

Heavy-Duty Factory Sealed 6P+ Switches

Contents

Overview 1
 Model Selection, Assembled Switches 2
 Model Selection, Operating Heads..... 4
 Model Selection, Switch Bodies 5
 Model Selection, Accessories 7
 Specifications 8
 Dimensions 9

Cutler-Hammer® E50 6P+ Limit Switches by Eaton's electrical business were specifically designed to withstand the penetrating properties of cutting fluids and coolants, such as those used in the automotive industry, as well as extreme shock, vibration and temperature fluctuations. The one-piece, epoxy filled switch body is prewired at the factory to ensure leak-proof, submersible performance. This unique construction positively stops fluid from finding its way to any and all critical connections.

Our 6P+ switches can be ordered in separate components or as complete assembled devices. They are available with prewired 16 AWG cables or mini-connectors. Standard and custom cable lengths are available. As part of the E50 line, the 6P+ switches use the same operating heads as the standard E50 plug-in models to reduce the components you need to inventory.

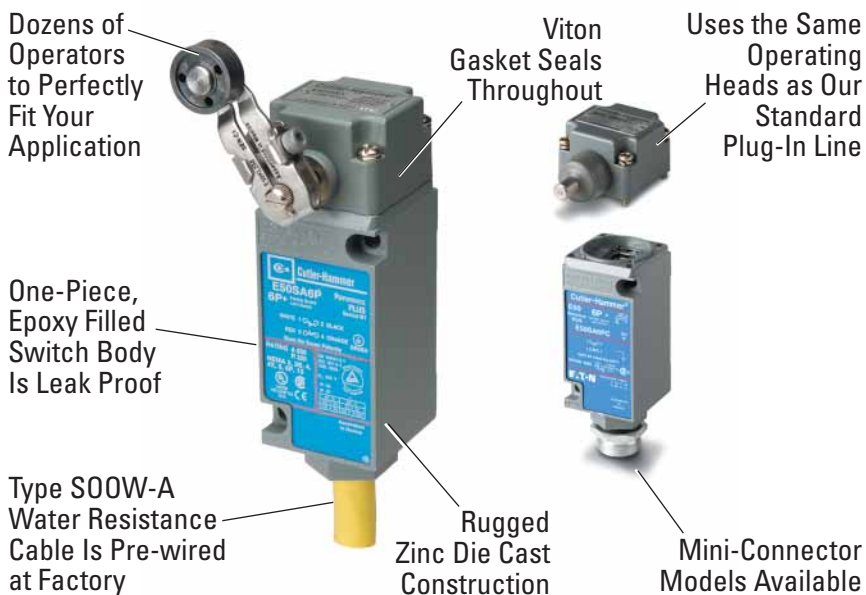
Approvals

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

CE (where shown)

Unless otherwise noted, the products contained in this document are not designed or intended for use in human safety applications.

The Best Sealed, Most Durable Limit Switch You Can Buy







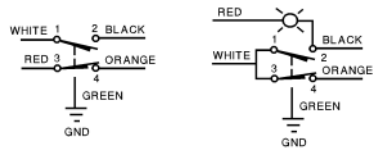



Product Features

- Manufactured to take the physical and environmental abuse (including cutting fluids and chemicals) of harsh industrial environments
- Modular, plug-in components (head and switch body) provide application flexibility, reduced inventory and less downtime
- Chemical resistant Viton gaskets, seals and boots are standard, and so are captive, posi-drive screws
- A special tertiary seal on the switch body prevents fluid from entering even when the operating head is not attached
- 600V rating, ridge-topped contacts and wiping action assure continuity even to logic level circuits
- Factory wired cable features a 350 pound pullout capacity
- 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
- Extended 5 year warranty

For Customer Service in the U.S. call **1-877-ETN CARE (386-2273)**,
 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 (Connection is by 8-Foot Cable) ①

Assembled Switch 	Single Pole			Double Pole			
	Indicating Light:	None	LED (24 – 120V AC/DC)	Neon (120V AC)	None	LED (24 – 120V AC/DC)	Neon (120V AC)
Lever Sold Separately	Switch Body:	E50SA6P 1N.O.-1N.C.	E50SAL6P 1N.O.-1N.C.	E50SAN6P 1N.O.-1N.C.	E50SB6P 2N.O.-2N.C.	E50SBL6P 2N.O.-2N.C.	E50SBN6P 2N.O.-2N.C.
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	E50AR16P CE	E50ALR16P	E50ANR16P	E50BR16P	E50BLR16P	E50BNR16P
	Low Force Spring Return — E50DL1 ③	E50AL16P CE	E50ALL16P	E50ANL16P	E50BL16P	E50BLL16P	E50BNL16P
	Maintained Two-Position — E50DM1	E50AM16P CE	E50ALM16P	E50ANM16P	E50BM16P	E50BLM16P	E50BNM16P
Side Pushbutton, Spring Return — E50DS1 		E50AS16P CE	E50ALS16P	E50ANS16P	E50BS16P	E50BLS16P	E50BNS16P
Side Pushbutton, Adjustable Spring Return — E50DS2 		E50AS26P CE	E50ALS26P	E50ANS26P	E50BS26P	E50BLS26P	E50BNS26P
Side Push Roller, Spring Return — E50DS3 ④ 		E50AS36P CE	E50ALS36P	E50ANS36P	E50BS36P	E50BLS36P	E50BNS36P
Side Pushbutton, Maintained — E50DH1 		E50AH16P CE	E50ALH16P	E50ANH16P	E50BH16P	E50BLH16P	E50BNH16P
Wiring:		Single Pole 1N.O.-1N.C. (Must be same polarity) 			Double Pole 2N.O.-2N.C. (Same polarity each pole) 		

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

Option	Catalog Number	Code Suffix
Mini-Connector ⑥	Single Pole (5-Pin Mini-Connector)	CSMS5D5CY1602
	Double Pole (9-pin Mini-Connector)	CSMS9D9CY1602
Cable Connection	12-foot cable length (standard)	12
	20-foot cable length (standard)	20
	Other lengths (special order)	Length in Feet


② For Operating Head specifications, see Page 4.

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.






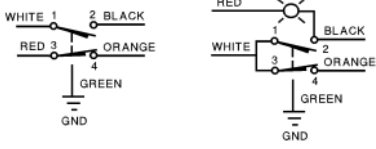

⑤ For alternate wiring, use Code Suffix CW, see Page 6.

⑥ For a full selection of connector cables, see PG.05.05.T.E.

 Stocked product, typical order quantities guaranteed in stock.

August 2007

Model Selection — Assembled Switches — Standard (Connection is by 8-Foot Cable) (Continued)^①

 Assembled Switch Lever Sold Separately		Single Pole			Double Pole		
	Indicating Light:	None	LED (24 – 120V AC/DC)	Neon (120V AC)	None	LED (24 – 120V AC/DC)	Neon (120V AC)
	Switch Body:	E50SA6P 1N.O.-1N.C.	E50SAL6P 1N.O.-1N.C.	E50SAN6P 1N.O.-1N.C.	E50SB6P 2N.O.-2N.C.	E50SBL6P 2N.O.-2N.C.	E50SBN6P 2N.O.-2N.C.
Operating Head Type ^②		Catalog Number for Assembled Switches					
Top Pushbutton, Spring Return — E50DT1 		E50AT16P CE	E50ALT16P	E50ANT16P	E50BT16P	E50BLT16P	E50BNT16P
Top Pushbutton, Adjustable Spring Return — E50DT2 		E50AT26P CE	E50ALT26P	E50ANT26P	E50BT26P	E50BLT26P	E50BNT26P
Top Push Roller, Spring Return — E50DT3 		E50AT36P CE	E50ALT36P	E50ANT36P	E50BT36P	E50BLT36P	E50BNT36P
Wobble Head, Spring Return (requires a wobble operator, see PG.05C.04.T.E) 	Standard Duty — E50DW1	E50AW16P CE	E50ALW16P	E50ANW16P	E50BW16P	E50BLW16P	E50BNW16P
	Heavy-Duty High Strength Steel — E50DW2	E50AW26P CE	E50ALW26P	E50ANW26P	E50BW26P	E50BLW26P	E50BNW26P
Wiring:		Single Pole 1N.O.-1N.C. (Must be same polarity)			Double Pole 2N.O.-2N.C. (Same polarity each pole)		
							

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

Option	Catalog Number	Code Suffix
Mini-Connector ^④	Single Pole (5-Pin Mini-Connector)	CSMS5D5CY1602
	Double Pole (9-pin Mini-Connector)	CSMS9D9CY1602
Cable Connection	12-foot cable length (standard)	12
	20-foot cable length (standard)	20
	Other lengths (special order)	Length in Feet

^② For Operating Head specifications, see Page 4.


^③ For alternate wiring, use Code Suffix C-W, see Page 6.

^④ For a full selection of connector cables, see PG.05.05.T.E.

^⑤ For alternate wiring, use Code Suffix CW, see Page 6.

Stocked product, typical order quantities guaranteed in stock.

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 pre-wired cable.


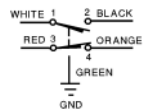
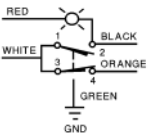
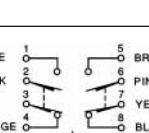
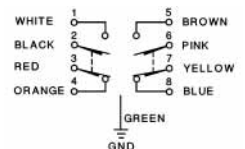
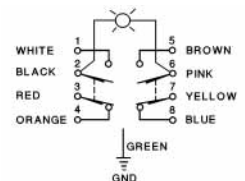
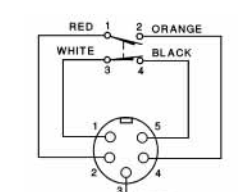

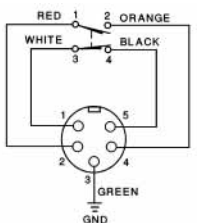
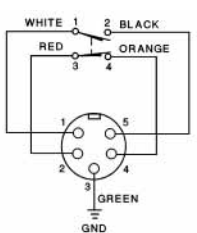
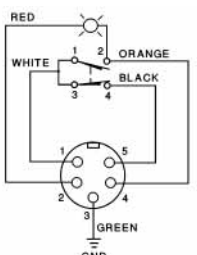

④ Roller can be converted in the field between horizontal and vertical.

⑤ Roller shaft is 0.38 inches (9.5 mm) longer on E50DS4, see dimensions on **Page 9**.

 Stocked product, typical order quantities guaranteed in stock.

August 2007

Model Selection — Switch Bodies

	Circuit	Switch Body Construction	Cable Length	Catalog Number	Wiring	
	Single Pole 1N.O.-1N.C.	Without Indicating Light	8-foot	E50SA6P		
			12-foot	E50SA6P12		
			20-foot	E50SA6P20		
		With LED Indicating Light 24–120V AC/DC	8-foot	E50SAL6P		
			12-foot	E50SAL6P12		
			20-foot	E50SAL6P20		
	With Neon Indicating Light 120V AC	8-foot	E50SAN6P			
		12-foot	E50SAN6P12			
		20-foot	E50SAN6P20			
	Double Pole 2N.O.-2N.C.	Without Indicating Light	Without Indicating Light	8-foot	E50SB6P	
				12-foot	E50SB6P12	
				20-foot	E50SB6P20	
With LED Indicating Light 24–120V AC/DC		Without Indicating Light	8-foot	E50SBL6P		
			12-foot	E50SBL6P12		
			20-foot	E50SBL6P20		
With Neon Indicating Light 120V AC	Without Indicating Light	8-foot	E50SBN6P			
		12-foot	E50SBN6P12			
		20-foot	E50SBN6P20			
	Single Pole 1N.O.-1N.C.	Without Indicating Light Normal Wiring	—	E50SA6PC Ⓢ	① 	
		Without Indicating Light Alternate Wiring	—	E50SA6PC-W Ⓢ	① 	
		With LED Indicating Light 24–120V AC/DC	—	E50SAL6PC Ⓢ	① 	
		With Neon Indicating Light 120V AC	—	E50SAN6PC Ⓢ	① 	


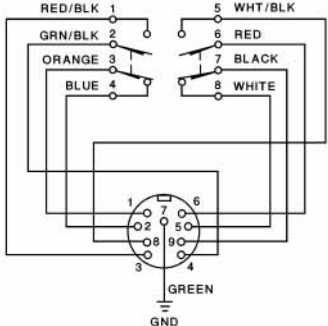
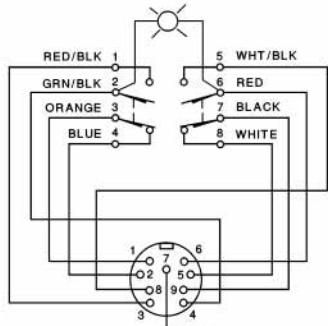
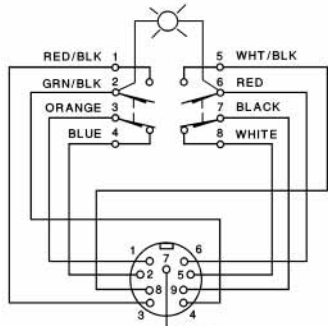
① The wire colors referenced on these diagrams are those internal to the switch itself.

Ⓢ See listing of compatible connector cables on **Page 6**.

Fast turn product with typical one business day lead-time to shipment.

Stocked product, typical order quantities guaranteed in stock.




Model Selection — Switch Bodies (Continued)

	Circuit	Switch Body Construction	Cable Length	Catalog Number	Wiring
Mini-Connector 	Double Pole 2N.O.-2N.C.	Without Indicating Light	—	E50SB6PC	① 
		With LED Indicating Light 24 – 120V AC/DC	—	E50SBL6PC	① 
		With Neon Indicating Light 120V AC	—	E50SBN6PC	

① The wire colors referenced on these diagrams are those internal to the switch itself.

See listing of compatible connector cables below.

Model Selection — Compatible Connector Cables ②

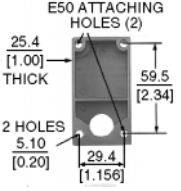
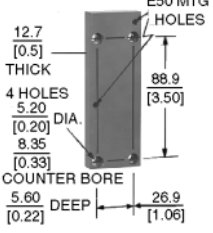
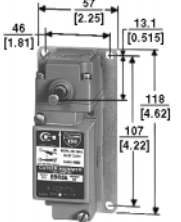
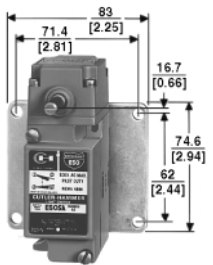
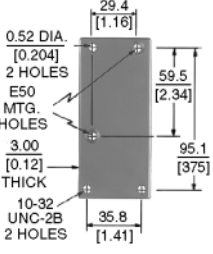
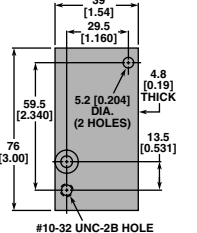
	Voltage Style	Number of Pins	Gauge	Length	Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables — Mini Style						
Mini Style Straight Female  Current Rating @ 600V 5-pin: 8A 9-pin: 7A	—	5-pin	16 AWG	6 feet (2m)	CSMS5D5CY1602	 1-White 2-Red 3-Green 4-Orange 5-Black
	—	9-pin	16 AWG	12 feet (4m)	CSMS9D9CY1602	 1-Orange 2-Blue 3-Red/Black 4-Green/Black 5-White 6-Red 7-Green 8-White/Black 9-Black

② For a full selection of connector cables, see **PG.05.05.T.E.**

Stocked product, typical order quantities guaranteed in stock.

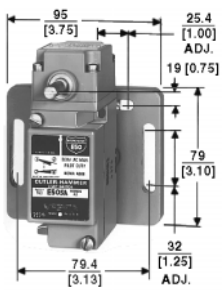

August 2007

Model Selection — Accessories


Approximate Dimensions in mm [Inches]	Description	Catalog Number
Adapter Plate 	Allows E50 to replace Eaton's Cutler-Hammer 10316 Type LP Surface Mounting Plug-In Limit Switch	E50KH1
	Allows E50 to replace Eaton's Cutler-Hammer 10316 Type LP Manifold Mounting Plug-In Limit Switch	E50KH1M
Adapter Plate 	Allows E50 to replace Square D Type AW Surface Mounting Non Plug-In Standard Box Limit Switch	E50KH7
Adapter Plate 	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
Adapter Plate 	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
Adapter Plate 	Allows E50 to replace Eaton's Cutler-Hammer 10316 Type LT Non Plug-In 2-Pole Limit Switch	E50KH2
Adapter Plate 	Allows E50 to replace Allen-Bradley 802M Sealed Limit Switch	E50KH10

① Limit Switch not included.

Model Selection — Accessories (Continued)

Approximate Dimensions in mm [Inches]	Description	Catalog Number
	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
	1/2 inch oiltight	E50KH6

^① Limit Switch not included.

 Stocked product, typical order quantities guaranteed in stock.

Specifications

Environmental Ratings	NEMA 1, 3, 3S, 4, 4X, 6, 6P, 13, IP67
Material of 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 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	13,000,000 operations minimum
Side or Top Push	10,000,000 operations minimum
Electrical Life:	
Single Pole	1,000,000 operations typical at full load
Double Pole	100,000 operations typical at full load
Ambient Temperature Range — Standard	
Standard without Cable	14° to 250°F (-10° to 121°C)
Standard with Cable	14° to 221°F (-10° to 105°C)
Low Temperature without Cable	-40° to 250°F (-40° to 121°C)
Low Temperature with Cable	-40° to 221°F (-40° to 105°C)
Repeat Accuracy — Standard	
Side Operated	Within 0.0012 in
Top Operated	Within 0.0003 in
Side Rotary	Within 0.0014 in
Torque Requirements:	
Operating Head Screws	14 – 18 lb-in

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

AC Volts	Current, Amperes			Voltamperes		DC Volts	Current, Amperes	
	Make	Break	Cont. ^②	Make	Break		Max. Make or Break	Cont. ^②

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)

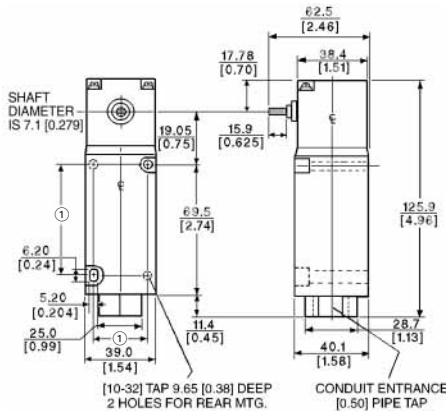
NEMA A150 Rating					NEMA R150			
120	60	6	10	7200	720	125	0.22	1.0

^② Thermal rating. Valid only if switch does not have to make or break.

August 2007

Approximate Dimensions in mm [Inches]

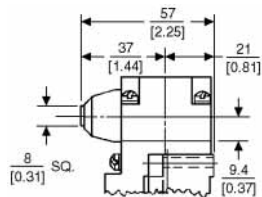
6P+ Limit Switch with Rotary Operating Head



① Can accommodate both U.S., 29.4 (1.16) x 59.5 (2.34) and DIN, 30 (1.18) x 60 (3.26), mounting dimensions.

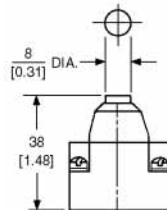
Side Push Operators

Pushbutton



Top Push Operators

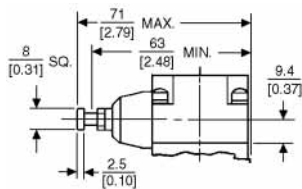
Pushbutton



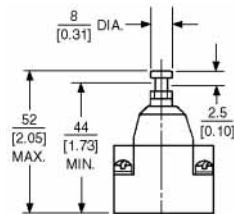
Wobble Operators

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

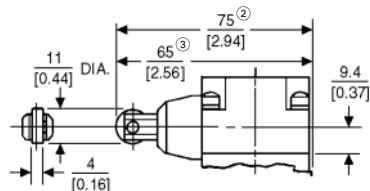
Adjustable Pushbutton



Adjustable Pushbutton

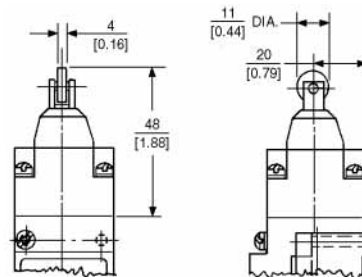


Roller



② For E50DS4.
③ For E50DS3.

Roller



Maintained Pushbutton

