



LSB Series Valve Position Monitor



All innovation
on driving your valve automation

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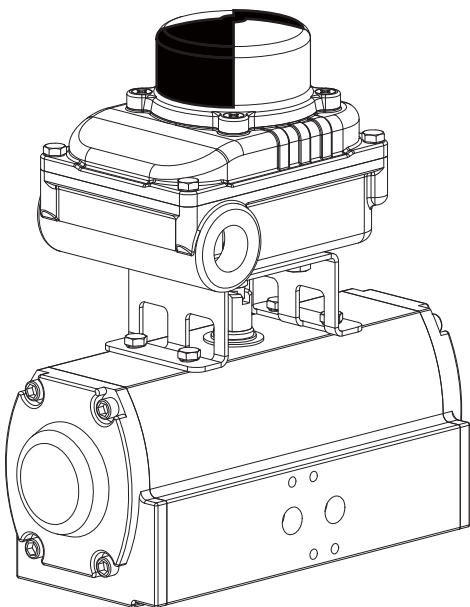




Robust valve position monitor with a good recognizable beacon, various switches and feedback options

Features

- ▶ Weatherproof to IP67 (optionally IP68)
- ▶ Rugged aluminum die-cast housing
- ▶ Various switches and sensors (available with Honeywell / P&F)
- ▶ NAMUR mounting shaft or fork lever shaft adjustable for a non-NAMUR pneumatic actuator



Options

- ▶ 2 x SPDT mechanical limit switch
- ▶ 4 x SPDT mechanical limit switch
- ▶ 2 x P&F proximity sensor

Specifications

Model	LSB-1000
Protection Class	IP67 (optionally IP68)
Switches / Sensors	See page 5
Operating Temperature	- 40 ~ +100°C (-40 ~ +212°F)
Electrical Connections	PT 3/4, NPT 3/4, PF 1/2, NPT 1/2, M20 x 1.5
Body Material / Painting	Aluminum die-cast / powdered-coating
Weight	0.8 kg



< With beacon indicator >



< With bottom indicator >



< With stainless steel 316 housing >



Explosion proof robust valve position monitor with a good recognizable beacon, bottom indicator, various switches and feedback options

Features

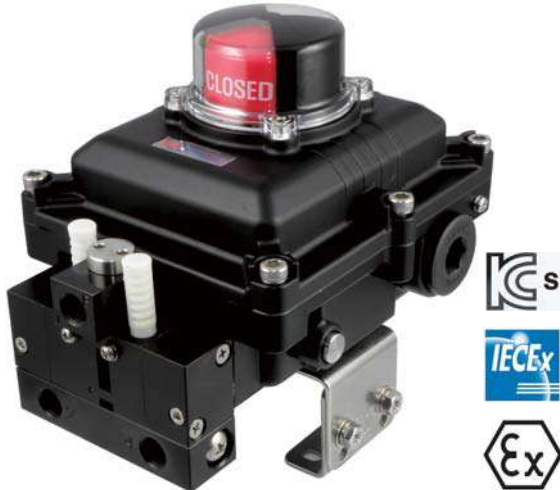
- ▶ Flameproof ATEX / IECEx / KC Ex d IIC
- ▶ Rugged aluminum die-cast housing or optionally stainless steel 316 housing
- ▶ Optionally dual beacons or bottom indicator
- ▶ Various switches and sensors (available with Honeywell / P&F / Westlock / Go switch)
- ▶ NAMUR mounting shaft or fork lever shaft adjustable for a non-NAMUR pneumatic actuator

Options

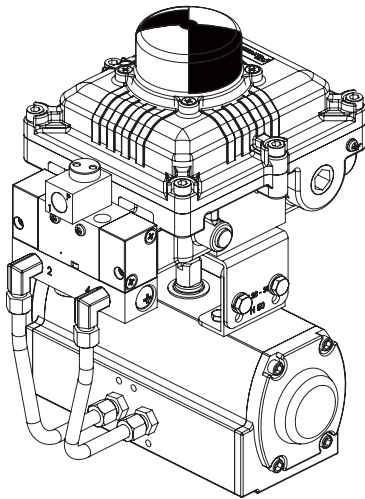
- ▶ 4 x SPDT mechanical limit switch
- ▶ 4 x P&F proximity sensor
- ▶ 4 x Hermetically-sealed magnetic sensor
- ▶ 2 x GO switch
- ▶ 4 - 20mA output position transmitter

Specifications

Model	LSB-30xx	LSB-31xx
Explosion proof / Protection Class	ATEX / IECEx / KC - Ex d IIC - IP67 (optionally IP68)	
	Ambient Temperature	T6 : - 40 ~ +75°C
		T5 : - 40 ~ +90°C
	T4 : - 40 ~ +125°C	
Switches / Sensors	See page 5	
Operating Temperature	- 40 ~ +100°C (-40 ~ +212°F)	
Electrical Connections	PT 3/4, NPT 3/4, PF 1/2, NPT 1/2, M20 x 1.5	NPT 3/4, NPT 1/2
Body Material / Painting	Aluminum die-cast / powdered-coating	Stainless steel 316 / 316L
Weight	1.6 kg	3.8 kg



With built-in solenoid valve



Explosion-proof robust valve position monitor with built-in solenoid and more feedback options and designed to provide an outstanding performance under harsh working environments

Features

- ▶ Flameproof ATEX / IECEx / KC Ex d IIB+H₂ T6 - IP67
- ▶ Rugged aluminum die-cast or stainless steel housing
- ▶ Compact single unit with built-in solenoid valve
- ▶ More economical in costs and simple wiring to a single unit comparison with separate installations of explosion proof limit switches and explosion proof solenoid valve
- ▶ Auto / Manual button easy to convert
- ▶ NAMUR mounting shaft or fork lever shaft adjustable for a non-NAMUR pneumatic actuator

Options

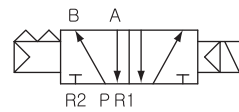
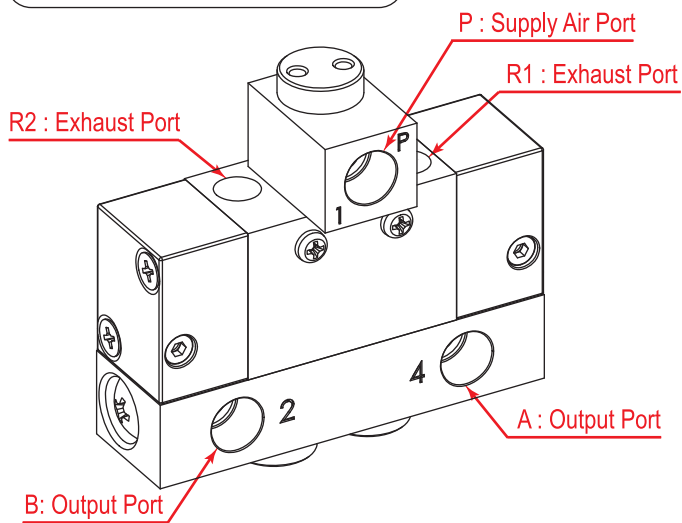
- ▶ 4 x SPDT mechanical limit switch
- ▶ 4 x P&F proximity sensor
- ▶ 2 x Hermetically-sealed magnetic sensor
- ▶ 4 - 20mA output position transmitter

Specifications

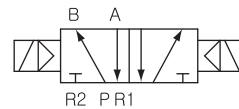
Model	LSB-7000	LSB-7100	LSB-7200
Explosion proof / Protection Class	IECEX / ATEX / KC Ex d IIB+H ₂ T6 - IP67		
Operating Air Pressure	1.5 ~ 10 bar		
Air Supply Pressure	Max. 10 bar		
Mechanical Switches/Proximity Sensors	See page 5		
Operating Voltage of Solenoid Valve	24 VDC / 48 VDC / 110 VAC / 220 VAC		
Manual Override of Solenoid Valve	Push button type		
Response Time of Solenoid Valve	25 ms		
Coil Insulation Class	Class F		
Operating Temperature	-30 ~ +75 °C		
Pneumatic Connections	PT(Rc) 1/4, NPT 1/4		NTP 1/4
Electrical Connections	PT 1, NPT 1 PT 3/4, NPT 3/4, PF 1/2, NPT 1/2		NPT 1, NPT 3/4, NPT 1/2
Body Material	Aluminum die-cast		Stainless steel 316
Solenoid Valve Body Material	Aluminum die-cast	Stainless steel 316	
Weight	2.5 kg	3.5 kg	5.8 kg



Solenoid Valve



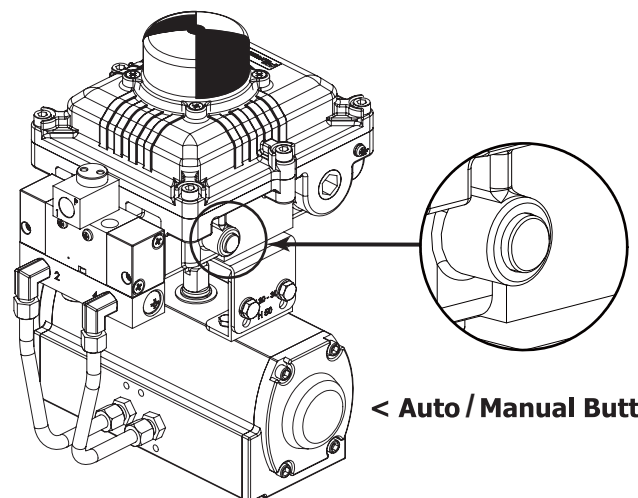
2 Position with Single Coil



2 Position with Dual Coils

< Symbols of Operation >

Supply Air		Filtered, compressed, dry and non-oiled air
Supply Air Pressure	2 position with single coil	1.5 ~ 9.9 bar
	2 position with dual coils	1.0 ~ 9.9 bar
Eff. Sectional Area (5 kgf/cm ²)		19.0 mm ²
Manual Override		Push button type
Response Time		25 ms or less
Max. Working Frequency		5 c/sec
Power Consumption		AC : 4.5 / 3.6VA (60Hz/50Hz) DC : 2.8W
Coil Insulation Class		Class F or equivalent
Permissible Voltage Variation		±10% of rated voltage
Lubrication		Not required



< Auto / Manual Button >

Specifications of Switches / Sensors

Mechanical Switches



< SPDT Mechanical Switch - GSM >

< SPDT Mechanical Switch - V7/V15 >

< DPDT Mechanical Switch - 22104 >

Maker	Standard
Switch type	SPDT (Form C)
Contacts	Silver-plated
Approvals	UL, CSA
Electrical Rating	
16 amps / 250 VAC	
16 amps / 8 VDC , 10amps / 30 VDC	
Operating Temp.	-30 ~ +130°C

Maker	Honeywell
Switch type	SPDT (Form C)
Contacts	Silver-plated or gold-plated
Approvals	UL, CSA
Electrical Rating	
Silver : 16 amps / 125 / 250 VAC	
Gold : 0.1 amps / 125 / 250 VAC	
Operating Temp.	-40 ~ +125°C

Maker	Licon
Switch type	DPDT (Form CC)
Contacts	Silver-plated
Approvals	UL, CSA
Electrical Rating	
10 amps / 125 / 250 VAC	
10 amps / 28 VDC	
Operating Temp.	-30 ~ +80°C

Proximity Sensors



Part Number / Maker	NJ2-V3-N / P&F
Switching element function	NAMUR NC
Nominal Ratings	
Nominal voltage	8.2 VDC
Switching frequency	0 ~ 1000 Hz
Hysteresis	0.01 ~ 0.1 mm
Current consumption	
Measuring plate not detected	> 3 mA
Measuring plate detected	< 1 mA
Operating Temperature	-25 ~ +100°C

Part Number / Maker	NJ2(4)-12GK-SN / P&F
Switching element function	NAMUR NC
Nominal Ratings	
Nominal voltage	8 VDC
Switching frequency	0 ~ 2000 Hz
Hysteresis	3%
Current consumption	
Measuring plate not detected	> 3 mA
Measuring plate detected	< 1 mA
Operating Temperature	-40(-50) ~ +100°C

Magnetic Proximity Sensors

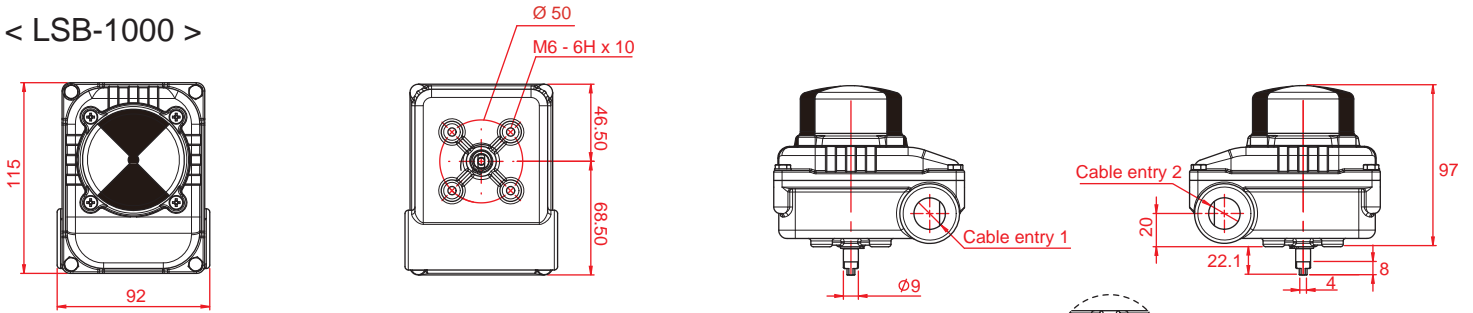


Part Number / Maker	XT-90 / Westlock
Switch type	SPDT (Form C)
Contacts	Tungsten
Approvals	UL, CSA
Electrical Ratings	
Rhodium : 1 amp/24VDC, 0.2amps/120VAC	
Tungsten : 2 amp/24VDC, 3amps/120VAC, 1.5amps/240VAC	
Operating Temperature	-40 ~ +80°C

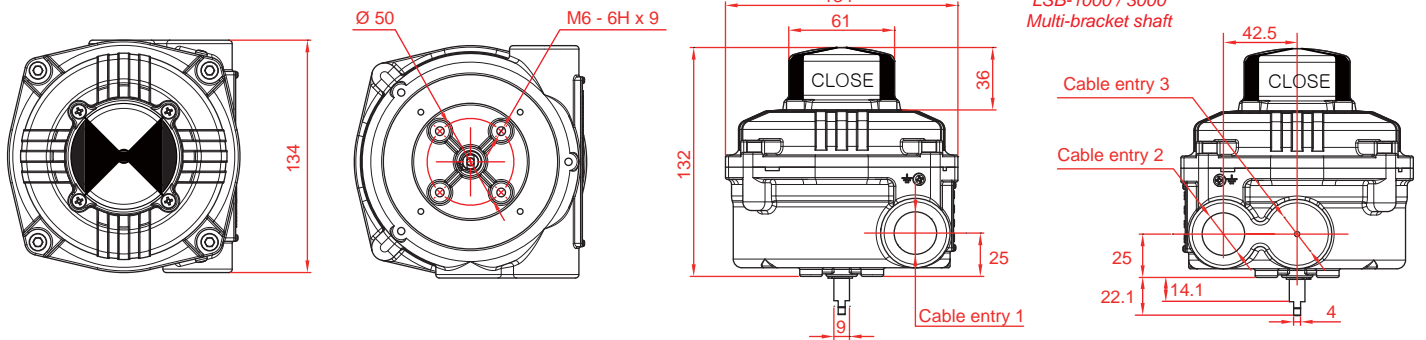
Part Number / Maker	GO Switch Model 35 / Topworx
Switch type	SPDT (Form C)
Contacts	Silver cadmium oxide, gold flashed
Approvals	UL, CSA
Electrical Ratings	
4 amps / 120 VAC, 2 amps / 240 VAC	
3 amps / 24 VDC	
Operating Temperature	-40 ~ +100°C

Switch Box Type	Body Material	Switches / Sensors	Position Transmitter	Explosion Proof	Beacon / Indicator	Electrical Connections	Number of Electrical Connections	Feedback Shaft	Mounting Bracket	Coil type	Power Supply	Pneumatic Connections
LSB-1 Weatherproof type	0 Aluminum die-cast	Mechanical switches 0 (2) SPDT 2 (4) SPDT P&F Sensors 4 (2) NJ2-V3-N 7 (2) NBB3-V3-Z4 9 (2) NBB2-V3-E2 Autonics sensors 8 (2) PSN17-5D Honeywell J (2) SPDT Hermetically-sealed sensors C (2) MS-20	0 None	7 Weatherproof IP67 8 Weatherproof IP68	N None A Beacon indicator 90° (Open / Close) D Other flow direction indicator (L or T port)	A PF 3/4 B NPT 3/4 C PF 1/2 D NPT 1/2 E M20 x 1.5 H PG 13.5	2 2 pcs	Rotary type N NAMUR shaft F Fork lever Linear type A Stroke 10 ~ 40mm B Stroke 10 ~ 80mm C Stroke 80 ~ 150mm D Stroke 80 ~ 200mm	Rotary type N None 1 30x80 x20(H) 2 30x80 x30(H) 3 30x130 x30(H) 4 30x130 x50(H) M Multi-size Bracket			
LSB-3 Explosion-proof type	0 Aluminum die-cast 1 Stainless steel 316 2 Stainless steel 316L (On request)	Mechanical switches 0 (2) SPDT 2 (4) SPDT 3 (2) DPDT P&F sensors 4 (2) NJ2-V3-N 5 (4) NJ2-V3-N 6 (2) NJ2-12GK-SN or NJ4-12GK-SN 7 (2) NBB3-V3-Z4 9 (2) NBB2-V3-E2 Autonics sensors 8 (2) PSN17-5D PNP or NPN Hermetically-sealed proximity sensors A (2) XT-90 B (4) XT-90 C (2) MS-20 D (4) MS-20 E (2) MS-100 F (4) MS-100	0 None T 4~20mA output signal	K7 KC Ex d IIC - IP67 A7 ATEX /IECEX Ex d IIC - IP67 I7 KC Ex ia IIC - IP67 K8 KC Ex d IIC - IP68 A8 ATEX /IECEX Ex d IIC - IP68 I8 KC Ex ia IIC - IP68	N None A Beacon indicator 90° (Open / Close) B Bottom indicator 90° (Open / Close) C Beacon & bottom indicator 90° (Open / Close) D Other flow direction indicator (L or T port)	A PF 3/4 B NPT 3/4 C PF 1/2 D NPT 1/2 E M20 x 1.5 F PF 1 G NPT 1 I M25 x 1.5	2 2 pcs 3 3 pcs 4 4 pcs	Rotary type N NAMUR shaft F Fork lever Linear type A Stroke 10 ~ 40mm B Stroke 10 ~ 80mm C Stroke 80 ~ 150mm D Stroke 80 ~ 200mm	Rotary type N None M Multi-size Bracket	N None S Single coil D Dual coil	N None A 220VAC B 110VAC C 24VDC D 48VDC	N None 1 PT 1/4 2 NPT 1/4
LSB-7 Explosion-proof type (built-in solenoid v/v)	0 Aluminum die-cast 1 Aluminum die-cast switch box / 316SS solenoid V/V 2 316SS switch box & solenoid V/V	Honeywell switches J (2) SPDT(SILVER) K (4) SPDT(SILVER) L (2) SPDT(GOLD) M (4) SPDT(GOLD) GO switches (only LSB-3000) P (2) Model35 Q (4) Model35 Other on request	0 None T 4~20mA output signal	K KC Ex d IIB+Hz - IP67 A ATEX /IECEX Ex d IIB+Hz - IP67	N None A Beacon indicator 90° (Open / Close) D Other flow direction indicator (L or T port)	A PF 3/4 B NPT 3/4 C PF 1/2 D NPT 1/2 E M20 x 1.5 F PF 1 G NPT 1 I M25 x 1.5	2 2 pcs 3 3 pcs 4 4 pcs	Rotary type N NAMUR shaft F Fork lever Linear type A Stroke 10 ~ 40mm B Stroke 10 ~ 80mm C Stroke 80 ~ 150mm D Stroke 80 ~ 200mm	Rotary type N None M Multi-size Bracket	N None S Single coil D Dual coil	N None A 220VAC B 110VAC C 24VDC D 48VDC	N None 1 PT 1/4 2 NPT 1/4
Switch Box Type	Body Material	Switches / Sensors	Position Transmitter	Explosion Proof	Beacon / Indicator	Electrical Connections	Number of Electrical Connections	Feedback Shaft	Mounting Bracket	Coil type	Power Supply	Pneumatic Connections

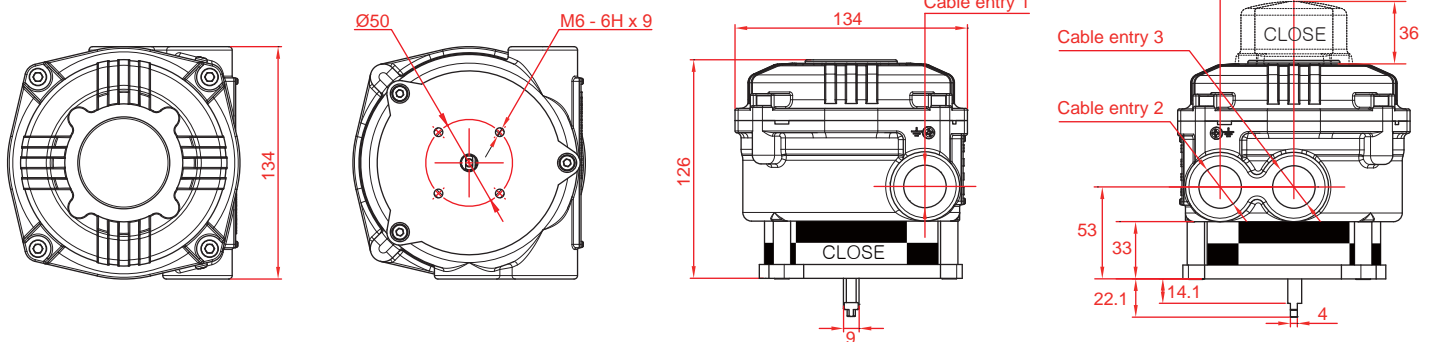
< LSB-1000 >



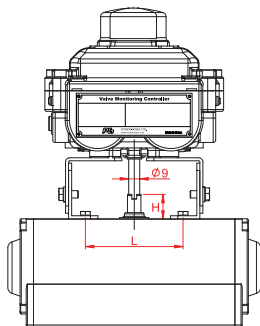
< LSB-3000 - Beacon Indicator >



< LSB-3000 - Bottom Indicator >



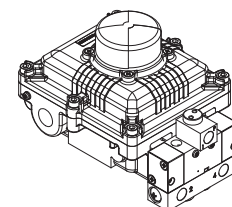
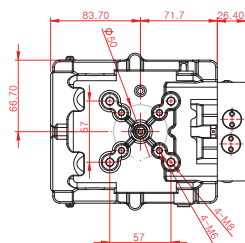
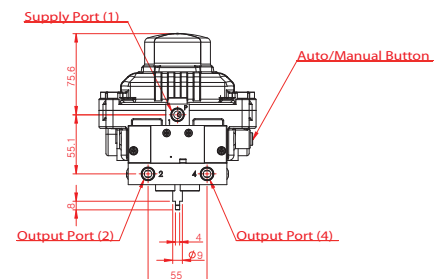
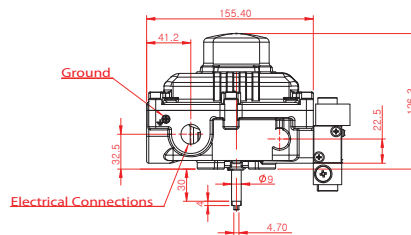
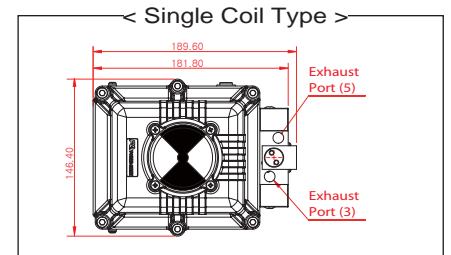
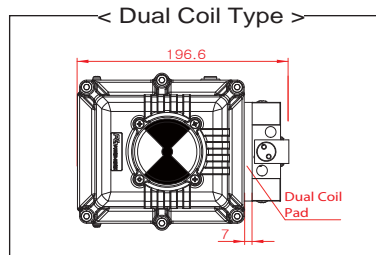
< LSB-7000 >



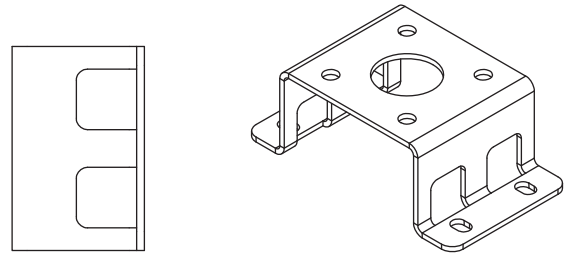
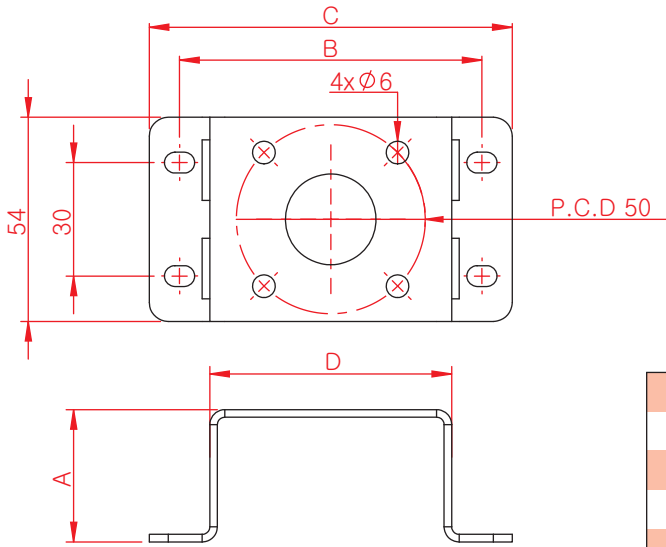
Size Variation of Multi-Size Bracket

- 1) 80 x 30 x 20 (H), 4) 130 x 30 x 20 (H)
- 2) 80 x 30 x 30 (H), 5) 130 x 30 x 30 (H)
- 3) 80 x 30 x 50 (H), 6) 130 x 30 x 50 (H)

H : Rotary Actuator Shaft Height
L : Length (80 or 130mm)

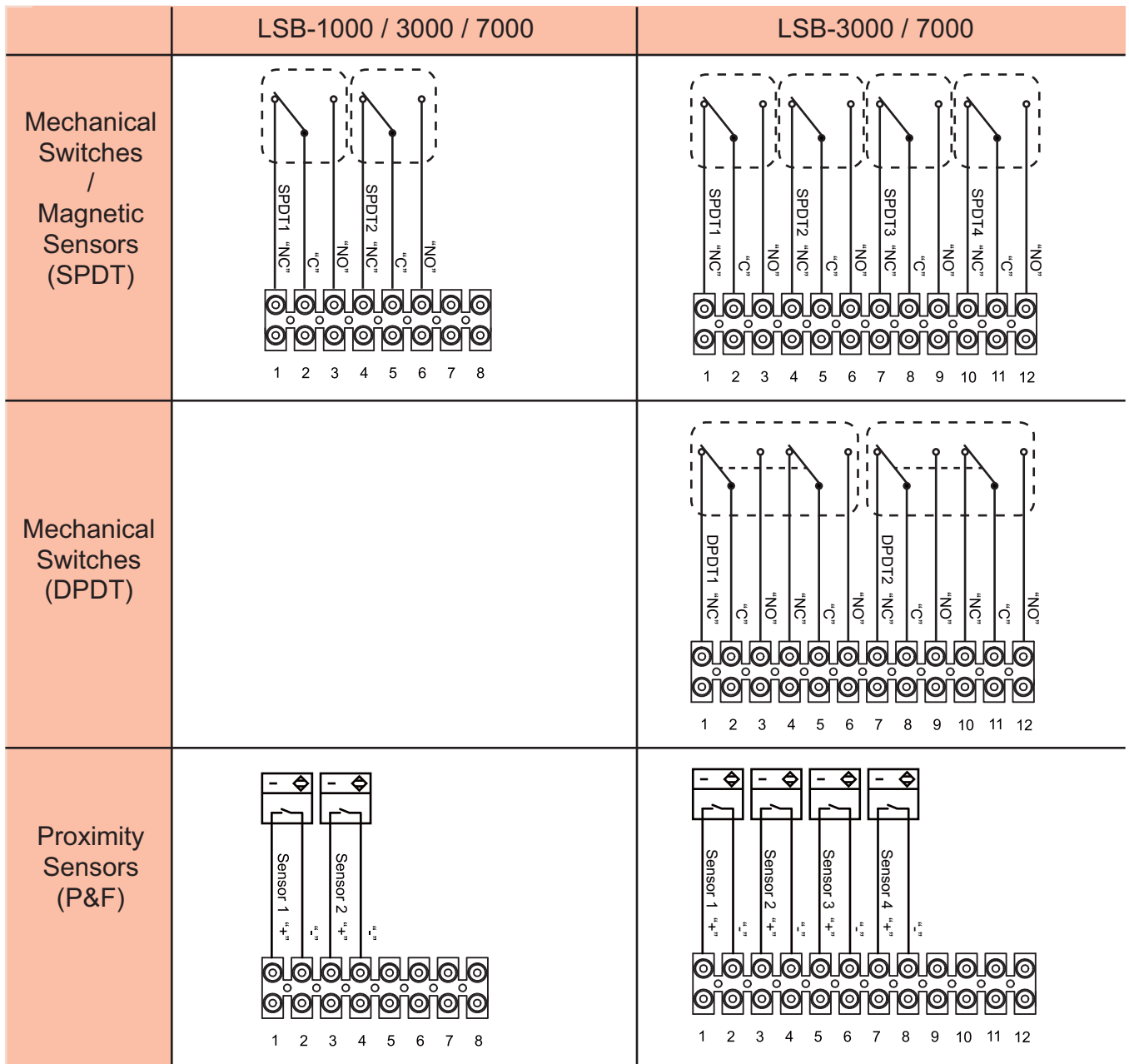


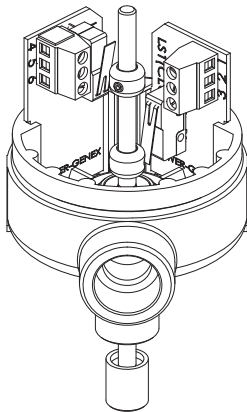
< Bracket : LSB-1000 / 3000 >



	A	B	C	D
30x80x20	35	80	96	64
30x80x30	45	80	96	64
30x130x30	45	130	150	100
30x130x50	65	130	150	100

< Wiring Diagram >





Linear valve position monitor

Features

- ▶ Weatherproof to IP66
- ▶ Easy to mount and compact for angle seat valve or diaphragm valve

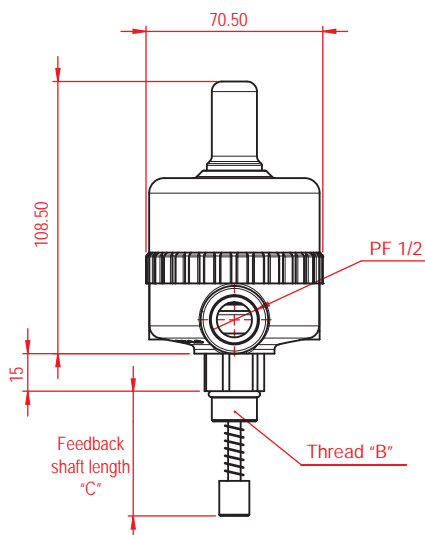
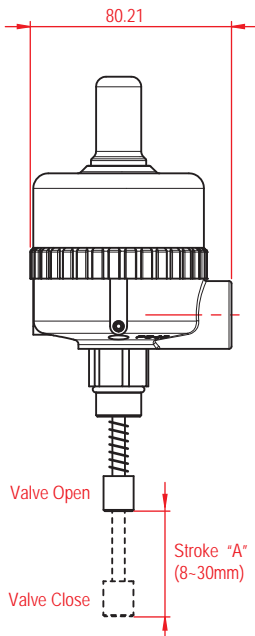
Specifications

	LSB-2000
Protection Class	IP66
Specifications of Switches	2 x SPDT (250 VAC @ 10.1A)
Linear Operating Stroke	8 ~ 30mm
Operating Temperature	-20 ~ +60°C (-4 ~ +140°F)
Electrical connections	PF 1/2
Body material	PA
Weight	0.5 kg

How to Order

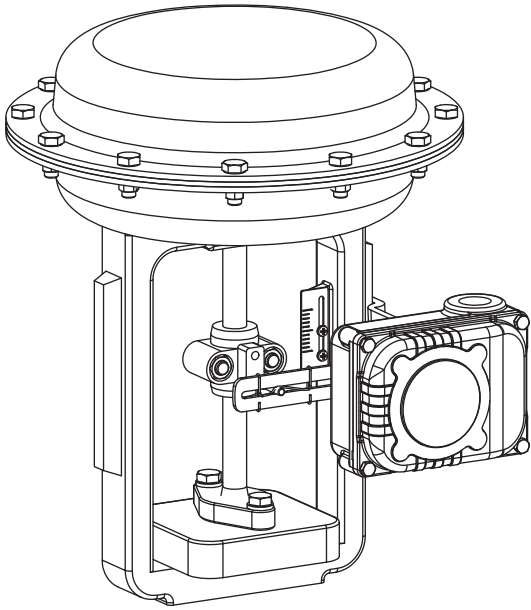
LSB-2000 - Stroke "A" - Mounting Threads "B" - Feedback Shaft Length "C"

Description	Code
Stroke (A) :	On request (8mm ~ 30mm)
Mounting Threads (B):	On request (Ex. M30 x 2.0)
Feedback Shaft Length (C):	On request

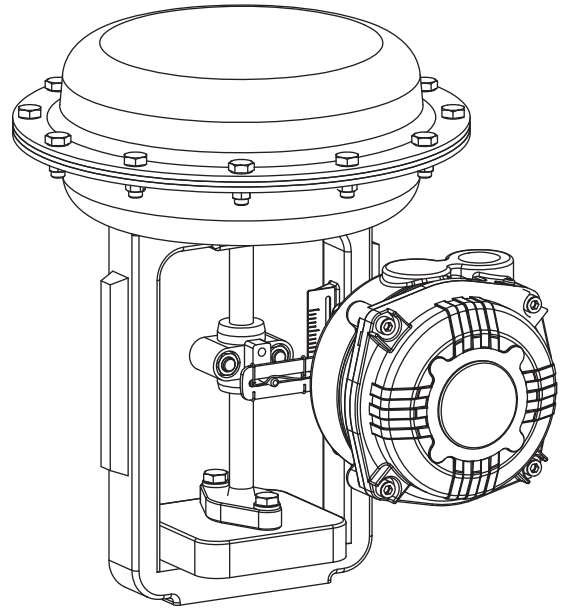


< SPDT Mechanical Switch - OMRON >

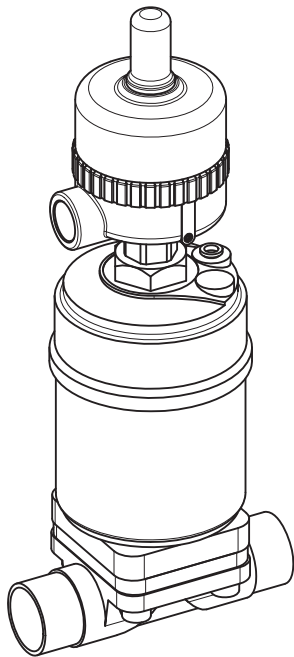
Technical Data	
Switch type	SPDT (Form C)
Contacts	Silver-plated
Approvals	UL, CSA
Electrical Rating	10.1 Amps / 250 VAC
Operating Temp.	-25 ~ +85°C



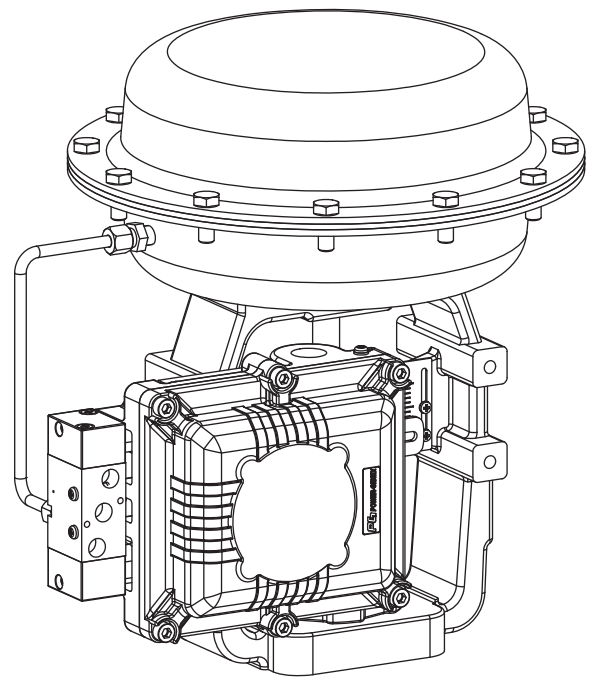
< Linear type - LSB-1000 >



< Linear type - LSB-3000 >



< Linear type - LSB-2000 >



< Linear type - LSB-7000 >

Solenoid Valve



ESV-S
(5/2 way)



ESV-D
(5/2 way, Dual coil)



ESV-3
(3/2 way)



ESV-SS
(SS316 body)



ESV-DS
(SS316 body)

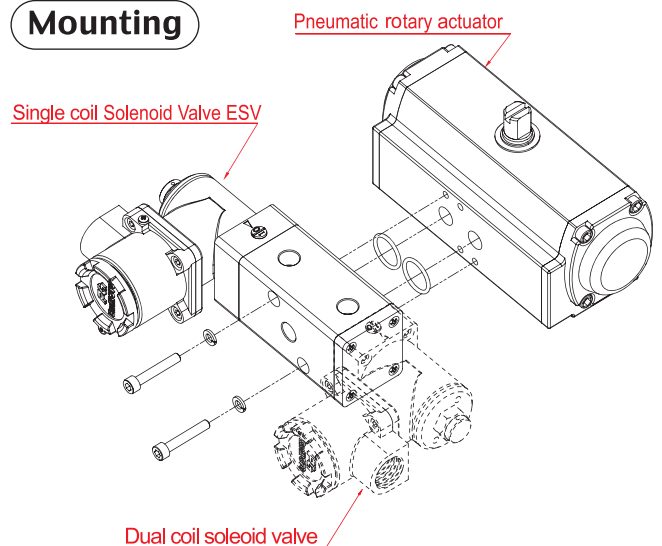


ESV-3S
(SS316 body)

Features

- ▶ Flameproof KC Ex d IIC
- ▶ Rugged aluminum die-cast housing or optionally stainless steel 316 valve body
- ▶ Convertible from 5/2 way to 3/2 way
- ▶ Rotatable valve head for optimal mounting
- ▶ Direct NAMUR mounting or screw mounting

Mounting



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