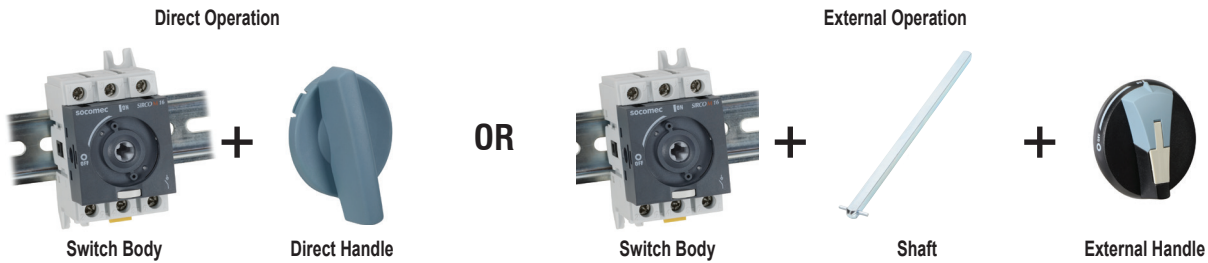


SIRCO M UL 508 Non-Fusible Disconnect Switches



To assemble a switch, please select:



UL 508 Non-Fusible Disconnect Switches				
Part Number*	Description	Switch Body Rating (A)	# of Poles	Price
22003000	Non-fusible UL 508 disconnect rotary 600VAC disconnect switch	16	3	\$24.50
22003001		20	3	\$26.00
22003002		25	3	\$28.50
22003003		32	3	\$29.00
22003004		40	3	\$30.00
22003006		63	3	\$39.50
22003008		80	3	\$44.50
22003009		100	3	\$57.00

* 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 number E173959.

Handles – Defeatable and Lockable							
Part Number	Description	Switch Body Rating (A)	Handle Color	Handle Type	NEMA/UL Type	Price	
22995012	Direct operation handle, shaft not required*	16 - 100	Blue	M00	-	\$3.00	
14731111	Front and right side handles I - O, shaft required		Black/Blue	S00	1, 3R, 12	\$14.00	
14741111			Red/Yellow			\$14.00	
147D1111			Black/Blue			4, 4X	\$23.00
147E1111			Red/Yellow	S0	1, 3R, 12	\$24.00	
14831111			Black/Blue			\$24.00	
14841111			Red/Yellow			4, 4X	\$40.50
148D1111			Black/Blue			\$40.50	
148E1111			Red/Yellow	S01	1, 3R, 12	\$33.50	
140F2111			Black/Blue			\$33.50	
140G2111			Red/Yellow			4, 4X	\$49.50
140D2111			Black/Blue	S01	4, 4X	\$49.50	
140E2111			Red/Yellow			\$49.50	



* Not defeatable

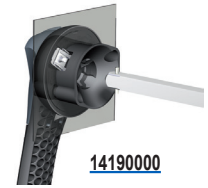
Shafts for External Handles						
Part Number	Description	Switch Body Rating (A)	Handle Type	Length		Price
				in	mm	
14070515	For 3/4-pole switches: shafts are for external front and side handle	16 - 100	S00, S0	5.9	150	\$4.50
14070520				7.9	200	\$5.75
14070532				12.6	320	\$7.25
14040520	For 3/4-pole switches: shafts are for external front and side handle.		S01	7.9	200	\$10.50
14040532				12.6	320	\$13.00
14040540				15.7	400	\$21.00



SIRCO M UL 508 Non-Fusible Disconnect Switches



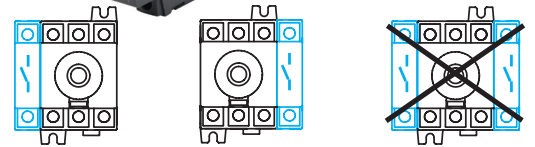
Shaft Guide for External Handle			
Part Number	Description	Fits Handle Type	Price
14190000	This accessory makes alignment connections between the shaft and handle easier. Allows up to 15mm misalignment tolerance. Required for a shaft length over 300mm. Included with longer shafts.	S0, S00	\$2.75
14290000		S01, S1, S2, S3	\$6.50



Additional Poles					
Part Number*	Description	Switch Body Rating (A)	No. of Poles	Use	Price
22001000	Module switched 4th pole	16	1	Transforms a 3-pole switch into a 4-pole	\$14.00
22001001		20			\$15.00
22001002		25			\$15.00
22001003		32			\$16.50
22001004		40			\$18.00



22001000



4th Pole Configurations

* 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 number E173959.

Terminal Shrouds				
Part Number	Description	Switch Body Rating (A)	No. of Poles	Price
22941005	Terminal shroud line/load mount, 2 per pack, offers additional protection against direct contact with the terminals.	16-40	1	\$3.00
22943005			3	\$4.50
22941009		63-100	1	\$3.50
22943009			3	\$5.75

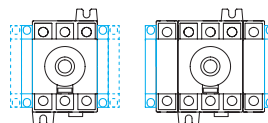


22941005

Auxiliary Contacts				
Part Number*	Description	Switch Body Rating (A)	Contacts	Price
22990001	Auxiliary contact block module, 10A @ 240VAC, can be mounted on left or right side of switch, maximum 4 auxiliary contacts can be used (requires 2 modules).	16 - 100	1 NO / 1 NC	\$18.50
22990011		16 - 100	2 NO	\$20.00



22990001



Auxiliary Contact Configurations

* 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 number E173959.

Conversion Kit			
Part Number	Description	Switch Body Rating (A)	Price
22096009	Front mount transfer switch (2/4 pole) conversion kit. Open center transition (I-O-II).	16 - 100	\$27.00
22696009	Front mount multi-pole (6/8 pole) conversion kit.	16 - 100	\$24.00



22096009

Door Mounting Kit				
Part Number	Description	Switch Body Rating (A)	No. of Poles	Price
22993409	This kit enables direct mounting of the switch on the panel door or on the right or left side of the panel. For use with S0 and S00 handles only.	16-100	3/4	\$5.75



22993409

SIRCO M UL 508 Non-Fusible Disconnect Switches



Technical Characteristics

Characteristics According to UL 508 / CSA 22.2#4								
	22003000	22003001	22003002	22003003	22003004	22003006	22003008	22003009
General use rating (A)	16	20	25	32	40	63	80	100
Short-circuit rating at 600VAC (kA) ¹	65	65	65	65	10 / 65	50 / 65	50 / 65	50 / 65
Type of fuse	J	J	J	J	J	J	J	J
Max fuse rating (A)	30	30	30	30	60 / 30	100 / 60	100 / 60	100 / 60
Max. motor hp / FLA 3-phase motor max.								
208VAC	3 / 10.6	5 / 16.7	7.5 / 24.2	7.5 / 24.2	7.5 / 24.2	15 / 46.2	15 / 46.2	15 / 46.2
220-240 VAC	5 / 15.2	5 / 15.2	7.5 / 22	7.5 / 22	7.5 / 22	20 / 54	20 / 54	20 / 54
440-480 VAC	10 / 14	10 / 14	15 / 21	20 / 27	20 / 27	40 / 52	40 / 52	40 / 52
600VAC	10 / 11	15 / 17	20 / 22	25 / 27	25 / 27	40 / 41	40 / 41	40 / 41
Wire type / temperature	Cu / 167°F (75°C)							
Product weight – lb (kg)	0.5 (0.2)					0.7 (0.32)		
Wire range								
Solid (AWG) - 1 wire	#14-10	#14-10	#14-10	#14-10	#14-10	#14-10	#14-10	#14-10
Torque - lb-in (N·m)	26.5 (3)	26.5 (3)	26.5 (3)	26.5 (3)	26.5 (3)	39.8 (4.5)	39.8 (4.5)	
Solid (AWG) - 2 wire	(2) #12	(2) #12	(2) #12	(2) #12	(2) #12	(2) #12	(2) #12	(2) #12
Torque - lb-in (N·m)	26.5 (3)	26.5 (3)	26.5 (3)	26.5 (3)	26.5 (3)	39.8 (4.5)	39.8 (4.5)	
Stranded (AWG) - 1 wire	#14-4	#14-4	#14-4	#14-4	#14-4	#14-1	#14-1	#14-1
Torque - lb-in (N·m)	26.5 (3)	26.5 (3)	26.5 (3)	26.5 (3)	26.5 (3)	39.8 (4.5)	39.8 (4.5)	
Stranded (AWG) - 2 wire	(2) #14-12	(2) #14-12	(2) #14-12	(2) #14-12	(2) #14-12	(2) #10-6	(2) #10-6	(2) #10-6
Torque - lb-in (N·m)	26.5 (3)	26.5 (3)	26.5 (3)	26.5 (3)	26.5 (3)	39.8 (4.5)	39.8 (4.5)	
Environmental – switch body								
Operating temperature ²	-20°C to 70°C (-4°F to +158°F)							
Flammability rating	UL 94-V0							
Mechanical characteristics								
Endurance (# of operating cycles)	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Operating torque (lb-in / N·m)	7 / 0.8	7 / 0.8	7 / 0.8	7 / 0.8	7 / 0.8	8.9 / 1	8.9 / 1	8.9 / 1
Mounting	DIN rail or panel mount							
Auxiliary contacts								
Electrical characteristics	A300	A300	A300	A300	A300	A300	A300	A300
Agency approvals								
UL file # E173959 (UL 508, C22.2 NO. 14) Manual motor controller "suitable as motor disconnect" CE2011/65/EU								

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.

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 number E173959.

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 508 Non-Fusible Disconnect Switches



Technical Characteristics

Characteristics According to IEC 60647-3									
	22003000	22003001	22003002	22003003	22003004	22003006	22003008	22003009	
General use rating (A)	16	20	25	32	40	63	80	100	
Thermal current I _{th} at 40°C (A)	16	20	25	32	40	63	80	100	
Rated insulation voltage U _i (V)	800	800	800	800	800	800	800	800	
Rated impulse withstand voltage U _{imp} (kV)	8	8	8	8	8	8	8	8	
Rated operational currents I_e									
415VAC AC-23A / AC-23B utilization category (A/B) ¹	16 / 16	20 / 20	25 / 25	32 / 32	40 / 40	63 / 63	80 / 80	80 / 80	
500VAC AC-22A / AC-22B utilization category (A/B) ¹	16 / 16	20 / 20	25 / 25	32 / 32	40 / 40	63 / 63	80 / 80	-	
500VAC AC-23A / AC-23B utilization category (A/B) ¹	16 / 16	20 / 20	25 / 25	25 / 25	25 / 25	63 / 63	63 / 63	-	
690VAC AC-21A / AC-21B utilization category (A/B) ¹	16 / 16	20 / 20	25 / 25	32 / 32	40 / 40	63 / 63	80 / 80	100 / 100	
690VAC AC-22A / AC-22B utilization category (A/B) ¹	16 / 16	20 / 20	25 / 25	32 / 32	32 / 40	40 / 63	63 / 80	-	
690VAC AC-23A / AC-23B utilization category (A/B) ¹	16 / 16	20 / 20	25 / 25	25 / 25	25 / 25	40 / 40	40 / 40	-	
Operational power in AC-23 (kW)									
@ 400VAC without prebreak AC in AC-23 ^{1/2}	7.5	9	11	15	18.5	30	37	-	
@ 500VAC without prebreak AC in AC-23 ^{1/2}	7.5	9	11	15	15	30	37	-	
@ 690VAC without prebreak AC in AC-23 ^{1/2}	7.5	11	15	18.5	18.5	30	37	-	
Fuse protected short-circuit withstand (kA rms prospective)									
Prospective short-circuit current (kA rms) ³	50	50	50	50	50	50	50	25	
Associated fuse rating (A) ³	16	20	25	32	40	63	80	100	
Overload capacity (U_e 415VAC)									
Rated short-time withstand current 0.3 s. I _{cw} (kA rms) ³	2.5	2.5	2.5	2.5	2.5	3	3	1.5	
Rated short-circuit making capacity I _{cm} (kA peak) ³	6	6	6	6	6	9	9	2.1	
Connection									
Minimum Cu cable cross section (mm ²)	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	
Maximum Cu cable cross section (mm ²)	16	16	16	16	16	35	35	35	
Tightening torque min/max (N·m)	2 / 2.2	2 / 2.2	2 / 2.2	2 / 2.2	2 / 2.2	3.5 / 3.85	3.5 / 3.85	3.5 / 3.85	

¹A/B: Category with index A = frequent operation - Category with index B = infrequent operation.

²The power value is given for information only, the current values vary from one manufacturer to another.

³For a rated operating voltage U_e = 400VAC

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 number E173959.

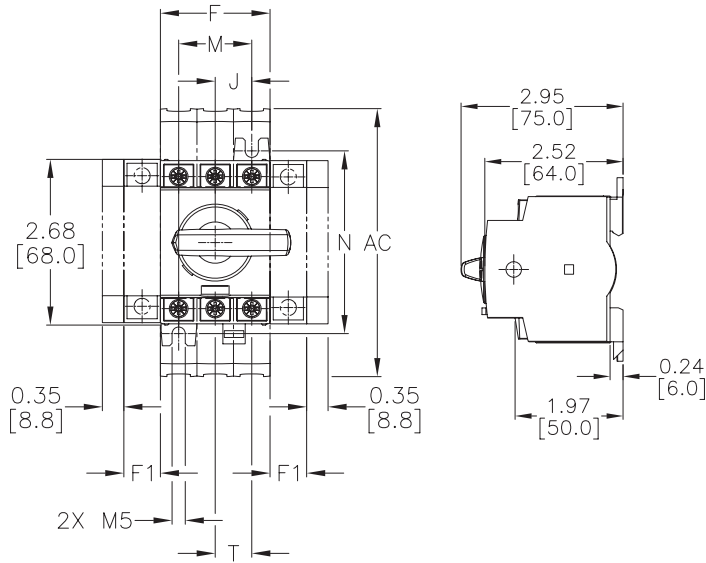
SIRCO M UL 508 Non-Fusible Disconnect Switches



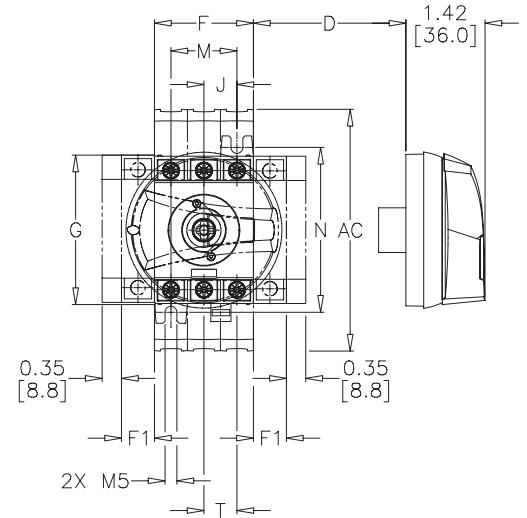
Dimensions

Inches [mm]

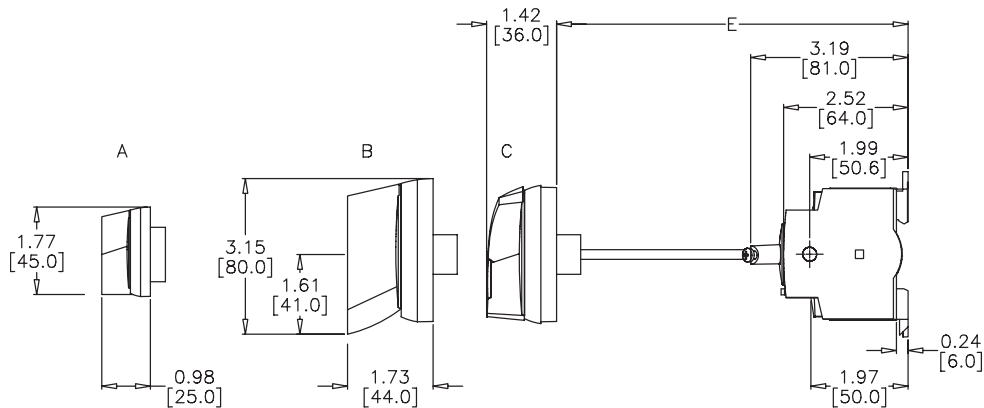
Switch with direct handle



Switch with external handle side operation



Switch with external handle front operation



Dimensions													
Switch Body Rating (A)	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	
16 - 40	in	1.18	9.25	3.94	14.64	4.33	1.77	0.59	2.67	0.59	1.18	2.95	0.59
	mm	30	235	100	372	110	45	15	68	15	30	75	15
63 - 100	in	1.18	9.25	3.94	14.64	4.33	2.06	0.69	2.99	0.69	1.38	3.35	0.69
	mm	30	235	100	372	110	52.5	17.5	76	17.5	35	85	17.5

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

SIRCO M UL 508 Enclosed Non-Fusible Disconnect Switches



Our enclosed UL 508 switches allow for the safe control and disconnection of any motor application.

General characteristics

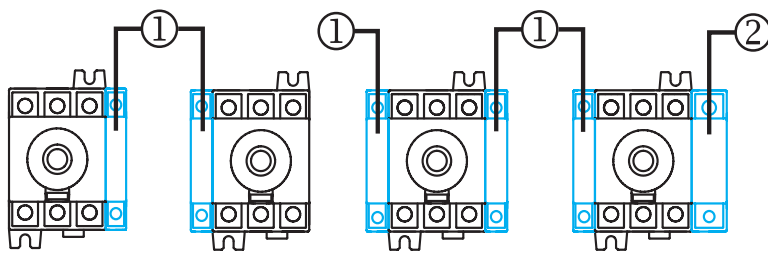
- Gray enclosure with red handle
- Equipped with a 3-pole SIRCO M
- 1 removable ground terminal
- Possibility of adding 1 power pole and 1 auxiliary contact
- Operating temperature -4° to +158°F (-20° to +70°C)
- Polycarbonate plastic
- Flammability rating UL94-5VA
- NEMA/UL Type 1, 3R, 4, 4X, 12

UL 508 Enclosed Non-Fusible Disconnect Switches						Accessories*		
Part Number	Enclosure Rating (A)	No. of Poles	Enclosure Size	Weight lb (kg)	Price	Switched 4th Pole Module	Auxiliary Contacts	Terminal Shrouds (Line & Load)
22143503	30	3	1	1.25 (0.56)	\$90.00	1P 22001003 \$16.50	1 NO / 1 NC 22990001 \$18.50	1P 22941005 \$3.00
22243503			2	1.60 (0.72)	\$104.00			3P 22943005 \$4.50
22243506	60	3	2	1.80 (0.82)	\$124.00	-	2 NO 22990011 \$20.00	1P 22941009 \$3.50
								3P 22943009 \$5.75

Note: 2294100x fits 4th pole module only.

* 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 number E173959.

Configuration of the Auxiliary Contacts



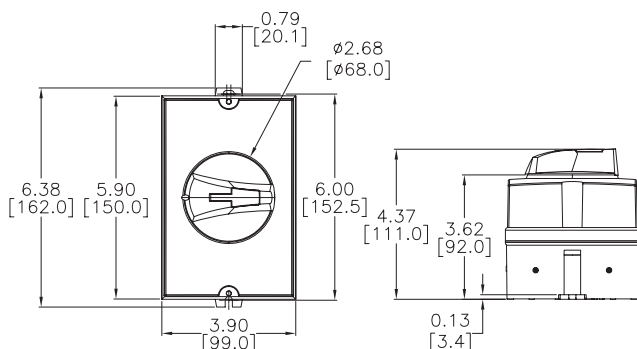
- 1. M Type auxiliary contacts
- 2. Additional 4th pole

See switch body drawings for dimensions

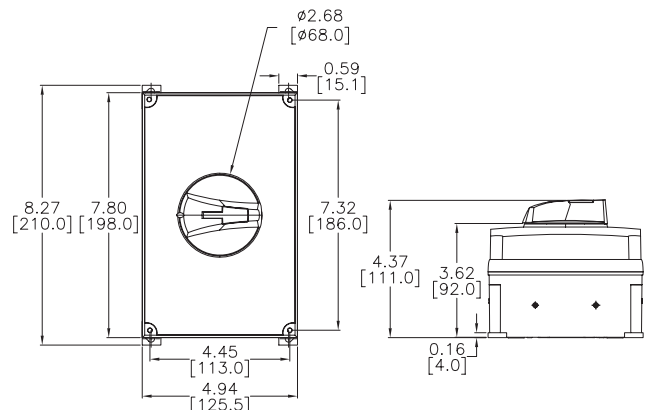
Dimensions

Inches [mm]

Size 1



Size 2



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

SIRCO M UL 508 Enclosed Non-Fusible Disconnect Switches



Technical Characteristics

Characteristics According to UL 508 / CSA 22.2#4			
	22143503	22243503	22243506
General use rating (A)	30A	30A	60A
Max volts (VAC)	600VAC		
Short circuit rating at 600VAC (kA)	65kA	65kA	50kA
Type of fuse	J		
Max fuse rating (A)	30	100	100
Max. motor 3-ph HP			
240VAC	7.5	7.5	20
480VAC	20	20	40
600VAC	25	25	40
Wire type/temperature	Cu / 75°C (167°F)		
Product weight – lb (kg)	1.5 lb (0.68 kg)	1.9 lb (0.86 kg)	2.1 lb (0.95 kg)
Wire range			
Solid (AWG) - 1 wire	#14-10	#14-10	#14-10
Torque - lb-in (N-m)	26.5 (3)	26.5 (3)	38.9 (4.5)
Solid (AWG) - 2 wire	(2) #12	(2) #12	(2) #12
Torque - lb-in (N-m)	26.5 (3)	26.5 (3)	38.9 (4.5)
Stranded (AWG) - 1 wire	#14-4	#14-4	#14-1
Torque - lb-in (N-m)	26.5 (3)	26.5 (3)	38.9 (4.5)
Stranded (AWG) - 2 wire	(2) #14-12	(2) #14-12	(2) #10-6
Torque - lb-in (N-m)	26.5 (3)	26.5 (3)	38.9 (4.5)
Environmental			
Operating temperature ¹	-20°C to 70°C (-4°F to +158°F)		
Flammability rating	UL94-5VA		
Enclosure Material	Polycarbonate		
Enclosure NEMA/UL type	1, 3R, 12, 4, 4X		
Mounting	Wall		
Auxiliary contacts	A300		
Agency approvals			
UL file # E173959 (UL 508, C22.2 NO. 14) Manual motor controller "suitable as motor disconnect" CE 2011/65/EU, 2014/35/EU LVD and 2014/30/EU EMC			

¹Temperatures 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

Note: Short-circuit rating achieved when used with corresponding fuse type and max fuse rating.

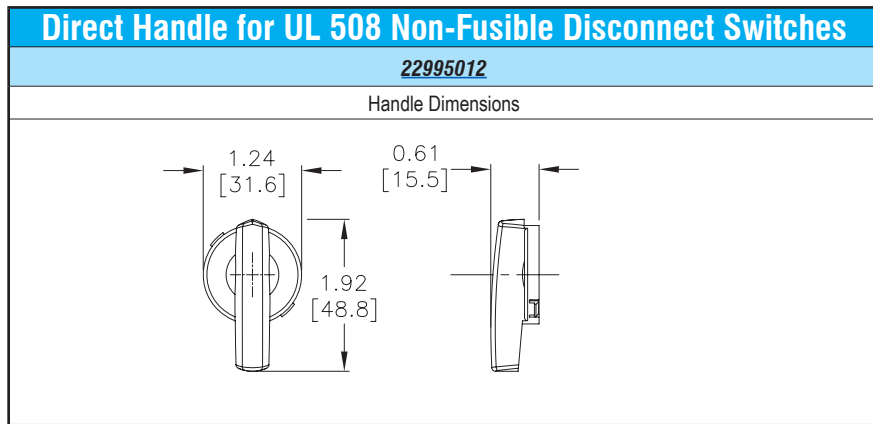
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Accessories Dimensions



Handles

[inches/mm]



External Handles for UL 508 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



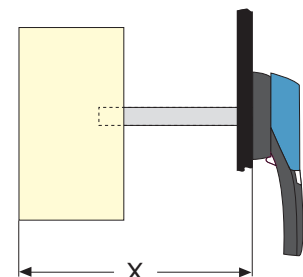
Shafts for Non-Fusible Disconnect Switches

[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	
	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	
	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	
	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: 7.9 in / 200mm – 12.6 in / 320mm – 15.7 in / 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

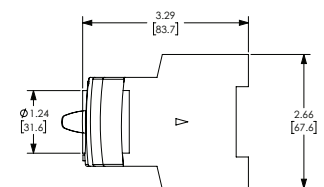
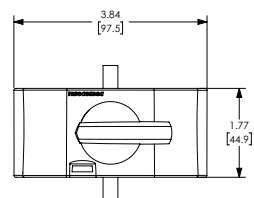
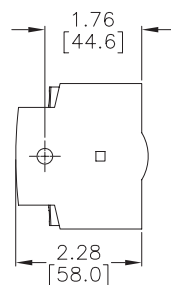
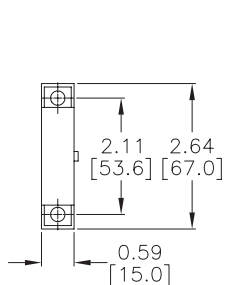
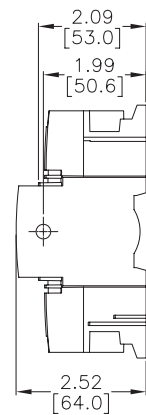
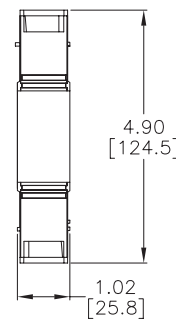
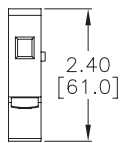
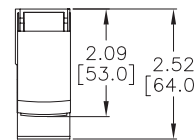
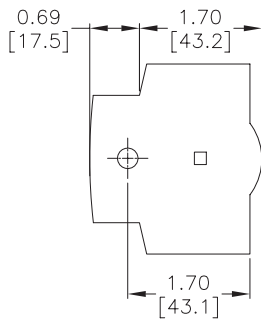
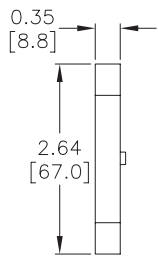
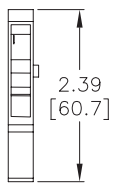
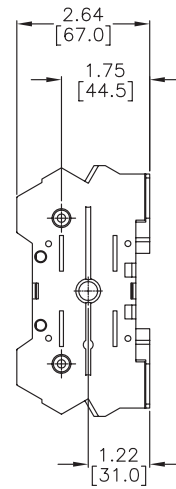
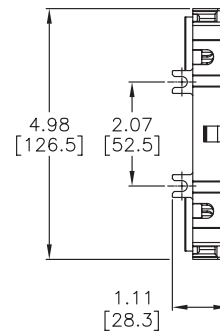
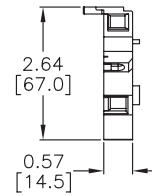
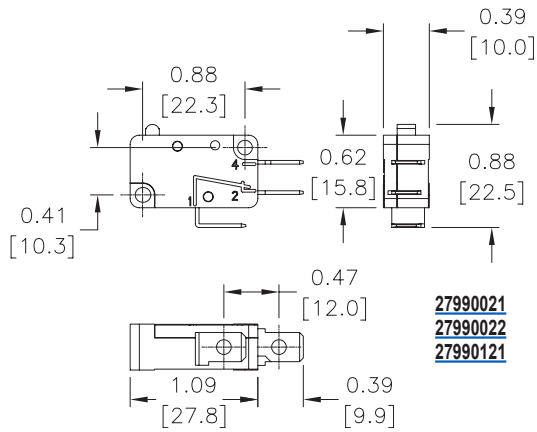


Accessories Dimensions



Auxiliary Contacts and Additional Poles

[inches/mm]



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

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 200kA.

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

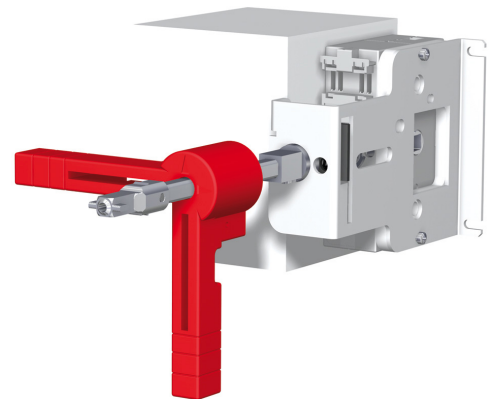
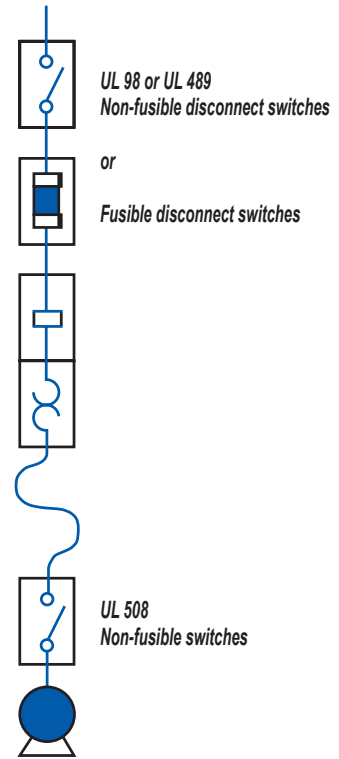
UL® Standards for Electrical Machinery

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 30.3.3 and 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.


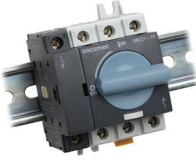



Note: UL 508A; Paragraph 66.6.3 c.

Non-Fusible Disconnect Switches



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	✓	✓	✓	✓	✓
	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



Assembly of Accessories

