

A photograph of an industrial robotic welding cell. Several robotic arms with blue and orange cables are positioned over a metal workpiece. Bright sparks are being generated at the points where the welding torches meet the metal. The scene is lit with a warm, golden light, highlighting the sparks and the metallic surfaces. The background shows the structure of the welding cell.

Rotary disconnect switches

Flexible
options for
every application

EATON

Powering Business Worldwide

Eaton's new line of rotary disconnects provides OEM customers with a flexible product offering that has industry-leading fault current ratings.

The product range encompasses both the UL® 98 and UL 508 standards, and is the latest in a series of new and innovative products from the switching device product line.

The R5 (Rotary 508) Series of switches are UL 508 listed devices that are suitable for use as motor disconnects. Ideal for panel builders and custom control cabinets, the R5 Series is excellent for isolation of circuits in panels, or as enclosed motor disconnects when located downstream from appropriate overcurrent protection.

This totally new line of products incorporates a truly modular design, allowing for simple addition of fourth poles, neutral modules, auxiliary contact modules and many other popular accessories.

Additionally, when protected by applicable upstream fusing, these products can be rated up to 65 kAIC—one of the highest short-circuit ratings in the industry. The R5 switches are available in two frame sizes—A-Frame (16–40A) and B-Frame (60–80A).

The R9 (Rotary 98) product offering consists of UL 98 listed fusible and non-fusible products that may be used as service entrance devices, or anywhere a local means of disconnect is needed or required. Both the fusible and non-fusible products span six frame sizes, or footprints, and have 100 kAIC or 200 kAIC ratings.

The R9 offering includes a modular grouping of non-fusible switches at the low end of the range (30–100A), providing a compact, flexible solution where physical space is a concern.

As with the UL 508 products, these units allow for simple addition of fourth pole modules, neutral modules and other accessories. The balance of the line includes two-, three- and four-pole devices for safe isolation of any low voltage circuit. Further, the fusible products employ double-break-per-pole functionality, a safety feature that fully isolates the fusing when the switch is in the OFF position.

In addition to the R5 and R9 products, the new offering also includes a series of smaller footprint 30A, fusible molded-case switch disconnects in a compact design. These R4 (Rotary 489) units are listed to UL 489, and provide a small overcurrent device with short-circuit ratings of 100 kAIC.

The R5, R9 and R4 products have available new, state-of-the-art selector and pistol handle designs to give the final installation an up-to-date, professional look. In addition to the new handles, each offering includes an entirely new line of shafts, auxiliary contacts, terminal shields and other accessories.



Powering business worldwide



R5 Series Non-Fusible
UL 508 (CSA 22.2 No.14)
16–80A

See page 5



R9 Series Non-Fusible—Compact
UL 98 (CSA 22.2 No.4)
30A, 60A and 100A

See page 13



R9 Series Non-Fusible
UL 98 (CSA 22.2 No.4)
100–1200A

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R9 Series Fusible
UL 98 (CSA 22.2 No.4)
30–800A

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R9 Series DC Rated
UL 98 (CSA 22.2 No.4)

See page 47



MTS—Manual
Transfer Switches

See page 55



Enclosed Rotary
Disconnects (R5)

See page 64

Eaton delivers power in thousands of products and systems that are answering the demands of today's ever-changing world. We help customers manage power needed for trucks, cars, machinery, aircraft, buildings and entire business enterprises worldwide—and we do it in a way that consumes fewer resources.

Switching Devices

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Switching Devices

Introduction



UL®/CSA® Standards for Disconnect Switches

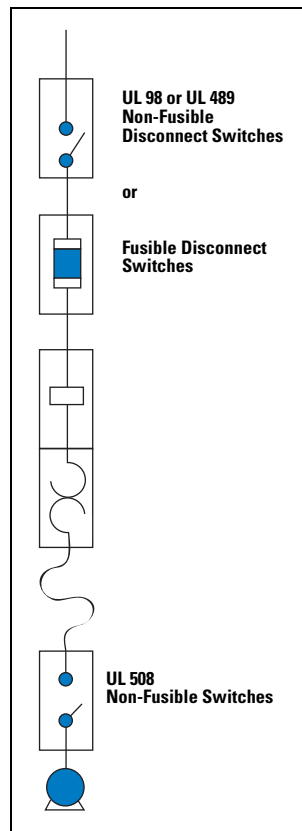
UL 98—Enclosed and Deadfront Switches (CSA C22.2 No. 4)

These requirements cover enclosed or deadfront switches, with or without provision for fuses, at 600V 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 600V or less and 6000A or less.

Typical Control Panel



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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, e.g., 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.

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.

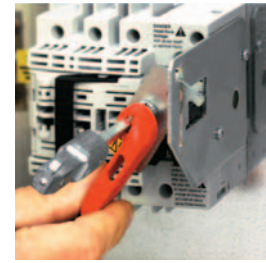
The disconnecting means is not closable with the enclosure door open, unless an interlock is operated by deliberate action.

Note: UL 508A; Paragraph 66.1.5.

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.

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.

Switching Devices

Introduction

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.

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

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.

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 16–80A

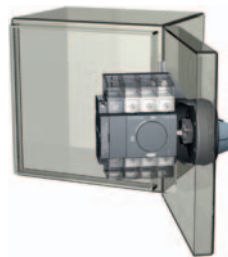


Product Overview

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.

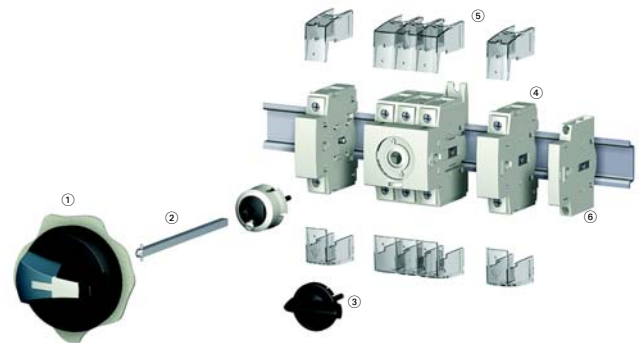
Features, Benefits and Functions

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



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Overview

- 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.

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



Switching Devices

R5 Series (UL 508) Non-Fusible 16–80A

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) | Shaft for SH0 and SH00—5 x 5 mm—In (mm) |
|---------------|--|-------------------------------|---------------|---|--|---|
| 16 | — | R5A3016U | DHR5 | SH00 Black 3R, 12 SHB00N12 | SH0 Black 3R, 12 SHB0N12 | 2.20 (55.5) SF55SH5X5 |
| 25 | — | R5A3025U | | | | |
| 30 | T5A3030U | R5A3030U | | | | 3.50 (90.0) SF90SH5X5 |
| 40 | T5A3040U | R5A3040U | | | | |
| 60 | T5B3060U | R5B3060U | | SH00 Red 3R, 12 SHR00N12 | SH0 Red 3R, 12 SHR0N12 | 5.90 (150.0) SF150SH5X5 |
| 80 | T5B3080U | R5B3080U | | | | 7.90 (200.0) SF200SH5X5 |
| | | | | SH00 Black 4, 4X SHB00N4X | SH0 Black 4, 4X SHB0N4X | 12.60 (320.0) SF320SH5X5 |
| | | | | SH00 Red 4, 4X SHR00N4X | SH0 Red 4, 4X SHR0N4X | |

Accessories



| Ampere Rating | Switched Fourth-Pole Module | Auxiliary Contacts (Choose one) | Terminal Shrouds | Door Mounting Kit ^② |
|---------------|-----------------------------|---------------------------------|---------------------|--------------------------------|
| 16 | S4PR516 | 1NO + 1NC AC1NONC | 1P TS1R5A | DMK |
| 25 | S4PR525 | | | |
| 30 | S4PR530 | | 3P TS3R5A | |
| 40 | S4PR540 | 2NO AC2NO | | |
| 60 | | | 1P TS1R5B | |
| 80 | | | 3P TS3R5B | |

Notes

- ^① Toggle version includes direct handle.
- ^② Includes shaft and accessory cap.

Handles

Direct Handle



Direct Handle

| Ampere Rating | Handle Color | Catalog Number |
|---------------|--------------|----------------|
| 16–80 | Black | DHR5 |

Size 00 Handle



Door Interlocked External Handle (Defeatable) ①

| Ampere Rating | Handle Color | Handle Size | NEMA Type Rating | Catalog Number |
|---|--------------|-------------|------------------|----------------|
| Front and Right Side Operation I–0 | | | | |
| 16–80 | Black | SH00 | 3R, 12 | SHB00N12 |
| 16–80 | Black | SH00 | 4, 4X | SHB00N4X |
| 16–80 | Red/Yellow | SH00 | 3R, 12 | SHR00N12 |
| 16–80 | Red/Yellow | SH00 | 4, 4X | SHR00N4X |
| Size 0 Handle | | | | |
| 16–80 | Black | SH0 | 3R, 12 | SHB0N12 |
| 16–80 | Black | SH0 | 4, 4X | SHB0N4X |
| 16–80 | Red/Yellow | SH0 | 3R, 12 | SHR0N12 |
| 16–80 | Red/Yellow | SH0 | 4, 4X | SHR0N4X |

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 | 16–80 | SH00/SH0 | 2.17 (55.0) | SF055SH5X5 |
| | 16–80 | SH00/SH0 | 3.54 (90.0) | SF090SH5X5 |
| For 3/4-pole switches: shafts are for external front and side handle | 16–80 | SH00/SH0 | 5.91 (150.0) | SF150SH5X5 |
| | 16–80 | SH00/SH0 | 7.87 (200.0) | SF200SH5X5 |
| For 6/8-pole switches and changeover switches: shafts are for external front and side handle | 16–80 | SH00/SH0 | 12.60 (320.0) | SF320SH5X5 |



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 | 16–80 | SH00 and SH0 | SFGAB |

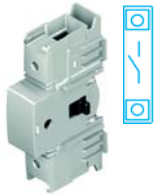
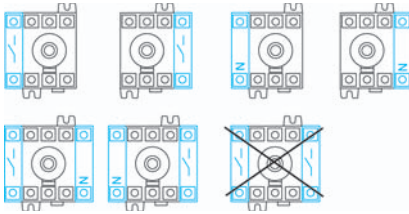
Note

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

Switching Devices

R5 Series (UL 508) Non-Fusible 16–80A

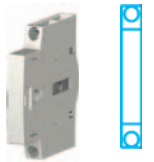
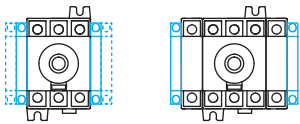
Additional Pole Configurations



Switched Fourth-Pole Module

| Description | Ampere Rating | Number of Poles | Type | Catalog Number |
|---|---------------|-----------------|----------|----------------|
| Add one or two poles and transform: <ul style="list-style-type: none"> • 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 |

Auxiliary Contact Configurations



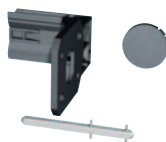
Auxiliary Contact Module

| 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. | 16–80 | 1NO + NC | AC1N0NC |
| | 16–80 | 2NO | AC2N0 |



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 |
| | 60–80 | 1 | Line and load | TS1R5B |
| | 60–80 | 3 | Line and load | TS3R5B |



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. | 16–80 | 3 and 4 | DMK ^① |

Note

^① Includes shaft and accessory cap.

Technical Data and Specifications

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

| Technical Characteristics | 16A | 25A | 30A | 40A | 60A | 80A |
|---|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| 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 |
| Short-circuit rating at 600 Vac (kA) ① | 10/65 | 10/65 | 10/65 | 10/65 | 50/65 | 50/65 |
| Branch circuit fuse type | J | J | J | J | J | J |
| Maximum fuse rating | 60/30A | 60/30A | 60/30A | 60/30A | 100/60A | 100/60A |
| 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 |
| 220–240 Vac | 5/15 | 7.5/22 | 7.5/22 | 7.5/22 | 15/42 | 20/54 |
| 440–480 Vac | 10/14 | 15/21 | 15/21 | 20/27 | 30/40 | 40/52 |
| 600 Vac | 10/11 | 20/22 | 20/22 | 25/27 | 30/32 | 40/41 |
| Connection | | | | | | |
| Wire range (AWG), solid, single cable | #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 |
| Wire range (AWG), stranded, single cable | #14–#4 | #14–#4 | #14–#4 | #14–#4 | #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) |
| Mechanical Characteristics | | | | | | |
| Endurance, number of mechanical cycles | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Auxiliary Contacts | | | | | | |
| Electrical characteristics | A300 | A300 | A300 | A300 | A300 | A300 |

IEC 60947-3 Characteristics

| Technical Characteristics | | 16A | 25A | 32A | 40A | 63A | 80A |
|--|---------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 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 |
| 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 |
| 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) ③ | | 16 | 25 | 32 | 40 | 63 | 80 |
| Rated insulation voltage U_i (V) | | 800 | 800 | 800 | 800 | 800 | 800 |
| Rated impulse withstand voltage U_{imp} (kV) | | 8 | 8 | 8 | 8 | 8 | 8 |
| Operational Power in AC-23 (kW) | | | | | | | |
| At 400 Vac without prebreaking AC in AC-23 (kW) ④ | | 7.5 | 11 | 15 | 18.5 | 30 | 37 |
| At 500 Vac without prebreaking AC in AC-23 (kW) ④ | | 7.5 | 11 | 15 | 15 | 30 | 37 |
| At 690 Vac without prebreaking AC in AC-23 (kW) ④ | | 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 |
| Associated fuse rating (A) ⑤ | | 16 | 25 | 32 | 40 | 63 | 80 |
| Overload Capacity (U_e 415 Vac) | | | | | | | |
| Rated short-time withstand current 0.3 s. I_{CV} (kA rms) ⑥ | | 2.5 | 2.5 | 2.5 | 2.5 | 3 | 3 |
| Rated short-circuit making capacity I_{cm} (kA peak) ⑥ | | 6 | 6 | 6 | 6 | 9 | 9 |
| Connection | | | | | | | |
| Minimum Cu cable cross section (mm ²) | | 1.5 | 1.5 | 1.5 | 1.5 | 2.5 | 2.5 |
| Maximum Cu cable section (mm ²) | | 16 | 16 | 16 | 16 | 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 |

Notes

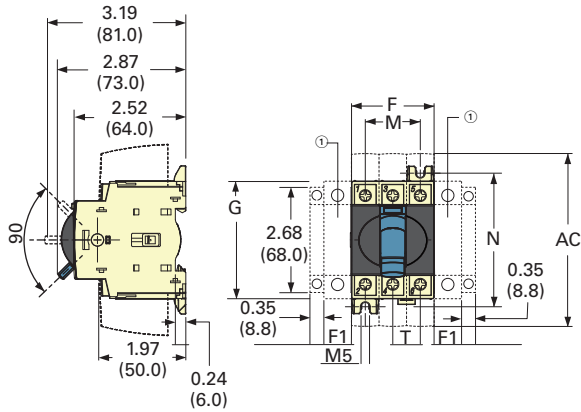
- ① Short-circuit rating achieved when used with respective fuse type and maximum fuse rating.
- ② A/B: Category with index A = frequent operation; category with index B = infrequent operation.
- ③ De-rate 1% per °C above 40°C, max 70°C.
- ④ The power value is given for information only; the current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

Dimensions

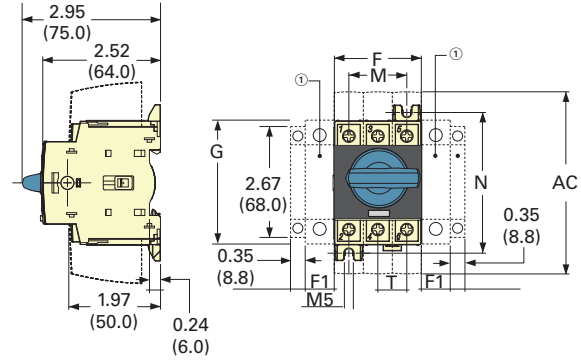
Approximate Dimensions in Inches (mm)

R5 Series 16–80A

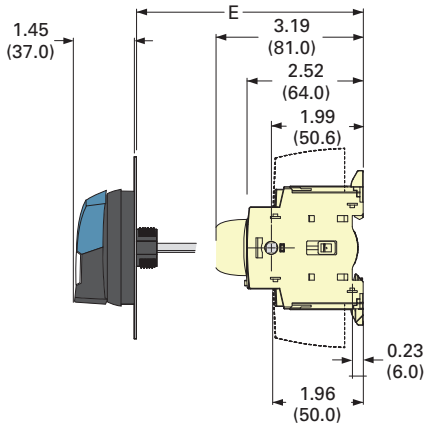
Toggle Operation



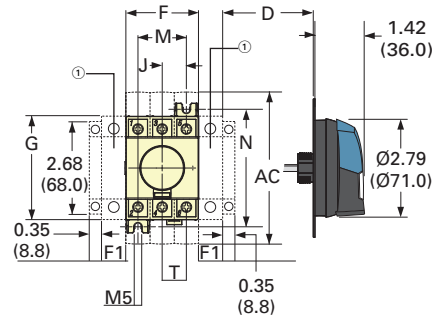
Direct Operation with Handle



External Front Operation



External Side Operation



R5 Series ^②

| Ampere Rating | Overall Dimensions | | | | Terminal Shrouds | Switch Body | | | | Switch Mounting | | Connection Terminal |
|---------------|--------------------|--------------|--------------|---------------|------------------|-------------|-------------|-------------|-------------|-----------------|-------------|---------------------|
| | D Min. | D Max. | E Min. | E Max. | AC | F | F1 | G | J | M | N | 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) |
| 63–80 | 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) |

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.

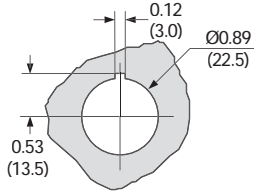
Switching Devices

R5 Series (UL 508) Non-Fusible 16–80A

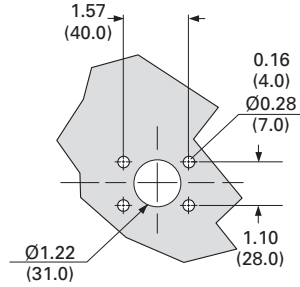
Approximate Dimensions in Inches (mm)

Door Drilling—SH00/SH0

With Fixing Nut

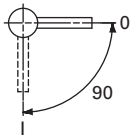


With Four Fixing Screws

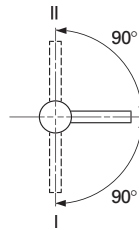


Operating Handle—SH00/SH0

Front and Right Side Operation



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





Contents

| Description | Page |
|---|------|
| Product Overview | 13 |
| Features, Benefits and Functions | 13 |
| Standards and Certifications | 13 |
| Product Selection | 14 |
| Technical Data and Specifications | 17 |
| Dimensions | 18 |

Product Overview

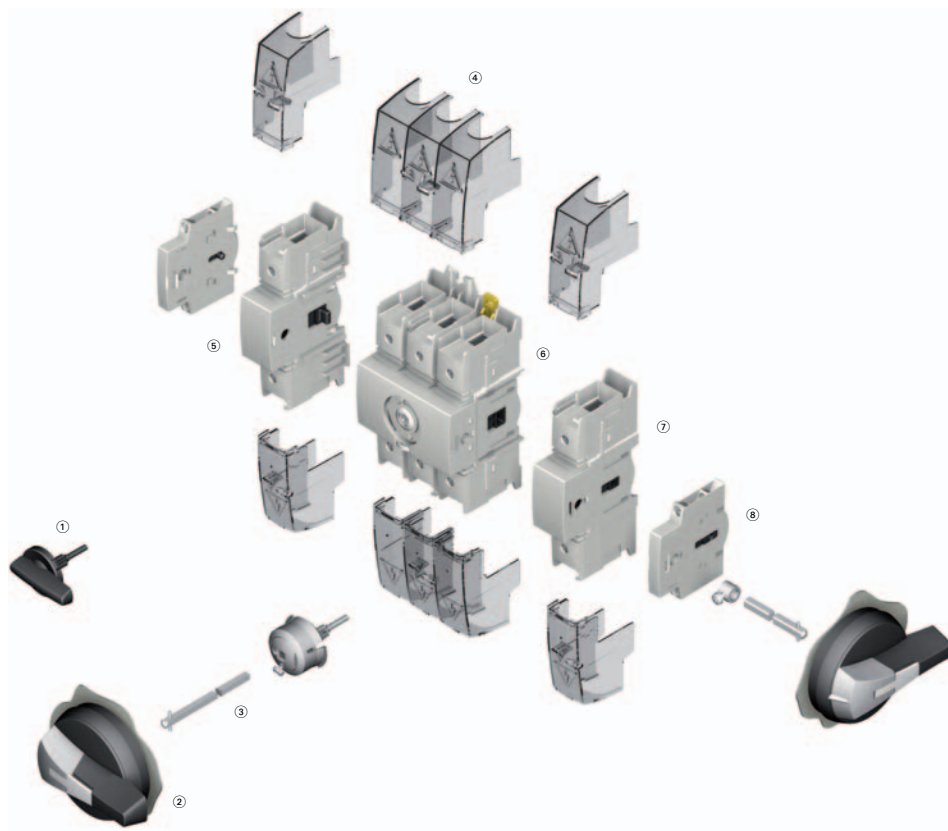
The R9 Series (UL® 98 listed) non-fusible 30–100A compact range ensures making or breaking on load and safety isolation for low voltage electrical circuits, particularly for machine control circuits up to 600V.

Features, Benefits and Functions

- Rating three-pole from 30A to 100A
- 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



Overview

- 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

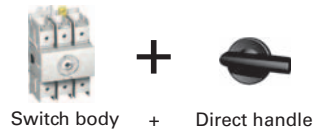
Note: For further details, please see the installation instructions supplied with each device.

Switching Devices

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

Product Selection

Direct Operation



External Operation



R9 Series 30–100A

| 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) | 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 | S4PR930 | 1NO + 1NC AC1NONC | 1P TS1R9 |
| 60 (C-Frame) | 3 | R9C3060U | | SH00 Red 3R, 12 SHR00N12 | SH0 Red 3R, 12 SHR0N12 | 3.50 (90.0) SF90SH5X5 | S4PR960 | 2NO AC2NO | 3P TS3R9CV |
| 100 (C-Frame) | 3 | R9C3100U | | SH00 Black 4, 4X SHB00N4X | SH0 Black 4, 4X SHB0N4X | 5.91 (150.0) SF150SH5X5 | S4PR9100 | | |
| | | | | SH00 Red 4, 4X SHR00N4X | SH0 Red 4, 4X SHR0N4X | 7.87 (200.0) SF200SH5X5 | | | |
| | | | | | | 12.60 (320.0) SF320SH5X5 | | | |

Handles

Direct Handle



Direct Handle

| Ampere Rating | Handle Color | Catalog Number |
|---------------|--------------|----------------|
| 30–100 | Black | DHR9 |

Size 00 Handle



Door Interlocked External Handle ^①

| 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 |

Size 0 Handle



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 | 30–100 | SH00/SH0 | 2.20 (55.5) | SF55SH5X5 |
| | 30–100 | SH00/SH0 | 3.50 (90.0) | SF90SH5X5 |
| Shafts are for external front and right side handles | 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 |



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 | 16–80 | SH00 and SH0 | SFGAB |

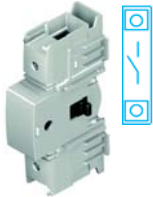
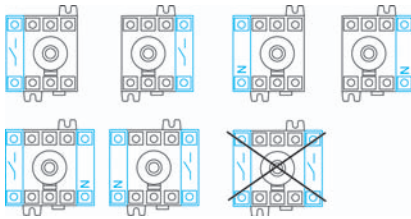
Note

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

Switching Devices

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

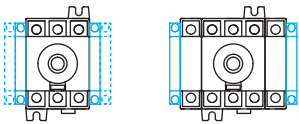
Additional Pole Configurations



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) | 30–100 | 1NO + 1NC | AC1N0NC |
| | 30–100 | 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 |

Technical Data and Specifications

UL and CSA Characteristics

UL 98/CSA 22.2 No. 4

| Technical Characteristics | 30A | 60A | 100A |
|---|---------|---------|---------|
| 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 | 32A | 63A | 100A |
|--|----------------------|------------|------------|
| 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_o (A) | | | |
| Load Duty Category | Rated Voltage | A ② | A ② |
| 400 Vac | AC-22 A | 32 | 63 |
| 400 Vac | AC-23 A | 32 | 63 |
| 690 Vac | AC-22 A | 32 | 63 |
| 690 Vac | AC-23 A | 32 | 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_o 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, $U_o = 400$ Vac.

Switching Devices

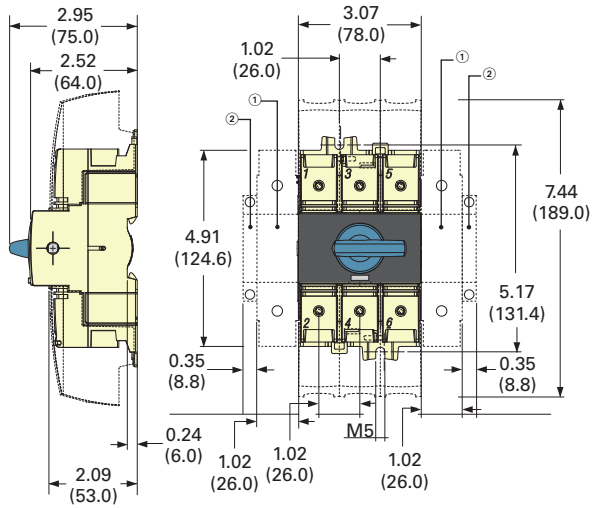
R9 Series (UL 98) Non-Fusible 30–100A Compact

Dimensions

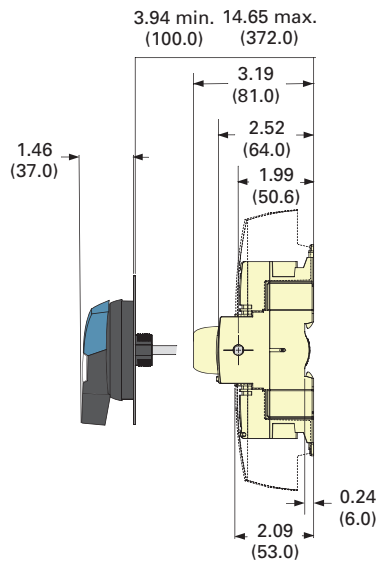
R9 Series 30–100A Compact

Approximate Dimensions in Inches (mm)

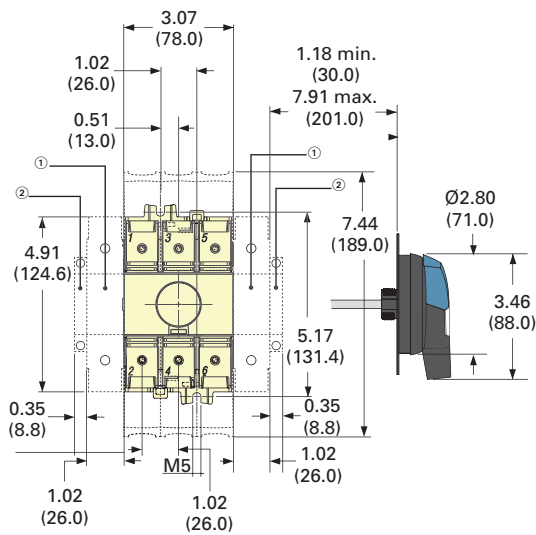
Direct Operation



External Front Operation



External Side Operation



Notes

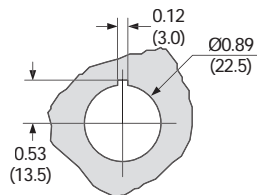
- ① One switched fourth-pole module (one per device maximum) and/or one unswitched neutral pole.
- ② Auxiliary contact.

Approximate Dimensions in Inches (mm)

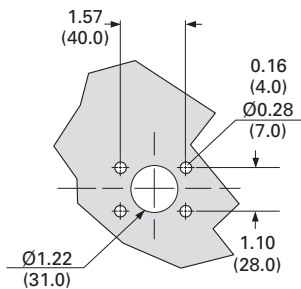
R9 Series 30–100A Compact

Door Drilling—SH00/SH0

With Fixing Nut

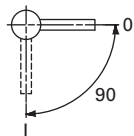


With Four Fixing Screws



Operating Handle—SH00/SH0

Front and Right Side Operation



Switching Devices

R9 Series (UL 98) Non-Fusible 100–1200A



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| Description | Page |
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| Dimensions | 25 |

Product Overview

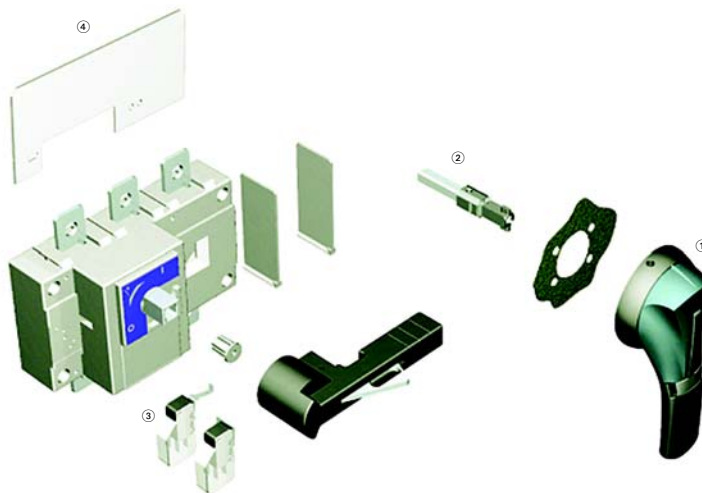
The R9 Series (UL® 98 listed) non-fusible 100–1200A are manually operated multipole load-break switches. Quick-make, quick-break design provides safety isolation for any low voltage circuit.

Features, Benefits and Functions

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

Standards and Certifications

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



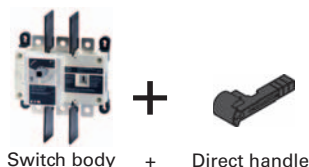
Overview

- 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

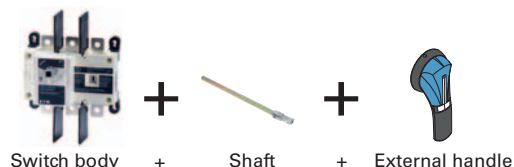
Note: For further details, please see the installation instructions supplied with each device.

Product Selection

Direct Operation



External Operation



R9 Series Non-Fusible 100–1200A

| 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 ^① | |
|-----------------------|-----------------|------------------|---------------|---|---|---|--|--|-----------------|
| 100 (D-Frame) | 3 | R9D3100U | DHR9DE | Size 2, Black 1, 3R, 12 Defeatable PHB2N12F | 7.90 (200.0) SF200PH10X10 | 1NO + 1NC AC1N0NCDE AC1N0NCDELL | 3-pole, Line side only TS3R9DT | LK3R9DL | |
| | 4 | R9D4100U | | | | | | | LK4R9DL |
| 200 (D-Frame) | 3 | R9D3200U | DHR9DE | Size 2, Red 1, 3R, 12 Defeatable PHR2N12F | 12.60 (320.0) SF320PH10X10 | 2NO + 2NC AC2N0NCDE AC2N0NCDELL | 3-pole, Load side only TS3R9DB | LK3R9DL | |
| | 4 | R9D4200U | | | | | | | LK4R9DL |
| 400 (E-Frame) | 3 | R9E3400U | DHR9DE | Size 2, Black 4, 4X Defeatable PHB2N4XF | 15.70 (400.0) SF400PH10X10 | 1NO + 1NC AC1N0NCDE AC1N0NCDELL | 4-pole, Line or load side TS4R9DTB | LK3R9EM | |
| | | 4 | | | | | | | R9E4400U |
| | 3 | R9F3600U | | DHR9FG | Size 3, Black 4, 4X Defeatable PHB3N4XF | 7.90 (200.0) SF200PH15X12 | 1NO AC U Type AC1N0R9 ^② | 3-pole, Line side only TS3R9F ^③ | LK3R9FN |
| | | 4 | | | | | | | |
| 800 (G-Frame) | 3 | R9G3800U | DHR9FG | Size 3, Red 4, 4X Defeatable PHR3N4XF | 12.60 (320.0) SF320PH15X12 | 1NC AC U Type AC1NCR9 ^② | 3-pole, Load side only TS3R9FB | LK3R9EM | |
| | 4 | R9G4800U | | | | | | | LK4R9EM |
| 1000 (G-Frame) | 3 | R9G31000U | DHR9FG | Size 4, Black 4, 4X Defeatable PHB4N4XF | 1.70 (400.0) SF400PH15X12 | 1NO AC U Type AC1N0R9 ^② | 4-pole, Line or load side TS4R9ETB | LK3R9EM | |
| | 4 | R9G41000U | | | | | | | LK4R9EM |
| 1200 (G-Frame) | 3 | R9G31200U | DHR9FG | Size 4, Red 4, 4X Defeatable PHR4N4XF | 1.70 (400.0) SF400PH15X12 | 1NC AC U Type AC1NCR9 ^② | 3-pole, Load side only TS3R9EB | LK3R9EM | |
| | 4 | R9G41200U | | | | | | | LK4R9EM |

Notes

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

Switching Devices

R9 Series (UL 98) Non-Fusible 100–1200A

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



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 27. | 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 |

PH4 Type



Shaft Extensions

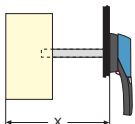


Shaft Extensions for External Front Handle

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 In (mm) | Length In (mm) | 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) | 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 |
|---|---------------------------|--------------|------------------------|-----------------------------|
| 100–200A, up to two ACs max. 400A, up to two ACs max. | 100–400 (D-, E-Frame) | 1NO / 1NC | Standard | AC1N0NCDE |
| | | 1NO / 1NC | Low Level ^② | AC1N0NCDELL |
| | | 2NO / 2NC | Standard | AC2N0NCDE |
| | | 2NO / 2NC | Low Level ^② | AC2N0NCDELL |
| 600–1200A, up to four ACs max. | 600–1200 (F-, G-Frame) | 1NO | Standard | AC1N0R9 ^③ |
| | | 1NC | Standard | AC1NCR9 ^③ |
| Auxiliary contact holder (for use with AC1N0R9 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 600–1200A non-fusible switches. Shrouds are not included on the 100–400A. | 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 26. | 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 | #2–600 kcmil | Cu/Al | LK3R9EM ^④ |
| | | 4 | 1 | #2–600 kcmil | Cu/Al | LK4R9EM ^④ |
| | 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.
- ④ For two-hole lug, consult factory.

Technical Data and Specifications

UL and CSA Characteristics

| Technical Characteristics | | 100A | 200A | 400A | 600A | 800A | 1000A | 1200A |
|---|----------------------|-----------|-----------|-----------|---------------|---------------|---------------|---------------|
| 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 | | 100A | 200A | 400A | 600A | 800A | 1000A | 1200A |
|---|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 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-22 A | 100 | 200 | 400 | 630 | 800 | 1000 | 1200 |
| 400 Vac | AC-23 A | 100 | 200 | 400 | 630 | 800 | 1000 | 1000 |
| 690 Vac | AC-22 A | 100 | 200 | 400 | 500 | 630 | 630 | 630 |
| 690 Vac | AC-23 A | 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 I_{cm} (kA peak) ^③ | | 17.6 | 32 | 48 | 48 | 75 | 48 | 75 |

Notes

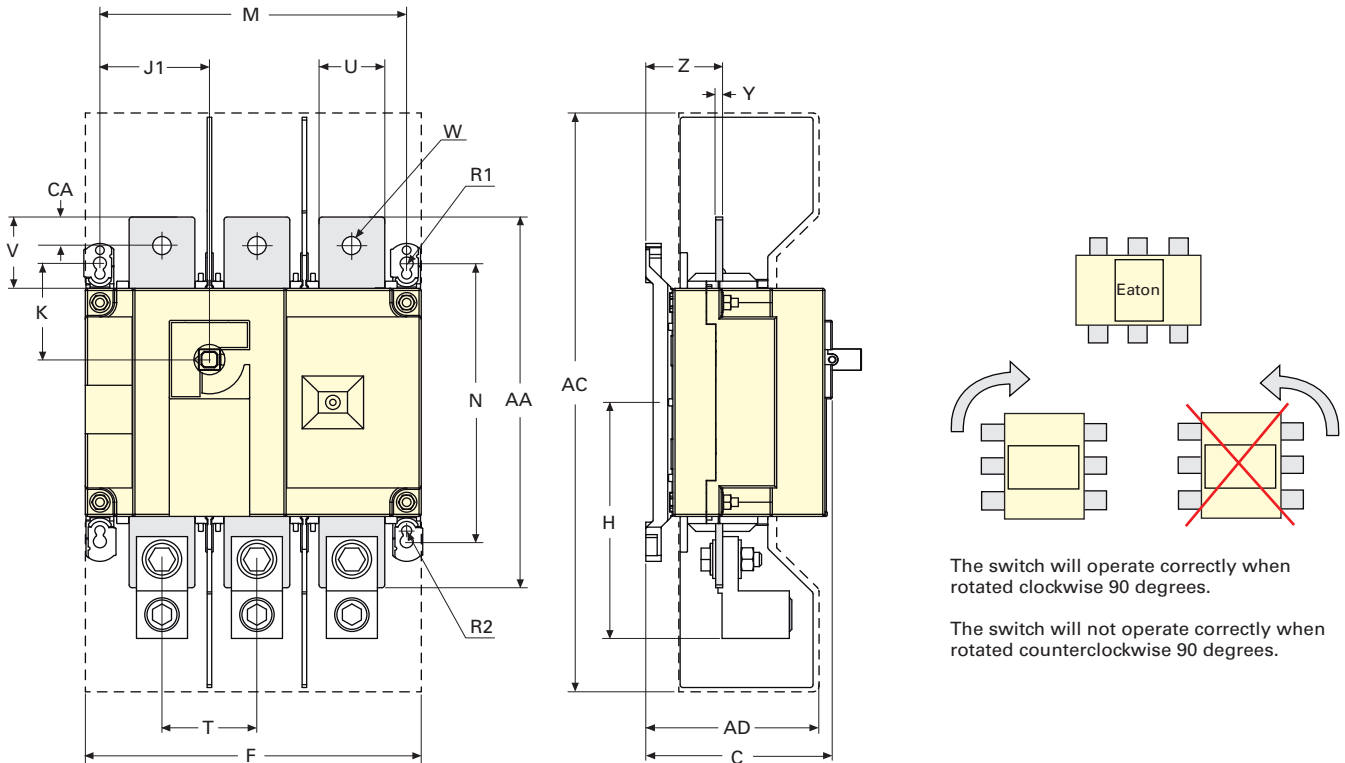
- ① Short-circuit rating achieved when used with respective fuse type and maximum fuse rating.
- ② Category with index A = frequent operation.
- ③ For a rated operating voltage, $U_i = 400$ Vac.

Dimensions

Approximate Dimensions in Inches (mm)

Front Operation—D- and E-Frames

R9 Series Non-Fusible 100–400A



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— In (mm) | Terminal Shrouds | | Switch Body | | | | | |
|-------------------|--------------------------------|------------------|--------------|--------------|---------------|--------------|-------------|--------------|-------------|
| | | AC | AD | F 3P | 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 | | | | Connection | | | | | | | | | |
|-------------------|-----------------|---------------|--------------|------------|------------|-------------|-------------|-------------|-------------|------------|-------------|---------------|-------------|--|
| | M 3P | M 4P | N | R1 | R2 | 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) | |

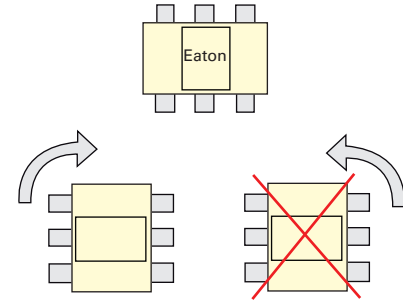
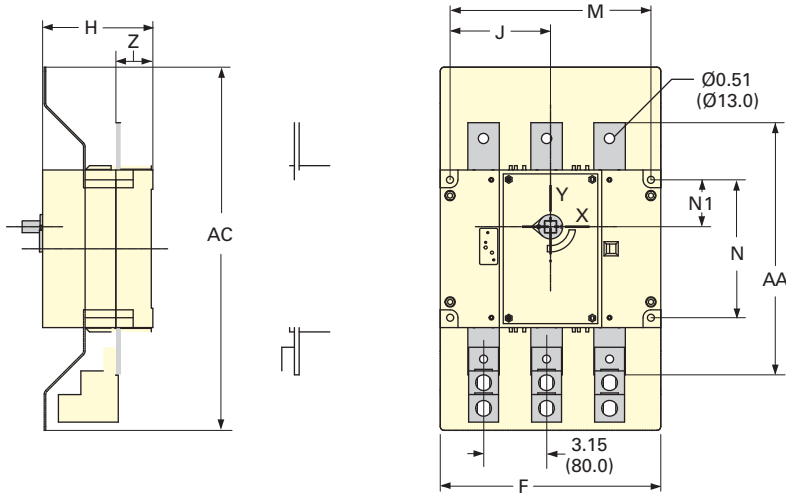
Switching Devices

R9 Series (UL 98) Non-Fusible 100–1200A

Approximate Dimensions in Inches (mm)

Front Operation—F- and G-Frames

R9 Series Non-Fusible 600A

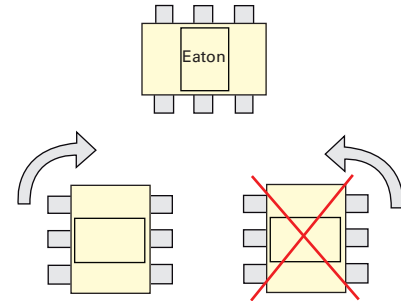
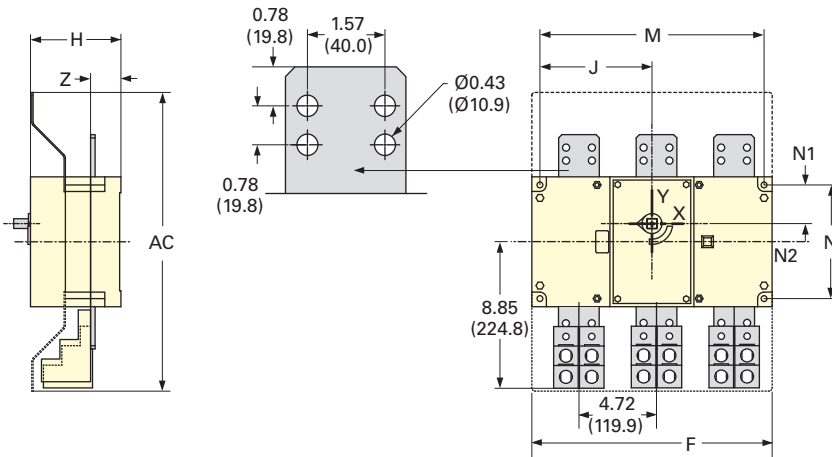


The switch will operate correctly when rotated clockwise 90 degrees.

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 4P | 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 800–1200A



The switch will operate correctly when rotated clockwise 90 degrees.

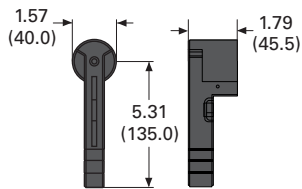
The switch will not operate correctly when rotated counterclockwise 90 degrees.

| 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) |

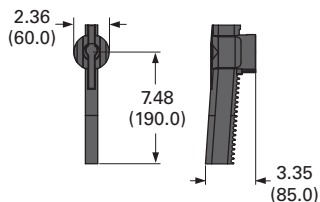
Approximate Dimensions in Inches (mm)

Direct Handle—Front Operation

R9 Series Non-Fusible 400A

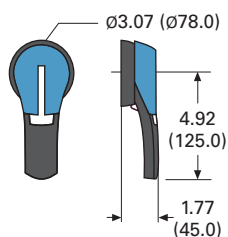


R9 Series Non-Fusible 600–1200A

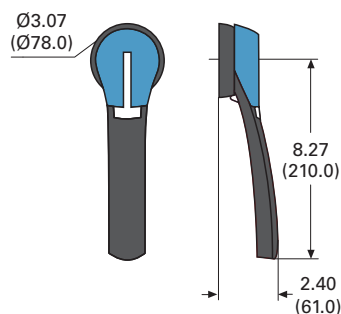


Door Interlocked External Handle

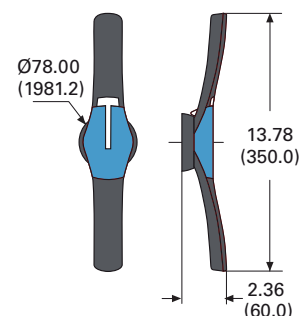
PH2 Type Handle



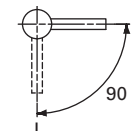
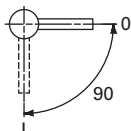
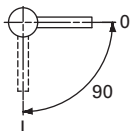
PH3 Type Handle



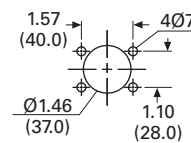
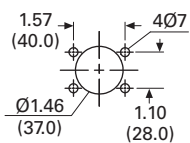
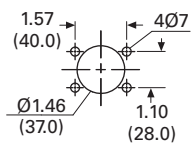
PH4 Type Handle



Direction of Operation

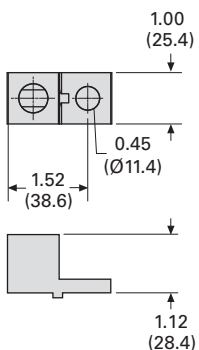


Door Drilling Templates

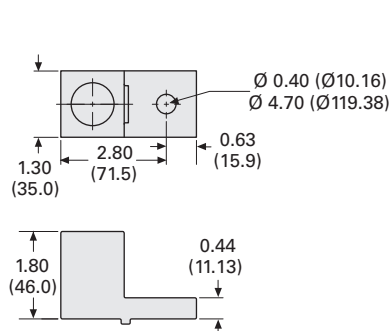


Top and Bottom Terminal Lugs

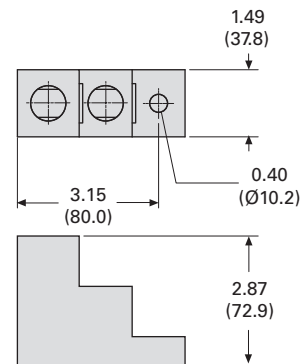
R9 Series Non-Fusible 100–200A



R9 Series Non-Fusible 400A



R9 Series Non-Fusible 600–1200A



Switching Devices

R9 Series (UL 98) Fusible 30–800A



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| Accessories | 34 |
| Technical Data and Specifications | 39 |
| Dimensions | 41 |

Product Overview

R9 Series (UL® 98 listed) Fusible 30–800A 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 400A) 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

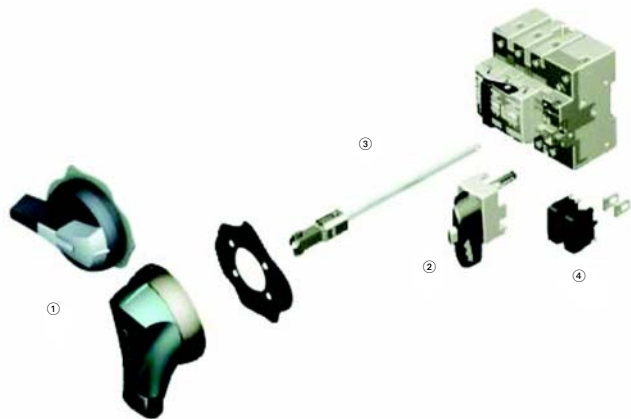
Standards and Certifications

- UL 98, File E222859 for 30 to 800A 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
- CE mark
- NFPA 79



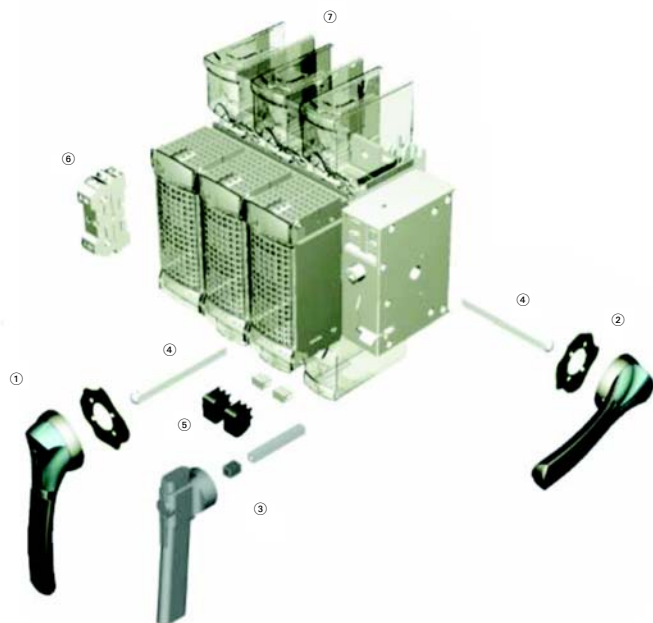
Illustrations

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



- ① External front handle
- ② External right side handle (not applicable for N-Frame 600/800A)
- 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

Switching Devices

R9 Series (UL 98) Fusible 30–800A

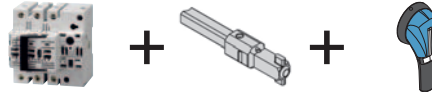
Product Selection

Direct Operation



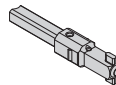
Switch body + Direct handle

External Operation



Switch body + Shaft + External handle

Front and Right Side Operation

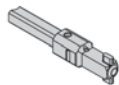


| Ampere Rating (Frame) (Fuse Class) | Number of Poles | Switch Body Only | Direct Handle | External Selector Handle (Choose one) | Shaft Extension for Selector Handle Only (Choose one) | External Front Pistol Handle | External Right Side Pistol Handle |
|------------------------------------|----------------------|--|----------------|---------------------------------------|---|---|-----------------------------------|
| 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 4 | R9I3030FCC R9I4030FCC | DHR9J2M | — | — | | |
| 30 (J-Frame) (J) | 2 3 4 | R9J2030FJ R9J3030FJ R9J4030FJ | | | | Black 4,4X (w/ TEST Position) PHB1N4XFT | Black 4, 4X PHB1N4XS |
| 60 ① (J-Frame) (J) | 2 3 4 | R9J2060FJ R9J3060FJ R9J4060FJ | | | | Red 4,4X (w/ TEST Position) PHR1N4XFT | Red 4, 4X PHR1N4XS |

Note

① 100 kA short-circuit rating.

Front and Right Side Operation, continued



Shaft Extensions for Pistol Handle Only In (mm) (Choose one)

NFPA79 Kit

Auxiliary Contacts (Choose one)

S Type Auxiliary Contacts (Choose one)

Terminal Shrouds

7.90 (200.0)
SF200PH5X5

NFPA79H

1 AC
NO
AC1NOR9

—

Integral to switch

12.60 (320.0)
SF320PH5X5

15.70 (400.0)
SF400PH5X5

NFPA79JKL

1 AC
NC
AC1NCR

1 AC
NO + NC
AC1N01NCJ2N

12.60 (320.0)
SF320PH10X10

15.70 (400.0)
SF400PH10X10

19.70 (500.0)
SF500PH10X10

1 AC
NC
AC1NCR

2 AC
NO + NC
AC2N02NCJ2N

1 AC
NO + NC
w/ TEST
AC1N01NCJ2NT

2 AC
NO + NC
w/ TEST
AC2N02NCJ2NT

Switching Devices

R9 Series (UL 98) Fusible 30–800A

Front and Right Side Operation, continued



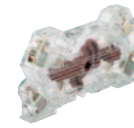
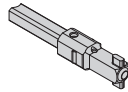
| Ampere Rating (Frame) (Fuse Class) | Number of Poles | Switch Body Only | Direct Handle (Black) | External Front Pistol Handle (Choose one) | External Right Side Pistol Handle (Choose one) |
|--|--------------------|---------------------|--------------------------|---|---|
| 60 ① (K-Frame) (J) | 2 | R9K2060FJ | DHR9J2M | Black 1,3R,12 PHB2N12F | Black 4, 4X PHB2N4XS |
| | 3 | R9K3060FJ | | Red 1,3R,12 PHR2N12F | Red 4, 4X PHR2N4XS |
| | 4 | R9K4060FJ | | Black 4,4X PHB2N4XF | |
| 100 (K-Frame) (J) | 2 | R9K2100FJ | | Red 1,3R,12 PHR2N12F | Red 4, 4X PHR2N4XS |
| | 3 | R9K3100FJ | | Black 4,4X PHB2N4XF | |
| | 4 | R9K4100FJ | | Red 4,4X PHR2N4XF | |
| 200 (L-Frame) (J) | 2 | R9L2200FJ | | Black 4,4X PHB2N4XF | |
| | 3 | R9L3200FJ | | Red 4,4X PHR2N4XF | |
| | 4 | R9L4200FJ | | Black 4,4X (w/ TEST Position) PHB2N4XFT ② | |
| 400 (M-Frame) (J) | 3 | R9M3400FJ | | Red 4,4X (w/ TEST Position) PHR2N4XFT ② | |
| | 4 | R9M4400FJ | | Black 4, 4X PHB3N4XF | |
| | | | | Red 4,4X PHR3N4XF | |
| 600 (N-Frame) (J) | 2 | R9N2600FJ | DHR9N | Black 4, 4X PHB3N4XF | |
| | 3 | R9N3600FJ | | Red 4,4X PHR3N4XF | |
| | 4 | R9N4600FJ | | | |
| 800 (N-Frame) (L) | 2 | R9N2800FL | | Red 4,4X PHR3N4XF | |
| | 3 | R9N3800FL | | | |
| | 4 | R9N4800FL | | | |

Notes

① 200 kA short-circuit rating.

② 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) | NFPA79 Kit | Auxiliary Contacts (Choose one) | Auxiliary Contacts (Choose one) | Terminal Shrouds |
|------------------------------------|-----------------|------------------|---|------------------|---------------------------------|---|--------------------|
| 60 ① (K-Frame) (J) | 2 | R9K2060FJ | 7.90 (200.0) | NFPA79JKL | 1 AC NO AC1NOR9 | 1 AC NO + NC AC1N01NCJ2N | Integral to switch |
| | 3 | R9K3060FJ | Pistol SF200PH10X10 | | | | |
| | 4 | R9K4060FJ | | | | | |
| 100 (K-Frame) (J) | 2 | R9K2100FJ | 12.60 (320.0) | | 1 AC NC AC1NCR9 | 2 AC NO + NC AC2NO2NCJ2N | |
| | 3 | R9K3100FJ | Pistol SF320PH10X10 | | | | |
| | 4 | R9K4100FJ | 15.70 (400.0) | | | | |
| 200 (L-Frame) (J) | 2 | R9L2200FJ | Pistol SF400PH10X10 | | | 1 AC NO + NC w/ TEST AC1N01NCJ2NT ② | TSR9L2 |
| | 3 | R9L3200FJ | | | | | TSR9L3 |
| | 4 | R9L4200FJ | 19.70 (500.0) Pistol SF500PH10X10 | | | | TSR9L4 |
| 400 (M-Frame) (J) | 3 | R9M3400FJ | | | | 2 AC NO + NC w/ TEST AC2NO2NCJ2NT ② | TSR9M3 |
| | 4 | R9M4400FJ | | | | | TSR9M4 |
| 600 (N-Frame) (J) | 2 | R9N2600FJ | 7.90 (200.0) | NFPA79N | | 1 AC NO + NC AC1N01NCJ2N | TSR9N2 |
| | 3 | R9N3600FJ | Pistol SF200PH12X12 | | | | TSR9N3 |
| | 4 | R9N4600FJ | | | | | TSR9N4 |
| 800 (N-Frame) (L) | 2 | R9N2800FL | 12.60 (320.0) Pistol | | | 2 AC NO + NC AC2NO2NCJ2N | TSR9N2 |
| | 3 | R9N3800FL | SF320PH12X12 | | | | TSR9N3 |
| | 4 | R9N4800FL | 15.70 (400.0) Pistol | | | | TSR9N4 |
| | | | 19.70 (500.0) Pistol SF500PH12X12 | | | | |

Notes

- ① 200 kA short-circuit rating.
- ② Requires test handle.

Switching Devices

R9 Series (UL 98) Fusible 30–800A

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. | 30–400 (J-, K-, L-, M-Frame) | Standard handle | 1, 3, 3R, 4, 12 | FHS ① |
| | 30–400 (J-, K-, L-, M-Frame) | Chrome-plated handle | 1, 3, 3R, 4, 4X, 12 | FHCP ① |



Cable Operator

Mechanism for Flange Handle

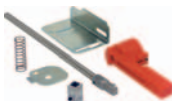


| Description | Ampere Rating (Frame) | NEMA Type | Cable Length In (mm) | Catalog Number |
|--|------------------------------|-------------------------------|----------------------|----------------|
| Link between “Flange” handle and side-operated switches. Please order mechanism and “Flange” handle. | 30–400 (J-, K-, L-, M-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. | 30–400 (J-, K-, L-, M-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 |
| | 30–400 (J-, K-, L-, M-Frame) | NFPA79JKL |
| | 600–800 (N-Frame) | NFPA79N |

Note

① Defeatable.



Direct Handles

| 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 |

S0 Type Handle



Door Interlocked External Front Handles

| 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) | S0 | 1, 3R, 12 | Black | SHB0N12HV |
| | 30 (H-Frame) | S0 | 1, 3R, 12 | Red/yellow | SHR0N12HV |
| | 30 (H-Frame) | S0 | 4, 4X | Black | SHB0N4XHV |
| | 30 (H-Frame) | S0 | 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 |

PH1 Type Handle



PH2 Type Handle



PH3 Type Handle

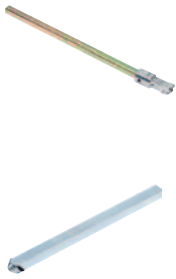


Right Side External Handles

| 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 |

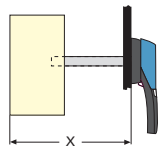
Note

① Includes TEST position.



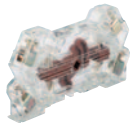
Shaft Extensions for External Handles

| 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) | 7.87–10.24 (200.0–260.0) | PH2, PH3 | 7.90 (200.0) | SF200PH10X10 |
| 30–100A (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) | 7.87–14.96 (200.0–380.0) | 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) | 7.87–18.10 (200.0–460.0) | 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) | 7.87–22.05 (200.0–560.0) | 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 _g (Amperes) | |
|---|-----------------------|---------------------|--|----------------------|
| | | | Nominal Current (Amperes) | Catalog Number |
| For the R9 Series Fusible 30–800A, 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 | AC1N01NCJ2N ② |
| | 600–800 (N-Frame) | 2NO + 2NC | 10 | AC2N02NCJ2N ② |
| | 30–400 (I–M-Frame) | 1NO + 1NC (w/ TEST) | 10 | AC1N01NCJ2NT |
| | 30–400 (I–M-Frame) | 2NO + 2NC (w/ TEST) | 10 | AC2N02NCJ2NT |



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 30A/CC (H-Frame), maximum of four ACs. For 30A/J (H-Frame), maximum of two ACs. For 30 to 100A/J (I, J and K-Frame), maximum of four ACs. For 200 to 600A/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 | AC1N0R9 |
| | 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 _g (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-, I-, 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 | TSR9M2 ④ |
| | 400 (M-Frame) | 3 | TSR9M3 ④ |
| | 400 (M-Frame) | 4 | TSR9M4 ④ |
| | 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 I–M-Frame switches.
- ③ Early-break/same-make auxiliary contacts.
- ④ For replacement only. Both line and load side terminal shrouds are included with 400A switch.

Switching Devices

R9 Series (UL 98) Fusible 30–800A



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 | (2) #2–600 kcmil | Cu/Al | LK3R9FN |
| | 400 (M-Frame) | J | 4 | (2) #2–600 kcmil | Cu/Al | LK4R9FN |
| | 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 30–800A

| Description | 30A | 30A | 30A | 30A | 60A | 60A | 100A |
|---|------------|------------|------------|------------|------------|------------|------------|
| 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.

Switching Devices

R9 Series (UL 98) Fusible 30–800A

R9 Series Fusible 30–800A, continued

| Description | 200A | 400A | 600A | 800A |
|---|---------|---------------------|------------------|------------------|
| 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

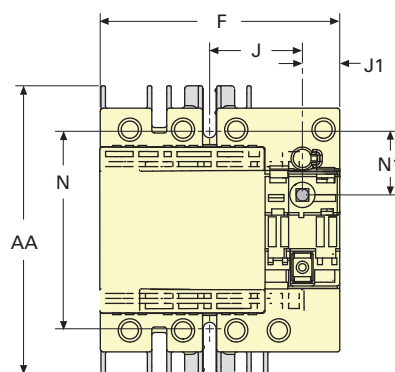
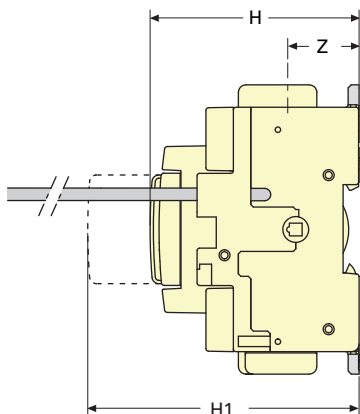
- ① Two-pole in series.
- ② Three-pole in series.

Dimensions

Approximate Dimensions in Inches (mm)

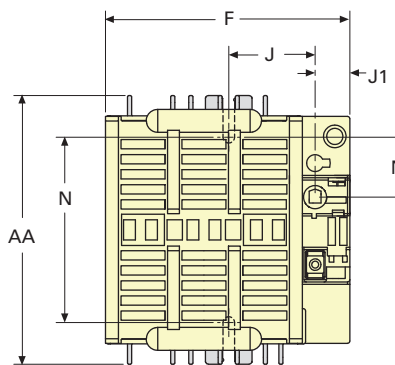
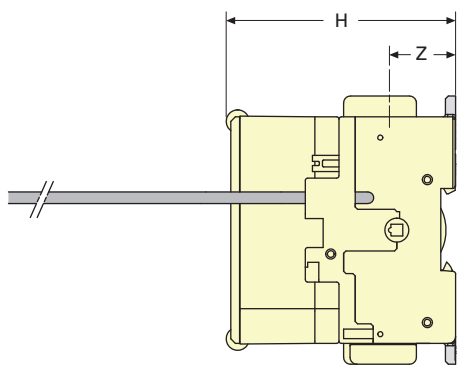
Front Operation

R9 Series Fusible 30A/CC—H-Frame



| F | Switch Body | | J | J1 | Switch Mounting | | Connection Terminals | |
|-------------|-------------|--------------|-------------|-------------|-----------------|-------------|----------------------|-------------|
| | H | H1 | | | 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 30A/J—H-Frame



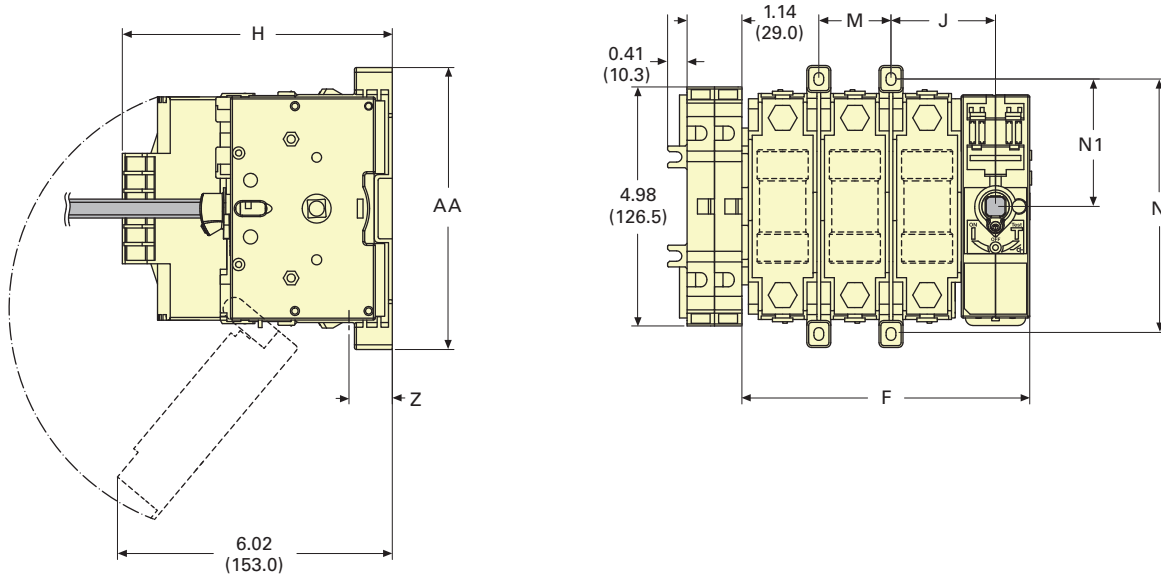
| F | Switch Body | | J1 | Switch Mounting | | Connection Terminals | |
|--------------|-------------|-------------|-------------|-----------------|-------------|----------------------|-------------|
| | H | J | | N | N1 | AA | Z |
| 4.13 (104.9) | 3.89 (98.8) | 1.47 (37.3) | 0.59 (15.0) | 3.30 (83.8)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

Switching Devices

R9 Series (UL 98) Fusible 30–800A

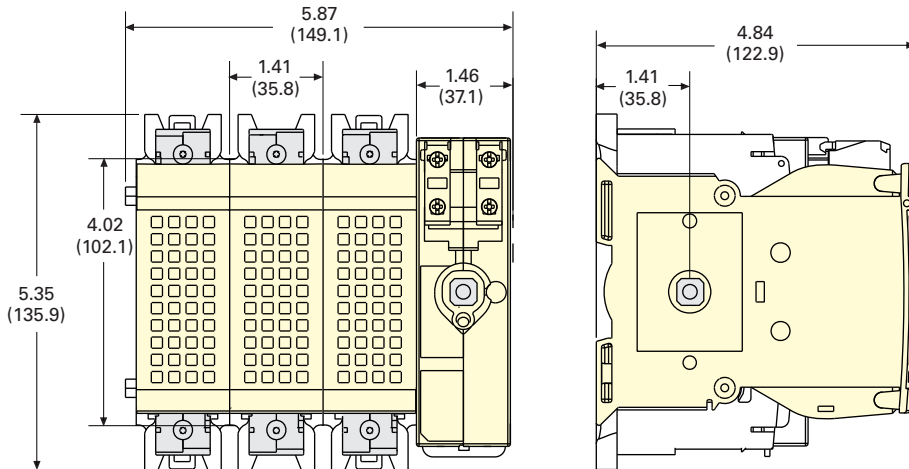
Approximate Dimensions in Inches (mm)

R9 Series Fusible 30A/CC—I-Frame



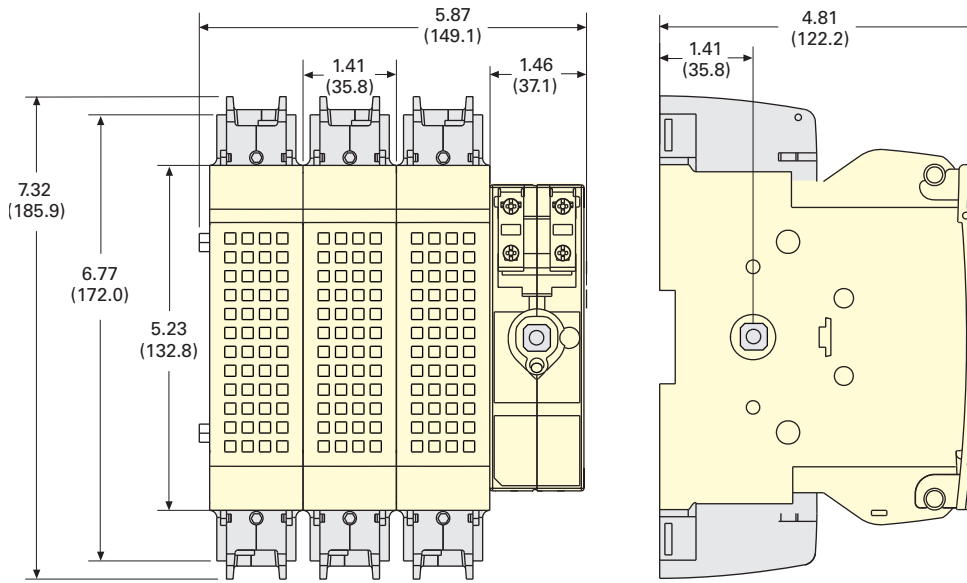
| Ampere Rating (Fuse) | Switch body | | | Switch Mounting | | | | Connection Terminals | |
|-------------------------|--------------|--------------|-------------|-----------------|-------------|--------------|-------------|----------------------|-------------|
| | F 3P | F 4P | H | J | M | N | N1 | AA | Z |
| 30 (CC) | 4.92 (125.0) | 6.06 (154.0) | 3.89 (99.0) | 1.77 (45.0) | 1.14 (29.0) | 5.31 (135.0) | 2.63 (66.5) | 5.87 (149.0) | 1.21 (31.0) |

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

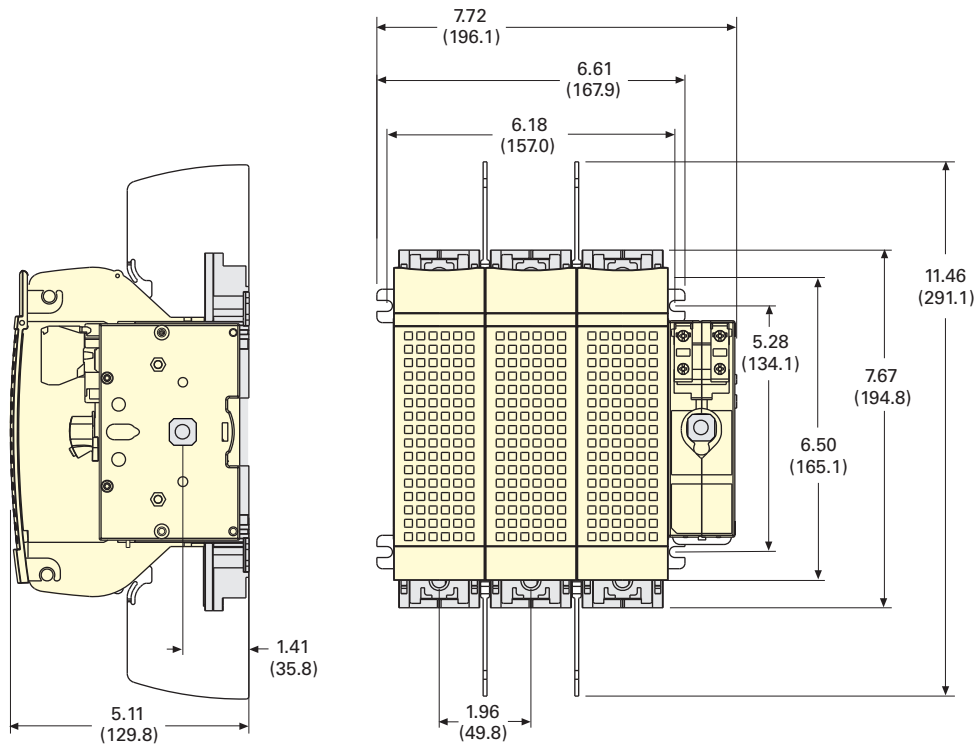


Approximate Dimensions in Inches (mm)

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



R9 Series Fusible 200A/J—L-Frame

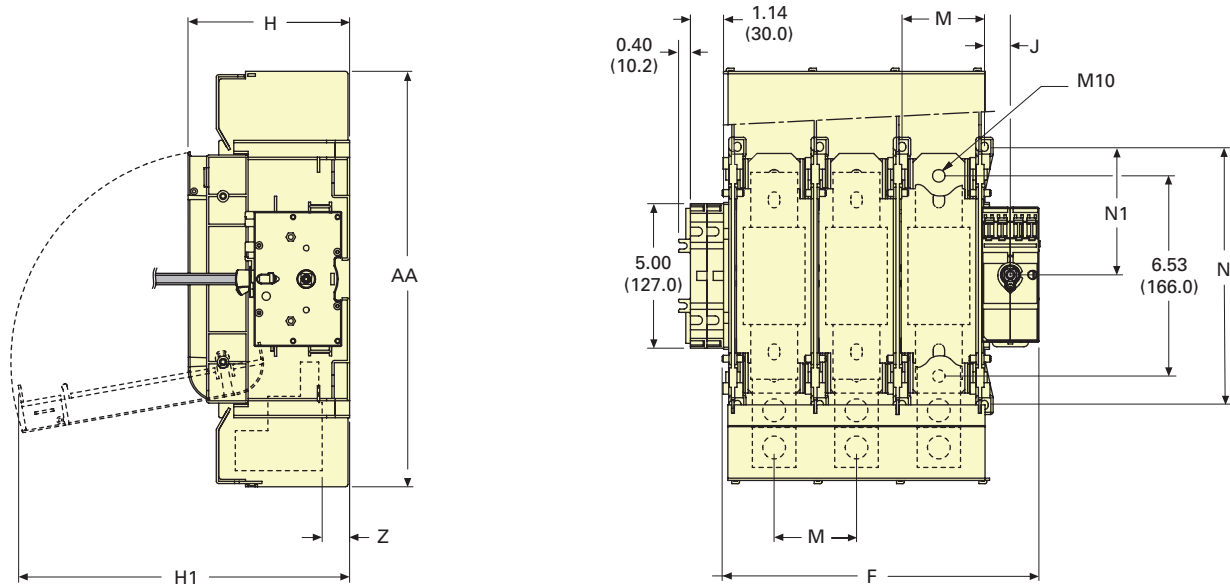


Switching Devices

R9 Series (UL 98) Fusible 30–800A

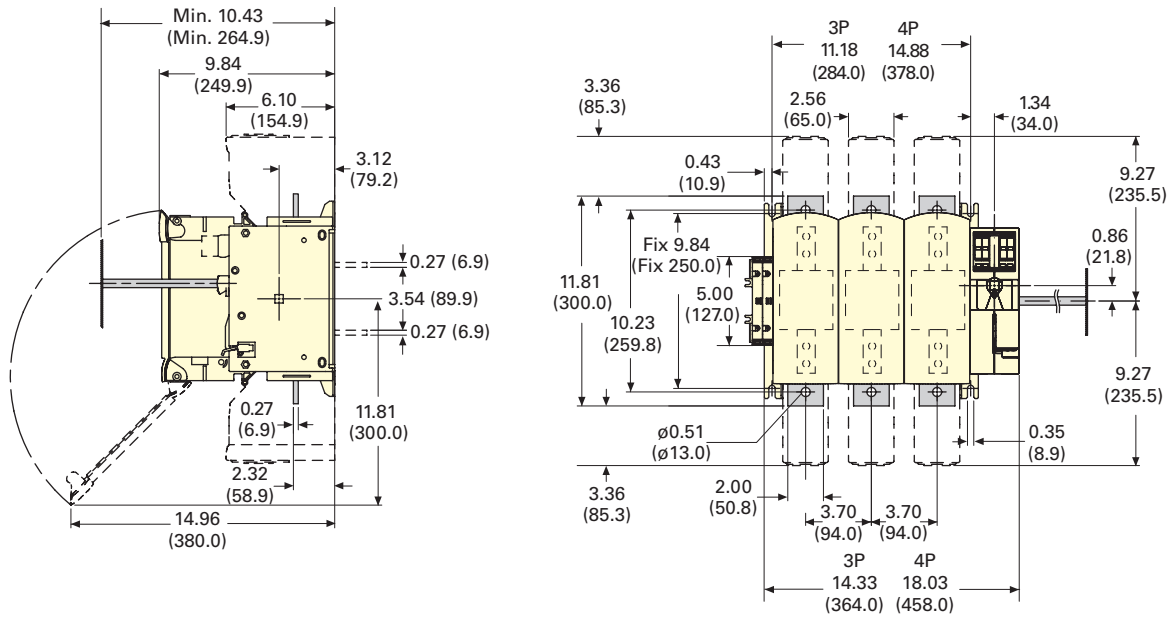
Approximate Dimensions in Inches (mm)

R9 Series Fusible 400A/J–M-Frame



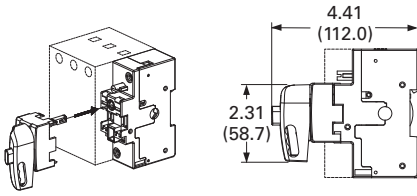
| Switch Body | | | | Switch Mounting | | | | Connection Terminals | |
|---------------|---------------|--------------|---------------|-----------------|-------------|--------------|--------------|----------------------|-------------|
| F3P | F4P | H | H1 | J | M | N | N1 | AA | Z |
| 10.80 (276.0) | 13.70 (348.0) | 5.56 (141.5) | 11.41 (290.0) | 0.88 (22.5) | 2.84 (72.0) | 8.83 (224.0) | 4.41 (112.0) | 14.31 (363.5) | 1.06 (27.0) |

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

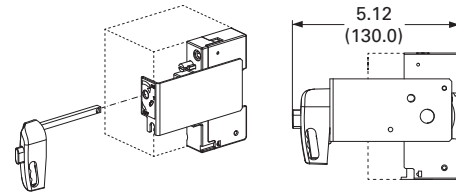


Approximate Dimensions in Inches (mm)

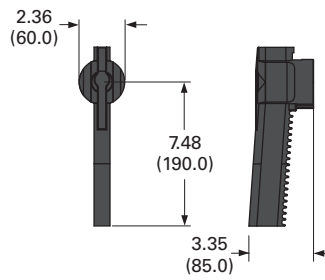
30CC (H-Frame)



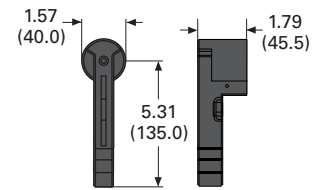
30J (H-Frame)



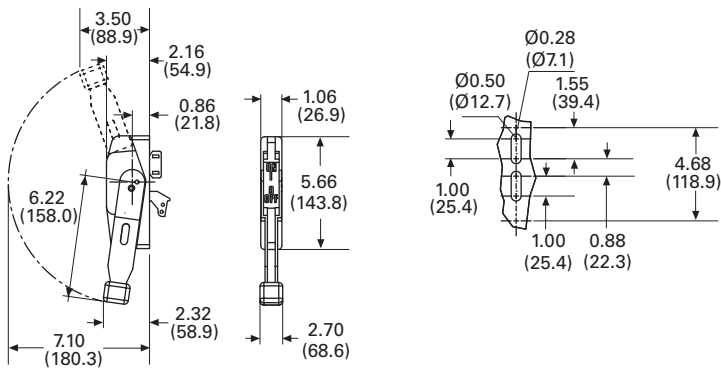
30J to 400J



600J and 800L



Flange Handle



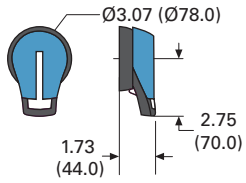
Switching Devices

R9 Series (UL 98) Fusible 30–800A

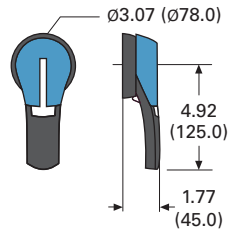
Approximate Dimensions in Inches (mm)

Door Interlocked External Handle

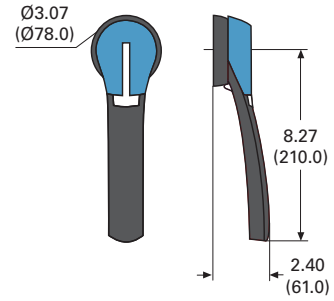
PH1 Type Handle



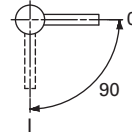
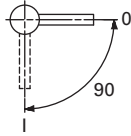
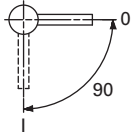
PH2 Type Handle



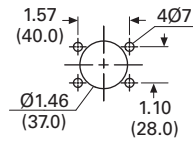
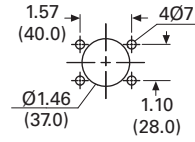
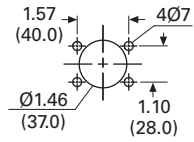
PH3 Type Handle



Direction of Operation

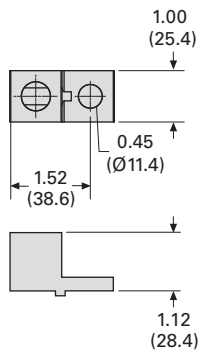


Door Drilling Template

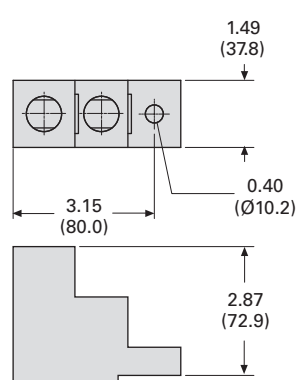


Line and Load Side Lugs

200A (L-Frame)



400–800A (M and N-Frames)





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| Features, Benefits and Functions | 47 |
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| Accessories | 49 |
| Technical Data and Specifications | 51 |
| Dimensions | 52 |

Product Overview

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

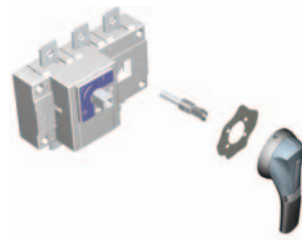
R9 Series (UL® 98 listed) DC rated disconnects are manually operated multi-pole load break switches. They provide safety isolation for any low voltage circuit in a photovoltaic application.

Features, Benefits and Functions

- Unique switching technology
- Up to 600 Vdc according to UL 98 / CSA®
- Up to 1000 Vdc according to IEC 947-3

Application Description

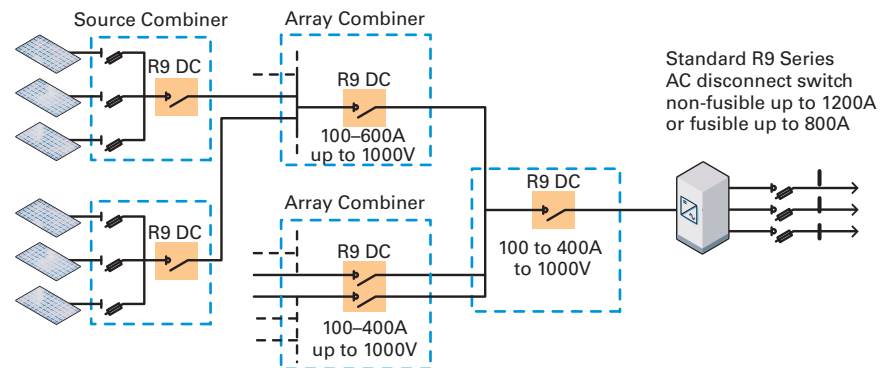
In three- and four-pole versions from 100 to 400A



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)

① Q4 2010

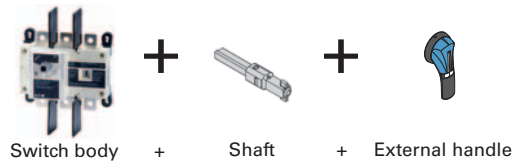
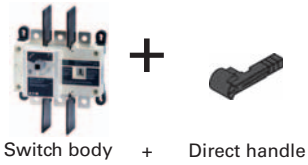


Simplified large photovoltaic system layout

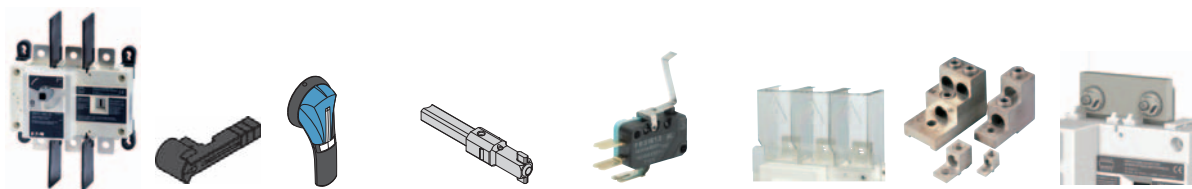
Switching Devices

R9 Series (UL 98) DC Rated Disconnects

Product Selection



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 | 7.90 (200.0) | C Type | 3P ② | 3P ④ | 2 pieces |
| | 4 | R9D4100UDC | | Black 1, 3R, 12 ① | SF200PH10X10 | 1st Contact NO+NC | TS3R9DT | LK3R9DL | DCJUMPD2 |
| 200 | 3 | R9D3200UDC | PHB2N12F | Red/Yellow 1, 3R, 12 ① | 12.60 (320.0) | AC1NONCDE | 3P ③ | 4P ④ | 3 pieces |
| | 4 | R9D4200UDC | | PHR2N12F | 15.7 0 (400.0) | 2nd Contact NO+NC | TS3R9DB | LK4R9DL | DCJUMPD3 |
| 400 | 3 | R9E3400UDC | PHB2N4XF | Black 4, 4X ① | SF400PH10X10 | AC2NONCDE | 4P ④ | 3P ④ | 2 pieces |
| | 4 | R9E4400UDC | | Red/Yellow 4, 4X ① | | | TS4R9DTB | LK4R9EM | DCJUMPE2 |
| | | | | | | | 3P ③ | 4P ④ | 3 pieces |
| | | | | | | | 4P ④ | LK4R9EM | DCJUMPE3 |
| | | | | | | | 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 |

PH2 Type Handle



Door Interlocked External Handle Front Operation—1-0, Three- and Four-Pole

| 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.

Switching Devices

R9 Series (UL 98) DC Rated Disconnects

Line and Load Terminal Lugs

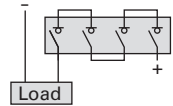
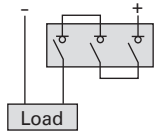


Line and Load Terminal Lugs

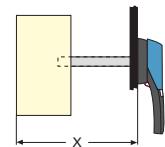
| Description | Ampere Rating | Connection Type | Number of Cables per Terminal | Lugs per Kit | Cable Type | Catalog Number |
|---|---------------|-----------------|-------------------------------|--------------|------------|----------------|
| Connection of bare copper cables onto the terminals | 100–200 | 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 | DCJUMP2 |
| | 100–200 | 3 Pieces | 2 | 4 | DCJUMP3 |
| | 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 In (mm) | Handle | Shaft Length In (mm) | 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

100–400A

Characteristics According to UL 98

| Thermal Current I_{th} at 40°C (A) | | Ampere Rating | | |
|--|-----------|---------------|-----------|-----------|
| | | 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

| Thermal Current I_{th} at 40°C (A) | | Ampere Rating | | |
|---|-----------|---------------|-----|-----|
| | | 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 |

Switching Devices

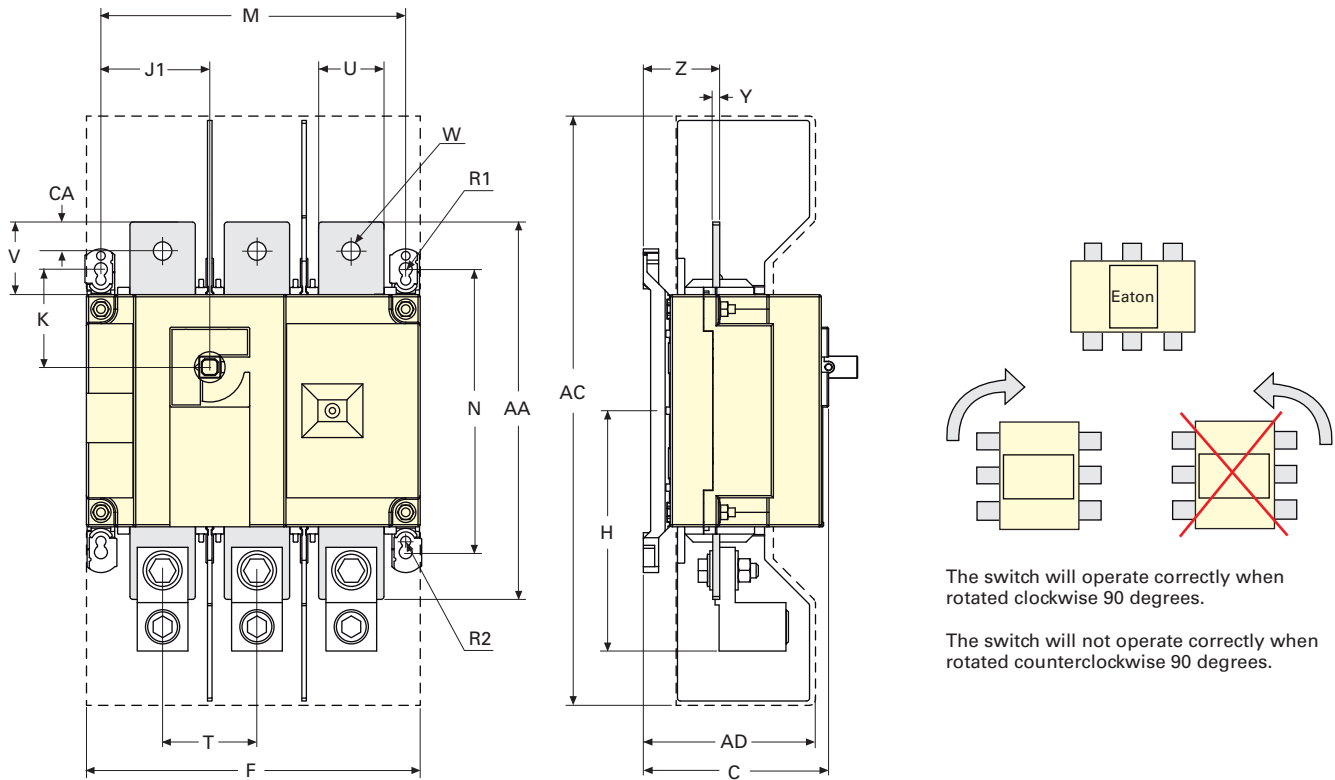
R9 Series (UL 98) DC Rated Disconnects

Dimensions

Approximate Dimensions in Inches (mm)

R9 Series DC Rated Disconnects 100–400A

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

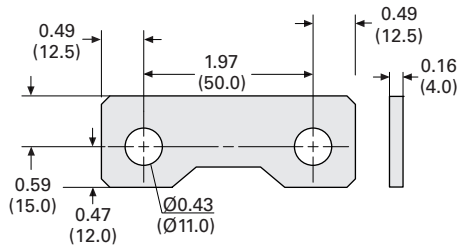
| Ampere Rating | C | AC | AD | F 3P | F 4P | H | J1 3P | J1 4P | K | M 3P | M 4P |
|---------------|--------------|---------------|--------------|--------------|---------------|--------------|-------------|--------------|-------------|--------------|---------------|
| 100–200 | 3.72 (94.5) | 10.10 (256.5) | 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) |

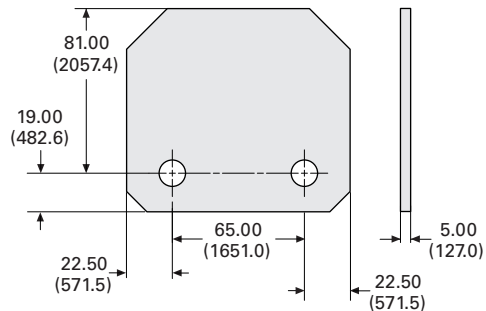
Approximate Dimensions in Inches (mm)

Jumpers

100–200A

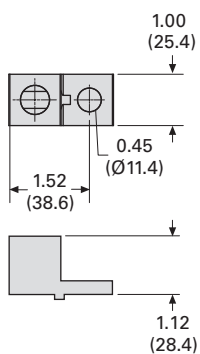


400A

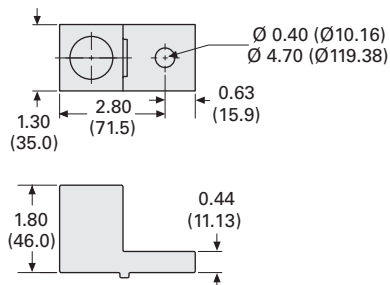


Terminal Lugs

100–200A



400A



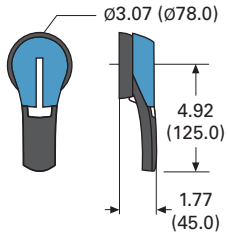
Switching Devices

R9 Series (UL 98) DC Rated Disconnects

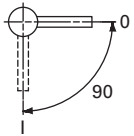
Approximate Dimensions in Inches (mm)

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

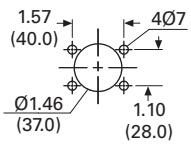
PH2 Type Handle

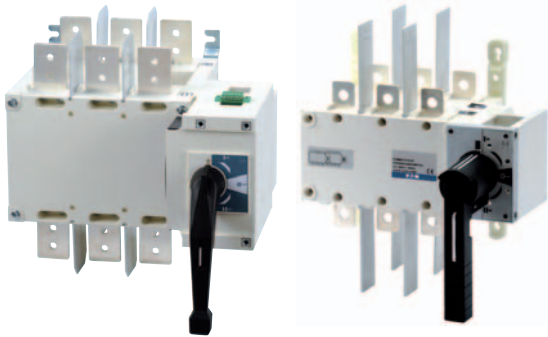


Direction of Operation



Door Drilling Template





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| Standards and Certifications | 55 |
| Product Selection | 56 |
| Accessories | 57 |
| Technical Data and Specifications. | 59 |
| Dimensions | 60 |

Product Overview

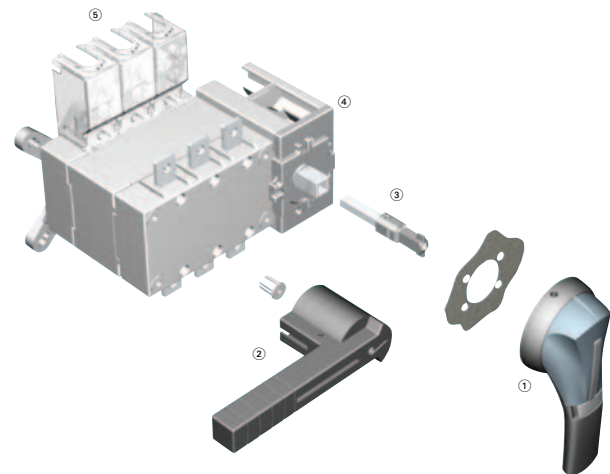
R9 Series (UL® 98 listed) non-fusible disconnects are heavy-duty manual transfer switches, they transfer load manually between two low voltage circuits and provide safety disconnection.

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, O, 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 (600–1200A)
- CSA® 22.2 No. 4, File 217736
- IEC 60947-3
- EN 60947-3
- CE



Overview

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

Switching Devices

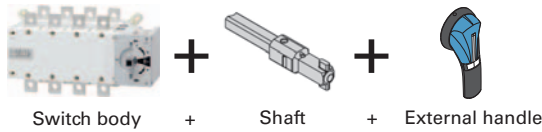
Manual Transfer/Double Throw Switches

Product Selection

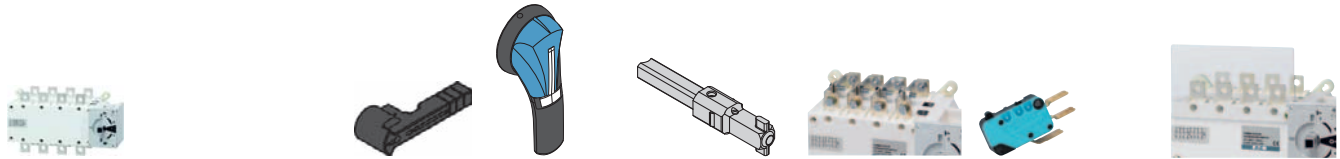
Direct Operation



External Operation



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–O–II Type 4/4X PHB2N4X3P | 7.90 (200.6) SF200PH10X10 | 3P BB3P200 | NO/NC AC1NONCMTS400 | 3P TS3MTS200TB |
| | 4 | RMTS4100U | | | | | | |
| 200 | 3 | RMTS3200U | | Size 2, Red I–O–II Type 4/4X PHR2N4X3P | 12.60 (320.0) SF320PH10X10 | 4P BB4P200 | Low level AC1NONCMTS400LL ^③ | 4P TS4MTS200TB |
| | 4 | RMTS4200U | | | | | | |
| 400 | 3 | RMTS3400U | | Size 3, Black I–O–II Type 4/4X PHB3N4X3P | 7.90 (200.6) SF200PH15X12 | 3P BB3P400 | | 3P TS3MTS400TB |
| | 4 | RMTS4400U | | | | | | |
| 600 | 3 | RMTS3600U | DHMTSDL | Size 4, Black I–O–II Type 4/4X PHB4N4X3P | 12.60 (320.0) SF320PH15X12 | 4P BB4P400 | NO/NC contact standard | 4P TS4MTS600 |
| | 4 | RMTS4600U | | | | | | |
| 800 | 3 | RMTS3800U | DHMTSDLM | Size 4, Red I–O–II Type 4/4X PHR4N4X3P | 15.70 (398.8) SF400PH15X12 | 3P BB3P1200 | | 3P TS3MTS1200 |
| | 4 | RMTS4800U | | | | | | |
| 1200 | 3 | RMTS31200U | | | | 4P BB4P1200 | | 4P TS4MTS1200 |
| | 4 | RMTS41200U | | | | | | |

Notes

- ① All ratings, 100–1200A, are UL 98 listed; switches rated 600–1200A are also UL 1008 listed.
- 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.

Accessories



Direct Handle

| Ampere Rating | Handle Color | Handle Type | Catalog Number |
|---------------|--------------|--------------|----------------|
| 100–400 | Black | Single lever | DHMTSSL |
| 600 | Black | Double lever | DHMTSDL |
| 800–1200 | Black | Double lever | DHMTSDLM |

PH2 and PH3 Type



External Handle

| 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 |

PH4 Type



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 |

Switching Devices

Manual Transfer/Double Throw Switches



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.

Technical Data and Specifications

UL 1008 Characteristics

| Description | 100A | 200A | 400A | 600A | 800A | 1200A |
|--|-----------|-----------|------------------------|--------------|--------------|--------------|
| 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 | 100A ② | 200A ② | 400A ② | 600A | 800A | 1200A |
|--|---------|---------|------------|----------|----------|----------|
| 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.

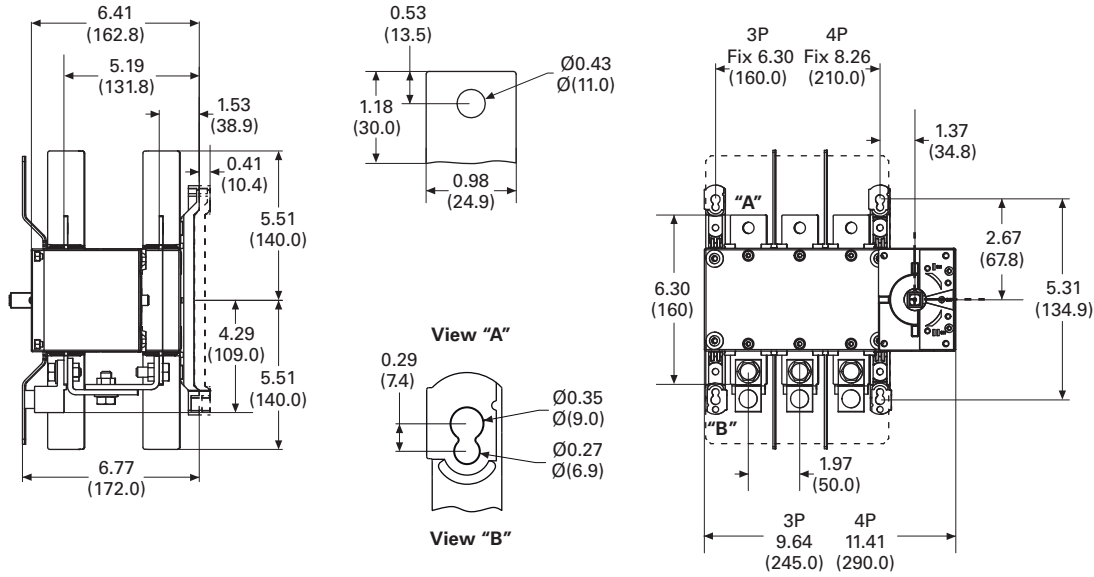
Switching Devices

Manual Transfer/Double Throw Switches

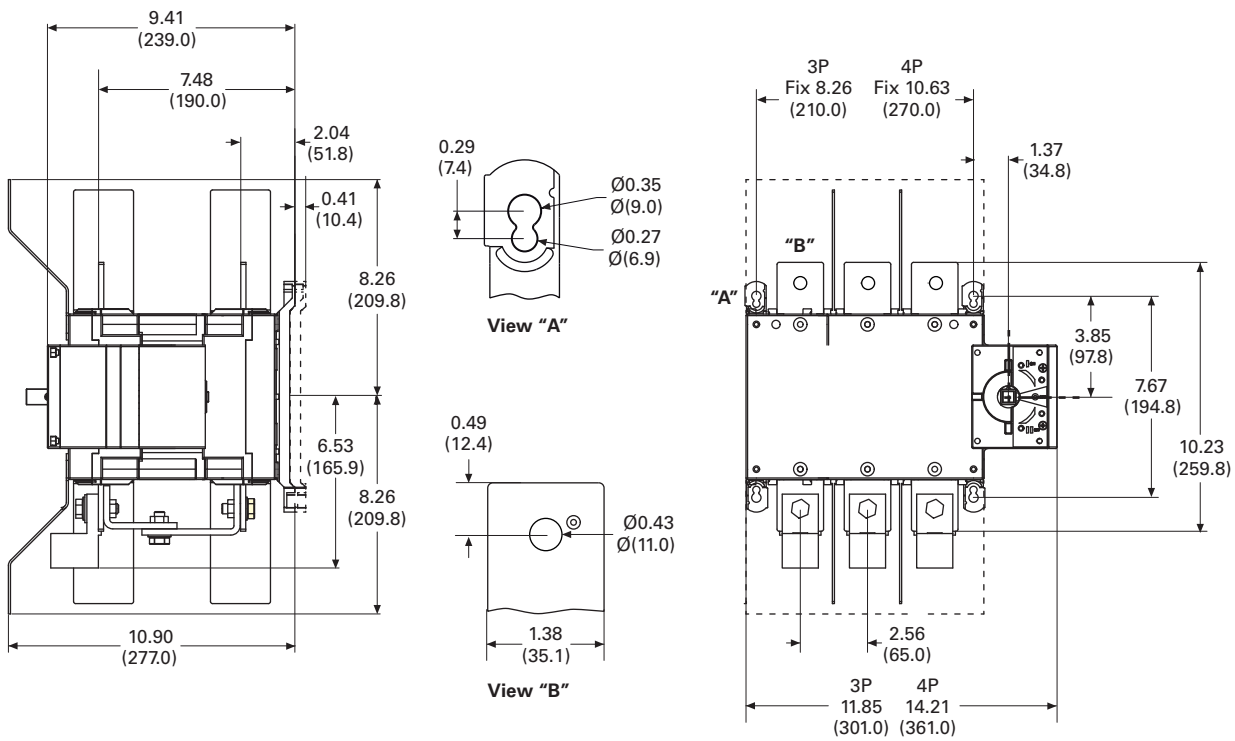
Dimensions

Approximate Dimensions in Inches (mm)

100 to 200A

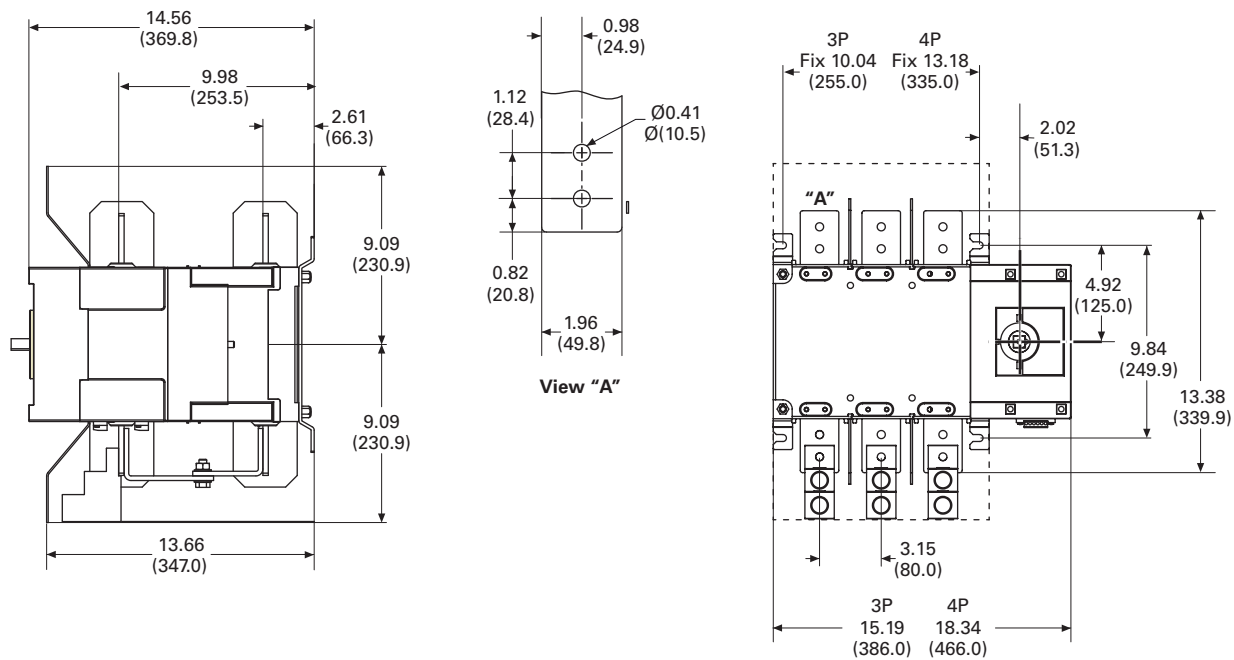


400A

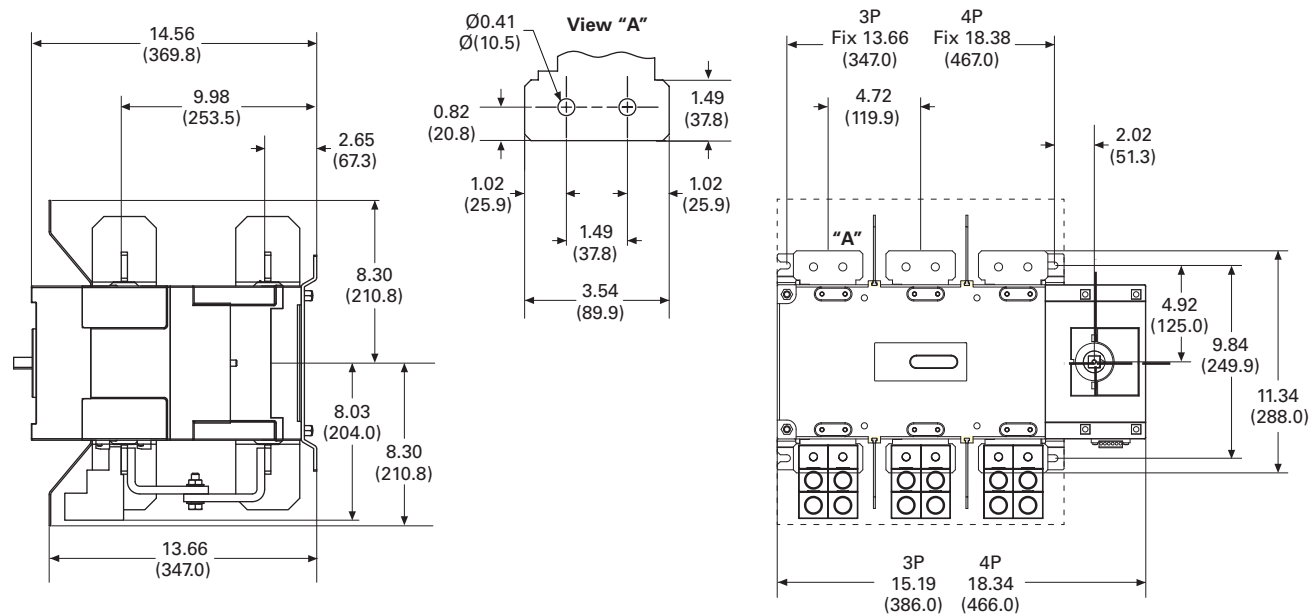


Approximate Dimensions in Inches (mm)

600A



800 to 1200A



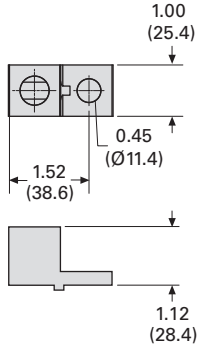
Switching Devices

Manual Transfer/Double Throw Switches

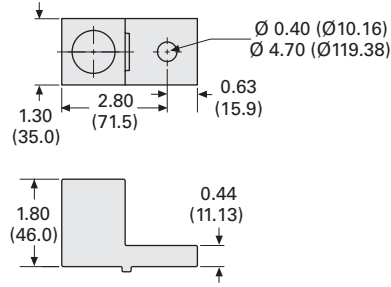
Approximate Dimensions in Inches (mm)

Terminal Lugs

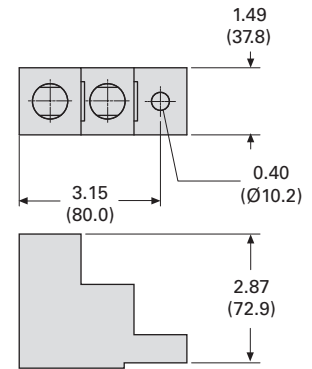
100-200A



400A

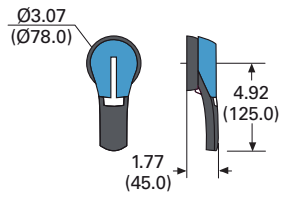


600-1200A

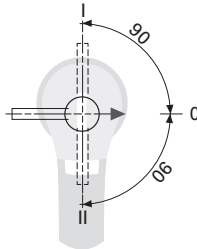


100-200A

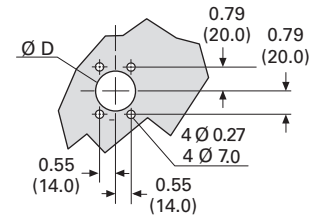
PH2 Type



Direction of Operation

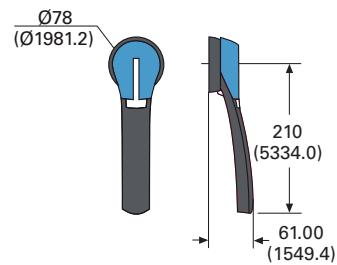


Door Drilling Template

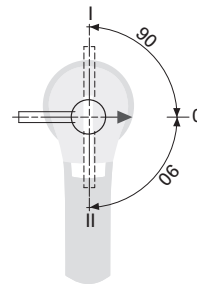


400A

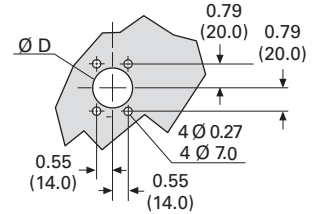
PH3 Type



Direction of Operation



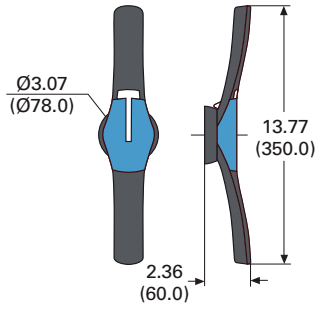
Door Drilling Template



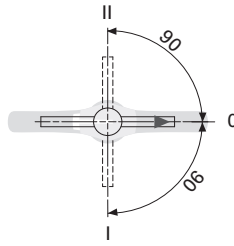
Approximate Dimensions in Inches (mm)

600-1200A

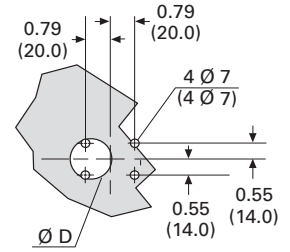
PH4 Type



Direction of Operation



Door Drilling Template



Enclosed Rotary Disconnects



Product Overview

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.

Features, Benefits and Functions

- 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

Open rotary disconnects can be found in Volume 5, Motor Control and Protection Catalog CA08100006E.

Contents

Description

| | <i>Page</i> |
|--|-------------|
| Product Overview | 64 |
| Features, Benefits and Functions | 64 |
| Standards and Certifications | 64 |
| Product Selection | 65 |
| Dimensions | 66 |

Standards and Certifications

- Meets NEC® Article 430 requirements for a separate disconnect means within sight of all motor loads
- UL® listed under Section 508
- UL listed File No. E165150
- CSA® listed under 22.2 No. 14, File 162136



Product Selection

Enclosed Rotary Non-Fusible ^①

| Ampere Rating | Maximum Horsepower Ratings | | | | NEMA 1 ^② Enclosure Indoor Catalog Number | NEMA 12 ^{②③} Enclosure Dust-Tight/ Rainproof Catalog Number | NEMA 4X ^② Enclosure Corrosion-Resistant, Stainless Steel Catalog Number | NEMA 4X ^② Enclosure Corrosion-Resistant, Non-Metallic Catalog Number | NEMA 4X Enclosure Polycarbonate- Non-Metallic Catalog Number |
|----------------------------|----------------------------|-------|------|------|--|--|--|---|--|
| | Three-Phase AC | | 480V | 600V | | | | | |
| 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 | ER53030UPGB ^{④⑤} |
| 40 | 7-1/2 | 7-1/2 | 20 | 25 | ER53040UG | ER53040UD | ER53040UW | ER53040UX | — |
| 60 | 15 | 15 | 30 | 30 | ER53060UG | ER53060UD | ER53060UW | ER53060UX | ER53060UPGB ^{④⑤} |
| 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 ^{⑥⑦}

| 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 | UNMR5B | | Single-pole TS1R5B |
| 80 | S4PR580 | | | Three-pole TS3R5B |

Notes

- ① Short-circuit current ratings are same as those listed in the table on Page 10, for the respective disconnect amperage.
- ② For CSA listed switches, add prefix letter "C" to the front of the catalog number.
- ③ 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.
- ④ "GB" suffix = **G**ray cover, **B**lack handle; "GR" suffix = **G**ray cover, **R**ed handle; "YR" suffix = **Y**ellow cover, **R**ed handle.
- ⑤ cULus only.
- ⑥ Ordered and shipped as separate components—not integral to enclosed device.
- ⑦ Enclosed disconnects can accept one power pole, neutral or up to two auxiliary contacts (one mounted on either side of switch).
- Contact the Safety Switch Flex Center (1-888-329-9272) for factory-installed accessories or other special modifications.

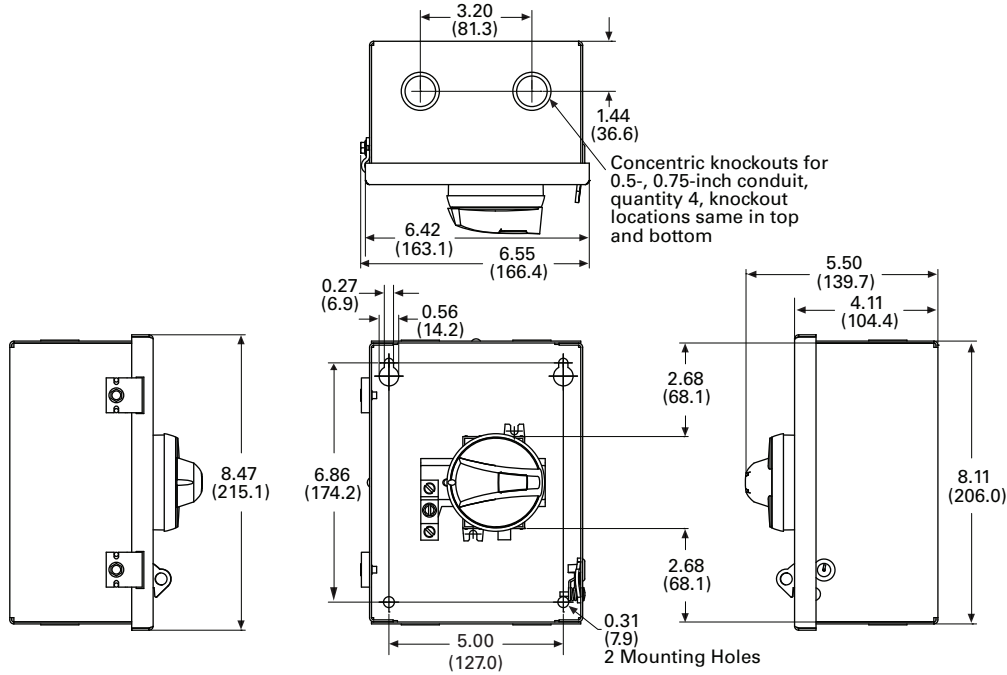
Switching Devices

Enclosed Rotary Disconnects

Dimensions

Approximate Dimensions in Inches (mm)

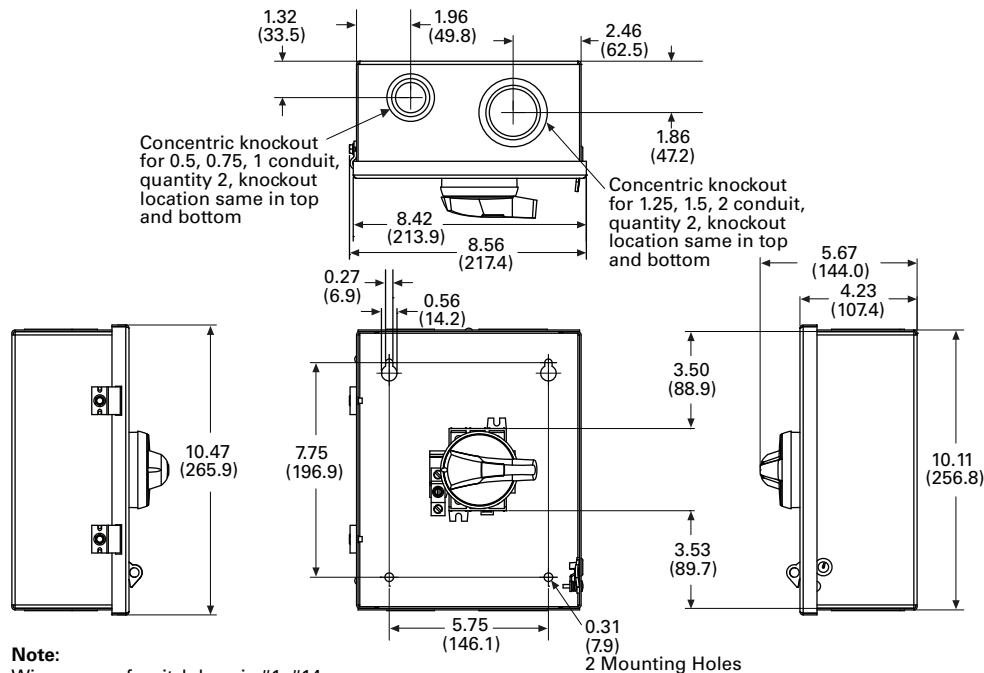
NEMA Type 1 (16–40A)



Note:

Wire range of switch lugs for 16–25A is #6–#10 copper, and for 30–40A is #8–#14. Wire range of ground lugs is #2–#14 copper or aluminum.

NEMA Type 1 (60–80A)

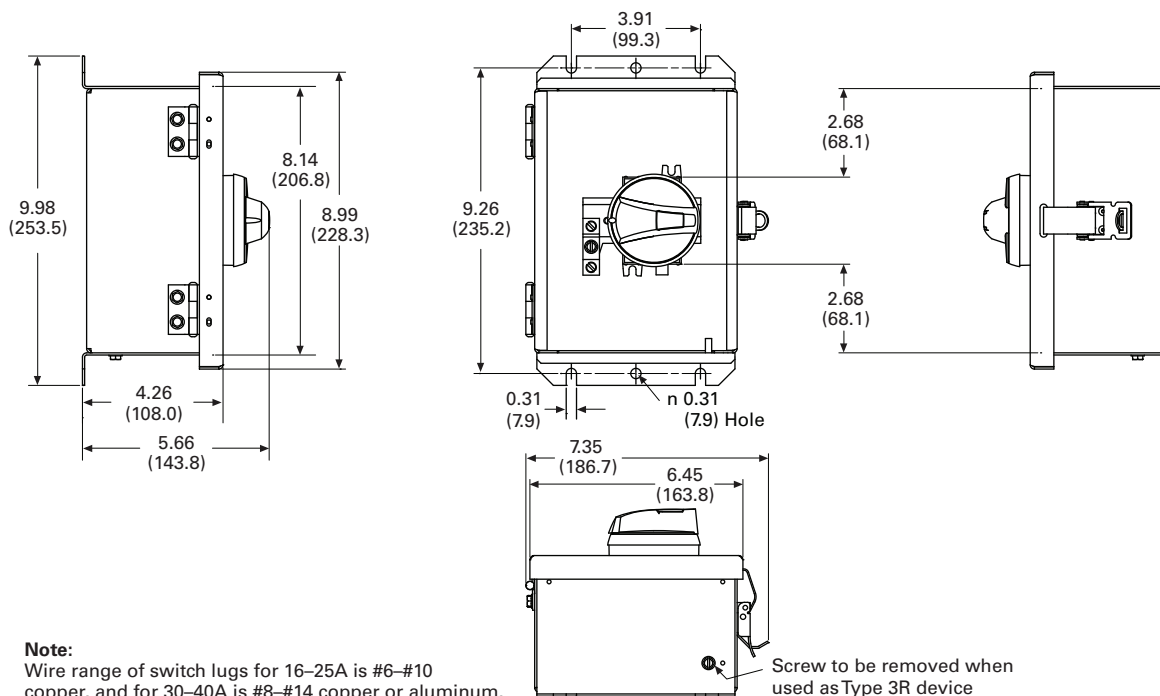


Note:

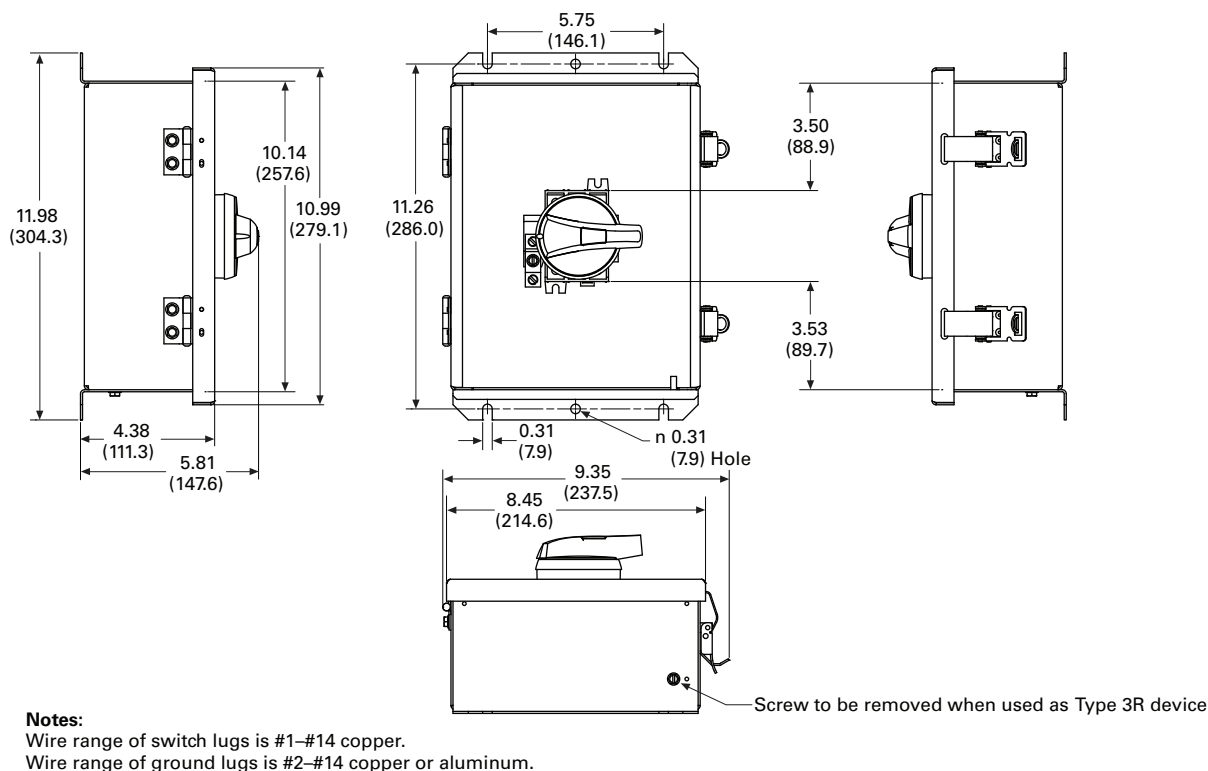
Wire range of switch lugs is #1–#14 copper. Wire range of ground lugs is #2–#14 copper or aluminum.

Approximate Dimensions in Inches (mm)

NEMA Type 12/3R (16–40A)



NEMA Type 12/3R (60–80A)

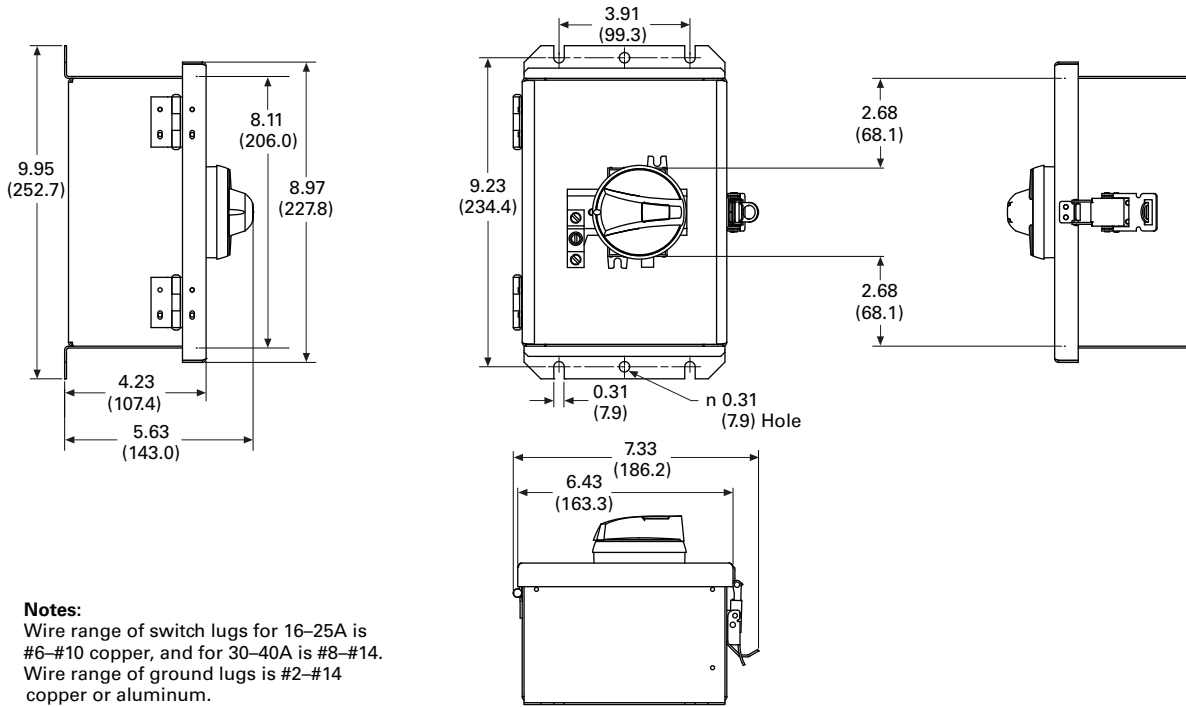


Switching Devices

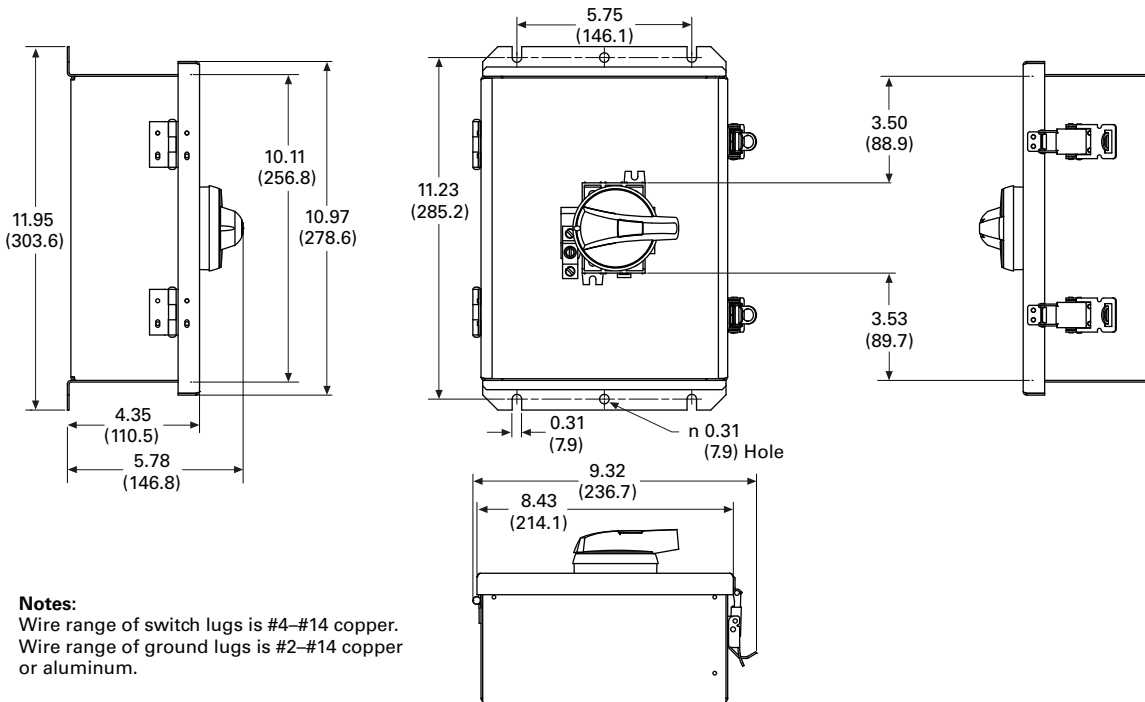
Enclosed Rotary Disconnects

Approximate Dimensions in Inches (mm)

NEMA Type 4X Stainless (16–40A)

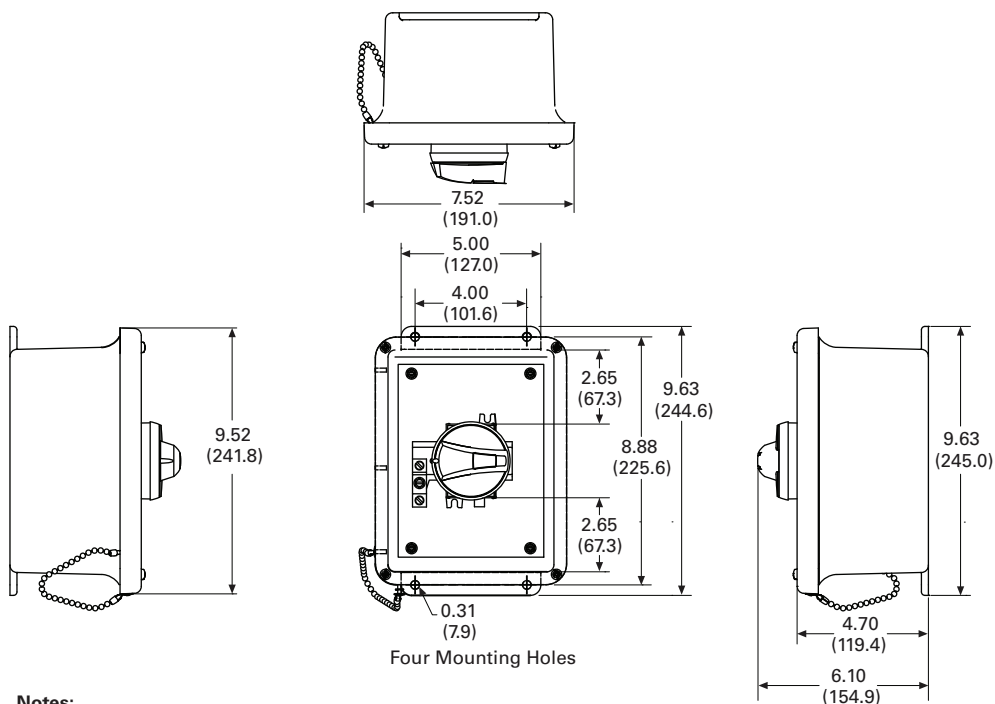


NEMA Type 4X Stainless (60–80A)



Approximate Dimensions in Inches (mm)

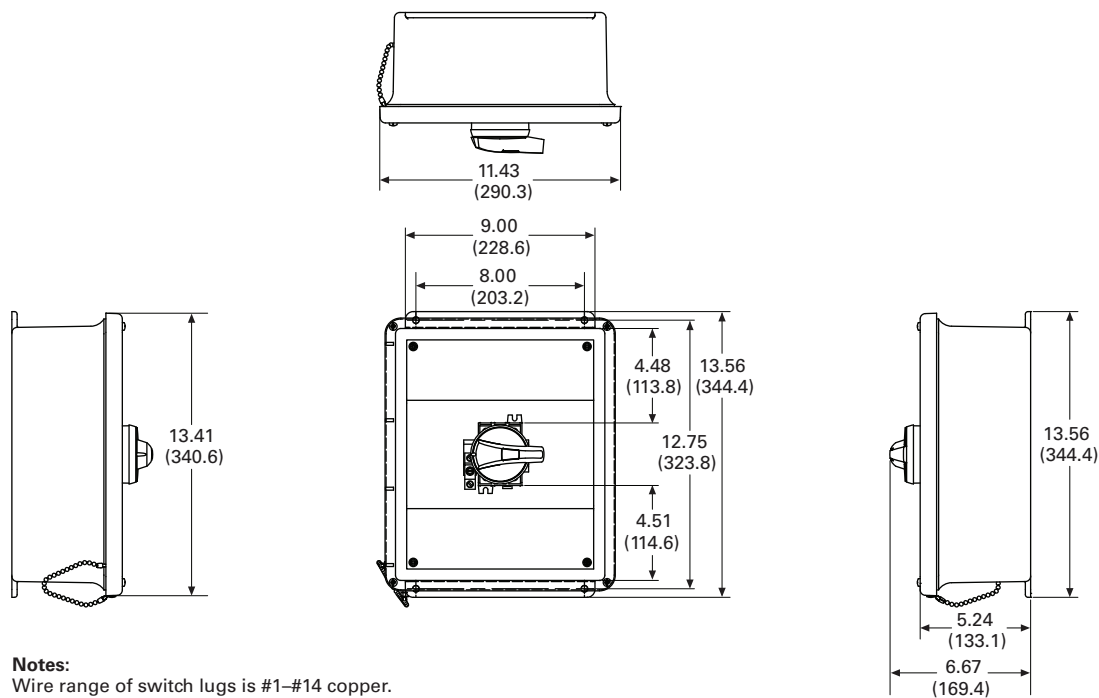
NEMA Type 4X Thermoset Polyester (16–40A)



Notes:

Wire range of switch lugs for 16–25A is #6–#10 copper, and for 30–40A is #8–#14.
Wire range of ground lugs is #2–#14 copper or aluminum.

NEMA Type 4X Thermoset Polyester (60–80A)



Notes:

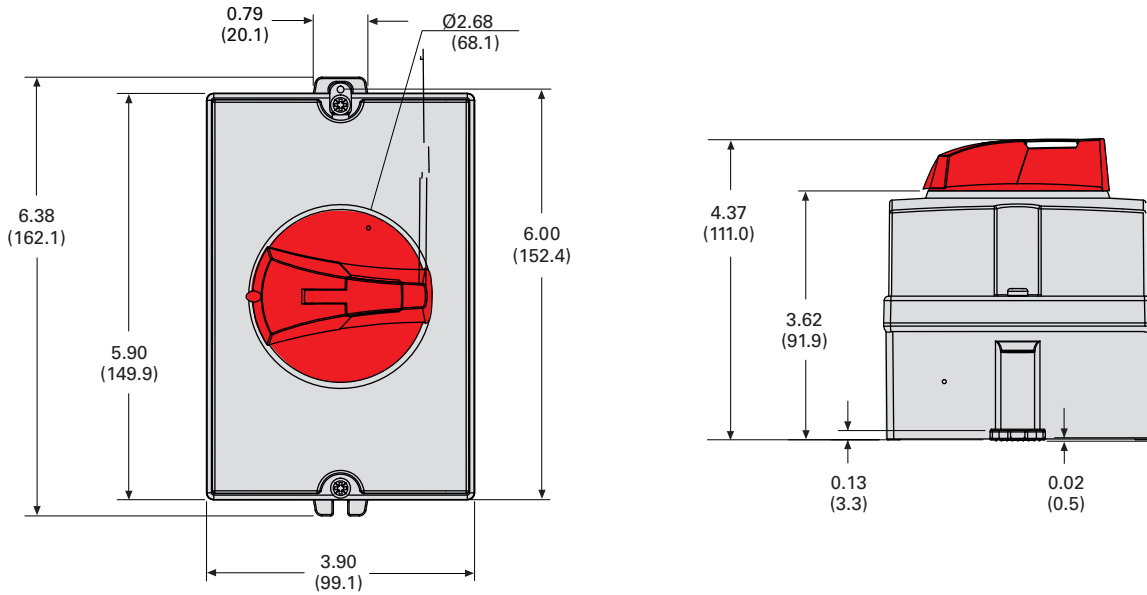
Wire range of switch lugs is #1–#14 copper.
Wire range of ground lugs is #2–#14 copper or aluminum.

Switching Devices

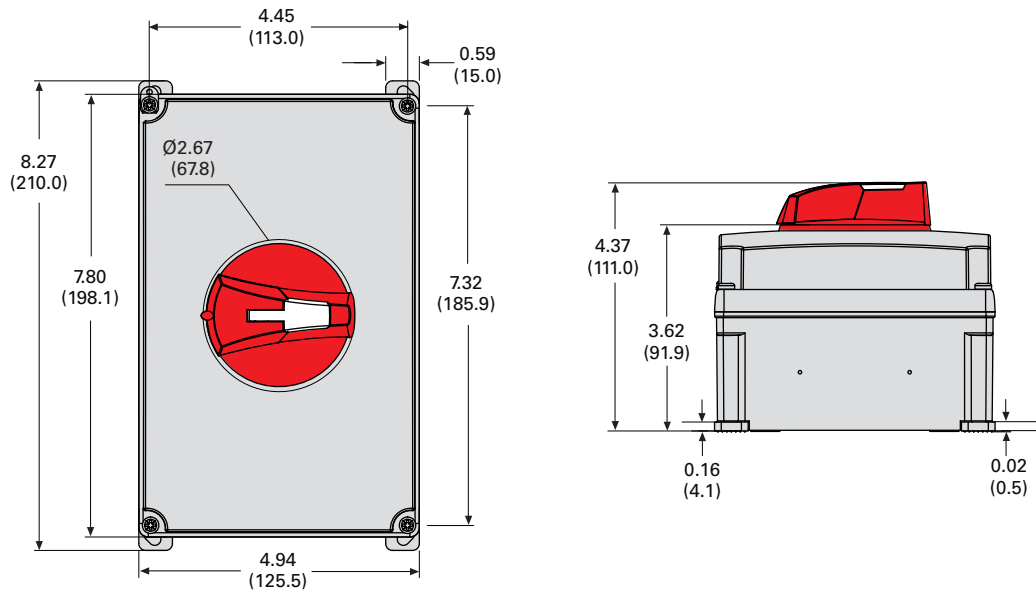
Enclosed Rotary Disconnects

Approximate Dimensions in Inches (mm)

NEMA Type 4X—Polycarbonate (30A)



NEMA Type 4X—Polycarbonate (60A)



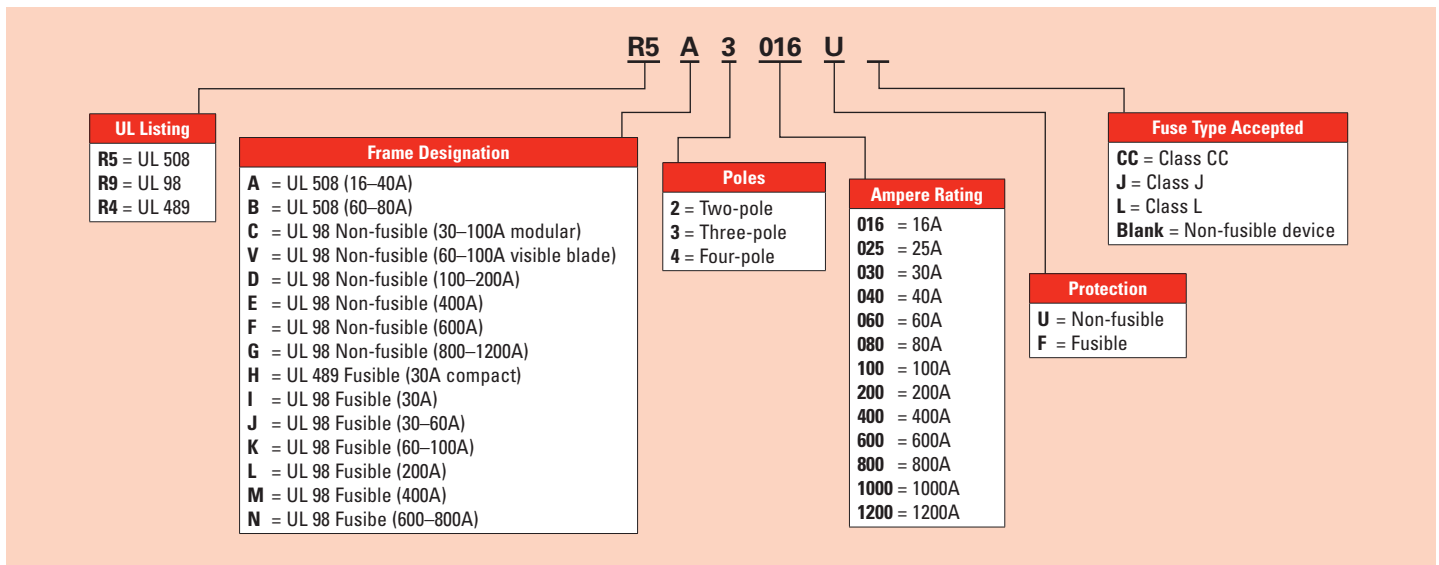
Notes:

Notes:

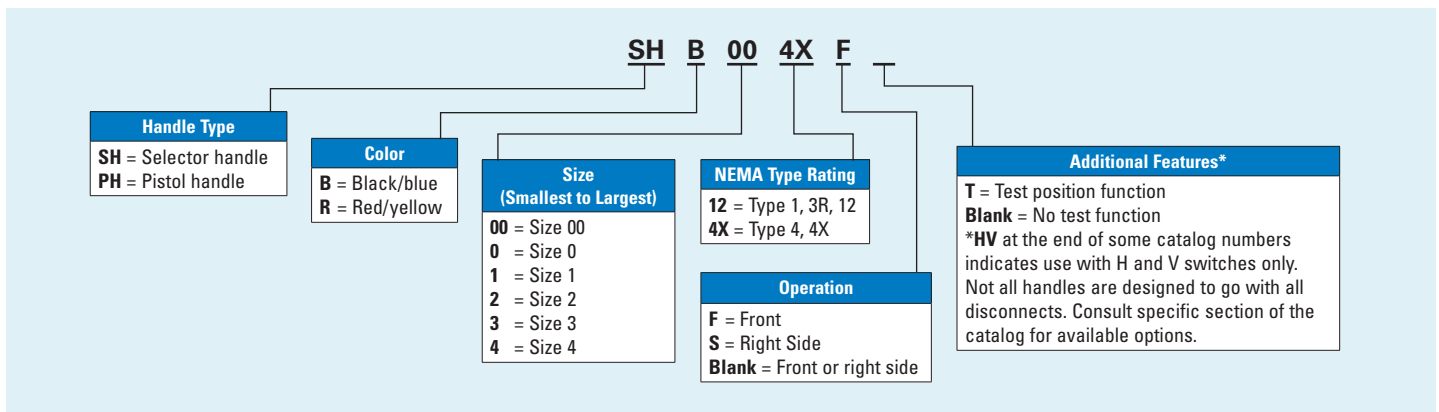
Notes:

Catalog Numbering Systems

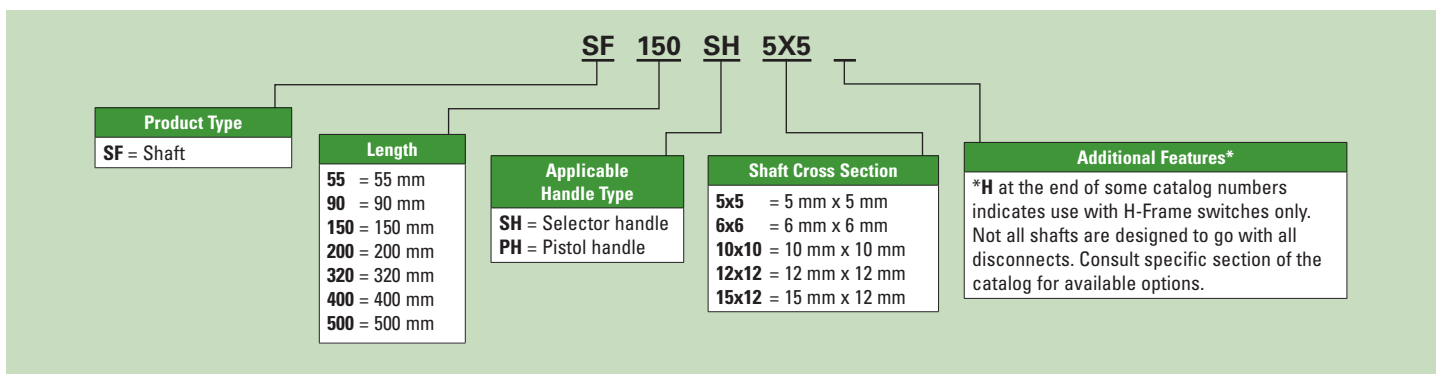
Disconnects





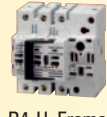





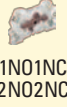







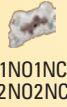

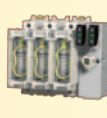

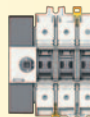




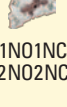







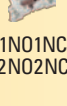












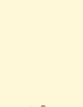







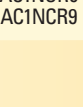

External Handles



Shafts



R Series Rotary Disconnects^①

| Direct Handles | Auxiliary Contacts | Available Shafts | Fusible Disconnect | External Handles | Non-Fusible Disconnect | Available Shafts | Auxiliary Contacts | Direct Handles |
|---|--|---------------------------------------|---|--|---|--------------------------------------|--|---|
|  DHR9HC |  AC1NOR9 AC1NCR9 | A SF___SH5X5H SF___PH5X5 |  R4 H-Frame 30A-CC/J |  SH_00_ |  R5 A- & B-Frame (16-40A & 60-80A) | A SF___SH5X5 SF___SH5X5 |  AC1NONC AC2NO |  DHR5 |
|  DHR9HJ |  AC1N01NCJ2N AC2N02NCJ2N  AC1NOR9 AC1NCR9 | B SF___PH10X10 |  R9 I-Frame 30A-CC |  SH_0_ |  R9 C-Frame 30-100A Modular | A SF___SH5X5 SF___SH5X5 |  AC1NONC AC2NO |  DHR9 |
|  DHR9J2M |  AC1N01NCJ2N AC2N02NCJ2N  AC1NOR9 AC1NCR9 | B SF___PH10X10 |  R9 J-Frame 30-60A J ② |  PH_1_ |  R9 V-Frame 60-100A Visible Blade | A SF___SH6X6 SF___PH6X6 |  AC1NONC AC2NO  AC1NOR9 AC1NCR9 |  DHR9V |
|  DHR9J2M |  AC1N01NCJ2N AC2N02NCJ2N  AC1NOR9 AC1NCR9 | B SF___PH10X10 |  R9 K-Frame 60-100A J ② |  PH_2_ |  R9 D-Frame 100-200A | B SF___PH10X10 |  AC1NONC_ |  DHR9DE |
|  DHR9J2M |  AC1N01NCJ2N AC2N02NCJ2N  AC1NOR9 AC1NCR9 | B SF___PH10X10 |  R9 L-Frame 200A J |  PH_3_ |  R9 E-Frame 400A | B SF___PH10X10 |  AC1NONC_ |  DHR9DE |
|  DHR9J2M |  AC1N01NCJ2N AC2N02NCJ2N  AC1NOR9 AC1NCR9 | B SF___PH10X10 |  R9 M-Frame 400A J |  PH_3_ |  R9 F-Frame 600A | D SF___PH15X12 |  AC1NOR9 AC1NCR9 |  DHR9FG |
|  DHR9N |  AC1N01NCJ2N AC2N02NCJ2N  AC1NOR9 AC1NCR9 | C SF___PH12X12 |  R9 N-Frame 600-800A J/L |  PH_4_ |  R9 G-Frame 800-1200A | D SF___PH15X12 |  AC1NOR9 AC1NCR9 ACHFG |  DHR9FG |

A



C



B



D



① For reference only—please consult specific catalog pages for detailed information.

② 60A J-Frame (100 kAIC), K-Frame (200 kAIC).

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