

Limit Switches

3SE03 North American Limit Switches

General Information

Features

Modular plug-in



Prewired receptacle with pin connector



Prewired cable



Features

- UL Listed, CSA Certified.
- UL File: E47512
- All Metal Captive Screws.
- Keyed, Four-Directional Head.
- Steel-Reinforced Diaphragm Seal Between Operational Head And Switch Body.
- Permanent Instructions for Adjusting Operational Head.
- Modular, Plug-In Housing
 1. Heavy-Duty, Bifurcated, Plug-In Prongs.
 2. Ample Receptacle Wiring Space with 1/2 - NPT threaded conduit opening.
 3. Stepped Terminals On Single Pole; Deep Center Trough On Double Pole.
- NEMA Type 6P Submersible
 1. Completely Sealed With Epoxy.
 2. SOOW-A Cable or Prewired Receptacle With Pin Connector.
 3. Factory wired cable features a 350 pound pullput capacity.
- Rotary heads are field convertible CW, CCW, or both without special tools.

Design

Modular Plug-In Housing

These heavy duty plug-in limit switches may be provided as complete devices using a composite catalog number; or, separately as components; operating head, plug-in module and base receptacle.

Example:

Complete Switch:

3SE03-AR1

Single Pole, Double Throw contacts with Side Rotary, Momentary Head

Components

3SE03-SA^①

Single Pole, Double Throw Plug-in Module

3SE03-DR1

Side Rotary Head, Momentary

3SE03-RA^①

Standard, Single Pole Receptacle, 1 NO + 1 NC

Since components may be interchanged, operating heads, plug-in modules and receptacles may be combined to satisfy most of your everyday limit switch requirements. This leads to less inventory with greater flexibility.

Operating heads include side rotary; plain and roller plunger; and, wobble. A variety of levers are available.

The zinc die-cast housing has an epoxy finish to protect against corrosion. All screws on the module and head are captive.

NEMA Type 6P Submersible

These heavy duty prewired, factory sealed switches meet the demanding enclosure requirements of UL (NEMA) Type 3, 4, 4X, 6P, 12, and 13. They are intended for wet environments where the integrity of the threaded conduit and switch body seals must be assured.

The switch body cavity including threaded conduit entry is completely sealed with epoxy. An 8 foot, 5 or 9 conductor SOOW-A cable; or 5 or 9 pin prewired receptacle with pin connector is provided as standard.

Switches are provided as complete devices using composite catalog numbers; or, separately as components; operating head and switch body.

UL (NEMA) Type 6P switches are designed to provide a degree of protection against the entry of water during prolonged submersion at limited depths (tested with a 6 foot head of water for 24 hours).

Both the Modular Plug-in and the (NEMA) Type 6P Submersible styles provide 60 Amp make and 6 Amp break—120V AC and 10 Amp continuous current for 120, 240, 480 and 600V AC. The circuit contact configuration depends on the device selected and the application criteria.

Switches are available with momentary or maintained operating heads; and, single pole, double pole or center neutral (modular, plug-in only) contact configurations.

3SE03 limit switches offer a new standard of reliability and quality in automatic control circuits under heavy duty applications.

^① Plug-in module and receptacle are keyed.

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Modular, plug-in and
NEMA type 6P submersible

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Technical data

Type	Modular, Plug-in and NEMA Type 6P Submersible					
Mechanical life	Side rotary: 13×10^6 make-break operations minimum					
Electrical life	All others: 10×10^6 make-break operations minimum					
	Single Pole: 1×10^6 operations typical at full load					
	Double Pole: 1×10^5 operations typical at full load					
Switching frequency	8×10^3 make-break operations per hour (maximum)					
Operating point accuracy	Side operated: 0.0012 in. (modular, plug-in housing)					
Cable entry	Side rotary: 0.0014 in. (modular plug-in). Top operated: 0.0003 in. (modular, plug-in housing)					
	1/2 in.-NPT, Prewired Cable or Prewired Receptacle with Pin Connector					
Ambient temperature	Without Cable: -10° to $+121^\circ\text{C}$, 14° to 250°F					
Degree of protection	With Cable: -10° to $+105^\circ\text{C}$, 14° to 221°F					
	NEMA Type 1, 3, 3S, 4, 4X, 6, 6P, 13; IP67					
Conductor size	22–12 AWG (modular, plug-in housing), single or stranded wire					
	5 or 9 conductor, 16 AWG yellow jacketed type SOOW-A cable (prewired cable)					
Mounting	5 or 9 pin, 0.87 in. (22 mm) diameter receptacle (prewired receptacle with pin connector)					
Tightening Torque	Any position					
	Switch body screws: 25–30 lb-in.					
	Operating head screws: 14–18 lb-in.					
NEMA rating	DC, NEMA R300		AC, NEMA A600			
Maximum current at	125V	250V	120V	240V	480V	600V
Make Break	0.22A 0.22A	0.11A 0.11A	60A 6A	30A 3A	15A 1.5A	12A 1.2A
Max. volt-ampere						
Make Break	28VA 28VA	28VA 28VA	7200VA 720VA	7200VA 720VA	7200VA 720VA	7200VA 720VA
Rated thermal current	DC, 1A		AC, 10A			
Rated operating voltage	DC, 300V		AC, 600V			

Operating temperature ¹⁾ ²⁾

Temperature rating	Operation		Temperature range	
	Type	Return	Without cable	With cable
1	Side rotary ³⁾	Momentary CW only or CCW only	10°F to 200°F -12°C to 94°C	10°F to 200°F -12°C to 94°C
2	Center neutral Side rotary Side plunger Two-sided plunger Roller side plunger ⁴⁾	Momentary CW or CCW Maintained Momentary Maintained Momentary	14°F to 200°F -10°C to 94°C	14°F to 200°F -10°C to 94°C
3	Top plunger Top roller plunger ⁴⁾ Wobble head	Momentary Momentary Momentary	14°F to 250°F -10°C to 121°C	14°F to 221°F -10°C to 105°C

1) Temperature ranges below +32°F (0°C) are based on absence of freezing moisture or water.

2) For temperature rating of specific switch, refer to page 13/70, Operating Heads.

3) For CW only or CCW only operation, upper temperature limit increases to 250°F (121°C) without cable, and 221°F (105°C) with pre-wired cable.

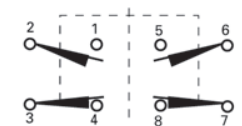
4) Roller direction can be converted in the field.

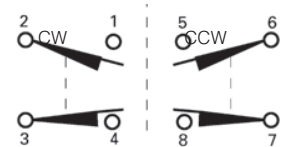
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Modular, plug-in metal housing

Complete switches without lever - threaded cable entry:

			Plug-In module type			Standard single pole 1 NO + 1 NC (3SE03-SA)			Standard double pole 2 NO + 2 NC (3SE03-SB)		
			Receptacle type surface mount			Single pole (3SE03-RA) 			Double pole (3SE03-RB) 		
Operating head type						Composite catalog number consisting of head, module and receptacle					
						DT	Catalog Number	List Price \$ 1 unit	DT	Catalog Number	List Price \$ 1 unit
 Side rotary CW and CCW operation convertible to CW only or CCW only			Standard momentary (3SE03-DR1)			▶	3SE03-AR1 ①		▶	3SE03-BR1 ①	
			Standard maintained (3SE03-DM1)			▶	3SE03-AM1		▶	3SE03-BM1	
			Low torqued momentary (3SE03-DL1)			▶	3SE03-AL1 ②			3SE03-BL1 ②	
 Plain side plunger			Momentary (3SE03-DS1)			▶	3SE03-AS1		▶	3SE03-BS1	
 Roller side plunger			Momentary (3SE03-DS3)			▶	3SE03-AS3			3SE03-BS3	
 Two-sided plunger			Maintained (3SE03-DH1)				3SE03-AH1			3SE03-BH1	
 Plain top plunger			Momentary (3SE03-DT1)			▶	3SE03-AT1			3SE03-BT1	
 Roller top plunger			Momentary (3SE03-DT3)				3SE03-AT3		▶	3SE03-BT3	
 Wobble head (without lever)			Momentary (3SE03-DW1)			▶	3SE03-AW1		▶	3SE03-BW1	

			Plug-In module type			Center neutral Double pole 2 NO + 2 NC (3SE03-SN)		
			Receptacle type surface mount			Center neutral (3SE03-RB) 		
Operating head type						Composite catalog number consisting of head, module and receptacle		
						DT	Catalog Number	List Price \$ 1 unit
 Side rotary (momentary)			Center	(3SE03-DN1)	▶	3SE03-NN1①		
			Neutral	(3SE03-DN2)	▶	3SE03-NN2②		

① 5° pretravel to operate contacts.

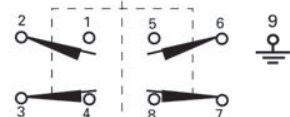
② 15° pretravel to operate contacts.

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NEMA type 6P submersible, prewired cable

Complete switches without lever - prewired cable:

 Switch body type—prewired cable with 8 foot cable	Single pole 1 NO + 1 NC (3SE03-SA6P) Cable color code 1 - White 2 - Black 3 - Red 4 - Orange 5 - Green 	Double pole 2 NO + 2 NC (3SE03-SB6P) Cable color code 1 - White 6 - Pink 2 - Black 7 - Yellow 3 - Red 8 - Blue 4 - Orange 9 - Green 5 - Brown 
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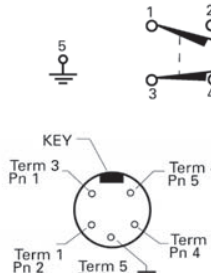
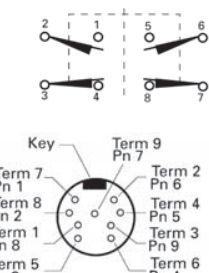
Operating head type		Composite catalog number consisting of head and switch body				
		DT	Catalog Number	List Price \$ 1 unit	Catalog Number	List Price \$ 1 unit
 Side rotary CW and CCW operation convertible to CW only or CCW only	Standard momentary (3SE03-DR1)	▶	3SE03-AR16P		3SE03-BR16P	
	Standard maintained (3SE03-DM1)		3SE03-AM16P		3SE03-BM16P	
	Low torqued momentary (3SE03-DL1)		3SE03-AL16P		3SE03-BL16P	
 Plain side plunger	Momentary (3SE03-DS1)		3SE03-AS16P		3SE03-BS16P	
 Roller side plunger	Momentary (3SE03-DS3)		3SE03-AS36P		3SE03-BS36P	
 Two-sided plunger	Maintained (3SE03-DH1)		3SE03-AH16P		Not available	
 Plain top plunger	Momentary (3SE03-DT1)		3SE03-AT16P		3SE03-BT16P	
 Roller top plunger	Momentary (3SE03-DT3)		3SE03-AT36P		3SE03-BT36P	
 Wobble head (without lever)	Momentary (3SE03-DW1)		3SE03-AW16P		3SE03-BW16P	

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**NEMA type 6P submersible,
prewired receptacle**

Complete switches without lever - prewired receptacle with pin connector:

 Switch Body Type—prewired receptacle with pin connector	Single pole 1 NO + 1 NC (3SE03-SA6PC) 	Double pole 2 NO + 2 NC (3SE03-SB6PC) 
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Operating head type		Composite catalog number consisting of head and switch body				
		DT	Catalog Number	List Price \$ 1 unit	Catalog Number	List Price \$ 1 unit
 Side rotary CW and CCW operation convertible to CW only or CCW only	Standard momentary (3SE03-DR1)	▶	3SE03-AR16PC		3SE03-BR16PC	
	Standard maintained (3SE03-DM1)		3SE03-AM16PC		3SE03-BM16PC	
	Low torqued momentary (3SE03-DL1)		3SE03-AL16PC		3SE03-BL16PC	
 Plain side plunger	Momentary (3SE03-DS1)		3SE03-AS16PC		3SE03-BS16PC	
 Roller side plunger	Momentary (3SE03-DS3)		3SE03-AS36PC		3SE03-BS36PC	
 Two-sided plunger	Maintained (3SE03-DH1)		3SE03-AH16PC		Not available	
 Plain top plunger	Momentary (3SE03-DT1)		3SE03-AT16PC		3SE03-BT16PC	
 Roller top plunger	Momentary (3SE03-DT3)		3SE03-AT36PC		3SE03-BT36PC	
 Wobble head (without lever)	Momentary (3SE03-DW1)		3SE03-AW16PC		3SE03-BW16PC	

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Modular, plug-in and
NEMA type 6P submersible

Components:

 Plug-in module	Plug-in module		DT	Catalog Number	List Price \$ 1 unit
	Standard single pole 1 NO + 1 NC		▶	3SE03-SA	
	Standard double pole 2 NO + 2 NC		▶	3SE03-SB	
	Center neutral 2 NO + 2 NC ^①		▶	3SE03-SN	
 Receptacle	Receptacle for plug-in module			Catalog Number	List Price \$ 1 unit
	Single pole 1 NO + 1 NC (5 terminals)		▶	3SE03-RA	
	Single pole 2 NO + 2 NC (9 terminals)			3SE03-RB	

Switch body—NEMA type 6P submersible:

 Prewired cable	Prewired cable 8 foot length				Prewired receptacle with pin connector		
	Switch body	DT	Catalog Number	List Price \$ 1 unit	DT	Catalog Number	List Price \$ 1 unit
	Single pole 1 NO + 1 NC	▶	3SE03-SA6P			—	—
	Single pole 2 NO + 2 NC	▶	3SE03-SB6P			—	—
 Prewired receptacle	Single pole 1 NO + 1 NC		—	—	▶	3SE03-SA6PC	
	Single pole 2 NO + 2 NC		—	—	▶	3SE03-SB6PC	

Operating heads^②:

 		Nominal operating data								
Operating head type		Total travel	Pretravel	Operating force	Release position	Minimum return force	Operating temp range ^④	DT	Catalog Number	List Price \$ 1 unit
 Side rotary^⑤	Standard momentary ^⑥	90°	5°	3 lb-in.	2°	4.5 oz-in.	1	▶	3SE03-DR1	
	Low torqued momentary ^⑥	90°	15°	1.5 lb-in.	6°	2.5 oz-in.	1	▶	3SE03-DL1	
	Standard maintained	90°	50°	3 lb-in.	50°	—	2	▶	3SE03-DM1	
 Plain side plunger	Momentary	0.25 in.	0.065 in.	4 lbs	0.03 in.	8 oz.	2	▶	3SE03-DS1	
 Roller side plunger	Momentary ^⑦	0.25 in.	0.065 in.	4 lbs	0.03 in.	8 oz.	2	▶	3SE03-DS3	
 Two-sided plunger	Maintained	0.32 in.	0.2 in.	5 lbs	0.13 in.	5 lbs	2	▶	3SE03-DH1	
 Plain top plunger	Momentary	0.28 in.	0.04 in.	4 lbs	0.02 in.	8 oz.	3	▶	3SE03-DT1	
 Roller top plunger	Momentary	0.28 in.	0.04 in.	4 lbs	0.02 in.	8 oz.	3	▶	3SE03-DT3	
 Wobble head^{⑧⑨}	Momentary	15°	10°	2 lb-in.	6°	2.4 oz-in.	3	▶	3SE03-DW1	
 Center neutral^⑨	Momentary	90°	5°	1.8 lb-in.	2°	2.5 oz-in.	2	▶	3SE03-DN1	
		90°	15°	1.8 lb-in.	2°	2.5 oz-in.	2	▶	3SE03-DN2	

① For use with 3SE03-DN1, -DN2 operating heads and 3SE03-RB receptacle only.

② For use with modular, Plug-in and NEMA Type 6P.

③

④ Refer to "Operating Temperature", Catalog page 13/118 for Temperature Ranges.

⑤ Without Operating Levers.

⑥ CW and CCW operation. Convertible to CW or CCW operation only.

⑦ Convertible—Horizontal to Vertical.

⑧ Requires Lever.

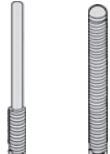
⑨ For use with 3SE03-SN plug-in module only.

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Modular, plug-in metal housing

Levers for plug-in and non-plug-in versions—most widely used

Description	Length ^①	Roller mounted on side of lever	Roller material	Roller diameter	Roller face width	Max required ^② return torque (oz-in.)	DT	Catalog Number	List Price \$ 1 unit
	1.5 (38)	Front	Nylatron	0.75 (19)	0.31 (8)	0.53	▶	3SX03-KL200	
	1.5 (38)	Front	Cast aluminum	0.75 (19)	0.31 (8)	1.10	▶	3SX03-KL355	
	1.5 (38)	Back	Cast aluminum	0.75 (19)	0.31 (8)	1.10	▶	3SX03-KL579	
	1.5 (38)	Back / back	Nylatron	0.75 (19)	0.31	–	▶	3SX03-KL204	
	1–3.5 (25–89)	Front	Nylatron	0.75 (19)	0.31 (8)	1.90 ^⑤	▶	3SX03-KL201	
	1–3.5 (25–89)	Front	Metal	0.75 (19)	0.31 (8)	3.40 ^⑤	▶	3SX03-KL538	
	9 (229)	–	Stainless steel	–	–	7.00 ^⑤	▶	3SX03-KL220	
	Adjustable spring rod	–	Nylon	–	–	3.50 ^⑤	▶	3SX03-KL556	
	6 (152)	–	Nylatron	–	–	0.40	▶	3SX03-KL142	
Levers									
	Rod	–	Nylon	–	–	–	▶	3SX03-KW2	
	Coil spring	–	Coil spring	–	–	–	▶	3SX03-KW4	
	For plunger actuated switches wobble actuators ^⑥								

Levers for plug-in and non-plug-in versions:

Operator	Length ^①	Roller			Max required ^② return torque (oz-in.)	Catalog Number			List Price \$ 1 unit
		Type	Diameter	Face (width)		Stainless steel	DT	Cast aluminum	
	0.87 (22)	Metal	0.75 (19)	0.31 (8)	0.62	–		3SX03-KL39	
	1.37 (35)	Metal	0.75 (19)	0.31 (8)	0.95	–	▶	3SX03-KL40	
	1.50 (38)	Nylatron	0.75 (19)	1.00 (25)	0.92	–	▶	3SX03-KL337	
		Ball bearing	0.69 (17)	0.25 (6)	0.77	–		3SX03-KL531	
		Without roller	–	–	0.32	–		3SX03-KL32	
	2.00 (51)	Nylatron	0.75 (19)	0.31 (8)	0.71	–	▶	3SX03-KL546	
		Nylatron	0.75 (19)	1.00 (25)	1.45	–		3SX03-KL572	
		Metal	0.75 (19)	0.31 (8)	1.5	–	▶	3SX03-KL549	
	250 (64)	Ball bearing	0.69 (17)	0.25 (6)	1.1	–		3SX03-KL552	
		Nylatron	0.75 (19)	0.31 (8)	1.0	–		3SX03-KL547	
Cast aluminum	3.00 (76)	Nylatron	0.75 (19)	1.00 (25)	1.8	–		3SX03-KL573	
		Nylatron	1.5 (38)	0.28 (7)	1.4	–		3SX03-KL575	
		Metal	0.75 (19)	0.31 (8)	2.0	–		3SX03-KL550	
		Ball bearing	0.69 (17)	0.25 (6)	1.5	–	▶	3SX03-KL553	
		Nylatron	0.75 (19)	0.31 (8)	1.3	–	▶	3SX03-KL548	
		Nylatron	0.75 (19)	1.00 (25)	2.3	–	▶	3SX03-KL574	
	3.00 (76)	Nylatron	1.5 (38)	0.28 (7)	1.8	–	▶	3SX03-KL576	
		Metal	0.75 (19)	0.31 (8)	2.5	–	▶	3SX03-KL551	
		Ball bearing	0.69 (17)	0.25 (6)	1.8	–	▶	3SX03-KL554	

All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

- ① Roller lever: Length from the operating shaft axis to the roller axis.
All other: Length from the operating shaft axis to the tip.

② Caution—When selecting lever, required return torque should not exceed minimum return torque in operating head.

③ Cap screw accommodates 3/64 inch Allen wrench.

④ By re-assembling lever minimum can be reduced another 0.50 (13).

⑤ Applies when lever extended to maximum dimension.

⑥ See dimensions page 13/76.

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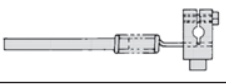
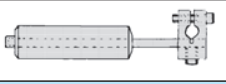
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NEMA type 6P submersible

Levers for plug-in and non-plug-in versions—most widely used

Operator		Length ^① Inches (mm)	Roller			Min. required return torque oz-in ^⑤	Catalog Number			
			Type	Diameter In. (mm)	Face width in. (mm)		DT	Stainless steel	Cast aluminum	List Price \$ 1 unit
Roller levers										
	Roller on reverse side	1.50 (38)	Nylatron Nylatron Ball bearing	0.75 (19) 1.5 (38) 0.69 (17)	0.31 (8) 0.28 (7) 0.25 (6)	0.53 0.96 0.77	▶ — —	— — —	3SX03-KL310 3SX03-KL536 3SX03-KL580	
	Offset lever (Inboard roller shown)	1.50 (38) Inboard roller	Nylatron	0.75 (19)	0.31 (8)	0.65	▶	3SX03-KL24	—	
			Metal	0.75 (19)	0.31 (8)	1.20	▶	3SX03-KL25	—	
			Ball bearing	0.69 (17)	0.25 (6)	0.90	—	3SX03-KL26	—	
		1.50 (38) outboard roller	Nylatron	0.75 (19)	0.31 (8)	0.65	▶	3SX03-KL27	—	
			Metal	0.75 (19)	0.31 (8)	1.20	—	3SX03-KL28	—	
			Ball bearing	0.69 (17)	0.25 (6)	0.90	—	3SX03-KL29	—	
	Nylatron	0.75 (19)	1 (25)	1.10	—	3SX03-KL30	—			
	Bantam lever	0.69 (18)	Metal	0.88 (22)	0.19 (5)	0.45	▶	3SX03-KL532		
	Precision adjustment	1.50 (38) ^②	Nylatron	0.75 (19)	0.31 (8)	0.65	▶	3SX03-KL340		
			Metal	0.75 (19)	0.31 (8)	1.20		3SX03-KL465		
			Ball bearing	0.69 (17)	0.25 (6)	0.90		3SX03-KL535		
	Adjustable roller	1–3.75 (25–95) ^③ 1–3.75 (25–95) ^③ 1.62–3.75 (41–95) ^③ 0.50–3.75 (13–95) 1–3.75 (25–95) ^③ 0.50–3.75 (13–95)	Nylatron	0.75 (19)	0.5 (13)	1.90 ^④	▶	3SX03-KL599		
			Nylatron	0.75 (19)	1 (25)	3.10 ^④	—	3SX03-KL537		
			Nylatron	1.5 (38)	0.28 (7)	2.50 ^④	▶	3SX03-KL443		
			Large nylatron	4 (102)	0.11 (3)	4.50 ^④	▶	3SX03-KL598		
			Ball bearing	0.69 (17)	0.25 (6)	2.50 ^④	—	3SX03-KL539		
			Without roller	—	—	1.20 ^④	—	3SX03-KL31		
	Fork lever _ both rollers one side	1.50 (38)	Nylatron	0.75 (19)	1 (25)	—	▶	3SX03-KL543		
			Metal	0.75 (19)	0.31 (8)	—	▶	3SX03-KL544		
			Ball bearing	0.69 (17)	0.25 (6)	—	—	3SX03-KL545		
	Fork lever _ both rollers outside, one side	1.50 (38)	Nylatron	0.75 (19)	0.31 (8)	—	▶	3SX03-KL203		
			Metal	0.75 (19)	0.31 (8)	—		3SX03-KL541		
			Ball bearing	0.69 (17)	0.25 (6)	—		3SX03-KL542		

Levers for plug-in and non-plug-in versions:

Operator	Length ^① Inches (mm)	Description Inches (mm)	Min. required return force oz-in. ^⑤	DT	Catalog Number	List Price \$ 1 unit
	Adjustable rod	5.50 (140) Max.	Nylon Rod—0.19 (5) Dia.	0.40 ^④	▶ 3SX03-KL399	
		5.50 (140) Max.	Metal Rod—0.12 (3) Dia.	0.92 ^④	▶ 3SX03-KL202	
		8.75 (222) Max.	Metal Rod (Square)—0.12 (3) Max.	2.20 ^④	▶ 3SX03-KL581	
		12 (305) Max.	Steel (Formable) Rod—0.12 (3) Dia.	5.00 ^④	▶ 3SX03-KL226	
		—	Clamp Only—0.19 (5) Hole	—	▶ 3SX03-KL35	
		—	Clamp Only—0.12 (3) Hole	—	▶ 3SX03-KL36	
	Spring rod	11.62 (295)	Metal rod	2.80	▶ 3SX03-KL421	
	Adjustable wire	12.12 (308) max.	Nylon covered wire	1.50 ^④	▶ 3SX03-KL533	
	Adjustable wide roller lever	3.9 (99)	0.75 (19) Dia. Nylatron Roller 0.19 (30) Dia. Rod	4.50 ^④	▶ 3SX03-KL37	
Wobble head operators						
See dimensions page 13/76	Stainless steel rod	—	Rod diameter - 0.06 (2)	—	▶ 3SX03-KW3	

① Length from operating shaft axis to the roller axis.

② Maximum dimensions, precision adjustable to lesser dimensions.

③ By re-assembling lever minimum can be reduced by 1/2 in.

④ Applies when lever extended to maximum dimension.

⑤ Caution—When selecting lever, required return torque should not exceed minimum return force in operating head.

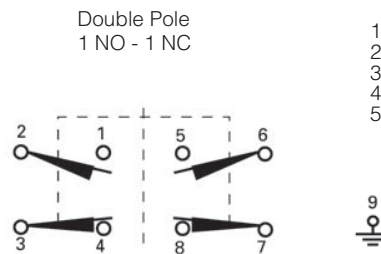
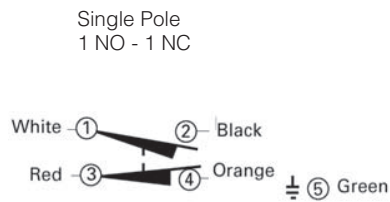
All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

Limit Switches

3SE03 North American Limit Switches

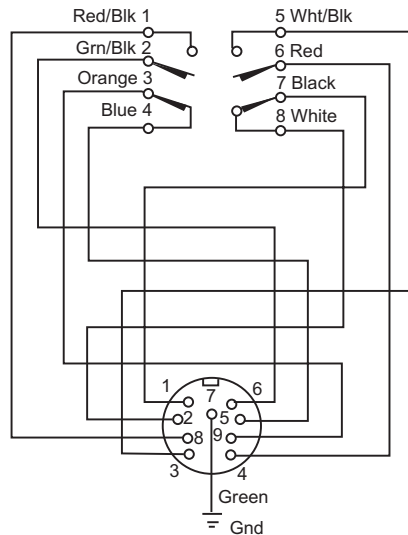
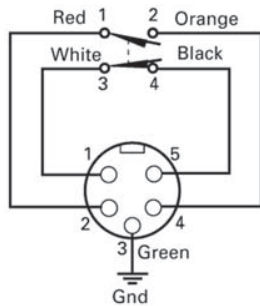
Modular, plug-in and
NEMA type 6P submersible

Wiring diagrams



Cable color code
1 - White 6 - Pink
2 - Black 7 - Yellow
3 - Red 8 - Blue
4 - Orange 9 - Green
5 - Brown
Pre-wired cable

Modular, plug-in and prewired cable



Prewired receptacle with pin connector

Typical connector cable (supplied by user)

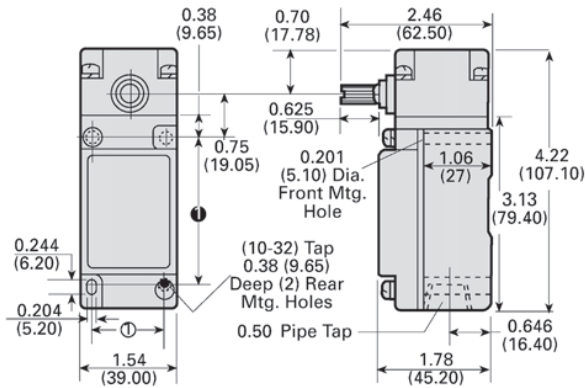
Cable length ft.	Manufacturers part number			
	Daniel Woodhead Brad Harrison	Cooper Crouse-Hinds	Molex (Industrial Interface)	Lumberg USA
5 Pin connector cable				
3	105000A01F030	5000111-3_	14541	RK50-77/1M
6	105000A01F060	5000111-4_	14542	RK50-77/2M
12	105000A01F120	5000111-5_	14544	RK50-77/4M
9 Pin connector cable				
3	309000A01F030	X8990-3	—	—
6	309000A01F060	X8990-4	—	—
12	309000A01F120	X8990-5	—	—

Limit Switches

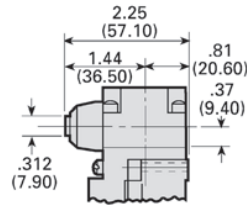
3SE03 North American Limit Switches

Modular, plug-in and
NEMA type 6P submersible

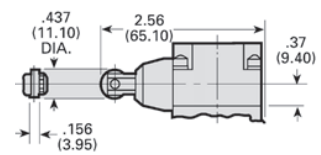
Dimension drawings



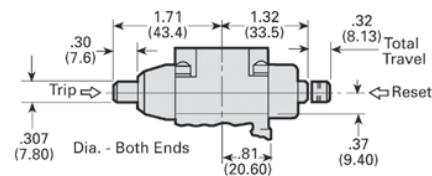
Plain side plunger



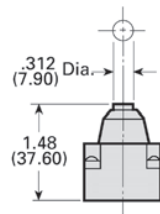
Roller side plunger



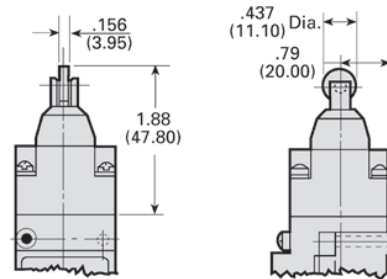
Two side plungers



Plain top plunger



Roller top plunger



Rotary lever operators

	Catalog Number	Dimensions						Catalog Number	Dimensions					
		A	B	C	D	E	F		A	B	C	D	E	F
	3SX03-KL200	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.44 (11.2)	0.20 (5.1)	0.24 (6.1)	3SX03-KL554	3.00 (76.2)	0.688 (17.5)	0.25 (6.4)	0.42 (10.7)	0.12 (3.0)	0.18 (4.6)
	3SX03-KL355	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.44 (11.2)	0.20 (5.1)	0.24 (6.1)	3SX03-KL572	2.00 (50.8)	0.75 (19.0)	1.00 (25.4)	0.42 (10.7)	0.90 (22.9)	0.90 (22.9)
	3SX03-KL377	1.50 (38.1)	0.75 (19.0)	1.00 (25.4)	0.44 (11.2)	0.90 (22.9)	0.90 (22.9)	3SX03-KL573	2.50 (63.5)	0.75 (19.0)	1.00 (25.4)	0.42 (10.7)	0.90 (22.9)	0.90 (22.9)
	3SX03-KL531	1.50 (38.1)	0.688 (17.5)	0.25 (6.4)	0.44 (11.2)	0.12 (3.0)	0.18 (4.6)	3SX03-KL574	3.00 (76.2)	0.75 (19.0)	1.00 (25.4)	0.42 (10.7)	0.90 (22.9)	0.90 (22.9)
	3SX03-KL546	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.42 (10.7)	0.20 (5.1)	0.24 (6.1)	3SX03-KL575	2.50 (63.5)	1.50 (38.1)	0.29 (7.4)	0.42 (10.7)	0.18 (4.6)	0.24 (6.1)
	3SX03-KL547	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.42 (10.7)	0.20 (5.1)	0.24 (6.1)	3SX03-KL576	3.00 (76.2)	1.50 (38.1)	0.29 (7.4)	0.42 (10.7)	0.18 (4.6)	0.24 (6.1)
	3SX03-KL548	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.42 (10.7)	0.20 (5.1)	0.24 (6.1)	With rollers on reverse side						
	3SX03-KL549	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.42 (10.7)	0.20 (5.1)	0.24 (6.1)	3SX03-KL310	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.44 (11.2)	0.34 (8.6)	0.38 (9.7)
	3SX03-KL550	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.42 (10.7)	0.20 (5.1)	0.24 (6.1)	3SX03-KL536	1.50 (38.1)	1.50 (38.1)	0.28 (7.1)	0.44 (11.2)	0.30 (7.6)	0.38 (9.7)
	3SX03-KL551	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.42 (10.7)	0.20 (5.1)	0.24 (6.1)	3SX03-KL579	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.44 (11.2)	0.34 (8.6)	0.38 (9.7)
	3SX03-KL552	2.00 (50.8)	0.688 (17.5)	0.25 (6.4)	0.42 (10.7)	0.12 (3.0)	0.18 (4.6)	3SX03-KL580	1.50 (38.1)	0.688 (17.5)	0.25 (6.4)	0.44 (11.2)	0.25 (6.4)	0.31 (7.9)
	3SX03-KL553	2.50 (63.5)	0.688 (17.5)	0.25 (6.4)	0.42 (10.7)	0.12 (3.0)	0.18 (4.6)							

All dimensions shown in inches and (millimeters). For reference purpose only. Not to be used for design or construction purposes.

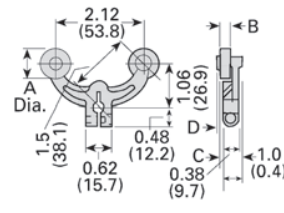
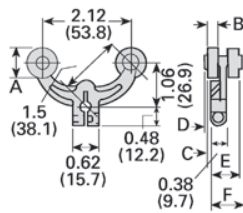
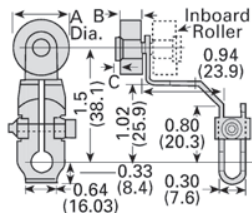
① Can accommodate both U.S. 1.16 (29.4) x 2.34 (59.5) and DIN 1.18 (30.0) x 2.36 (60.0) mounting dimensions.

Limit Switches

3SE03 North American Limit Switches

Modular, plug-in and
NEMA type 6P submersible

Dimension drawings



Offset roller levers

Catalog Number	Dimensions		
	A	B	C
Outboard roller			
3SX03-KL27	0.75 (19)	0.32 (8)	0.03 (1)
3SX03-KL28	0.75 (19)	0.32 (8)	0.03 (1)
3SX03-KL29	0.69 (18)	0.25 (6)	0.04 (1)
3SX03-KL30	0.75 (19)	1.0 (25)	—
Inboard roller			
3SX03-KL24	0.75 (19)	0.32 (8)	0.03 (1)
3SX03-KL25	0.75 (19)	0.32 (8)	0.03 (1)
3SX03-KL26	0.69 (18)	0.25 (6)	0.04 (1)

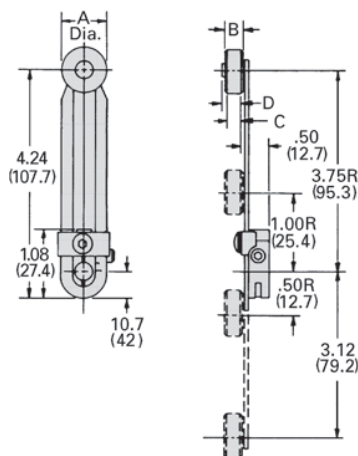
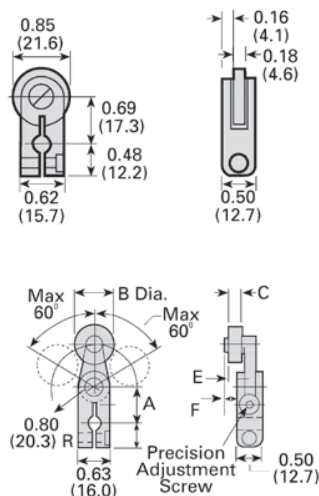
Fork lever, one roller inside, one roller outside

Catalog Number	Dimensions					
	A	B	C	D	E	F
3SX03-KL203	0.75 (19)	0.32 (8)	0.16 (4)	0.20 (5)	0.73 (19)	0.77 (20)
3SX03-KL541	0.75 (19)	0.32 (8)	0.16 (4)	0.20 (5)	0.73 (19)	0.77 (20)
3SX03-KL542	0.69 (18)	0.25 (6)	0.08 (2)	0.14 (4)	0.64 (16)	0.70 (18)

Fork lever - Both rollers on one side

Catalog Number	Dimensions			
	A	B	C	D
3SX03-KL204	0.75 (19)	0.32 (8)	0.16 (4)	0.20 (5)
3SX03-KL543	0.75 (19)	1.0 (25)	0.86 (22)	0.86 (22)
3SX03-KL544	0.75 (19)	0.32 (8)	0.16 (4)	0.20 (5)
3SX03-KL545	0.69 (18)	0.25 (6)	0.08 (2)	0.1 (3)

Bantam roller lever



Precision adjustment roller lever

Catalog Number	Dimensions					
	A	B	C	D	E	F
3SX03-KL340	0.69 (18)	0.75 (19)	0.32 (8)	0.48 (12)	0.24 (6)	0.28 (7)
3SX03-KL465	0.69 (18)	0.75 (19)	0.32 (8)	0.48 (12)	0.24 (6)	0.28 (7)
3SX03-KL535	0.69 (18)	0.69 (18)	0.25 (6)	0.48 (12)	0.16 (4)	0.22 (6)

Adjustable roller lever

Catalog Number	Dimensions			
	A	B	C	D
3SX03-KL201	0.75 (19)	0.32 (8)	0.29 (7)	0.33 (8)
3SX03-KL443	1.5 (38)	0.29 (7)	0.26 (7)	0.32 (8)
3SX03-KL537	0.75 (19)	0.32 (8)	0.29 (7)	0.33 (8)
3SX03-KL538	0.69 (18)	0.25 (6)	0.21 (5)	0.27 (7)
3SX03-KL539	0.69 (18)	0.25 (6)	0.21 (5)	0.27 (7)
3SX03-KL598	0.39 (10)	0.11 (3)	0.11 (3)	0.19 (5)
3SX03-KL599	0.75 (19)	0.5 (13)	0.46 (12)	0.47 (12)

All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

Limit Switches

3SE03 North American Limit Switches

Modular, plug-in and
NEMA type 6P submersible

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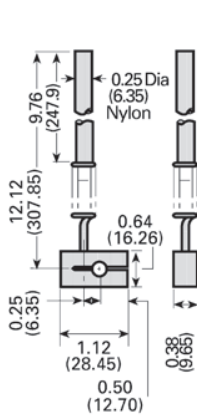
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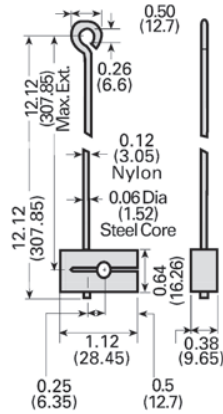
13

Dimension drawings

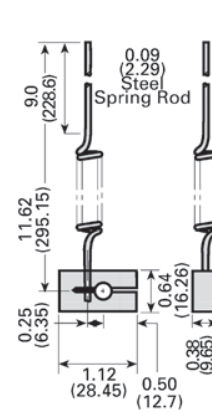
Nylon Spring Rod Actuator
3SX03-KL556



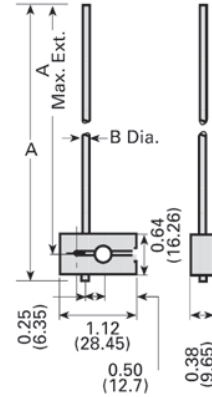
Nylon Covered Wire Actuator
3SX03-KL533



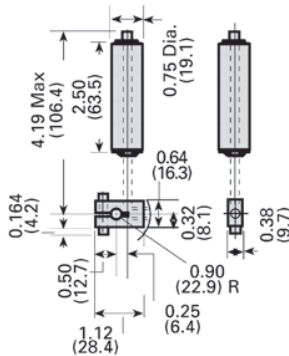
Stainless Steel Spring Actuator
3SX03-KL421



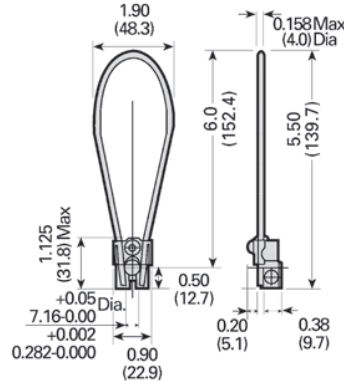
Adjustable Rod Actuator



Adjustable Wire Roller Actuator
3SX03-KL37



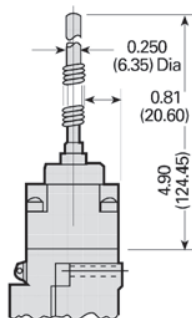
Nylatron Loop Actuator
3SX03-KL142



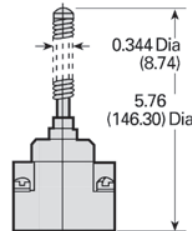
Adjustable rod actuators

Catalog Number	Material	Dimensions	
		A	B
3SX03-KL202	Steel-Round	5.50 (140)	0.120 (3)
3SX03-KL581	Steel-Square	8.75 (222)	0.125 (3)
3SX03-KL399	Nylon	5.50 (140)	0.190 (5)
3SX03-KL220	Stainless Steel	9.00 (229)	0.190 (5)
3SX03-KL226	Plated Steel	12.0 (305)	0.120 (3)

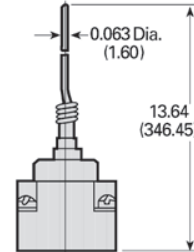
Wobble head with nylon head
3SE03-DW1
3SX03-KW2



Wobble head with coil spring
3SE03-DW1
3SX03-KW4



Wobble head with stainless steel rod
3SE03-DW1
3SX03-KW3



All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

Limit Switches

3SE03 North American Limit Switches

3SE03 Metal enclosure

Description

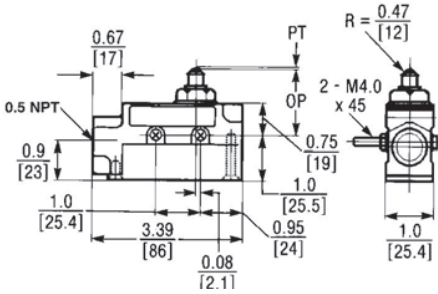
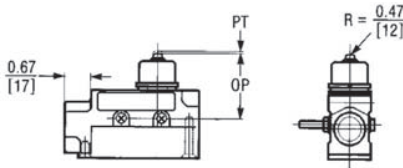
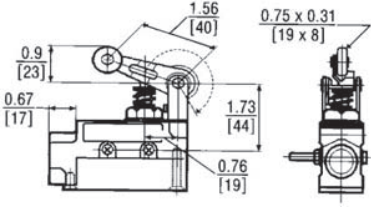
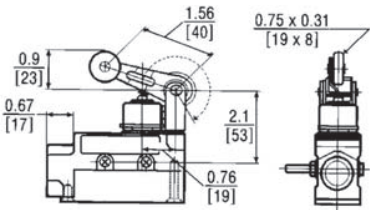
Features

- NEMA 1 Enclosed Aluminum Die Cast Housing
- Screw Terminals
- Booted versions for added protection
- 1/2" Conduit Entrance
- NEMA A600, R300 Contacts
- UL Recognized
- CSA Certified
- INO/INC Snap-action contacts (form c)

Application

These switches are designed for accurate repeatability. Their compact size makes them ideal for use in space-restricted areas.

Typical applications include overhead, folding and elevator doors, sliding gates and other automated equipment.

Overall dimensions	Specifications ①	DT	Catalog Number	List Price \$ 1 unit
Plunger actuator 	OF Max. - 8.82 - 12.3 oz. (250 - 350 g) RF Min. 4.02 oz. (114 g) PT Max. - 0.016 in. (0.4 mm) OT Min. - 0.217 in. (5.5 mm) MD Max. - 0.002 in. (0.05 mm) OP - 1.504 in. (38.2 mm)	▶	3SE03 - EB05	
Booted plunger 	OF Max. - 28.22 oz. (800 g) RF Min. 8.46 oz. (240 g) PT Max. - 0.079 in. (2.0 mm) OT Min. - 0.197 in. (5.0 mm) MD Max. - 0.004 in. (0.1 mm) OP - 1.803 in. (45.8 mm)	▶	3SE03 - EB06	
Roller lever 	OF Max. - 20.1 oz. (570 g) RF Min. 6.0 oz. (170 g) PT Max. - 0.157 in. (4.0 mm) OT Min. - 0.236 in. (6.0 mm) MD Max. - 0.016 in. (0.4 mm)	▶	3SE03 - EB32	
Booted roller lever 	OF Max. - 22.57 oz. (640 g) RF Min. 8.11 oz. (230 g) PT Max. - 0.197 in. (5.0 mm) OT Min. - 0.236 in. (6.0 mm) MD Max. - 0.016 in. (0.4 mm)	▶	3SE03 - EB33	

① OF = Operating Force
 RF = Return Force
 PT = Pretravel
 OT = Operating Travel
 MD = Movement Differential
 OP = Operating Position

Limit Switches

3SE03 North American Limit Switches

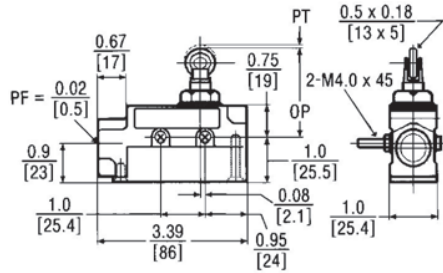
3SE03 Metal enclosure

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Dimension drawings

Overall dimensions

Roller plunger

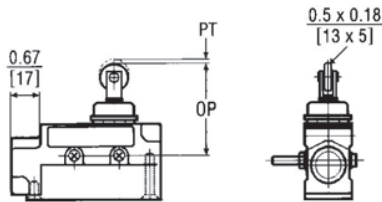


OF Max. - 9.92 - 12.3 oz.
(250 - 350 g)
RF Min. 4.02 oz. (114 g)
PT Max. - 0.02 in. (0.5 mm)
OT Min. - 0.142 in. (3.6 mm)
MD Max. - 0.002 in. (0.05 mm)
OP - 1.957 in. (49.7 mm)



3SE03 - EB07

Booted roller plunger



OF Max. - 17.64 oz. (500 g)
RF Min. 3.53 oz. (100 g)
PT Max. - 0.039 in. (1.0 mm)
OT Min. - 0.138 in. (3.5 mm)
MD Max. - 0.006 in. (0.12 mm)
OP - 1.957 in. (49.7 mm)



3SE03 - EB08

Technical data

Mechanical Life	3,000,000 operations maximum							
Electrical Life	500,000 operations minimum							
Operating Speed	0.01 m/second to 1m/second							
Cable Entry	1/2" NPT							
Temperature Range	-15° to 80° (5° to 176°F)							
Degree of Protection	NEMA 1							
Mounting	Any Position							
NEMA Rating	A600, R300							
Rated Voltage (V) ¹⁾²⁾	Non-Inductive Load (A)			Inductive load (A)			Inrush current (A)	
	Resistive load		Lamp load	Inductive load		Motor load		
	NC-NO	NO	NC	NC-NO	NO	NC	NO	NC
125 VAC	15	3	1.5	15	5	2.5	30 maximum	15 maximum
250 VAC	15	2.5	1.25	15	3	1.5		
500 VAC	3	1.5	0.75	2.5	1.5	0.75		
8 VDC	15	3	1.5	15	5	2.5		
14 VDC	15	3	1.5	10	5	2.5		
30 VDC	6 (2)	3	1.5	5	5	2.5		
125 VDC	0.4	0.4	0.4	0.05	0.05	0.05		
250 VDC	0.2	0.2	0.2	0.03	0.03	0.03		

1) Inductive load has power factor of 0.04 minimum (AC) and a time of 7m/second (DC)

2) Lamp load has an inrush current of 6 times steady-state current.

Mechanical Safety

3SE7 Cable-Operated Switches

General Information

Application

Cable-operated switches are used for monitoring or for EMERGENCY-STOP facilities on particularly endangered system sections. They are available with metal enclosures.

As the effective range of a cable-operated switch is limited by the length of the pull-wire, large systems can also be protected.

Cable-operated switches (requiring pulling at both ends) and conveyor belt unbalance track-ers are used primarily for monitoring very long belt systems.

Specifications

Switches with latching for implementation in EMERGENCY-STOP equipment correspond to the EN 418 standard.

Principle of operation

The switch contacts of the cable-operated switches and the conveyor belt unbalance protection devices are positive opening.

Cable-operated switches with one-side operation are held in free position by the pre-tension force on the turnbuckle.

- In the 3SE7 140, -150 and -160 cable-operated switches, both switching contacts are available for cable-break/cable pull signaling. The NO contact is used, for example, for signaling purposes.

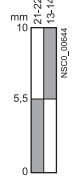
For switches with latching, with a pretensioned cable, the locking must be deactivated beforehand in order to return the switch to its free position.

Technical data

Type	3SE7 120	3SE7 150	3SE7 140	3SE7 141	3SE7 160	3SE7 310
Standards	IEC 60947-5-1, EN 60947-5-1; IEC 60204-1, EN 60204-1; EN ISO 13850					
Certifications	UL / CSA					
Electrical design	Contacts electrically isolated from each other					
Electrical loading						
• at AC-15	AC 400 V, 6A			AC 250 V, 2A	AC 400 V, 6A	
• minimum	AC/DC 24 V, 10 mA					
Short circuit protection	6 A (Slow acting)					
Mechanical endurance	> 1 x 10 ⁶ operating cycles					
Contact material	Fine silver					
Actuation	By pulling or breaking of a rope (cable)					
Rope length, maximum	10 m	25 m	50 m	75 m ¹⁾	2 x 50 m	–
Spacing between rope supports, maximum	2.5 m	3 m	5 m	5 m	5 m	–
Enclosure	GDAL alloy, coated (color), dark black RAL 9005					
Cover	Shock-resistant thermoplastic					
Degree of protection acc. To IEC 60529	IP65			IP67	1P65	
Ambient temperature	-25C to +70C					
Mounting	Designed for M 5					
Mounting space	30 mm and 40 mm					
Cable entry	2x(M20x1.5)	2x(M20x1.5)	1x(M16x1.5)	3x(M20x1.5)	2x(M25x1.5)	
Type of connection	M3.5 screw connection; Self-lifting pressure plate terminals					

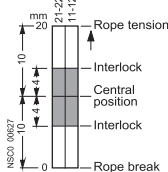
Travel diagrams

3SE7 120-2DD01



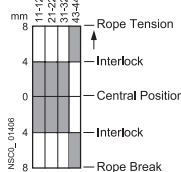
Central position

3SE7 140-1.F00



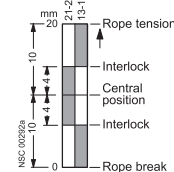
Central position

3SE7 141-1EG10



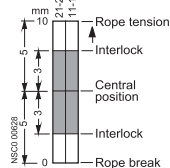
Central position

3SE7 140-1.D0.



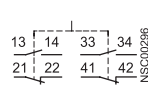
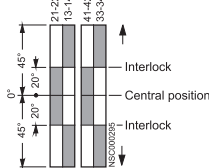
Central position

3SE7 120-1BF00, 3SE7 150-1BF00



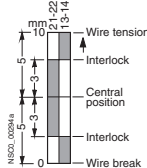
Central position

3SE7 160-1AE, 3SE7 310-1AE



Central position

3SE7 150-1.D00, 3SE7 150-2DD00



Central position

1) 75 m cable length possible provided the ambient temperature range is strictly observed, otherwise, 50 m.