METROL

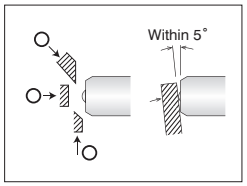
Precision Limit Switches

Ball Plunger Limit Switches

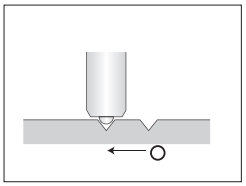
Features

- Indexing positioning ball plunger combined with touch switch for confirmation signal
- Dual function reduces number of components required
- 10 micron (µm) repeat accuracy
- Angled/Sliding Touch
- Higher contact force ideal for indexing

Angled/Sliding Touch



Indexing Touch



O indicates correct target approach and orientation.

Ball Plunger Limit Switches Selection Chart

Part Number	Price	Drawing Link	Actuator/Head Type*	Barrel Type	Barrel Diameter/ Thread*	Stroke	Switching Output	Contact Force	Connection Type
Indexing/Angled/Sliding Touch									
BP060A-F	$55.00	PDF	Ø 3mm ball plunger	Threaded	Ø M6 × 1.0	0.8mm	(1) N.O.	1N	Cable 2m [6.5ft]
BP060A-L	$65.00	PDF	Ø 3mm ball plunger			0.8mm	(1) N.O.	8–13N	
BP060A-LF	$65.00	PDF	Ø 3mm ball plunger			0.8mm	(1) N.O.	1N	
BP080A-L	$78.00	PDF	Ø 4mm ball plunger		Ø M8 × 1.25	1.0mm	(1) N.O.	10-16N	
BP080A-LF	$78.00	PDF	Ø 4mm ball plunger			1.0mm	(1) N.O.	1N	
BP100A-L	$81.00	PDF	Ø 5mm ball plunger		Ø M10 × 1.5	1.2mm	(1) N.O.	15–20N	
BP100A-LF	$81.00	PDF	Ø 5mm ball plunger			1.2mm	(1) N.O.	1N	
BP4SWA	$92.00	PDF	Ø 3mm ball plunger	Smooth	Ø 4mm	0.8mm	(1) N.O.	1N	Core wire 0.5m [1.64ft]
BP5MWA	$86.00	PDF	Ø 3mm ball plunger	Threaded	M5 × 0.5	1mm	(1) N.O.	1N	

*** Ø = diameter**

BP060A-F

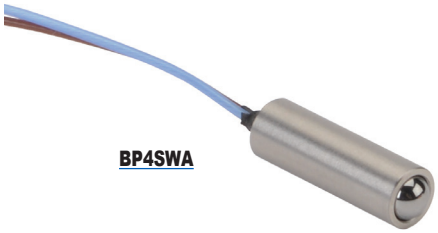
BP060A-L

BP080A-L

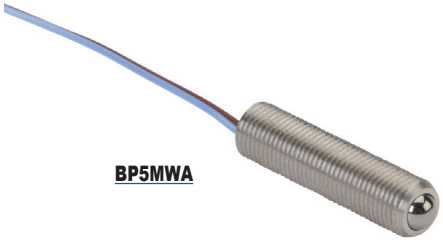
BP080A-LF

BP100A-L

BP100A-LF



BP4SWA



BP5MWA

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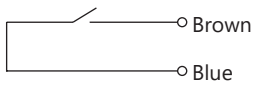
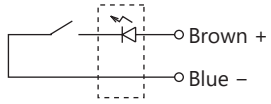
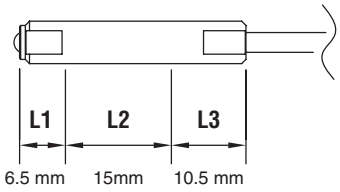
Ball Plunger Limit Switches Specifications					
Series	***BP060A***	***BP080A***	***BP100A***	***BP4SWA***	***BP5MWA***
Environmental					
Degree of Protection	IP40				
Temperature Range	Operating: 0 to 80 °C [32 to 176 °F] (Ice-free)				
Mechanical Ratings					
Enclosure Material	303 Stainless Steel				
Pretravel	0.3mm				
Torque (for nuts on threaded barrels, set screws on smooth barrels)	See Torque Limit Figure			NA	1 N•m
Vibration	10–55 Hz total amplitude 1.5 for X, Y, Z each direction				
Shock	300 m/s² for X, Y, Z each direction				
Repeat Accuracy	Both On–Off, Off–On: 0.01 mm (range)(axial direction)*				
Recommended Minimum Operating Speed	50mm/minute				
Electrical Ratings					
Contact Life	3 million operations			1 million operations	
Contact Voltage	5–24 VDC				
Steady Current Rating	10mA or less				
Max In-rush Current Rating	10mA (limit current to protect LED indicator)			20 mA	
Connection Type	Cable: 2m Oil resistant Ø2.8/2 cores, Tensile strength 30N, minimum bending R7.			Core wire cable: 0.5m (×2), Oil resistant, Ø0.66, Tensile strength 15N	
Indicating	-L and -LF models: LED indicator (mounted in cable 120mm from the switch)			N/A	

*** At operating speed 50-200 mm/minute. Operating speed slower than 10 mm/min is not recommended.**

Circuit Diagrams

Without LED	*With LED*
Normally open (N.O.)  	Normally open (N.O.)  LED Normally Off

Torque Limits



Tightening Torque for Case Screws and Nuts						
Applicable Models	***L1***		***L2***		***L3***	
	Length	***Tightening Torque***	***Length***	***Tightening Torque***	***Length***	***Tightening Torque***
BP060A	6.5mm	2.5 N•m [1.84 lb•ft]	15mm	5 N•m [3.68 lb•ft]	10.5mm	2.5 N•m [1.84 lb•ft]
BP080A	8mm	5 N•m [3.68 lb•ft]	21.5mm	10 N•m [7.37 lb•ft]	5.5mm	5 N•m [3.68 lb•ft]
BP100A	6.5mm	15 N•m [11.06 lb•ft]	22.5mm	25 N•m [18.44 lb•ft]	9mm	15 N•m [11.06 lb•ft]

Caution: Use the lower torque (i.e. torque corresponding to L1 and L3) while tightening the bolt between lengths L1 and L2 or L2 and L3 in the picture. Please make sure to use a locknut if the bolt is likely to shift in position due to the vibrational impacts.