

Heavy-Duty Plug-In Switches

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E50 Modular Plug-In Limit Switch Components are the industry standard with versatility of design and high reliability for low maintenance, installation and inventory costs. Standard Viton gaskets, seals and boots and a zinc die cast enclosure provide exceptional chemical resistance to the common coolants, cleansing agents, and hydraulic fluids found in machine tool, automotive, waste water treatment and other heavy-duty industrial applications. Mounting dimensions accommodate both U.S. and DIN standards for easy retrofit installations. Super bright 24 – 120V AC/DC LED indicating light versions simplify setup and troubleshooting operations.

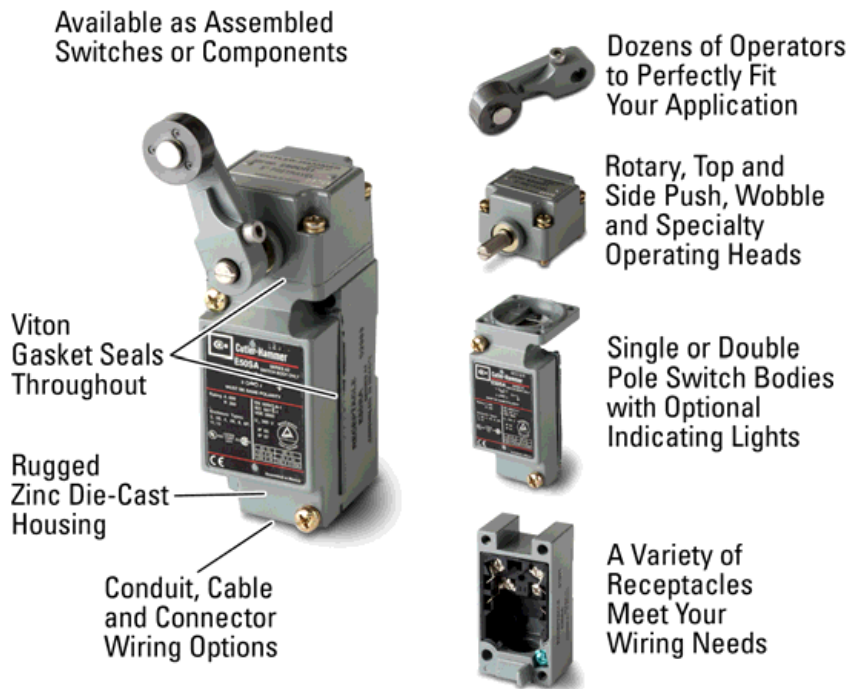
Approvals

- UL Listed
- CSA Certified
- IEC.947.5.1
- TUV — E9271605E02

CE (where shown)

For the most current information on this product, visit our web site at:
www.sensingsolutions.com

Modular Limit Switches Provide Extremely Easy Installation, High Reliability, and Low Maintenance and Inventory Costs

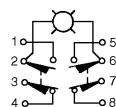
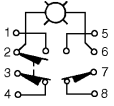


Product Features

- Modular, plug-in components (head, body and receptacle) provide application flexibility, reduced inventory and less downtime
- Manufactured to take the physical and environmental abuse (including cutting fluids and chemicals) of harsh industrial environments
- Chemical resistant Viton gaskets, seals and boots are standard, and so are captive, posi-drive screws
- The switches have terminal identification on the nameplate for a visual wiring checkout without guesswork. Heads and switch bodies can be replaced without rewiring
- E50 devices can be ordered in separate components or as complete assembled switches
- 600V rating, ridge-topped contacts and wiping action assure continuity even to logic level circuits
- Keyed, four direction head positioning
- Standard 5° pre-travel and 90° total travel
- 24 – 120V AC/DC LED and 120V AC neon indicating lights available
- Rotary heads are field convertible CW, CCW, or both, without special tools
- Epoxy filled, pin connector or pigtail pin connector receptacles available

For Customer Service in the U.S. call **1-800-356-1243**,
in Canada call **1-800-268-3578**.
For Application Assistance in the U.S. and Canada
call **1-800-426-9184**.

Model Selection — Assembled Switches — Standard

Assembled Switch 	Single Pole (5 Terminal Receptacle)			Double Pole (9 Terminal Receptacle)						
	 			 						
	Indicating Light:	None	LED (24 – 120V AC/DC)	Neon (120V AC)	None	LED (24 – 120V AC/DC)	Neon (120V AC)	LED (24 – 120V AC/DC)	Neon (120V AC)	
	Switch Body:	E50SA 1N.O.-1N.C.	E50SAL 1N.O.-1N.C.	E50SAN 1N.O.-1N.C.	E50SB 2N.O.-2N.C.	E50SBL 2N.O.-2N.C.	E50SBN 2N.O.-2N.C.	E50SCL 1N.O.-2N.C.	E50SCN 1N.O.-2N.C.	
Receptacle: ①	E50RA	E50RA	E50RA	E50RB	E50RB	E50RB	E50RB	E50RB		
Operating Head Type ②		Catalog Number for Assembled Switches								
Side Rotary (requires an operating lever, see PG.05C.04.T.E) 	Standard Spring Return — E50DR1 ③	E50AR1 CE	E50ALR1	E50ANR1	E50BR1	E50BLR1	E50BNR1	—	E50CNR1	
	Low Force Spring Return — E50DL1 ③	E50AL1 CE	E50ALL1	E50ANL1	E50BL1	E50BLL1	E50BNL1	E50CLL1	E50CNL1	
	Maintained Two-Position — E50DM1	E50AM1 CE	E50ALM1	E50ANM1	E50BM1	E50BLM1	E50BNM1	E50CLM1	E50CNM1	
Side Pushbutton, Spring Return — E50DS1		E50AS1 CE	E50ALS1	E50ANS1	E50BS1	E50BLS1	E50BNS1	E50CLS1	E50CNS1	
Side Pushbutton, Adjustable Spring Return — E50DS2		E50AS2 CE	E50ALS2	E50ANS2	E50BS2	E50BLS2	E50BNS2	E50CLS2	E50CNS2	
Side Push Roller, Spring Return — E50DS3 ④		E50AS3 CE	E50ALS3	E50ANS3	E50BS3	E50BLS3	E50BNS3	E50CLS3	E50CNS3	
Side Pushbutton, Maintained — E50DH1		E50AH1 CE	E50ALH1	E50ANH1	E50BH1	E50BLH1	E50BNH1	E50CLH1	E50CNH1	
Wiring:	Single Pole 1N.O.-1N.C. Must be same polarity			Double Pole 2N.O.-2N.C. Parallel wired Indicator light Same polarity each pole			Double Pole 1N.O.-2N.C. Series wired Indicator light Same polarity each pole			
										

① Connection options (add the Code Suffix from the table below to the end of the Catalog Number):

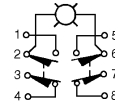
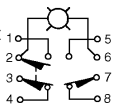
Option	Code Suffix	
Mini-Connector (with epoxy filled receptacle)	Single Pole (5-Pin Mini-Connector)	P5
	Double Pole (9-pin Mini-Connector)	P9
Cable Connection (with epoxy filled receptacle)	8-foot cable length	S
	12-foot cable length	S12
	20-foot cable length	S20
Manifold Mount (rear wiring entrance)	M	
20 mm Conduit Entrance	20	

② For Operating Head specifications, see Page 5.

③ CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.

④ Roller can be converted in the field between horizontal and vertical.

Model Selection — Assembled Switches — Standard (Continued)

Assembled Switch	Single Pole (5 Terminal Receptacle)				Double Pole (9 Terminal Receptacle)				
									
	Indicating Light:	None	LED (24 – 120V AC/DC)	Neon (120V AC)	None	LED (24 – 120V AC/DC)	Neon (120V AC)	LED (24 – 120V AC/DC)	Neon (120V AC)
	Switch Body:	E50SA 1N.O.-1N.C.	E50SAL 1N.O.-1N.C.	E50SAN 1N.O.-1N.C.	E50SB 2N.O.-2N.C.	E50SBL 2N.O.-2N.C.	E50SBN 2N.O.-2N.C.	E50SCL 1N.O.-2N.C.	E50SCN 1N.O.-2N.C.
	Receptacle: ①	E50RA	E50RA	E50RA	E50RB	E50RB	E50RB	E50RB	E50RB
Operating Head Type ②		Catalog Number for Assembled Switches							
Top Pushbutton, Spring Return — E50DT1		E50AT1	E50ALT1	E50ANT1	E50BT1	E50BLT1	E50BNT1	E50CLT1	E50CNT1
Top Pushbutton, Adjustable Spring Return — E50DT2		E50AT2	E50ALT2	E50ANT2	E50BT2	E50BLT2	E50BNT2	E50CLT2	E50CNT2
Top Push Roller, Spring Return — E50DT3		E50AT3	E50ALT3	E50ANT3	E50BT3	E50BLT3	E50BNT3	E50CLT3	E50CNT3
Wobble Head, Spring Return (requires a wobble operator, see PG.05C.04.T.E)	Standard Duty — E50DW1	E50AW1	E50ALW1	E50ANW1	E50BW1	E50BLW1	E50BNW1	E50CLW1	E50CNW1
	Heavy-Duty High Strength Steel — E50DW2	E50AW2	E50ALW2	E50ANW2	E50BW2	E50BLW2	E50BNW2	E50CLW2	E50CNW2
Wiring:		Single Pole 1N.O.-1N.C. Must be same polarity 			Double Pole 2N.O.-2N.C. Parallel wired Indicator light Same polarity each pole 			Double Pole 1N.O.-2N.C. Series wired Indicator light Same polarity each pole 	

① Connection options (add the Code Suffix from the table below to the end of the Catalog Number):

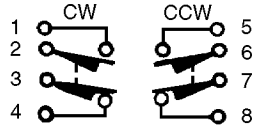
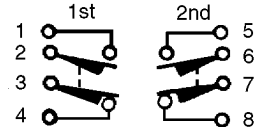
Option	Code Suffix
Mini-Connector (with epoxy filled receptacle)	Single Pole (5-Pin Mini-Connector)
	Double Pole (9-pin Mini-Connector)
Cable Connection (with epoxy filled receptacle)	8-foot cable length
	12-foot cable length
	20-foot cable length
Manifold Mount (rear wiring entrance)	
20 mm Conduit Entrance	

② For Operating Head specifications, see **Page 5**.

③ CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.

④ Roller can be converted in the field between horizontal and vertical.

Model Selection — Assembled Switches — Special Purpose

	Operating Data — Nominal	Catalog Number				Circuit Diagram
		Assembled Switch	Switch Body Only	Receptacle Only	Operating Head Only	
Neutral Position (requires an operating lever, see PG.05C.04.T.E) 	5° Travel	E50NN1	E50SN	E50RB	E50DN1	Same Polarity Each Pole 
	15° Travel	E50NN2	E50SN	E50RB	E50DN2	
	Travel to Operate Contacts: Travel to Reset Contacts: Total Travel: Force to Operate Contacts: Minimum Return Force: Operating Temperature:	5° or 15° (depending upon model selected) 2° 90° 1.8 in-lbs 2.5 in-oz 14° to 200°F (-10° to 94°C)				
Two Step CW, CCW or both, Convertible (requires an operating lever, see PG.05C.04.T.E) 		E50TD1	E50ST	E50RB	E50DD1	Same Polarity Each Pole 
	Travel to Operate Contacts: Travel to Reset Contacts: Total Travel: Force to Operate Contacts: Minimum Return Force: Operating Temperature:	1st Step 10°; 2nd Step 10° 4° Each 90° 3 in-lbs 4.5 in-oz CW or CCW: 14° to 250°F (-10° to 121°C) CW and CCW: 14° to 200°F (-10° to 94°C)				
Gravity Return (requires E50KL220, E50KL226 or equivalent operating lever, see PG.05C.04.T.E) 	without Indicating Light	E50GG1	E50SG	E50RA	E50DG1	Must Be Same Polarity 
	with LED Indicating Light (24-120V AC/DC)	E50GLG1	E50SGL			
	with Neon Indicating Light (120V AC)	E50GNG1	E50SGN			
	Travel to Operate Contacts: Travel to Reset Contacts: Total Travel: Force to Operate Contacts: Minimum Return Force: Operating Temperature:	10° to 170° 8° 90° 1.8 in-lbs 2.5 in-oz 14° to 200°F (-10° to 94°C)				

Model Selection — Operating Heads

Description		Travel to Operate Contacts	Travel to Reset Contacts	Total Travel	Force to Operate Contacts	Minimum Return Force	Operating Temperature ^①		Catalog Number
							Without Cable	With Pre-Wired Cable	
Side Rotary (requires an operating lever, see PG.05C.04.T.E) 	Standard Spring Return ^②	5°	2°	90°	3 in-lbs	4.5 in-oz	10° to 200°F (-12° to 94°C) ^③	10° to 200°F (-12° to 94°C) ^③	E50DR1
	Low ^② Temperature Spring Return	5°	2°	90°	3 in-lbs	4.5 in-oz	-40° to 175°F (-40° to 79°C)	-31° to 175°F (-34° to 79°C)	E50DR19
	Low Force Spring Return ^②	15°	6°	90°	1.5 in-lbs	2.5 in-oz	10° to 200°F (-12° to 94°C) ^③	10° to 200°F (-12° to 94°C) ^③	E50DL1
	Maintained Two-Position	50°	50°	90°	3 in-lbs	—	14° to 200°F (-10° to 94°C)	14° to 200°F (-10° to 94°C)	E50DM1
Side Pushbutton, Spring Return 		0.065 inch	0.030 inch	0.250 inch	4 lbs	8 oz	14° to 200°F (-10° to 94°C)	14° to 200°F (-10° to 94°C)	E50DS1
Side Pushbutton, Adjustable Spring Return 		0.065 inch	0.030 inch	0.250 inch	4 lbs	8 oz	14° to 200°F (-10° to 94°C)	14° to 200°F (-10° to 94°C)	E50DS2
Side Push Roller, Spring Return ^④ 		0.065 inch	0.030 inch	0.250 inch	4 lbs	8 oz	14° to 200°F (-10° to 94°C)	14° to 200°F (-10° to 94°C)	E50DS3 ^⑤
									E50DS4 ^⑤
Side Pushbutton, Maintained 		0.200 inch	0.130 inch	0.320 inch	5 lbs	5 lbs	14° to 200°F (-10° to 94°C)	14° to 200°F (-10° to 94°C)	E50DH1
Top Pushbutton, Spring Return 		0.040 inch	0.020 inch	0.280 inch	4 lbs	8 oz	14° to 250°F (-10° to 121°C)	14° to 221°F (-10° to 105°C)	E50DT1
Top Pushbutton, Adjustable Spring Return 		0.040 inch	0.020 inch	0.280 inch	4 lbs	8 oz	14° to 250°F (-10° to 121°C)	14° to 221°F (-10° to 105°C)	E50DT2
Top Push Roller, Spring Return 		0.040 inch	0.020 inch	0.280 inch	4 lbs	8 oz	14° to 250°F (-10° to 121°C)	14° to 221°F (-10° to 105°C)	E50DT3
Wobble Head, Spring Return (requires a wobble operator, see PG.05C.04.T.E) 	Standard Duty	10°	6°	15°	2 in-lbs	2.4 in-oz	14° to 250°F (-10° to 121°C)	14° to 221°F (-10° to 105°C)	E50DW1
	Heavy-Duty High Strength Steel	10°	6°	15°	2 in-lbs	2.4 in-oz	14° to 250°F (-10° to 121°C)	14° to 221°F (-10° to 105°C)	E50DW2

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

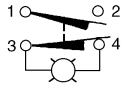
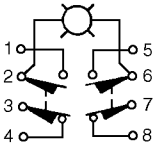
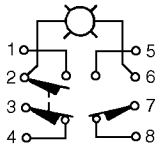
^② CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.

^③ For CW and CCW operation. For CW only or CCW only operation, high temperature limit increases to 250°F (121°C) without cable, and 221°F (105°C) with prewired cable.

^④ Roller can be converted in the field between horizontal and vertical.

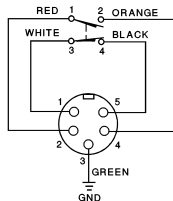
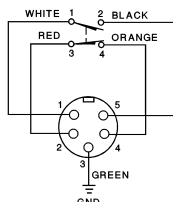
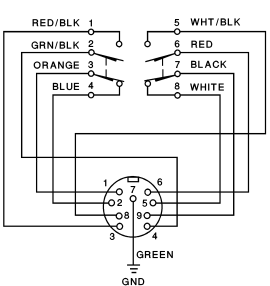
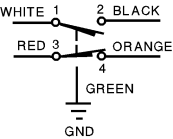
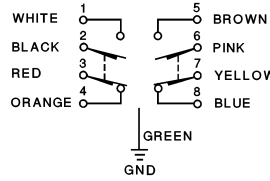
^⑤ Roller shaft is 0.38 inches (9.5 mm) longer on E50DS4, see dimensions on Page 11.

Model Selection — Switch Bodies

	Circuit	Switch Body Construction	Catalog Number
Switch Bodies 	Single Pole 1N.O.-1N.C. Must Be Same Polarity ① 	Without Indicating Light	E50SA CE
		With LED Indicating Light 24 – 120V AC/DC	E50SAL
		With Neon Indicating Light 120V AC	E50SAN
	Double Pole 2N.O.-2N.C. Parallel Wired Ind. Light Same Polarity Each Pole 	Without Indicating Light	E50SB
		With LED Indicating Light 24 – 120V AC/DC	E50SBL
		With Neon Indicating Light 120V AC	E50SBN
	Double Pole 2N.C.-1N.O. Series Wired Ind. Light Same Polarity Each Pole ① 	With LED Indicating Light 24 – 120V AC/DC	E50SCL
		With Neon Indicating Light 120V AC	E50SCN

① Indicating lights are supplied from the factory wired as shown. However, they can easily be re-connected to terminals 1 and 2 if necessary (SPDT).

Model Selection — Receptacles

	Description	Poles	Conduit Entrance	Cable Length	Catalog Number	Wiring
Surface Mount 	Conduit entrance, front or rear mounting	Single Pole (5 Terminal)	1/2 NPT	—	E50RA	①
			20 mm	—	E50RA20	
		Double Pole (9 Terminal)	1/2 NPT	—	E50RB	①
			3/4 NPT	—	E50RB34	
			20 mm	—	E50RB20	
Manifold Mount 	Rear wiring entrance instead of conduit hole, gasket on back for oil tightness	Single Pole (5 Terminal)	—	—	E50RAM	①
		Double Pole (9 Terminal)	—	—	E50RBM	①
Mini-Connector 	Epoxy filled receptacle with prewired Mini-Connector. (The -W version is a wiring scheme typically used in automotive applications.)	Single Pole (5 Terminal)	5-pin Mini-Connector	—	E50RAP5	② 
					E50RAP5-W	② 
		Double Pole (9 Terminal)	9-pin Mini-Connector	—	E50RBP9	② 
Prewired Cable 	Epoxy filled receptacle with prewired 16 gauge, yellow jacketed, type SOOW-A cable. Cable enters through hole threaded for conduit	Single Pole (5 Terminal)	1/2 NPT	8-foot	E50RAS	② 
				12-foot	E50RAS12	
				20-foot	E50RAS20	
			20 mm	8-foot	E50RA20S	
				12-foot	E50RA20S12	
				20-foot	E50RA20S20	
		Double Pole (9 Terminal)	1/2 NPT	8-foot	E50RBS	② 
				12-foot	E50RBS12	
				20-foot	E50RBS20	
			20 mm	8-foot	E50RB20S	
				12-foot	E50RB20S12	
				20-foot	E50RB20S20	

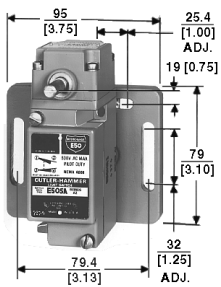
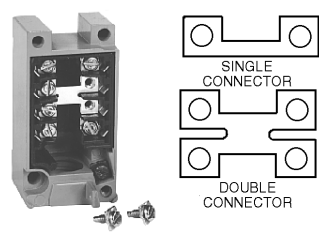
① See Model Selection — Switch Bodies for wiring information.

② The wire colors referenced on these diagrams are those internal to the switch itself.

Model Selection — Accessories

Dimensions	Description	Catalog Number
	Allows E50 to replace Cutler-Hammer 10316 Type LP Surface Mounting Plug-In Limit Switch	E50KH1
	Allows E50 to replace Cutler-Hammer 10316 Type LP Manifold Mounting Plug-In Limit Switch	E50KH1M
	Allows E50 to replace Square D Type AW Surface Mounting Non Plug-In Standard Box Limit Switch	E50KH7
	Allows E50 to replace National Acme, Type D-1200M, Style 2 Mounting. Denison LoxSwitch, Model L-100W, Style 2 Mounting. Square D 9007 Type T, Style B Mounting. (Adapter plate is 1/8 inch thick, with 1/4 inch mounting holes.)	E50KH4 ①
	Allows E50 to replace National Acme, Type D-1200M, Style 1 Mounting. Denison LoxSwitch, Model L-100W, Style 1 Mounting. Square D 9007 Type T, Style C Mounting. (Adapter plate is 1/8 inch thick, with 1/4 inch mounting holes.)	E50KH5 ①
	Allows E50 to replace Cutler-Hammer 10316 Type LT Non Plug-In 2-Pole Limit Switch	E50KH2
	Allows E50 to replace Allen-Bradley 802M Sealed Limit Switch	E50KH10

Model Selection — Accessories (Continued)

Dimensions	Description	Catalog Number
Adjustable Mounting Plate 	This is a mounting plate only 5/16 inch thick and includes the proper mounting bolts and nuts. The slots in the plate allow a maximum horizontal adjustment of 1 inch and vertical adjustment of 1-1/4 inches	E50KH3 ①
Jumpers for Two-Pole Receptacles 	Jumpers for series, parallel or series-parallel connection of 2-pole limit switches. Kit consists of one double and four single connectors. Photo shows installation of double connector, two screws removed for clarity	E50KH8
Conduit Sealing Nut 	1/2 inch oiltight	E50KH6

① Limit Switch not included.

Specifications

Environmental Ratings	NEMA 1, 3, 3S, 4, 4X, 6, 6P, 13, IP67
Enclosure Construction	Zinc die cast
Switch Gasket Material	Viton [®]
Universal U.S./DIN Mounting Dimensions	1.16 in (30 mm) x 2.34 in (60 mm)
Conduit Entrance	1/2 in NPT or 20 mm threading
Contact Ratings	See below
Contact Operation	Snap action over center mechanism
Contact Material	Fine silver
Maximum Frequency of Operation	8000 operations per hour
Mechanical Life: Side Rotary Side or Top Push	13,000,000 operations minimum 10,000,000 operations minimum
Electrical Life: Single Pole Double Pole	1,000,000 operations typical at full load 100,000 operations typical at full load
Ambient Temperature Range — Standard Standard without Cable Standard with Cable Low Temperature without Cable Low Temperature with Cable	14° to 250°F (-10° to 121°C) 14° to 221°F (-10° to 105°C) -40° to 250°F (-40° to 121°C) -40° to 221°F (-40° to 105°C)
Repeat Accuracy — Standard Side Operated Top Operated Side Rotary	Within 0.0012 in Within 0.0003 in Within 0.0014 in
Torque Requirements: Switch Body Screws Operating Head Screws	25 – 30 lb-in 14 – 18 lb-in
Wire Size	Will accept AWG #22 – #12, single or stranded wire

Electrical Data — Maximum Contact Ratings (Same polarity each pole)

AC Volts	Current, Amperes			Voltamperes		DC Volts	Current, Amperes	
	Make	Break	Cont. ①	Make	Break		Max. Make or Break	Cont. ①

All Switches Except Gravity Return and Indicating Light Versions

NEMA A600 Rating						NEMA R300		
120	60	6	10	7200	720	125	0.22	1.0
240	30	3				250	0.11	1.0
480	15	1.5						
600	12	1.2						

Switches with Indicating Lights (LED or Neon)

NEMA A150 Rating						NEMA R150		
120	60	6	10	7200	720	125	0.22	1.0

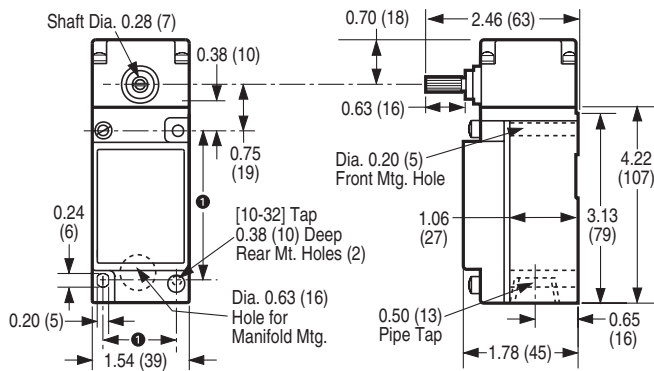
Gravity Return Switches — Maximum Contact Ratings

NEMA 6600 Rating — Contacts on Same Polarity						—		
120	30	3	5	3600	360	—	—	—
240	15	1.5						
480	7.5	0.75						
600	6	0.60						

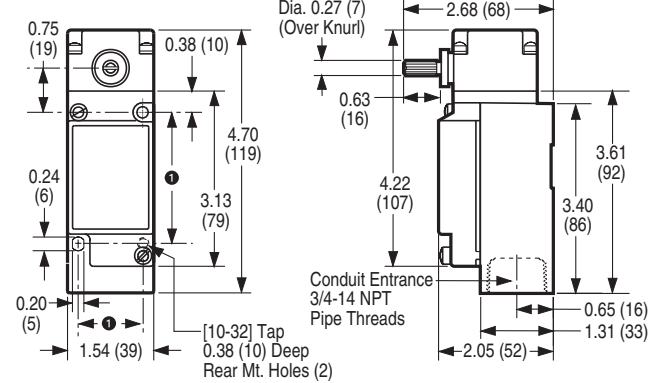
① Thermal rating. Valid only if switch does not have to make or break.

Approximate Dimensions in Inches (mm)

Standard



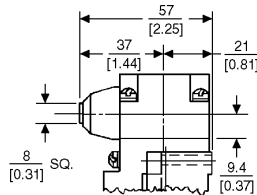
E50SB34



● Can accommodate both U.S., 1.16 (29.4) x 2.34 (59.5) and DIN, 1.18 (30) x 3.26 (83), mounting dimensions.

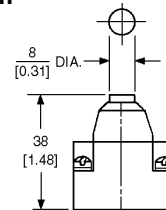
Side Push Operators in mm [Inches]

Pushbutton



Top Push Operators in mm [Inches]

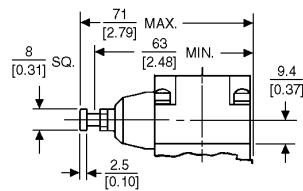
Pushbutton



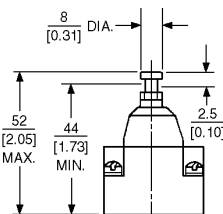
Wobble Operators

See Operators in PG.05C.04.T.E

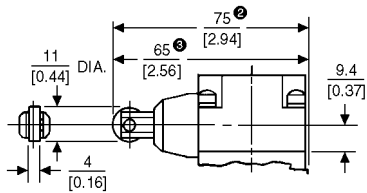
Adjustable Pushbutton



Adjustable Pushbutton

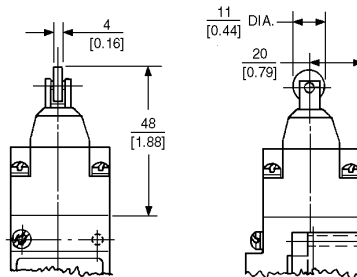


Roller



- For E50DS4.
- For E50DS3.

Roller



Maintained Pushbutton

