



LSB Series Valve Position Monitor



All innovation
on driving your valve automation

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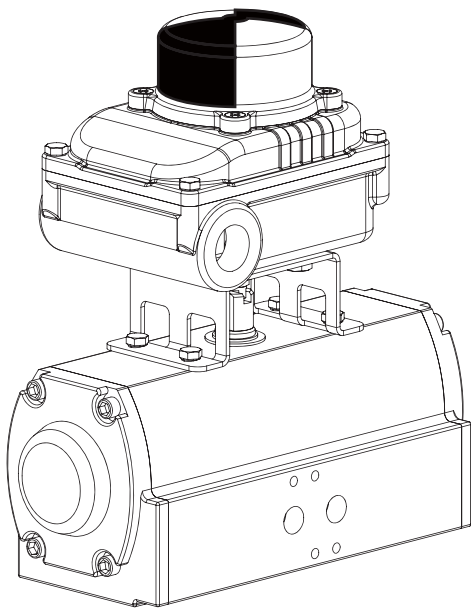




Robust valve position monitor with a good recognizable beacon, various switches and feedback options

Features

- ▶ Weatherproof to IP66 & 67 (optionally IP68)
- ▶ Rugged aluminum die-cast housing or 316SS
- ▶ 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	Ex ia IIC / IP66 & 67 (optionally IP68)	
Switches / Sensors	See page 5	
Operating Temperature	- 40 ~ +100 °C (-40 ~ +212 °F)	
Electrical Connections	PF 1/2, NPT 1/2, M20 x 1.5, PG13.5	
Body Material / Painting	Aluminum die-cast / powdered-coating	Stainless steel 316
Weight	0.8 kg	1.5 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 / EAC / KCs Ex d IIC
- ▶ Intrinsic safety ATEX / IECEx / EAC / KCs Ex ia 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 / Hermetically-sealed magnetic sensor)
- ▶ NAMUR mounting shaft or fork lever shaft adjustable for a non-NAMUR pneumatic actuator

Options

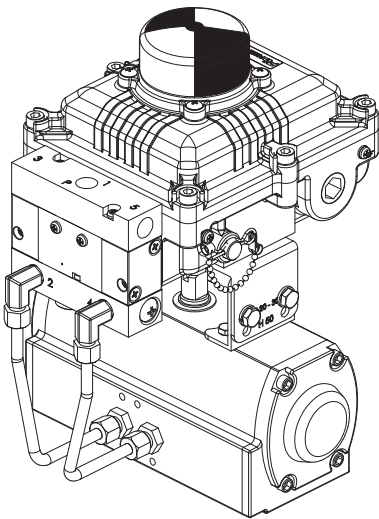
- ▶ 4 x SPDT mechanical limit switch
- ▶ 4 x P&F proximity sensor
- ▶ 4 x Hermetically-sealed magnetic sensor
- ▶ 4 - 20mA output position transmitter

Specifications

Model	LSB-30xx	LSB-31xx
Explosion proof / Protection Class	Flameproof - Ex d IIC - IP66&67 (optionally IP68)	
	Intrinsic safety - Ex ia IIC - IP66&67 (optionally IP68)	
	Intrinsic safety - Ex ia IIIC - IP66&67 (optionally IP68)	
Switches / Sensors	See page 5	
Operating Temperature	- 40 ~ +110°C (- 40 ~ +230°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	2 kg	4 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 / TR-CU / KC Ex d IIB+H₂ T6
- ▶ 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

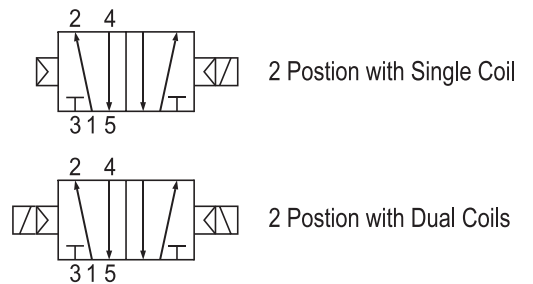
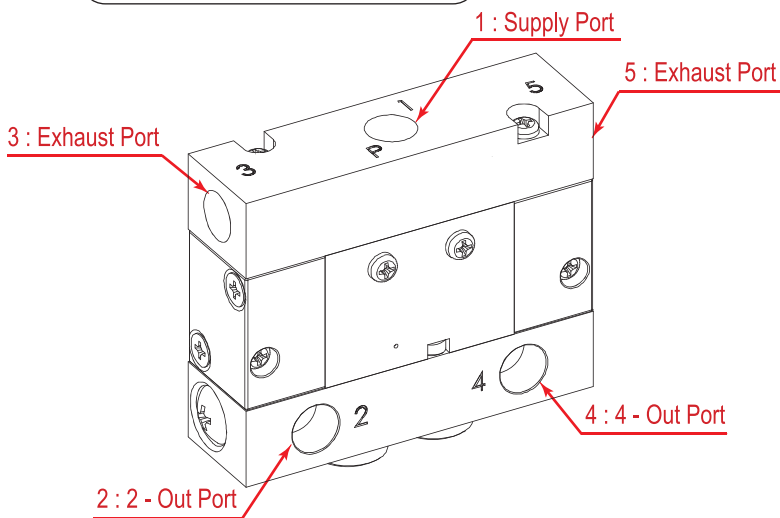
- ▶ 4 x SPDT mechanical limit switch
- ▶ 4 x P&F proximity sensor
- ▶ 2 x Hermetically-sealed magnetic sensor
- ▶ 4 - 20mA output position transmitter

Specifications

Model	LSB-7000	LSB-7100	LSB-7200
Explosion proof / Protection Class	ATEX / IECEx / TR-CU / KC - Ex d IIB+H ₂ - IP66&67		
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

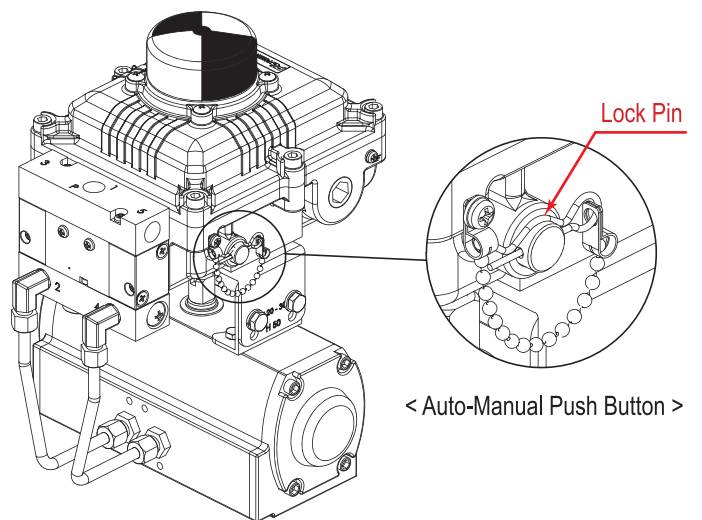


Solenoid Valve



< 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 kfg/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



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

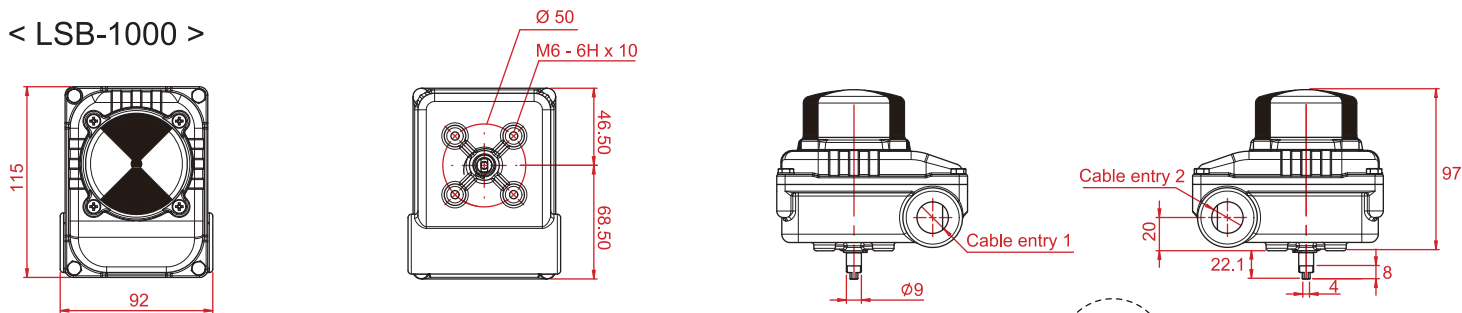


Part Number / Maker	MS Series / Power-genex
Switch type	SPDT (Form C)
Contacts	Rhodium / Tungsten
Approvals	UL, CSA
Electrical Ratings	
MS20 : 830 mA / 24VDC, 180 mA / 120VAC	
MS25 : 1 A / 24VDC, 200 mA / 120VAC	
MS100 : 2 A / 24VDC, 3 A / 120VAC, 1.5 A / 240VAC	
Operating Temperature	-40 ~ +130°C

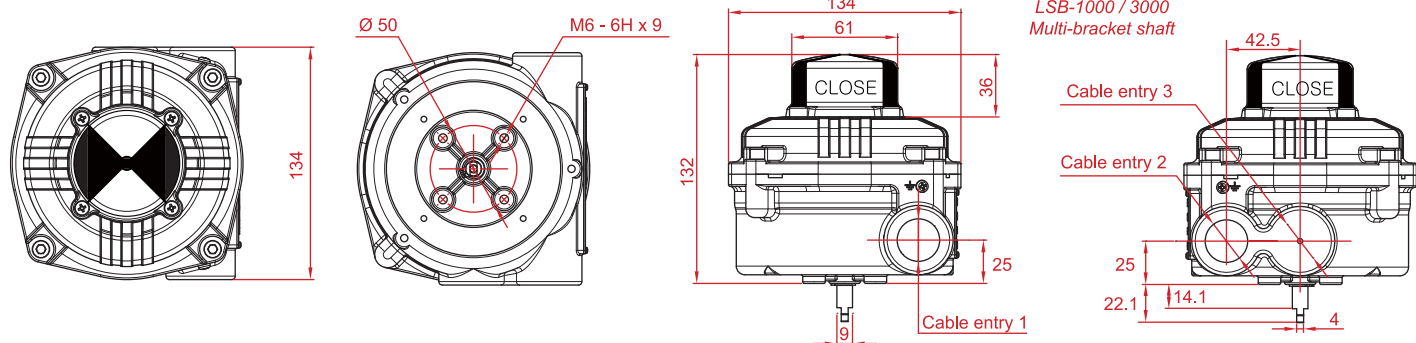
Part Number / Maker	ESI-V3-CR / Euroswitch
Switch type	SPDT (Form C)
Contacts	Rhodium
Approvals	ATEX / IECEx / INMETRO Ex ia IIC T6
Electrical Ratings	
830 mA / 24VDC, 180 mA / 120VAC	
Ex : Ui = 30V, Ii = 250mA, Pi = 1.3W	
Operating Temperature	-20 ~ +80°C

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 Weather-proof type	0 Aluminum die-cast	Mechanical switches 0 (2) SPDT 2 (4) SPDT	0 None	7 Weatherproof IP67	N None	C PF 1/2	2 2 pcs	Rotary type N NAMUR shaft	Rotary type N None			
	1 Stainless steel 316	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 A (2) MS-25 (1A) C (2) MS-20 (0.8A)		8 Weatherproof IP68 17 Ex ia IIC - IP67 18 Ex ia IIC - IP68	A Beacon indicator 90° (Open / Close) T T port indicator L L port indicator	D NPT 1/2 E M20 x 1.5 H PG 13.5		F Fork lever Linear type B Stroke 5 ~ 65mm C Stroke 5 ~ 130mm D Stroke 80 ~ 200mm	1 30x80 x20(H) 2 30x80 x30(H) 3 30x130 x30(H) 4 30x130 x50(H)			
LSB-3 Explosion-proof type	0 Aluminum die-cast	Mechanical switches 0 (2) SPDT 2 (4) SPDT 3 (2) DPDT	0 None	K7 KCs Ex d IIC - IP67	N None	A PF 3/4	2 2 pcs					
	1 Stainless steel 316 2 Stainless steel 316L (On request)	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 S(2) NJ2-12GM40-E2 R (2) NCN4-V3-NO T (2) SJ3 3.5-S1N Sensors 8 (2) PSN17-5D PNP or NPN N (2) D2VW-5L1-1M Hermetically-sealed proximity sensors	T 4~20mA output signal 1 0~1k output signal 2 0~10k output signal	A7 ATEX / IECEx Ex d IIC - IP67 17 Ex ia IIC - IP67 K8 KCs Ex d IIC - IP68 A8 ATEX / IECEx Ex d IIC - IP68 18 Ex ia IIC - IP68	A Beacon indicator 90° (Open / Close) B Bottom indicator 90° (Open / Close) C Beacon & bottom indicator 90° (Open / Close) T T port indicator L L port indicator	B NPT 3/4 C PF 1/2 D NPT 1/2 E M20 x 1.5 I M25 x 1.5	3 3 pcs		M Multi-size Bracket R Other on request			
LSB-7 Explosion-proof type (built-in solenoid v/v)	0 Aluminum die-cast	(Amp@24VDC) A (2) MS-25 (1A) B (4) MS-25 (1A) C (2) MS-20 (0.8A) D (4) MS-20 (0.8A) E (2) MS-100 (2A) F (4) MS-100 (2A) G (2) ESI-V3-CR H (4) ESI-V3-CR I (2) MONAS I(2A)	0 None	K KC Ex d IIB+H2 - IP67	N None	A PF 3/4	2 2 pcs	Rotary type N NAMUR shaft	Rotary type N None	N None	N None	N None
	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) Other on request	T 4~20mA output signal	A ATEX / IECEx Ex d IIB+H2 - IP67	A Beacon indicator 90° (Open / Close) T T port indicator L L port indicator	B NPT 3/4 C PF 1/2 D NPT 1/2 E M20 x 1.5 I M25 x 1.5 F PF 1 G NPT 1	3 3 pcs 4 4 pcs	F Fork lever Linear type B Stroke 5 ~ 65mm C Stroke 5 ~ 130mm D Stroke 80 ~ 200mm	M Multi-size Bracket R Other on request	S Single coil D Dual coil	A 220VAC B 110VAC C 24VDC D 48VDC	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

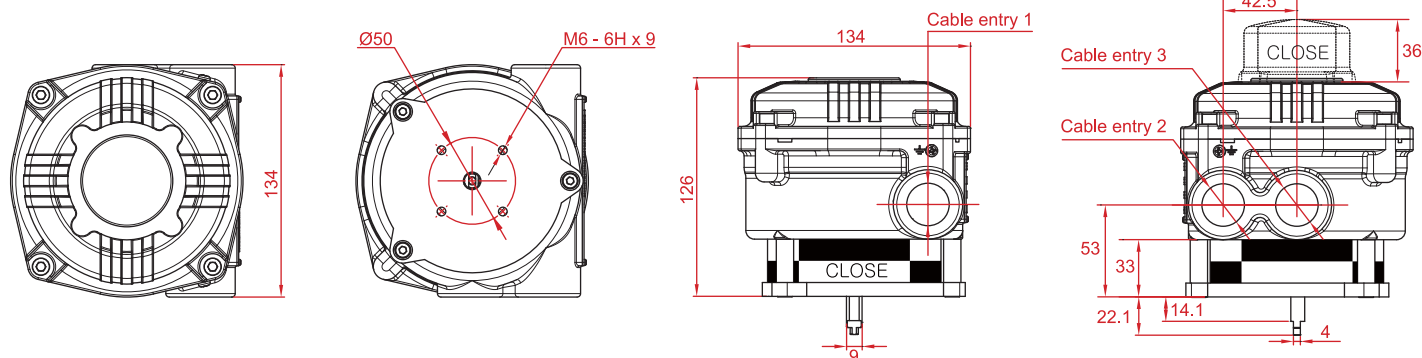
< LSB-1000 >



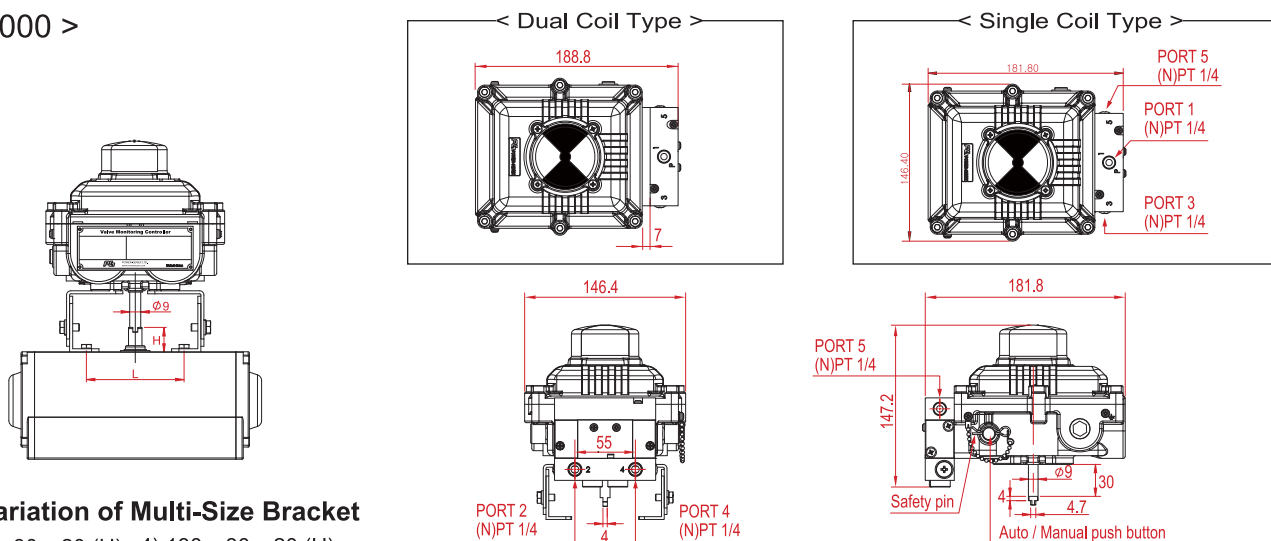
< LSB-3000 - Beacon Indicator >



< LSB-3000 - Bottom Indicator >



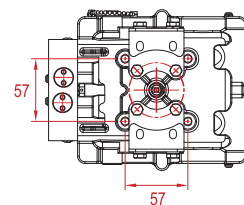
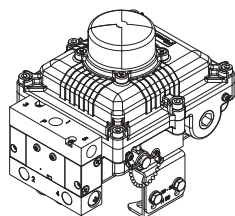
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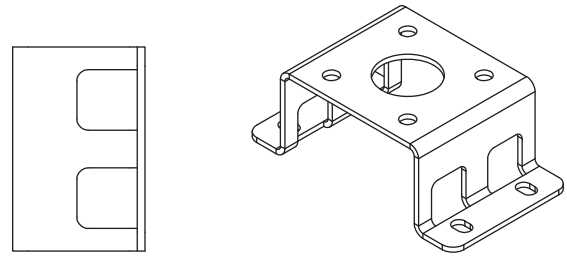
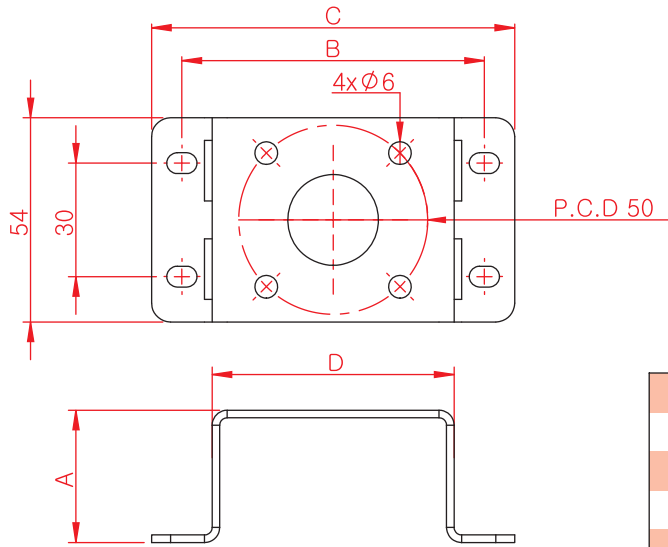
Size Variation of Multi-Size Bracket

- 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)

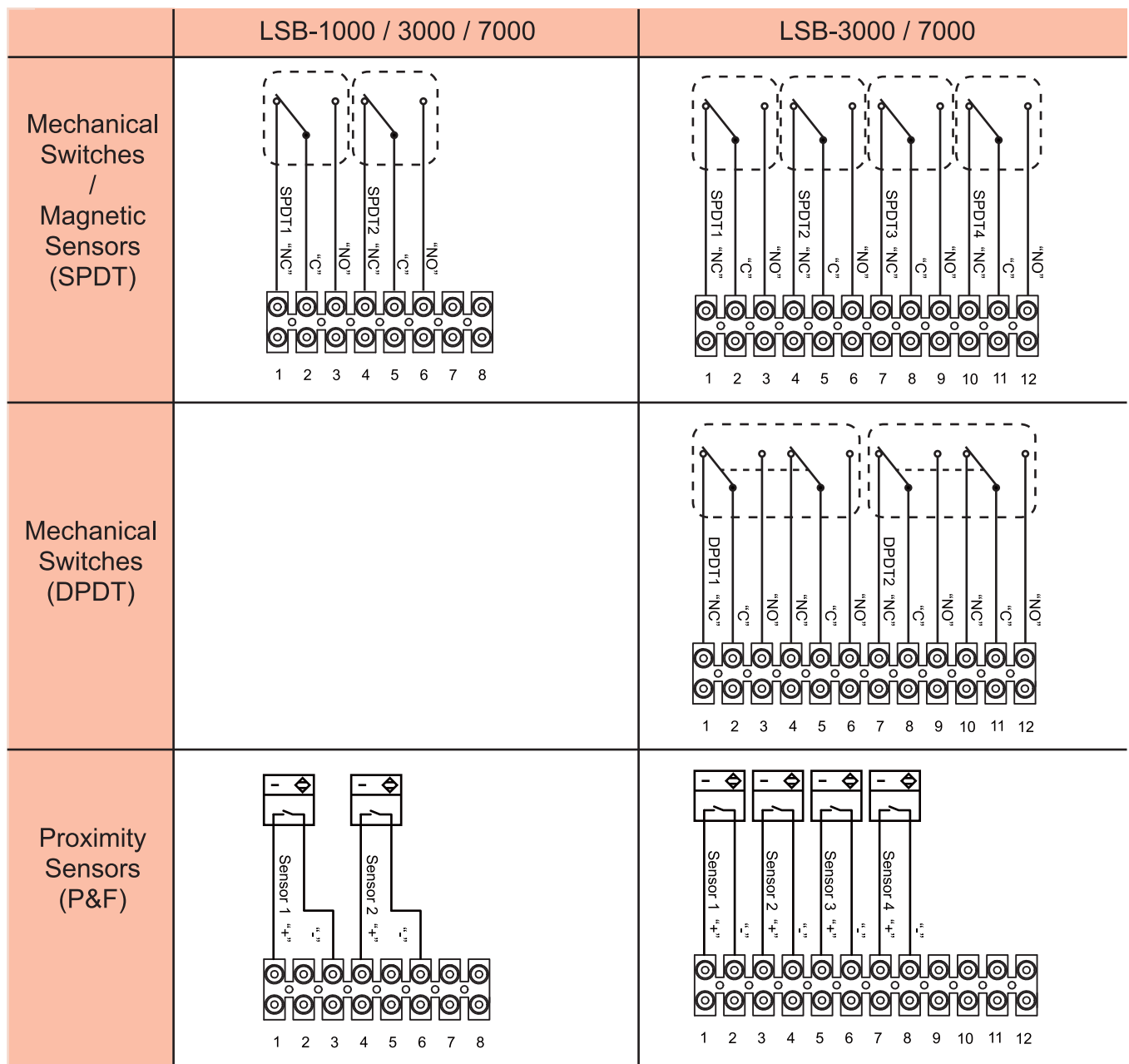


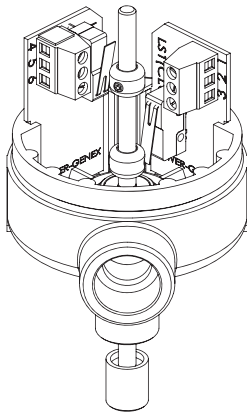
< Bracket : LSB-1000 / 3000 >



	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

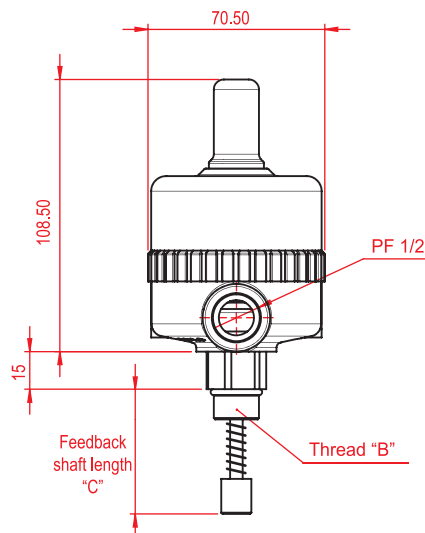
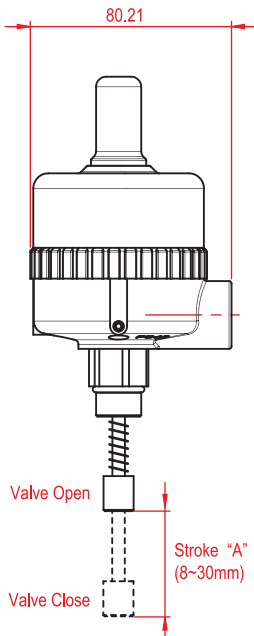
Specifications

	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

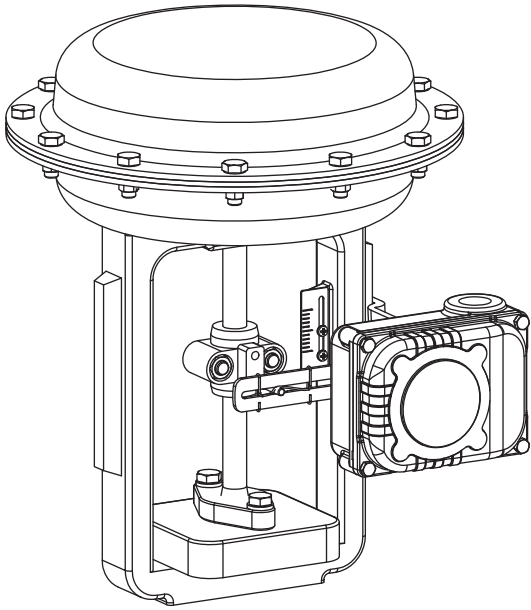
LSB-2000 - Stroke "A" - Mounting Threads "B" - Feedback Shaft Length "C"

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

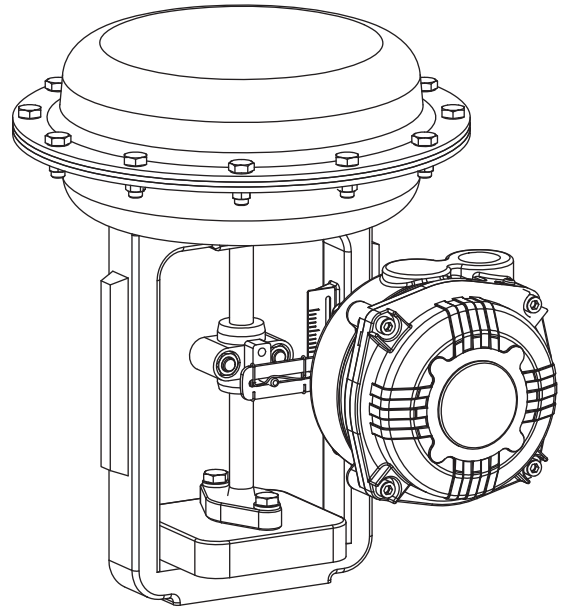


< SPDT Mechanical Switch - OMRON >

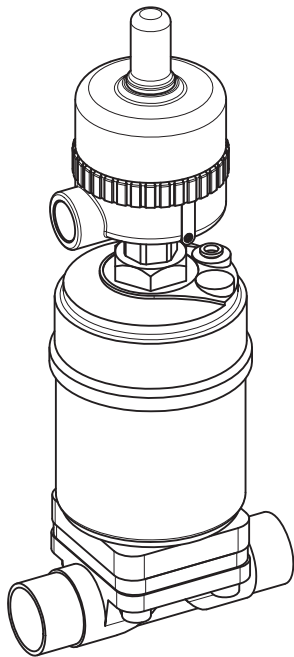
Technical Data	
Switch type	SPDT (Form C)
Contacts	Silver-plated
Approvals	UL, CSA
Electrical Rating	10.1 Amps / 250 VAC
Operating Temp.	-25 ~ +85°C



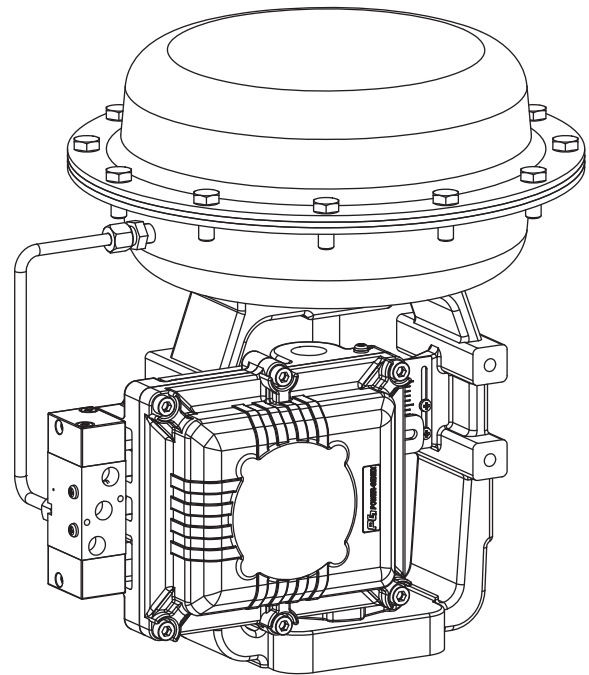
< Linear type - LSB-1000 >



< Linear type - LSB-3000 >



< Linear type - LSB-2000 >



< Linear type - LSB-7000 >

Solenoid Valve



ESV-S
(5/2 way)



ESV-SS
(SS316 valve body)



ESV-SC
(SS316)



ESV-3
(3/2 way)



ESV-3S
(SS316 valve body)

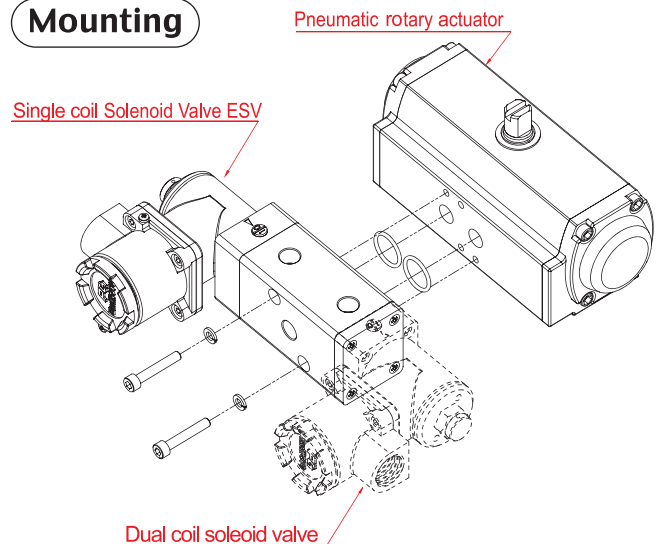


ESV-31
(3/2 way)

Features

- ▶ Flameproof ATEX / IECEx / 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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