SIRCO M UL 98 Compact Non-Fusible Disconnect Switches

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To assemble a switch, please select:

Direct Operation

Switch Body

+

Direct Handle

OR

External Operation

Switch Body

+ 6

Shaft

+

External Handle

UL 98 Compact Non-Fusible Disconnect Switches				
Part Number*	***Description***	***Amp Rating***	***Voltage Rating***	***Price***
22013003	Non-fusible rotary 3-pole disconnect switch, M3 frame size	30	600 VAC	$75.00
22013006		60	600 VAC	$87.00
22003010		100	600 VAC	$106.00

*** These part numbers are direct replacements for previous part numbers with a "-UL" suffix. They have identical technical specs, form, fit and function. There is no change in agency approvals, the UL mark, listing, or File numbers E173959 and E201138.**

Handles – Defeatable and Lockable						
Part Number	***Description***	***Switch Body Rating (A)***	***Handle Color***	***Handle Type***	***NEMA/ UL Type***	***Price***
22995032	Mounts directly on switch, no shaft required*	30–100	Blue	M01	–	$5.00
147D1111	External front and right side handles, shaft required	16–100	Black/Blue	S00	4, 4X	$27.00
147E1111			Red/Yellow			$27.00
14831111		16–100	Black/Blue	S0	1, 3R, 12	$28.00
14841111			Red/Yellow			$29.00
148D1111			Black/Blue		4, 4X	$46.50
148E1111			Red/Yellow			$46.50
140F2111			Black/Blue	S01	1, 3R, 12	$46.50
140G2111			Red/Yellow			$46.50
140D2111			Black/Blue		4, 4X	$68.00
140E2111			Red/Yellow			$68.00

*** Not defeatable**

M01 Handle
22995032

S0 Handle
14831111

S00 Handle
147D1111

S01 Handle
140F2111

Shafts for External Handles					
Part Number	***Switch Body Rating (A)***	***Handle Type***	***Length (in)***	***Length (mm)***	***Price***
14070515	16–100	S00, S0	5.9	150	$7.00
14070520			7.9	200	$8.00
14070532			12.6	320	$9.00
14040520		S01	7.9	200	$14.00
14040532			12.6	320	$19.00
14040540			15.7	400	$29.00

14070515

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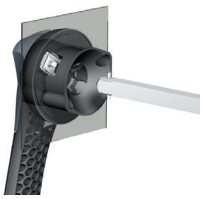
Shaft Guide for External Handle

Part Number	Description	Handle Type	Price
14190000	This accessory makes alignment connections between the shaft and handle easier. Allows up to 15mm misalignment tolerance. Required for a shaft length over 300mm. Included with longer shafts.	S00, S0	$3.00
14290000		S01, S1, S2, S3	$9.00

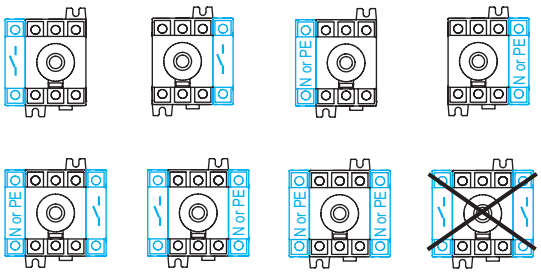


14190000

Additional Poles

Part Number*	Description	Switch Body Rating (A)	No. of Poles	Use	Price
22011003	Fourth pole module switched 600 VAC 100 kA SCCR	30	1	Adding one additional pole transforms a non-fusible disconnect switch from 3 poles to 4 poles	$23.00
22011006	Fourth pole module switched 600 VAC 65kA SCCR	60	1		$26.00
22001010	Fourth pole module switched 600 VAC 100 kA SCCR	100	1		$33.00
22005011	Solid neutral pole module unswitched 600 VAC	30–100	1	Transforms the 3-pole switch into a 3-pole + solid neutral	$27.00
22009011	Grounding pole module unswitched 600 VAC	30–100	1	Adds 1 ground module pole to the switch-disconnector	$27.00

22011003



4th Pole Configurations

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Terminal Shrouds

Part Number	Description	Switch Body Rating (A)	No. of Poles	Price
22941011	Terminal shroud line/load mount, 2 per pack, offers additional protection against direct contact with the terminals.	30–100	1	$6.00
22943016		30–100	3	$11.00

22941011

Auxiliary Contacts

Part Number*	Description	Switch Body Rating (A)	Contacts	Price
22990001	Auxiliary contact block module, 10A @ 240 VAC, can be mounted on left or right side of switch, maximum 4 auxiliary contacts can be used (requires 2modules)	16–100	1 NO / 1 NC	$21.00
22990011		16–100	2 NO	$24.00

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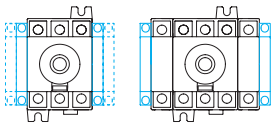
22990001



Auxiliary Contact Configurations

SIRCO M UL 98 Compact Non-Fusible Disconnect Switches

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Technical Characteristics

Characteristics According to UL 98 / CSA 22.2#4			
DIN rail panel	***22013003***	***22013006***	***22003010***
General use rating (A)	30	60	100
Short-circuit rating at 480 VAC (kA)[1]	100	100	100
Short-circuit rating at 600 VAC (kA)[1]	100	100	25
Type of fuse	J	J	J
Max fuse rating (A)	30	60	100
Max. motor hp / FLA 3-phase motor max.			
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
Max. motor hp / FLA 1-phase motor max.			
120 VAC	2 / 24	3 / 34	5 / 56
240 VAC	5 / 28	10 / 50	10 / 50
Wire type/temperature	Cu / 75 °C (167 °F)		
Product weight – lb (kg)	1.3 (0.6)		
Wire range			
Solid (AWG)	#12-10	#12-10	#12-10
Torque – lb·in (N·m)	35.4 (4)	35.4 (4)	35.4 (4)
Stranded (AWG)	#10–1	#10–1	#10–1
Torque – lb·in (N·m)	35.4 (4)	35.4 (4)	35.4 (4)
Stranded (AWG)	1/0	1/0	1/0
Torque – lb·in (N·m)	39.8 (4.5)	39.8 (4.5)	39.8 (4.5)
Stranded (AWG)	2/0	2/0	2/0
Torque – lb·in (N·m)	44.3 (5)	44.3 (5)	44.3 (5)
Mechanical characteristics			
Endurance (number of operating cycles)	10,000	10,000	10,000
Operating torque (lb·in / N·m)	12.4 / 1.4	12.4 / 1.4	12.4 / 1.4
Environmental - switch body			
Operating temperature[2]	-20 to 70 °C (-4 to +158 °F)		
Flammability rating	UL 94-V0		
Mounting	35mm DIN rail or panel mount		
Auxiliary contacts			
Electrical characteristics	A300	A300	A300
Agency approvals			
UL file # E201138 (UL 98), CSA file # 112964 (C22.2 NO. 14)			

[1] Short-circuit rating achieved when used with corresponding fuse type and max fuse rating.
[2] At temperatures above 40 °C, the current rating of the switch has to be de-rated 1% per °C over 40 °C. Example: At 60 °C a 100A switch is rated 80A.

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To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

SIRCO M UL 98 Compact Non-Fusible Disconnect Switches

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Technical Characteristics (Continued)

Characteristics According to IEC 60647-3			
	22013003	22013006	22003010
Thermal current Ith at 40 °C (A)	30	60	100
Rated insulation voltage U_i (V)	800	800	800
Rated impulse withstand voltage U_{imp} (kV)	8	8	8
Rated operational currents I_e			
400 VAC / AC-22A utilization category (A)[1]	32	63	100
400 VAC / AC-23A utilization category (A)[1]	32	63	100
690 VAC / AC-22A utilization category (A)[1]	32	63	80
690 VAC / AC-23A utilization category (A)[1]	32	63	63
Operational power in AC-23 (kW)[2/3]			
@ 400 VAC without prebreak AC in AC-23	15	30	45
@ 500 VAC without prebreak AC in AC-23	15	30	45
@ 690 VAC without prebreak AC in AC-23	18.5	30	45
Overload capacity (U_e 415 VAC)			
Rated short-circuit making capacity Icm (kA peak)[4]	12	12	12
Connection			
Min. connection section (mm^2)	2.5	2.5	10
Max. connection section (mm^2)	70	70	70

[1]Category with index A = frequent operation.
[2]A/B: Category with index A = frequent operation - Category with index B = infrequent operation.
[3]The power value is given for information only, the current values vary from one manufacturer to another.
[4]For a rated operating voltage U_e = 400 VAC

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SIRCO M UL 98 Compact Non-Fusible Disconnect Switches

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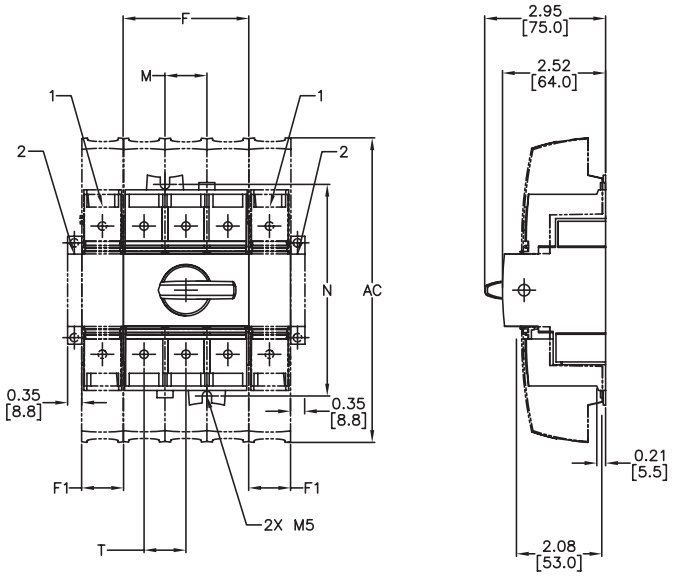
Dimensions *[inches/mm]*

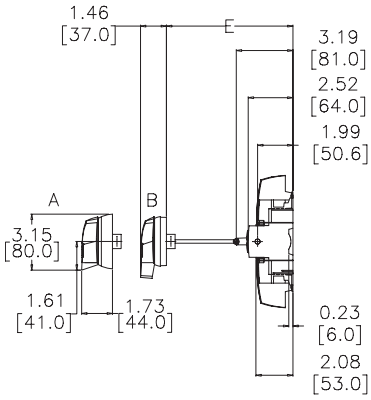
Direct operation with handle



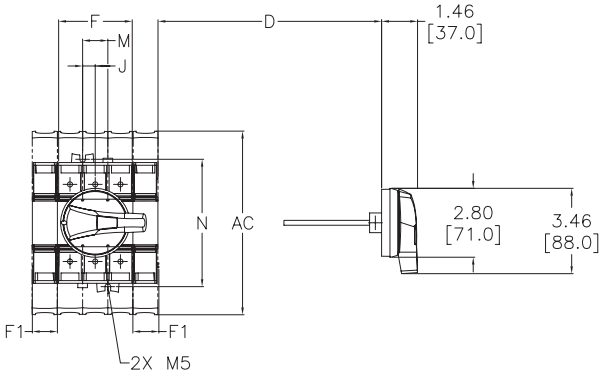
1. Location for: 1 switched fourth pole module (1 per device max), or 1 unswitched neutral pole module, or 1 auxillary contact module
2. Position for auxillary contact module

NOTE: MAX OF 2 ADDITIONAL BLOCK MODULES

External front operation



External side operation



Dimensions													
Switch Body Rating (A) / Frame Size	Units	Overall Dimensions				Terminal Shrouds AC	Switch Body				Switch Mounting		Connection
		D min	D Max	E min	E max		F	F1	G	J	M	N	T
100 / M3	in	1.18	7.87	3.94	14.65	7.44	3.07	1.02	4.91	0.51	1.02	5.17	1.02
	mm	30	201	100	372	189	78	26	124.6	13	26	131.4	26

Please see our website www.AutomationDirect.com for complete engineering drawings.

Accessories Dimensions

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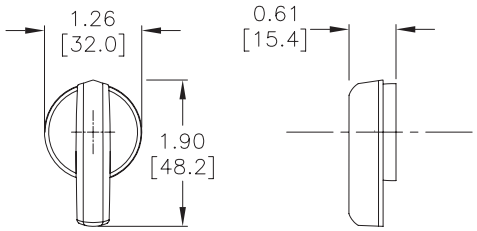
Handles

[inches/mm]

Direct Handle for UL 98 Compact Non-Fusible Disconnect Switches

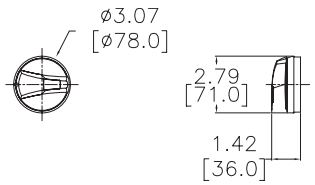
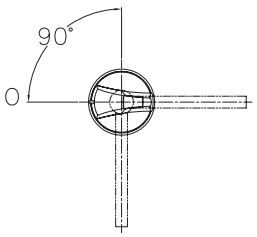
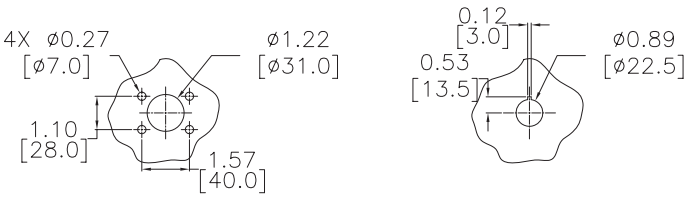
22995032

Handle Dimensions

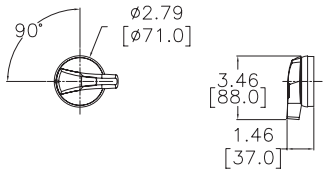
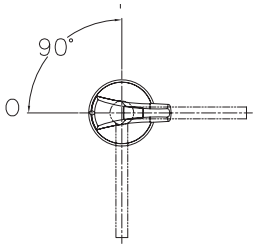
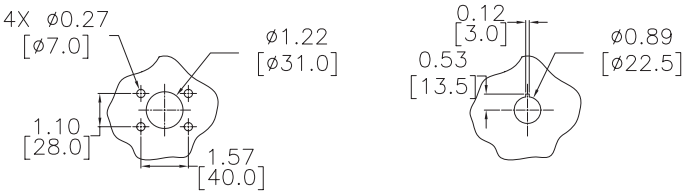


External Handles for UL 98 Compact Non-Fusible Disconnect Switches

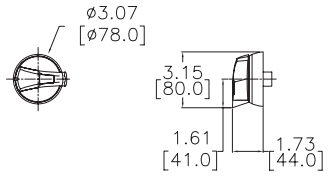
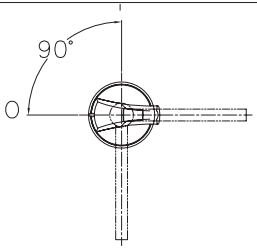
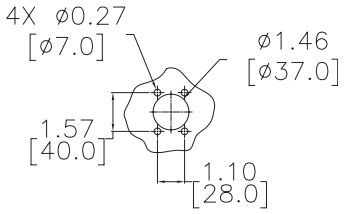
S00 Type

Handle Dimensions	Direction of Operation	Door Drilling
		

S0 Type

Handle Dimensions	Direction of Operation	Door Drilling
		

S01 Type

Handle Dimensions	Direction of Operation	Door Drilling
		

Please see our website www.AutomationDirect.com for complete engineering drawings.

Accessories Dimensions

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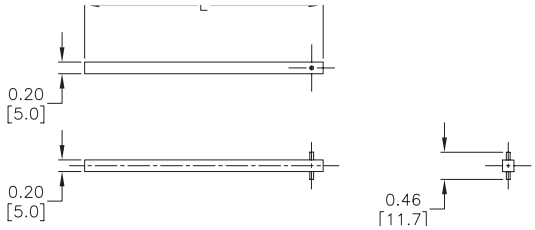
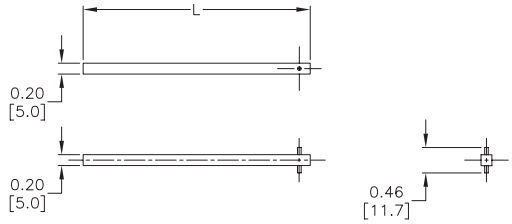
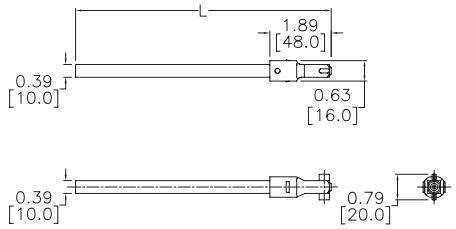
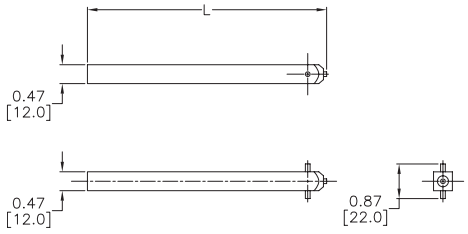
Shafts for Non-Fusible Disconnect Switches

[inches/mm]

Shafts for Non-Fusible Disconnect Switches

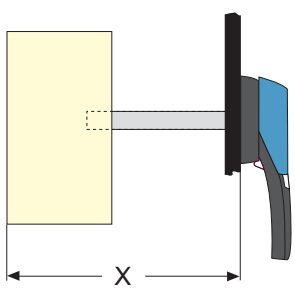
Shafts for S00, S0 Handle Type	Part Number	Switch Body Rating (A)	Length	
			in	mm
	14070515	16–100	5.9	150
	14070520		7.9	200
	14070532		12.6	320
Shafts for S01 Handle Type	**Part Number**	**Switch Body Rating (A)**	**Length**	
			in	mm
	14040520	16–100	7.9	200
	14040532		12.6	320
	14040540		15.7	400
Shafts for S1, S2 Handle Type	**Part Number**	**Switch Body Rating (A)**	**Length**	
			in	mm
	14001020	100 - 400	7.9	200
	14001032		12.6	320
	14001040		15.7	400
Shafts for S3 Handle Type	**Part Number**	**Switch Body Rating (A)**	**Length**	
			in	mm
	14011520	600	7.9	200
	14011532		12.6	320
	14011540		15.7	400

Please see our website www.AutomationDirect.com for complete engineering drawings.

Shaft Length Minimum Dimensions

Use standard lengths:
7.9in / 200mm – 12.6in / 320mm – 15.7in / 400mm

Switch Body Rating (A)	Dimension X		Handle Type	Length		Part Number
	in	mm		in	mm	
100 - 400	5.31 - 10.43	135 - 265	S2	7.9	200	14001020
100 - 400	5.31 - 15.16	135 - 385	S2	12.6	320	14001032
100 - 400	5.31 - 18.31	135 - 465	S2	15.7	400	14001040
600	8.70 - 13.50	221 - 343	S3	7.9	200	14011520
600	8.70 - 18.23	221 - 463	S3	12.6	320	14011532
600	8.70 - 21.38	221 - 543	S3	15.7	400	14011540



Accessories Dimensions

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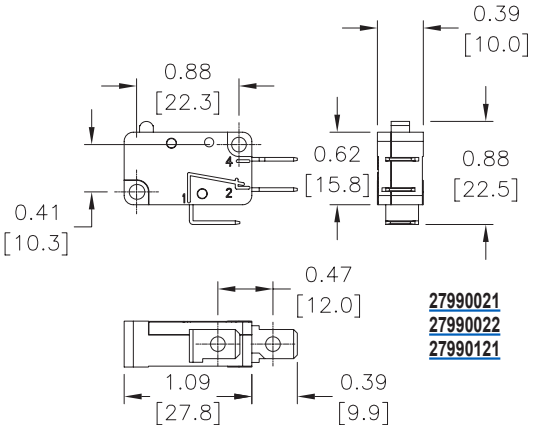
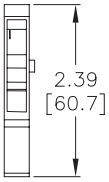
Auxiliary Contacts and Additional Poles

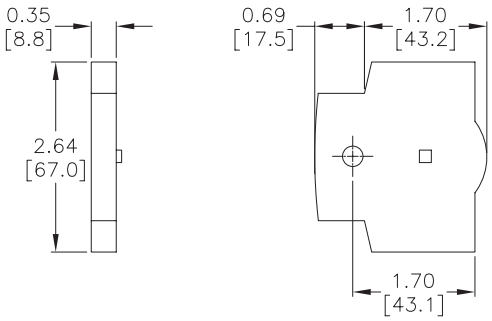
[inches/mm]

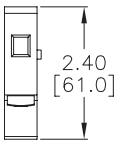


27990021
27990022
27990121

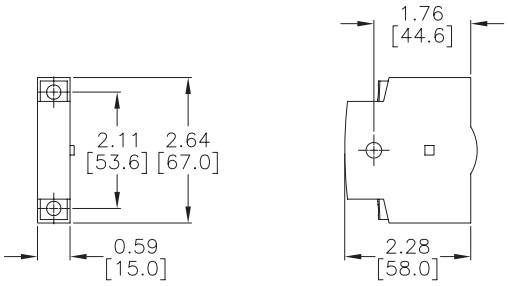


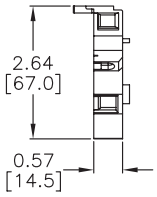
22990001
22990011
39990701
39990702



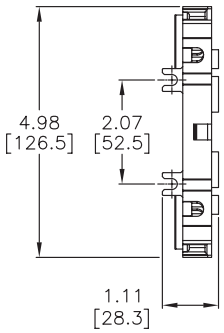


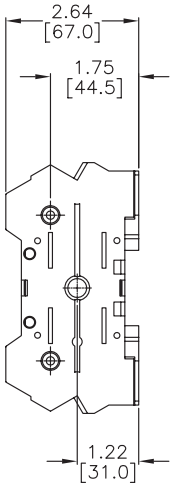
22001000
22001001
22001002
22001003
22001004

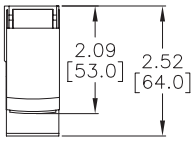




3999U041
3999U042







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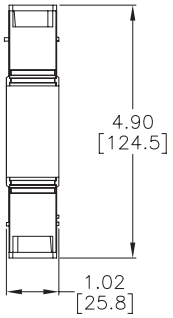
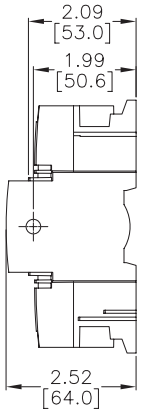
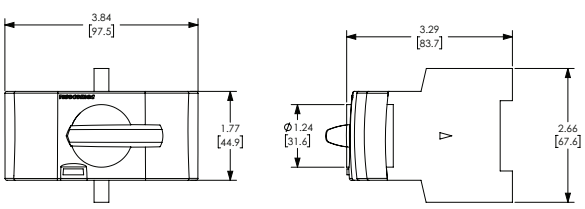
22005011
22009011







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Please see our website www.AutomationDirect.com for complete engineering drawings.

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Disconnect Switches

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 inches (50mm) minimum of creepage distance between phases, which gives maximum safety for users and installation. The short-circuit withstand of these 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.

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

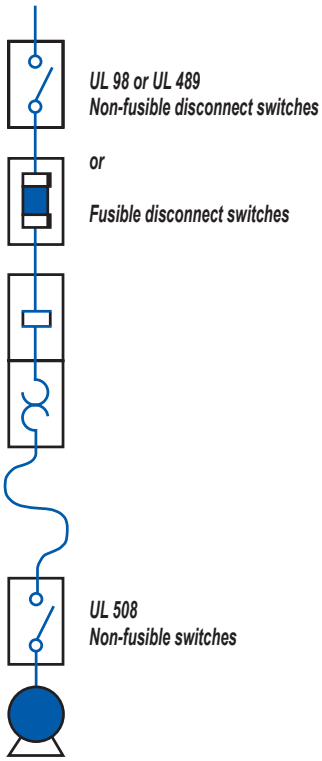
UL® Standards for Electrical Machinery

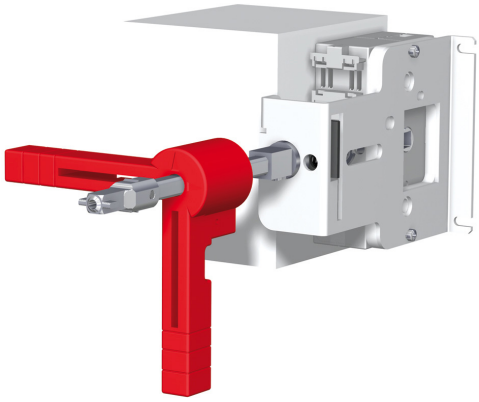
UL 508 – Industrial Control Equipment (CSA C22.2 No. 14)

These requirements cover manual, magnetic and solidstate 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 30.3.3And NEC 430.109 (6)].

Typical Control Panel





Meeting the requirements of UL508A and NFPA79

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).
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.

Non-Fusible Disconnect Switches

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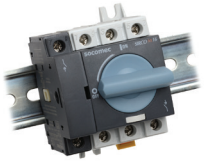
Selection Guide

- Which application?
- Which function?
- Which operation handle?
- Which type of breaking?

	Machine Control			Power Distribution	
	UL 98 Compact Non-Fusible Disconnect Switches	UL 508 Non-Fusible Disconnect Switches*	UL 508 Non-Fusible Enclosed Disconnect Switches	UL 98 Non-Fusible Disconnect Switches	UL 98B DC Non-Fusible Disconnect Switches
					
	22013003 22013006 22003010	22003000, 22003001 22003002, 22003003 22003004, 22003006 22003008	22143503 22243503 22243506	27003011, 27004011 27003021, 27004021 27003041, 27003060	27DC3011 27DC4011 27DC3021 27DC4021
Applications					
Main switchboard	✓	✓	✓	✓	✓
Distribution panel	✓	✓	✓	✓	✓
Emergency disconnect	✓	✓	✓	✓	✓
Local safety disconnect (padlockable)	✓	✓	✓	✓	✓
Photovoltaic disconnect					✓
Enclosed switches	✓	✓	✓	✓	✓
Functions					
3/4 pole non-fusible disconnect switch	✓	✓	✓	✓	✓
Characteristics					
Operation — *Manual (rotating)*	✓	✓	✓	✓	✓
Direct operation handle — *Front*	✓	✓	✓	✓	✓
External operation handle — *Front*	✓	✓	✓	✓	✓
External operation handle — *Right side*	✓	✓	✓		
Indication of breaking — *Positive break indication*	✓	✓	✓	✓	✓
Switch body — *Modular*	✓	✓	✓		

*** Note: These part numbers are direct replacements for previous part numbers with a "-UL" suffix. They have identical technical specs, form, fit and function. There is no change in agency approvals, the UL mark, listing, or File numbers E173959 and E201138.**

Non-Fusible Disconnect Switches

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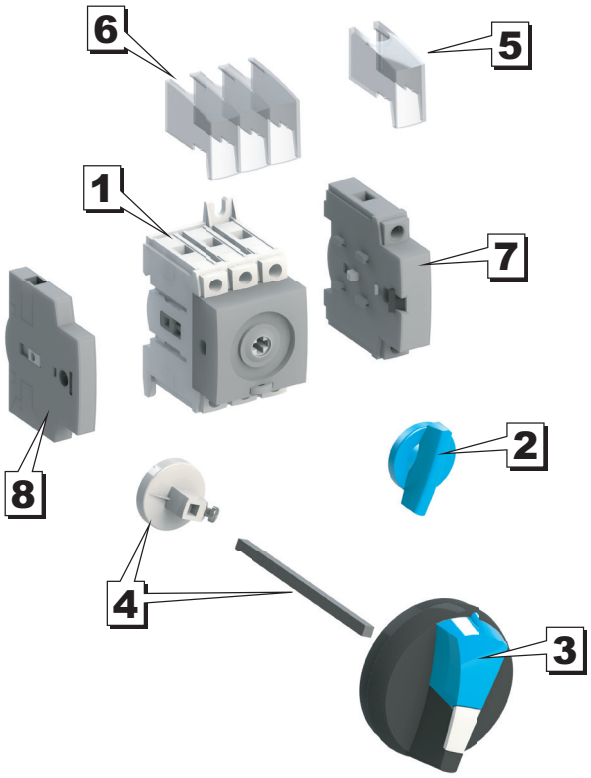
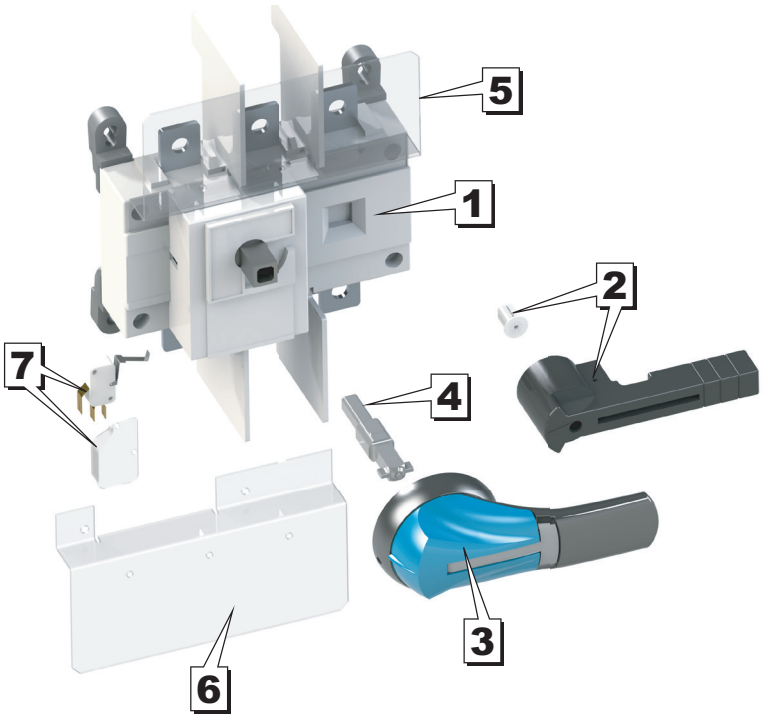
Assembly of Accessories

Non-fusible 16–100A Disconnect Switches Accessories



1. Switch body
2. Direct handle
3. External handle
4. Shaft and mount
5. Terminal shroud
6. Terminal shroud
7. Auxiliary contact
8. Additional pole

Non-fusible 100 - 600A Disconnect Switches Accessories



1. Switch body
2. Direct handle
3. External handle
4. Shaft
5. Terminal screen
6. Terminal screen
7. Auxiliary contacts