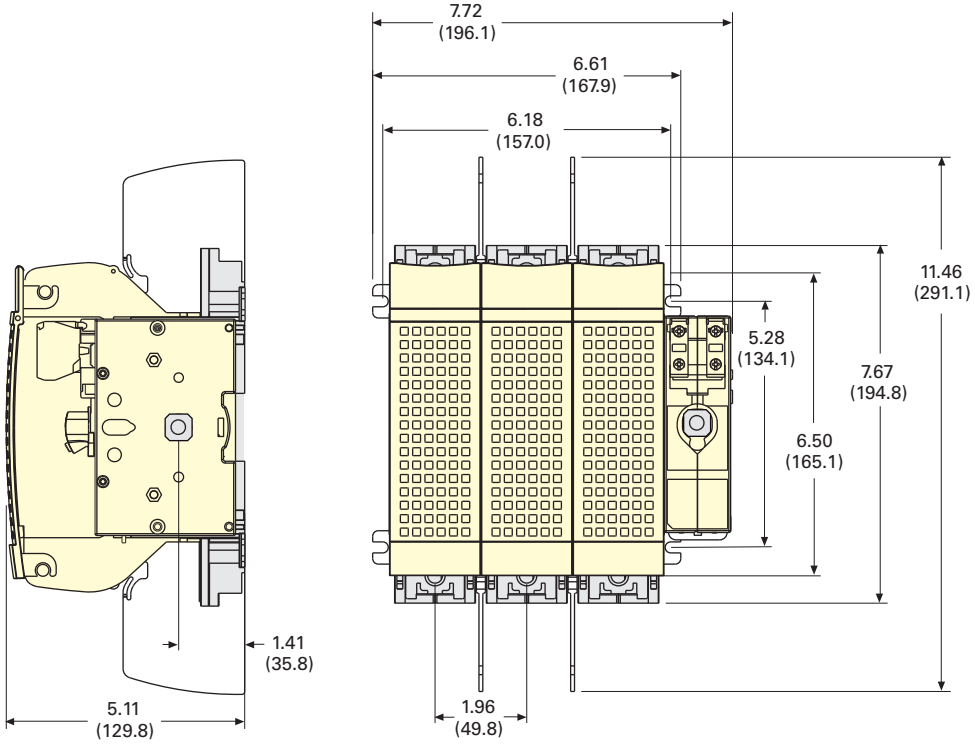


Approximate Dimensions in Inches (mm)

R9 Series Fusible 60 A/J (200 kA) and 100 A/J—K-Frame



R9 Series Fusible 200 A/J—L-Frame



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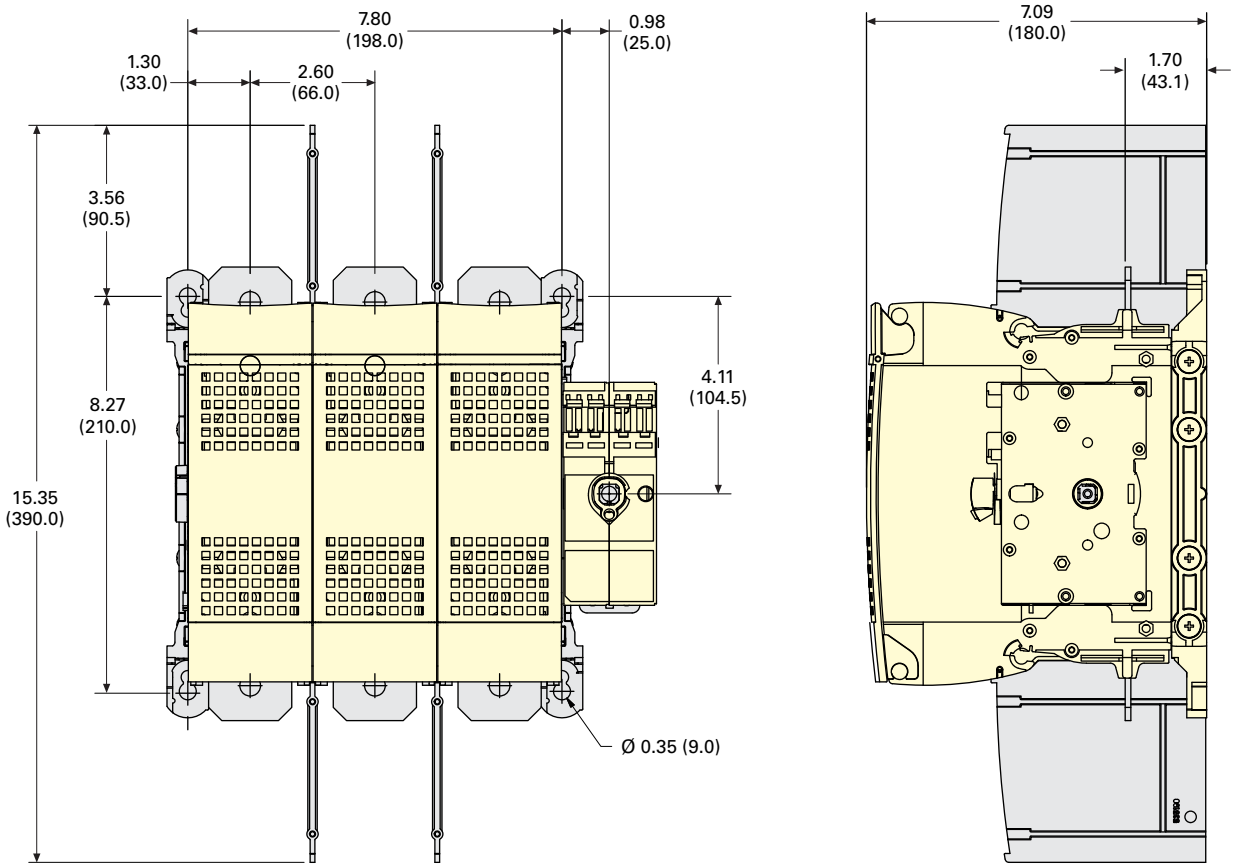
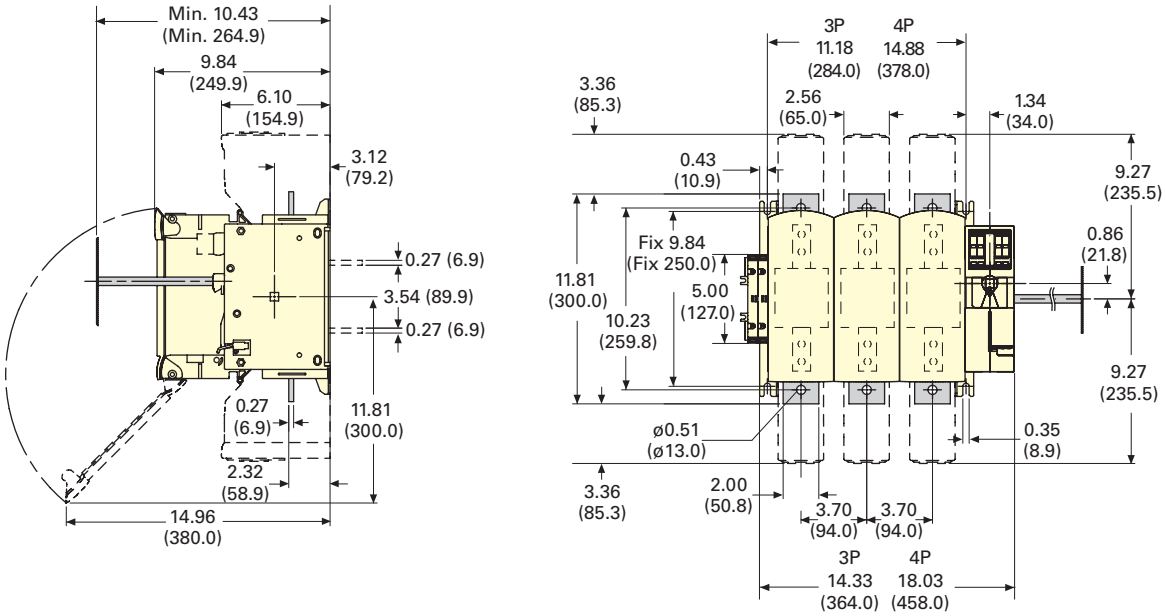
Approximate Dimensions in Inches (mm)

R9 Series Fusible 400 A/J—M-Frame

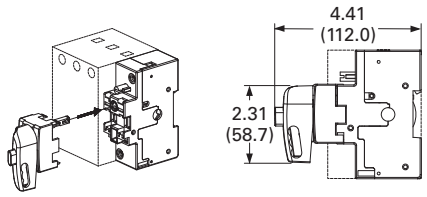


R9 Series Fusible 600–800 A J/L—N-Frame

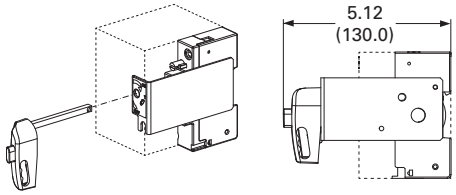


Approximate Dimensions in Inches (mm)

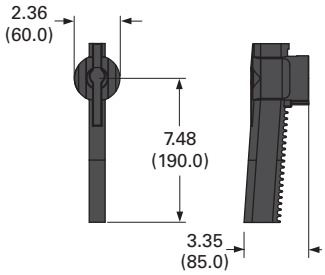
30CC (H-Frame)



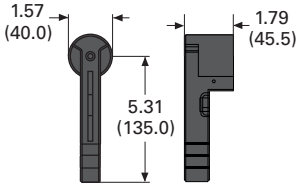
30J (H-Frame)



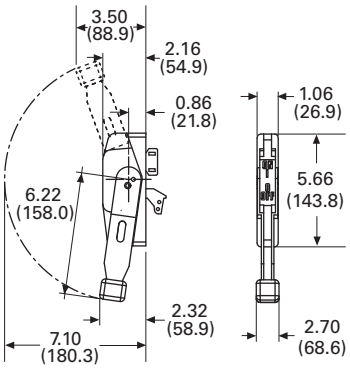
30J to 400J

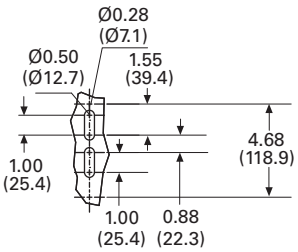


600J and 800L



Flange Handle





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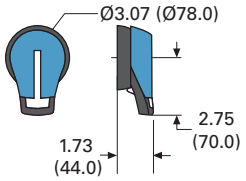
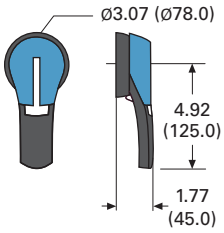
Approximate Dimensions in Inches (mm)

Door Interlocked External Handle

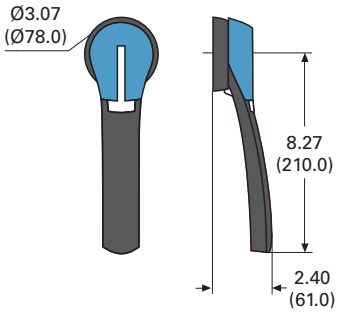
PH1 Type Handle



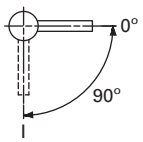
PH2 Type Handle

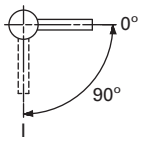


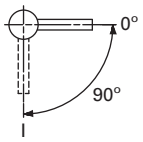
PH3 Type Handle



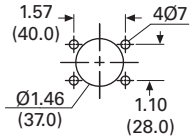
Direction of Operation

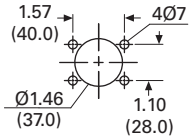


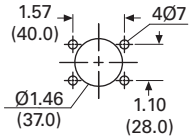




Door Drilling Template

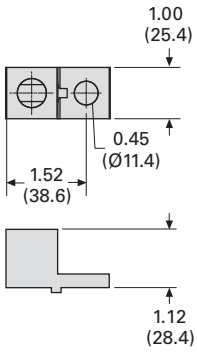




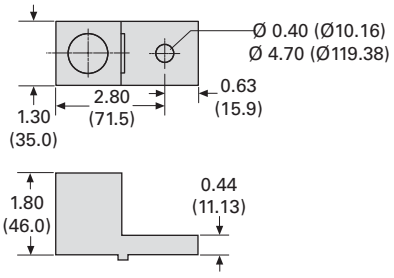


Line and Load Side Lugs

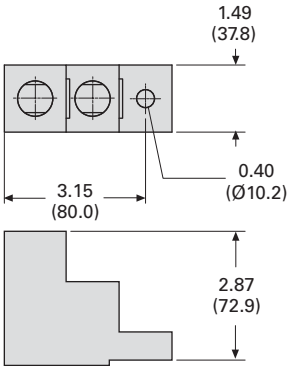
200 A (L-Frame)



400 A (M-Frame)



600–800 A (N-Frame)



DC Rated Disconnects

Contents

DC Rated Disconnects

Product Description

UL listed disconnect switches 600 Vdc for photovoltaic applications 100 to 400 A

R9 Series (UL 98 listed) DC rated disconnects are manually operated multi-pole load break switches. They provide safety isolation for any low-voltage circuit in a photovoltaic application.

Features, Benefits and Functions

- Switching technology
- Up to 600 Vdc according to UL 98 / CSA
- Up to 1000 Vdc according to IEC 947-3

Application Description

In three- and four-pole versions from 100 to 400 A

Standards and Certifications

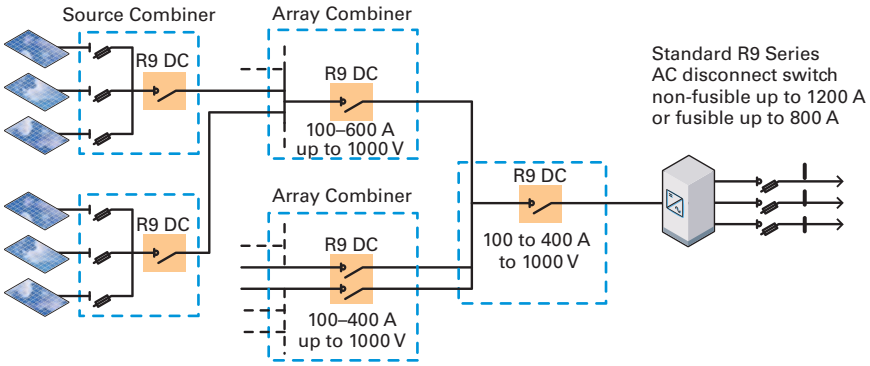
- UL 98, cULus®, File E222859
- CSA 22.2 No. 4, File 217736 ①
- IEC 60947-3
- EN 60947-3
- IEC 60-364-7-712 (Rules for the installations and sites special—photovoltaic applications)

Listed

Note

① Q4 2010

Simplified Large Photovoltaic System Layout



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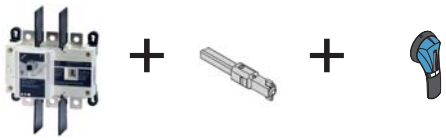
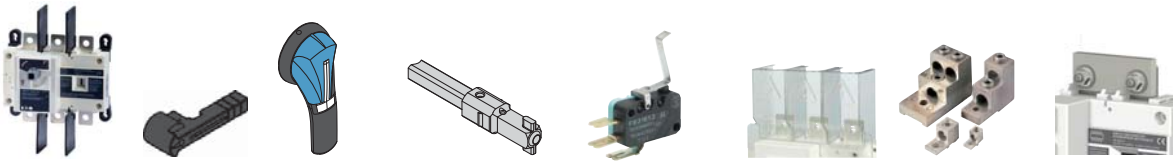
Product Selection

Direct Operation

External Operation



Front Operation—Three- and Four-Pole



Ampere Rating	Number of Poles	Switch Body	Direct Handle	External Handle (Choose one)	Shaft for External Handle In (mm) (Choose one)	Auxiliary Contacts (Choose one)	Terminals Shroud	Terminal Lugs	Jumpers for Connecting Poles in Series
100	3	**R9D3100UDC**	**DHR9DE**	S2 Type Black 1, 3R, 12 ① **PHB2N12F**	7.90 (200.0) **SF200PH10X10**	C Type 1st Contact NO+NC **AC1NONCDE**	3P ② **TS3R9DT**	3P ④ **LK3R9DL**	2 pieces **DCJUMPD2**
	4	**R9D4100UDC**							
					12.60 (320.0) **SF320PH10X10**		3P ③ **TS3R9DB**	4P ④ **LK4R9DL**	3 pieces **DCJUMPD3**
200	3	**R9D3200UDC**		Red/Yellow 1, 3R, 12 ① **PHR2N12F**		C Type 2nd Contact NO+NC **AC2NONCDE**			
	4	**R9D4200UDC**			15.7 0 (400.0) **SF400PH10X10**		4P ④ **TS4R9DTB**		
				Black 4, 4X ① **PHB2N4XF**					
400	3	**R9E3400UDC**		Red/Yellow 4, 4X ① **PHR2N4XF**			3P ② **TS3R9ET**	3P ④ **LK3R9EM**	2 pieces **DCJUMPE2**
	4	**R9E4400UDC**					3P ③ **TS3R9EB**	4P ④ **LK4R9EM**	3 pieces **DCJUMPE3**
							4P ④ **TS4R9ETB**		

Notes

① Defeatable handle.
② Top (line side).
③ Bottom (load side).
④ Top or bottom (line or load side).

Accessories

Direct Handle

Direct Handle

Description	Ampere Rating	Handle Color	Catalog Number
Front operation	100–400	Black	**DHR9DE**

Door Interlocked External Handle Front Operation—I–0, Three- and Four-Pole

PH2 Type Handle

Ampere Rating	Handle	Handle Color	NEMA Type	Catalog Number
100–400	PH2 Type	Black	1, 3R, 12	**PHB2N12F** ①
100–400	PH2 Type	Red/yellow	1, 3R, 12	**PHR2N12F** ①
100–400	PH2 Type	Black	4, 4X	**PHB2N4XF** ①
100–400	PH2 Type	Red/yellow	4, 4X	**PHR2N4XF** ①

Auxiliary Contacts

Description	Ampere Rating	Number of AC	Type	Catalog Number
Early-break/same-make and signaling of positions 0 and 1: 1 to 2NO/NC auxiliary contacts 1 to 2 low level NO/NC auxiliary contacts Characteristics: NO/NC AC: IP2 with front and side operation Connection to the control circuit: By 6.35 mm fast-on terminal Electrical characteristics: 30,000 operations; A300	**NO/NC Contact for Three and Four Poles**			
	100–400	1 AC NO + NC	C Type	**AC1NONCDE**
	100–400	2 AC NO + NC	C Type	**AC2NONCDE**
	Low Level NO/NC Contact for Three and Four Poles			
	100–400	1 AC NO + NC	C Type	**AC1NONCDELL**
	100–400	2 AC NO + NC	C Type	**AC2NONCDELL**

Terminal Screens

Description	Ampere Rating	Number of Poles	Position	Catalog Number
Line or load side protection against direct contact with terminals or connection parts	**Three- and Four-Pole**			
	100–200	3	Top (line)	**TS3R9DT**
	100–200	3	Bottom (load)	**TS3R9DB**
	100–200	4	Top or bottom (line or load)	**TS4R9DTB**
	400	3	Top (line)	**TS3R9ET**
	400	3	Bottom (load)	**TS3R9EB**
	400	4	Top or bottom (line or load)	**TS4R9ETB**

Note

① Order two sets for line and load sides.

1

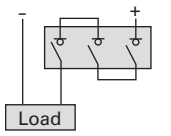
Line and Load Terminal Lugs

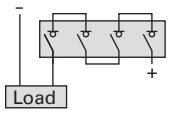
Line and Load Terminal Lugs

Description	Ampere Rating	Connection Type	Number of Cables per Terminal	Lugs per Kit	Cable Type	Catalog Number
Connection of bare copper cables onto the terminals	100–200	6–300 kcmil	1	2	Cu/Al	**LK2R9DL**
	100–200	6–300 kcmil	1	4	Cu/Al	**LK4R9DL**
	400	2–600 kcmil	1	2	Cu/Al	**LK2R9EM**
	400	2–600 kcmil	1	4	Cu/Al	**LK4R9EM**

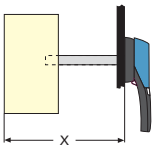
Jumpers for Connecting Poles in Series

Description	Ampere Rating	Kit of	Figure	Number of Poles in Series	Catalog Number
The jumpers will make easy the connection of the poles in series, allowing the following configurations: ①	100–200	2 pieces	1	3	**DCJUMPD2**
	100–200	3 pieces	2	4	**DCJUMPD3**
	400	2 pieces	1	3	**DCJUMPE2**
	400	3 pieces	2	4	**DCJUMPE3**





Shaft Extensions for External Front Dimensions (X)—Inches (mm)



Description	Ampere Rating	Dimension X	Handle	Shaft Length	Catalog Number
Standard lengths: 7.9 inches/200 mm 12.6 inches/320 mm 15.7 inches/400 mm	**For Three- and Four-Pole**				
	100–400	135–265 (3429.0–6731.0)	PH2 Type	7.90 (200.0)	**SF200PH10X10**
	100–400	135–385 (3429.0–9779.0)	PH2 Type	12.60 (320.0)	**SF320PH10X10**
	100–400	135–465 (3429.0–11811.0)	PH2 Type	15.70 (400.0)	**SF400PH10X10**

Note

① For other connections, refer to installation instructions.

Technical Data and Specifications

100–400 A

Characteristics According to UL 98

		Ampere Rating		
Thermal Current I_{th} at 40 °C (A)		**100**	**200**	**400**
General Use Purpose Ampere Rating				
Rated voltage	In series	A	A	A
600 Vdc	3P	100	200	400
Overload Capacity				
Prospective short-circuit current (kA rms)		20	20	20
Type of fuse		A70P100	A70P200	LDC
Fuse rating		100	200	400
Connection Terminals				
Minimum connection section/AWG		#6	#6	#2
Maximum connection section/AWG		300 kcmil	300 kcmil	600 kcmil
Auxiliary Contacts				
Electrical characteristics		A300	A300	A300

Characteristics According to IEC 60947-3

		Ampere Rating		
Thermal Current I_{th} at 40 °C (A)		**160**	**250**	**630**
Rated Operational Currents I_e (A), DC-22 B				
Rated voltage	In series	A	A	A
750 Vdc	3P	160	250	400
750 Vdc	4P	—	—	—
1000 Vdc	4P	160	250	400

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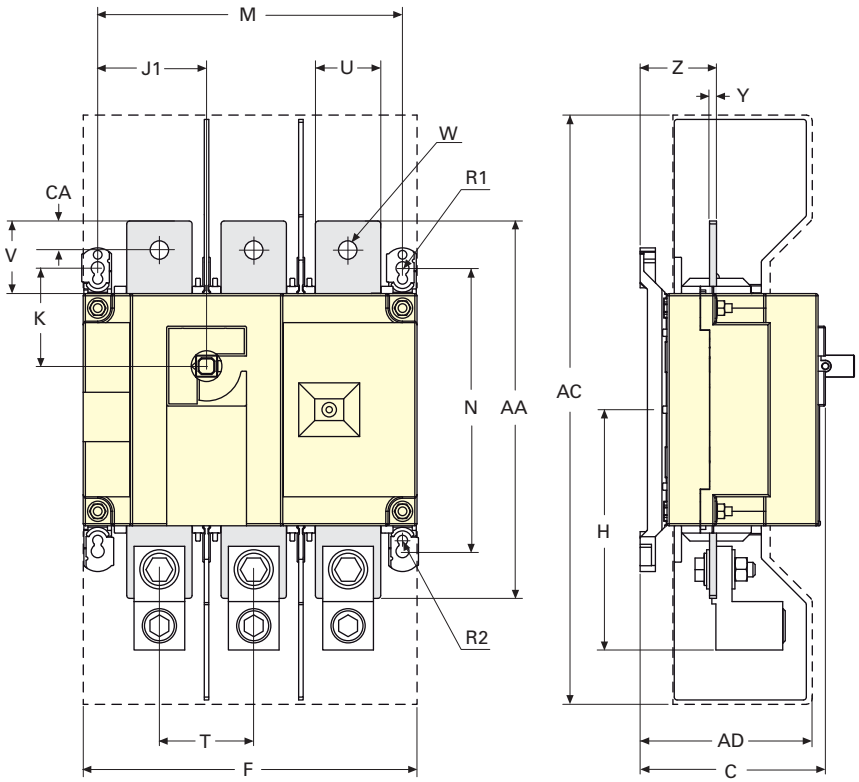
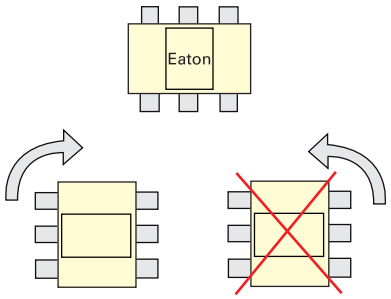
Dimensions

Approximate Dimensions in Inches (mm)

R9 Series DC Rated Disconnects 100–400 A

Front Operation





The switch will operate correctly when rotated clockwise 90 degrees.

The switch will not operate correctly when rotated counterclockwise 90 degrees.

R9 Series DC Rated Disconnects

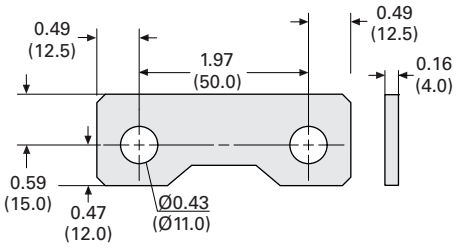
Ampere Rating	C	AC	AD	F 3P	F 4P	H	J1 3P	J1 4P	K	M 3P	M 4P
100–200	3.72 (94.5)	10.10 (256.5)	3.05 (77.5)	7.09 (180.1)	9.06 (230.0)	4.22 (107.2)	2.17 (55.1)	4.13 (104.9)	1.80 (45.7)	6.30 (160.0)	8.27 (210.1)
400	4.92 (125.0)	16.00 (406.4)	4.51 (114.5)	9.05 (230.0)	11.40 (290.0)	6.53 (166.0)	2.95 (75.7)	5.31 (134.9)	2.65 (67.3)	8.26 (209.8)	10.60 (269.2)

Ampere Rating	N	R1	R2	T	U	V	W	Y	Z	AA	CA
100–200	5.31 (135.0)	0.35 (8.9)	0.27 (6.9)	1.97 (50.0)	0.98 (24.9)	1.18 (30.0)	0.43 (10.9)	0.14 (3.6)	1.35 (34.3)	6.30 (160.0)	0.60 (15.2)
400	7.60 (193.0)	0.35 (8.9)	0.27 (6.9)	2.56 (65.0)	1.77 (45.0)	1.97 (50.0)	0.43 (10.9)	0.20 (5.1)	2.08 (52.8)	10.20 (259.1)	0.80 (20.3)

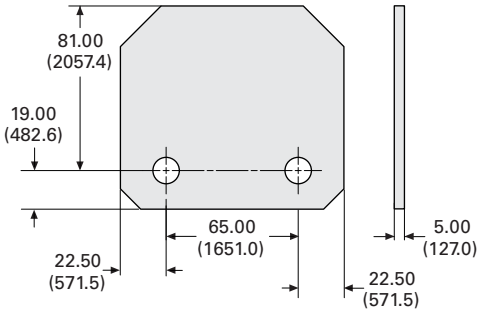
Approximate Dimensions in Inches (mm)

Jumpers

100–200 A

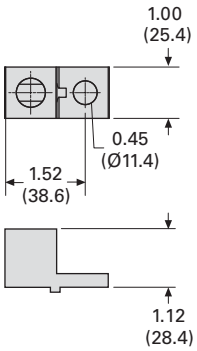


400 A

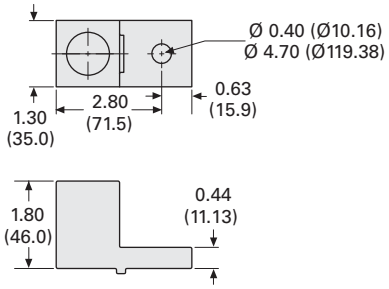


Terminal Lugs

100–200 A

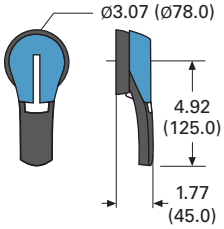


400 A

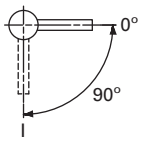


Door Interlocked External Handle—100 to 400 A, Three- and Four-Pole

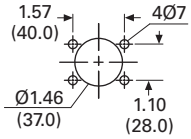
PH2 Type Handle



Direction of Operation



Door Drilling Template



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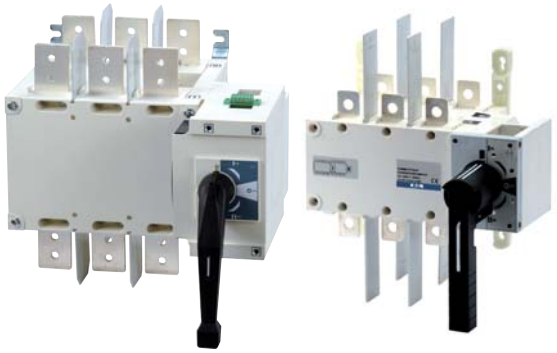
Manual Transfer Switches



Contents

Manual Transfer/Double Throw Switches

Product Description

R9 Series (UL 98 listed) non-fusible disconnects are heavy-duty manual transfer switches, they transfer load manually between two low-voltage circuits and provide safety disconnection.

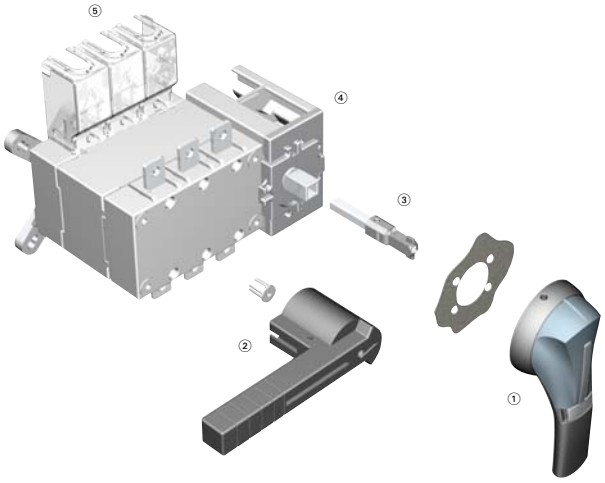
These switches are extremely durable and are tested and approved for use in the most demanding applications as resistive load or total system applications.

- Three load break positions (I, 0, II)
- On load switching
- Direct or external handle
- 480 Vac total system
- 600 Vac resistive load

Standards and Certifications

- UL 98, cULus, File E222859
- UL 1008 (600–1200 A)
- CSA 22.2 No. 4, File 217736
- IEC 60947-3
- EN 60947-3
- CE

Listed



Product Identification

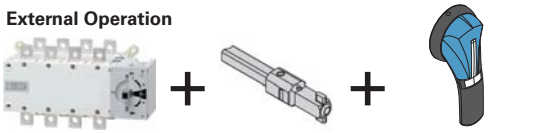
① External front handle
② Direct handle
③ Shaft extension for external handle
④ Pre-break ACs (standard on 600–1200 A)
⑤ Terminal screen

Product Selection

Direct Operation

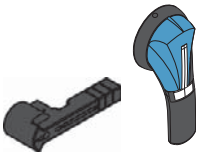
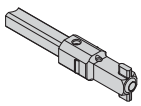
Switch body + Direct handle

External Operation



Switch body + Shaft + External handle

Manual Transfer/Double Throw Switches—UL 98 Standard ①


Ampere Rating	Number of Poles	Switch Body Only ①	Direct Handle (Black)	External Three-Position Handle (Choose one)	Shaft Extensions for External Handle In (mm) (Choose one)	Bridging Bars	Auxiliary Contacts	Terminal Screens ②
100	3	**RMTS3100U**	**DHMTSSL**	Size 2, Black I–0–II Type 4/4X **PHB2N4X3P**	7.90 (200.6) **SF200PH10X10**	3P **BB3P200**	NO/NC **AC1NONCMTS400**	3P **TS3MTS200TB**
	4	**RMTS4100U**						
200	3	**RMTS3200U**			12.60 (320.0) **SF320PH10X10**	4P **BB4P200**	Low level **AC1NONCMTS400LL** ③	4P **TS4MTS200TB**
	4	**RMTS4200U**		Size 2, Red I–0–II Type 4/4X **PHR2N4X3P**	15.70 (398.8) **SF400PH10X10**			
400	3	**RMTS3400U**		Size 3, Black I–0–II Type 4/4X **PHB3N4X3P**	7.90 (200.6) **SF200PH15X12**	3P **BB3P400**		3P **TS3MTS400TB**
	4	**RMTS4400U**			12.60 (320.0) **SF320PH15X12**	4P **BB4P400**		4P **TS4MTS400TB**
				Size 3, Red I–0–II Type 4/4X **PHR3N4X3P**	15.70 (398.8) **SF400PH15X12**			
600	3	**RMTS3600U**	Not Available	Size 4, Black I–0–II Type 4/4X **PHB4N4X3P**		3P **BB3P600**	NO/NC contact standard	3P **TS3MTS600**
	4	**RMTS4600U**				4P **BB4P600**		4P **TS4MTS600**
800	3	**RMTS3800U**	**DHMTSDLM**	Size 4, Red I–0–II Type 4/4X **PHR4N4X3P**		3P **BB3P1200**		3P **TS3MTS1200**
	4	**RMTS4800U**						
1200	3	**RMTS31200U**				4P **BB4P1200**		4P **TS4MTS1200**
	4	**RMTS41200U**						

Notes

① All ratings, 100–1200 A, are UL 98 listed. Switches rated 600–1200 A are UL 1008 listed as well.
② Line or load (top or bottom); for both line and load, order two kits.
③ Low level auxiliary contact—gold plated for minimal resistance—for PLC applications.

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Accessories

Direct Handle

Ampere Rating	Handle Color	Handle Type	Catalog Number
100–400	Black	Single lever	**DHMTSSL**
600	Black	Double lever	Not Available
800–1200	Black	Double lever	**DHMTSDLM**

External Handle

PH2 and PH3 Type

PH4 Type

Description	Ampere Rating	Handle Type	Handle Color	NEMA Type	Lockable in the "3" Positions	Catalog Number
The handle locking function prevents the user from opening the door of the enclosure when the switch is in the "ON" position. Opening the door when the switch is in the "ON" position is possible by defeating the locking function with the use of a tool (authorized persons only). The locking function is restored when the door is once again closed.	100–200	PH2	Black	4, 4X	Yes	**PHB2N4X3P**
	100–200	PH2	Red/Yellow	4, 4X	Yes	**PHR2N4X3P**
	400	PH3	Black	4, 4X	Yes	**PHB3N4X3P**
	400	PH3	Red/Yellow	4, 4X	Yes	**PHR3N4X3P**
	600–1200	PH4	Black	4, 4X	Yes	**PHB4N4X3P**
	600–1200	PH4	Red/Yellow	4, 4X	Yes	**PHR4N4X3P**

Shaft Extension

Ampere Rating	Handle Type	Length In (mm)	Catalog Number
100–800	PH1	7.90 (200.6)	**SF200PH10X10**
125–800	PH1	12.60 (320.0)	**SF320PH10X10**
100–200	PH2	15.70 (398.8)	**SF400PH10X10**
630–1200	PH2, PH3	7.90 (200.6)	**SF200PH15X12**
600–1200	PH2, PH3	12.60 (320.0)	**SF320PH15X12**
400–1200	PH2, PH3	15.70 (398.8)	**SF400PH15X12**
800–1200	V1	12.60 (320.0)	**SF320V1**
800–1200	V1	15.70 (398.8)	**SF400V1**

Bridging Bars

Description	Ampere Rating	Number of Bridging Bars	Catalog Number
Creation of a common point, above or below the switch, between positions I and II.	100 –200	3	**BB3P200**
	100–200	4	**BB4P200**
	400	3	**BB3P400**
	400	4	**BB4P400**
	600	3	**BB3P600**
	600	4	**BB4P600**
	800–1200	3	**BB3P1200**
	800–1200	4	**BB4P1200**

Terminals Protection Screen

Description	Ampere Rating	Number of Poles	Catalog Number
Top or bottom (line or load) protection against direct contacts with terminal or connecting parts.	100–200	3	**TS3MTS200TB**
	100–200	4	**TS4MTS200TB**
	400	3	**TS3MTS400TB**
	400	4	**TS4MTS400TB**
	600	6	**TS3MTS600**
	600	4	**TS4MTS600**
	800–1200	3	**TS3MTS1200**
	800–1200	4	**TS4MTS1200**

Mounting Spacers

Description	Ampere Rating	Number of Poles	Catalog Number
Raises the device's terminals 10 mm away from the bottom of the enclosure or frame on which the device is mounted.	100–400	1 set of 2 spacers	**MSP400**

Auxiliary Contacts

Description	Ampere Rating	Contact(s)	Catalog Number
Early-break/same-make and signalization per position 1 and 2. Electrical characteristics: A300.	100–400	1NO/NC per position 1 and 2	**AC1NONCMTS400**
	100–400	1NO/NC per position 1 and 2 low level	**AC1NONCMTS400LL** ①
	600–1200	1NO/NC per position 1 and 2	Standard

Line and Load Terminal Lugs

Description	Ampere Rating	Connection Type	Number of Poles	Number of Cables/Lug	Lugs per Kit	Cable Type	Catalog Number
Connection of bare copper cables onto the terminals (without spade lugs).	100–200	6–300 kcmil	3	1	3	Cu/Al	**LK3R9DL**
	100–200	6–300 kcmil	4	1	4	Cu/Al	**LK4R9DL**
	400	4–600 kcmil	3	1	3	Cu/Al	**LK3R9EM**
	400	4–600 kcmil	4	1	4	Cu/Al	**LK4R9EM**
	600	2x (#2–600 kcmil)	3	2	3	Cu/Al	**LK3R9FN**
	600	2x (#2–600 kcmil)	4	2	4	Cu/Al	**LK4R9FN**
	800–1200	2x (#2–600 kcmil)	3	2	6	Cu/Al	**LK6R9G**
	800–1200	2x (#2 –600 kcmil)	4	2	8	Cu/Al	**LK8R9G**

Note

① Gold plated for minimal resistance—for PLC applications.

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Technical Data and Specifications

UL 1008 Characteristics

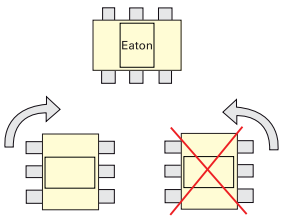
Description	100 A	200 A	400 A	600 A	800 A	1200 A
Operation voltage	600	600	600	600	600	600
Short-circuit rating at 600 Vac (kA) ①	100	100	65	100	100	100
Type of fuse	J	J	J	L	L	L
Maximum fuse rating (A)	200	400	600	800	1000	1600
Short-circuit rating with circuit breaker (kA/ms)	10/25	10/25	14/50	35/50	35/50	35/50
Operational Power/Current Maximum Operational Three-Phase						
240 Vac total system (A)	100	100	250	400	700	700
240 Vac resistive load (A)	100	200	400	600	800	1200
480 Vac total system (A)	100	100	125	350	600	600
480 Vac resistive load (A)	100	200	400	600	800	1200
600 Vac resistive load (A)	100	200	400	400	800	1200
Mechanical Endurance						
Endurance (number of operating cycles)	6050	6050	6050	6050	3550	3550
Connection Terminals						
Minimum connection section/AWG	#6	#6	#4/2 x #6	2x #2	4x #2	4x #2
Maximum connection section/AWG	300 kcmil	300 kcmil	600 kcmil/2x 350 kcmil	2x 600 kcmil	4x 600 kcmil	4x 600 kcmil

UL 98/CSA 22.2 No. 4 Characteristics

Description	100 A ②	200 A ②	400 A ②	600 A	800 A	1200 A
Short-circuit rating at 600 Vac (kA)	200	200	200	200	100	100
Type of fuse	J	J	J	J	L	L
Maximum fuse rating (A)	100	200	400	600	800	1200
Maximum Motor, hp/FLA Three-Phase Motor Maximum						
220–240 Vac	30/80	75/192	125/312	200/480	200/480	200/480
440–480 Vac	75/96	180/180	250/302	400/477	500/590	500/590
600 Vac	100/99	200/192	350/336	350/336	500/472	500/472
Maximum Motor Power, hp/DC FLA Motor Maximum						
125 Vdc ③	7.5/58	15/112	20/148	20/148	—	—
250 Vdc ④	20/72	40/140	50/173	50/173	—	—
Mechanical Characteristics						
Endurance (number of operating cycles)	10,000	8000	6000	6000	3500	3500
Operating torque (lbs.in/Nm)	88.5/10	88.5/10	128.3/14.5	327.5/37	442.5/50	442.5/50
Auxiliary Contacts						
Electrical characteristics	A300	A300	A300	A300	A300	A300

Notes

① Short-circuit rating achieved when used with respective fuse type and maximum fuse rating.
② Only UL 98 listed. For UL 1008 availability, contact Eaton.
③ Two-pole in series.
④ Three-pole in series.



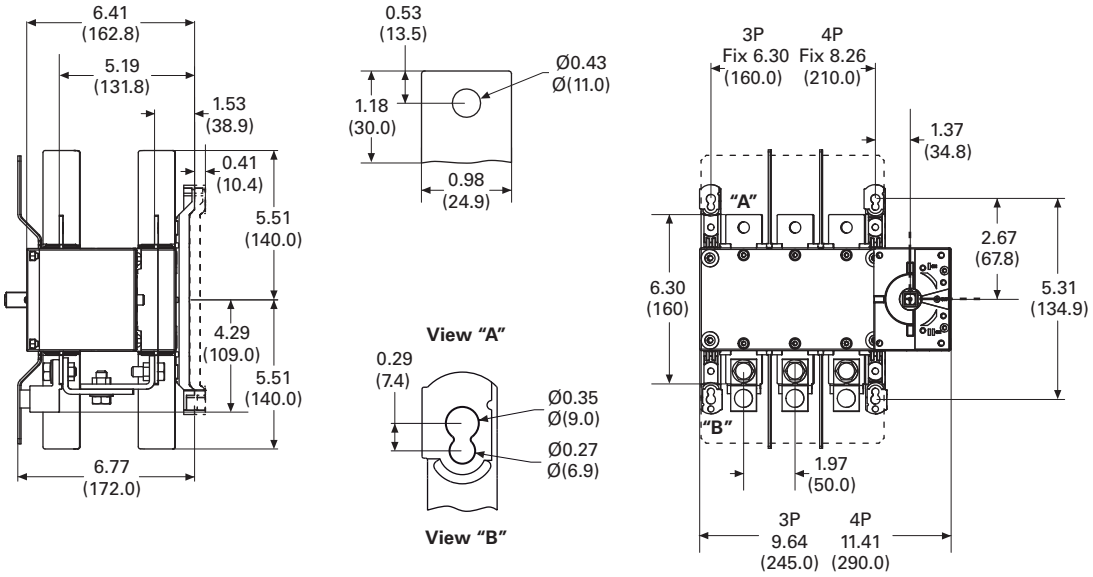
The switch will operate correctly when rotated clockwise 90 degrees.

The switch will not operate correctly when rotated counterclockwise 90 degrees.

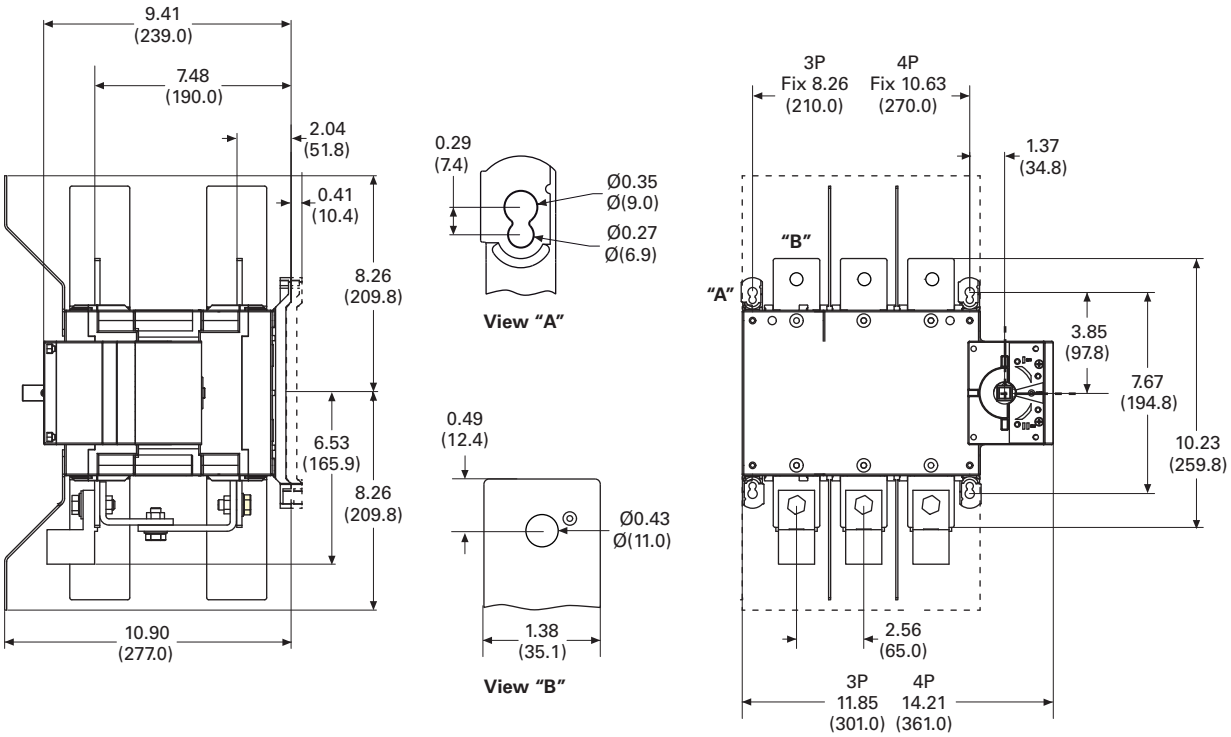
Dimensions

Approximate Dimensions in Inches (mm)

100 to 200 A



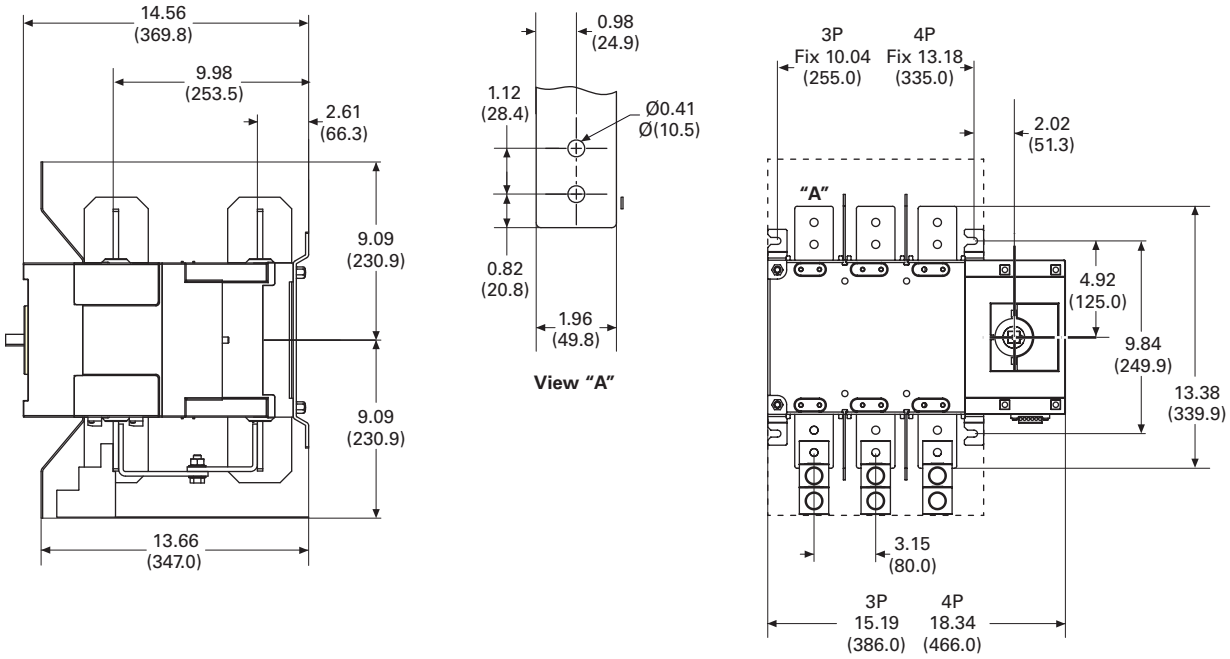
400 A



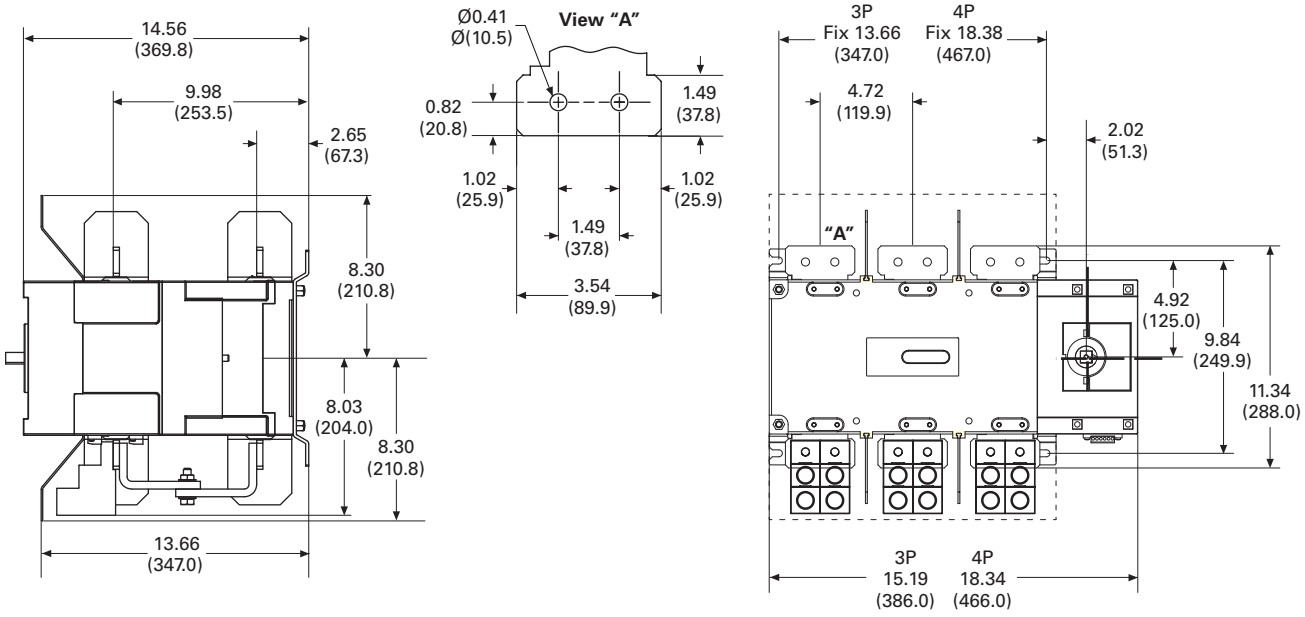
1

Approximate Dimensions in Inches (mm)

600 A



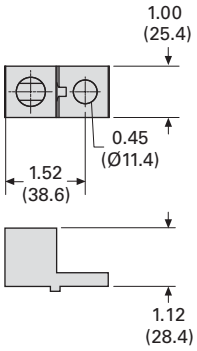
800 to 1200 A



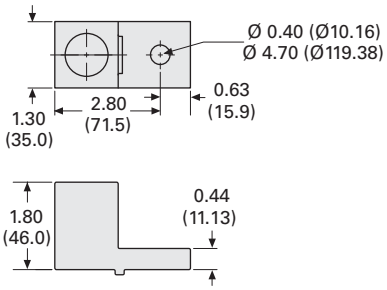
Approximate Dimensions in Inches (mm)

Terminal Lugs

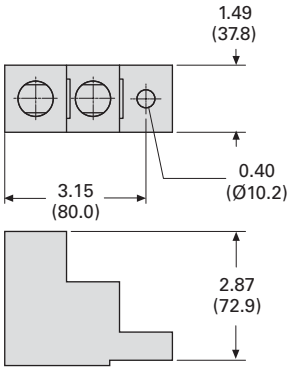
100–200 A



400 A

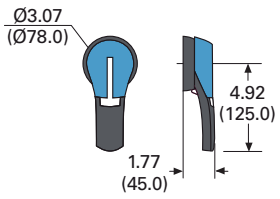


600–1200 A

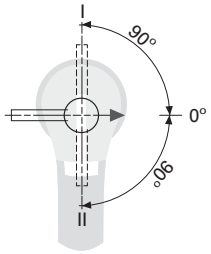


100–200 A

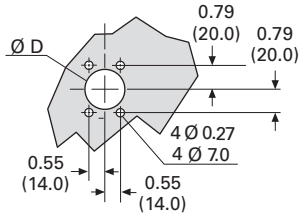
PH2 Type



Direction of Operation

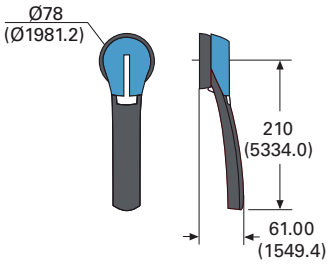


Door Drilling Template

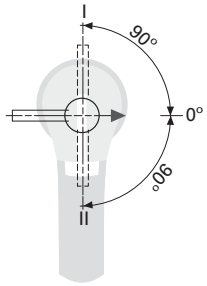


400 A

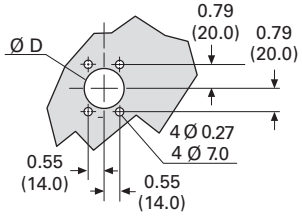
PH3 Type



Direction of Operation

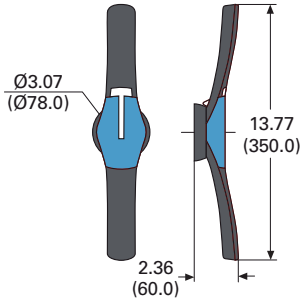


Door Drilling Template

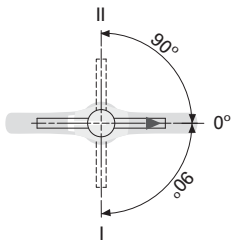


600–1200 A

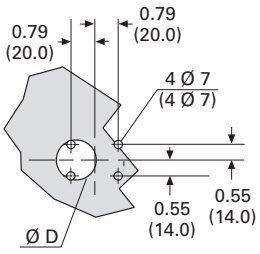
PH4 Type



Direction of Operation



Door Drilling Template



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Catalog Numbering Systems

Disconnects

R5 A 3 016 U __

UL Listing
- **R5** = UL 508
- **R9** = UL 98
- **R4** = UL 489

Frame Designation
- **A** = UL 508 (16–40 A)
- **B** = UL 508 (60–100 A)
- **C** = UL 98 non-fusible (30–100 A)
- **D** = UL 98 non-fusible (100–200 A)
- **E** = UL 98 non-fusible (400 A)
- **F** = UL 98 non-fusible (600 A)
- **G** = UL 98 non-fusible (800–1200 A)
- **H** = UL 489 fusible (30 A compact)
- **J** = UL 98 fusible (30–60 A)
- **K** = UL 98 fusible (60–100 A)
- **L** = UL 98 fusible (200 A)
- **M** = UL 98 fusible (400 A)
- **N** = UL 98 fusible (600–800 A)

Poles
- **2** = Two-pole
- **3** = Three-pole
- **4** = Four-pole

Ampere Rating
- **016** = 16 A
- **025** = 25 A
- **030** = 30 A
- **040** = 40 A
- **060** = 60 A
- **080** = 80 A
- **100** = 100 A
- **200** = 200 A
- **400** = 400 A
- **600** = 600 A
- **800** = 800 A
- **1000** = 1000 A
- **1200** = 1200 A

Protection
- **U** = Non-fusible
- **F** = Fusible

Fuse Type Accepted
- **CC** = Class CC
- **J** = Class J
- **L** = Class L
- **Blank** = Non-fusible device

External Handles

SH B 00 N4X F __

Handle Type
- **SH** = Selector handle
- **PH** = Pistol handle

Color
- **B** = Black/blue
- **R** = Red/yellow

Size (Smallest to Largest)
- **00** = Size 00
- **0** = Size 0
- **1** = Size 1
- **2** = Size 2
- **3** = Size 3
- **4** = Size 4

NEMA Type Rating
- **N12** = Type 1, 3R, 12
- **N4X** = Type 4, 4X

Operation
- **F** = Front
- **S** = Right side
- **Blank** = Front or right side

Additional Features
- **T** = Test position function
- **Blank** = No test function
- **HV** at the end of some catalog numbers indicates use with H-Frame switches only. Not all handles are designed to go with all disconnects. Consult specific section of the catalog for available options.

Shafts

SF 150 SH 5X5 __

Product Type
- **SF** = Shaft

Length
- **55** = 55 mm
- **90** = 90 mm
- **150** = 150 mm
- **200** = 200 mm
- **320** = 320 mm
- **400** = 400 mm
- **500** = 500 mm

Applicable Handle Type
- **SH** = Selector handle
- **PH** = Pistol handle

Shaft Cross Section
- **5X5** = 5 mm x 5 mm
- **10X10** = 10 mm x 10 mm
- **12X12** = 12 mm x 12 mm
- **15X12** = 15 mm x 12 mm

Additional Features
- **H** at the end of some catalog numbers indicates use with H-Frame switches only. Not all shafts are designed to go with all disconnects. Consult specific section of the catalog for available options.

Enclosed Rotary Disconnects

Contents

Enclosed Rotary Disconnects

Product Description

Provide users with the ability to lock directly wired motor loads in the OFF position to comply with OSHA lockout/tagout regulations. Also for machine applications that require compact, economical disconnect switches.

Enclosed rotary disconnect switches allow safe control and safe disconnect of any motor application.

Open rotary disconnects can be found on **Pages V9-T1-89** to **V9-T1-106** and full information in Volume 5, Motor Control and Protection, CA08100006E, Tab 8.

Features

- Padlockable in the OFF position (up to three padlocks) to meet OSHA lockout requirements
- Available in 16–80A ratings
- 600 Vac, three- and four-pole non-fusible device
- Rated for making and breaking loads
- Accepts auxiliary contacts; capability to signal PLC controllers
- Ground lug connection provided
- Possibility of adding one power pole and one auxiliary contact
- NEMA Type 1, 3R, 12, 4, 4X
- 65kAIC rating when applied downstream from appropriate fusing

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Product Selection

Enclosed Rotary Non-Fusible

Ampere Rating	Maximum Horsepower Ratings Three-Phase AC 208V	240V	480V	600V	NEMA 1 ① Enclosure Indoor Catalog Number	NEMA 12 ①② Enclosure Dust-Tight/ Rainproof Catalog Number	NEMA 4X ① Enclosure Corrosion-Resistant, Stainless Steel Catalog Number	NEMA 4X ① Enclosure Corrosion-Resistant, Non-Metallic Catalog Number	NEMA 4X Enclosure Polycarbonate-Non-Metallic Catalog Number
Three-Pole, 600 Vac									
16	3	5	10	10	**ER53016UG**	**ER53016UD**	**ER53016UW**	**ER53016UX**	—
25	7-1/2	7-1/2	15	20	**ER53025UG**	**ER53025UD**	**ER53025UW**	**ER53025UX**	—
30	7-1/2	7-1/2	15	20	**ER53030UG**	**ER53030UD**	**ER53030UW**	**ER53030UX**	**ER53030UPYR** ③④
40	7-1/2	7-1/2	20	25	**ER53040UG**	**ER53040UD**	**ER53040UW**	**ER53040UX**	—
60	15	15	30	30	**ER53060UG**	**ER53060UD**	**ER53060UW**	**ER53060UX**	**ER53060UPYR** ③④
80	15	20	40	40	**ER53080UG**	**ER53080UD**	**ER53080UW**	**ER53080UX**	—
Four-Pole, 600 Vac									
16	3	5	10	10	**ER54016UG**	**ER54016UD**	**ER54016UW**	**ER54016UX**	—
25	7-1/2	7-1/2	15	20	**ER54025UG**	**ER54025UD**	**ER54025UW**	**ER54025UX**	—
30	7-1/2	7-1/2	20	25	**ER54030UG**	**ER54030UD**	**ER54030UW**	**ER54030UX**	—
40	7-1/2	7-1/2	20	25	**ER54040UG**	**ER54040UD**	**ER54040UW**	**ER54040UX**	—

Accessories for Enclosed Rotary Disconnects ⑤⑥

Disconnect Ampere Rating	Switched Fourth Pole	Unswitched Neutral Pole	Auxiliary Contacts (Choose One)	Terminal Shrouds
16	**S4PR516**	**UNMR5A**	1NO + 1NC **AC1NONC**	Single-pole **TS1R5A**
25	**S4PR525**			
30	**S4PR530**		2NC **AC2NC**	Three-pole **TS3R5A**
40	**S4PR540**			
60	**S4PR560** ⑦	**UNMR5B** ⑦		Single-pole **TS1R5B**
80	**S4PR580** ⑦			Three-pole **TS3R5B**

Notes

① For CSA listed switches, add prefix letter "C" to the front of the catalog number.

② NEMA Type 12 enclosures (16–80A) can be field modified to meet NEMA Type 3R rainproof requirements when a factory-provided drain hole is opened.

③ YR suffix indicates **Y**ellow cover with **R**ed handle. For **G**ray cover with **B**lack handle, replace "YR" with "GB." For **G**ray cover with **R**ed handle, replace "YR" with "GR."

④ cULus only.

⑤ Ordered and shipped as separate components—not integral to enclosed device.

⑥ Enclosed disconnects can accept one power pole, neutral or up to two auxiliary contacts (one mounted on either side of switch).

⑦ Available 2011.

Contact the Safety Switch Flex Center (**1-888-329-9272**) for factory-installed accessories or other special modifications.