



LSB Series

Valve Position Monitor



All innovation
on driving your valve automation

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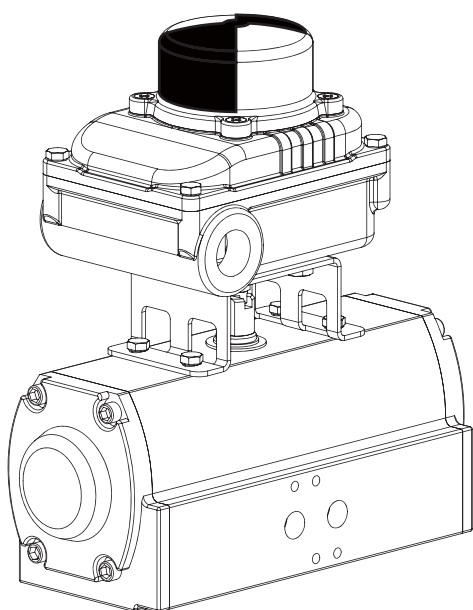




**Robust valve position monitor
with a good recognizable beacon, various
switches and feedback options**

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

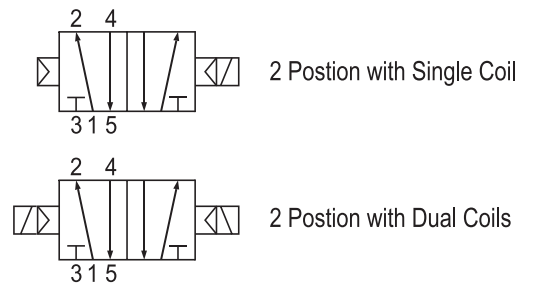
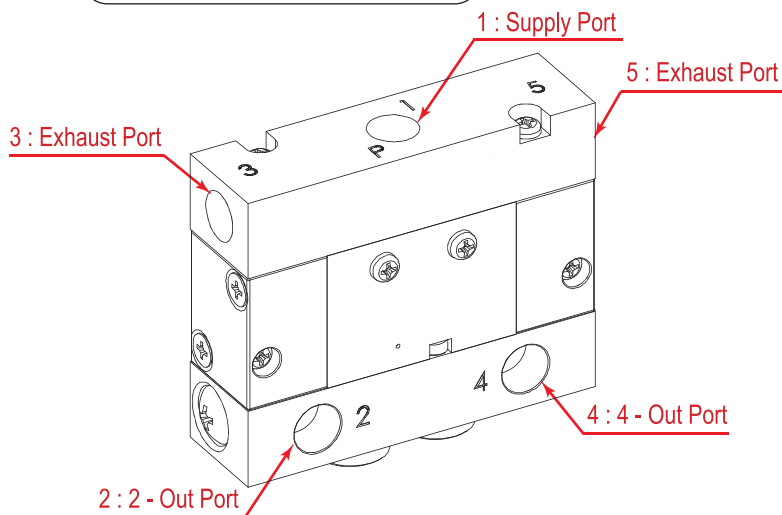
- ▶ 4 x SPDT mechanical limit switch
- ▶ 4 x P&F proximity sensor
- ▶ 2 x Hermetically-sealed magnetic sensor
- ▶ 4 - 20mA output position transmitter

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		NPT 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

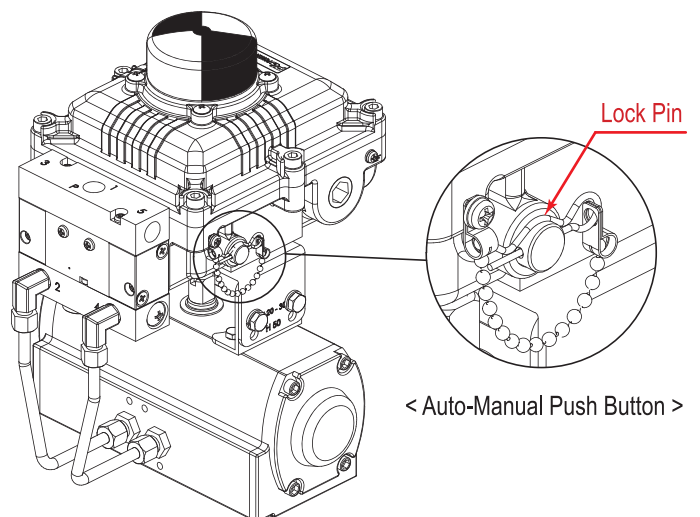


Solenoid Valve



< 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℃

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℃

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℃

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℃

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℃

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℃

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℃

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	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 I7 Ex ia IIC - IP67 I8 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 (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) 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 1 0~1k output signal 2 0~10k output signal	A7 ATEX / IECEx Ex d IIC - IP67 I7 Ex ia IIC - IP67 K8 KCs Ex d IIC - IP68 A8 ATEX / IECEx Ex d IIC - IP68 I8 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 4 4 pcs		M Multi-size Bracket R Other on request			
LSB-7 Explosion-proof type (built-in solenoid v/v)	0 Aluminum die-cast	Mechanical switches 0 (2) SPDT 2 (4) SPDT 3 (2) DPDT	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	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 (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) 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 >

Technical drawings of the LSB-1000 sensor. The left drawing is a front view showing a square sensor with a central circular lens and four mounting holes. Dimensions include a height of 115 mm and a width of 92 mm. The right drawing is a side view showing the sensor's profile with a total height of 68.50 mm and a mounting flange height of 46.50 mm. It also shows a central hole with a diameter of Ø 50 and a mounting hole with a diameter of M6 - 6H x 10.

Technical drawing of the Valve Monitoring Controller (VSC) showing top and side views. The top view includes the text "Valve Monitoring Controller" and "VSC". The side view shows the controller mounted on a base. Dimensions are indicated: $\phi 9$ for the mounting hole diameter, H for the mounting height, and L for the base width.

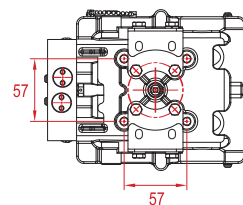
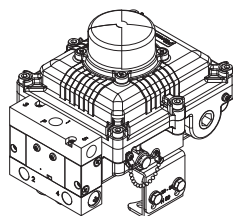
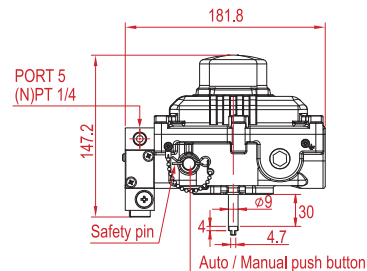
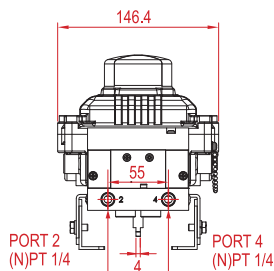
1) 80 x 30 x 20 (H) , 4) 130 x 30 x 20 (H)
2) 80 x 30 x 30 (H) , 5) 130 x 30 x 30 (H)
3) 80 x 30 x 50 (H) , 6) 130 x 30 x 50 (H)

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

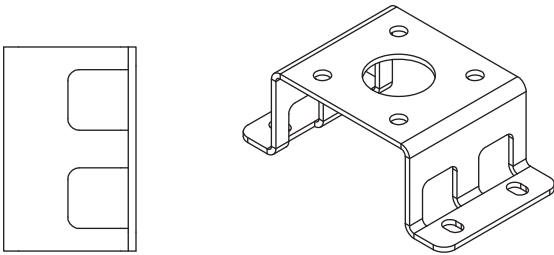
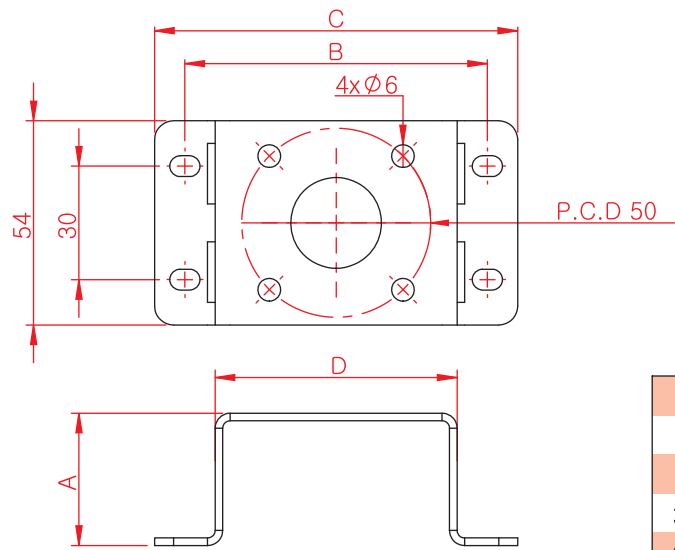
Dual Coil Type

188.8

7



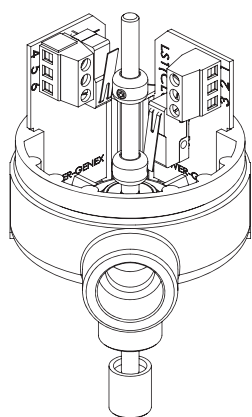
< Bracket : LSB-1000 / 3000 >



	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 >

	LSB-1000 / 3000 / 7000	LSB-3000 / 7000
Mechanical Switches / Magnetic Sensors (SPDT)	Wiring diagram for SPDT sensors on LSB-1000 / 3000 / 7000. It shows two sensors, SPDT1 and SPDT2, each with NO, C, and NC contacts. The terminals are numbered 1 through 8.	Wiring diagram for SPDT sensors on LSB-3000 / 7000. It shows four sensors, SPDT1 through SPDT4, each with NO, C, and NC contacts. The terminals are numbered 1 through 12.
Mechanical Switches (DPDT)		Wiring diagram for DPDT sensors on LSB-3000 / 7000. It shows two sensors, DPDT1 and DPDT2, each with NO, C, and NC contacts. The terminals are numbered 1 through 12.
Proximity Sensors (P&F)	Wiring diagram for P&F sensors on LSB-1000 / 3000 / 7000. It shows two sensors, Sensor 1 and Sensor 2, each with + and - contacts. The terminals are numbered 1 through 8.	Wiring diagram for P&F sensors on LSB-3000 / 7000. It shows four sensors, Sensor 1 through Sensor 4, each with + and - contacts. The terminals are numbered 1 through 12.



Linear valve position monitor

Features

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

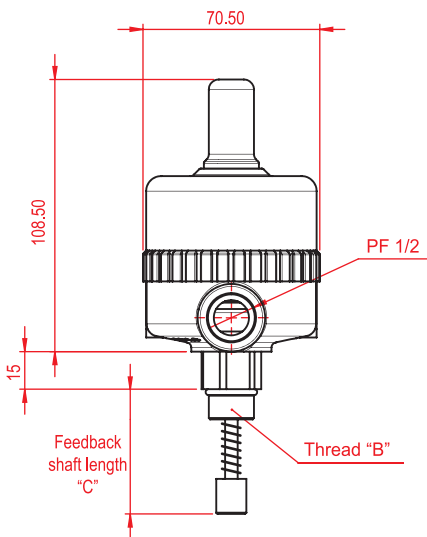
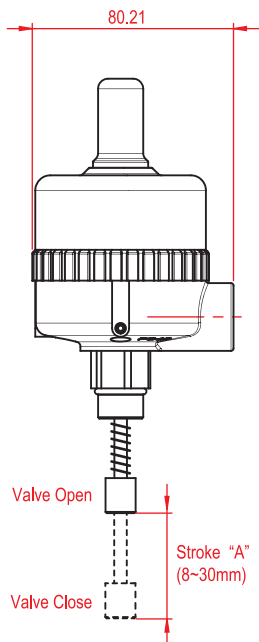
Specifications

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

How to Order

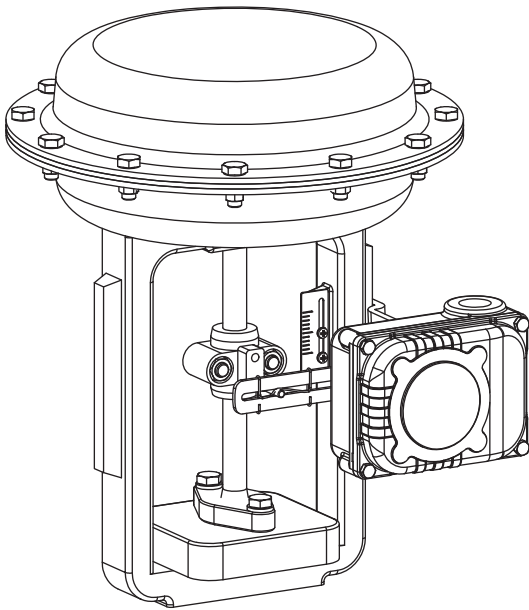
LSB-2000 - Stroke "A" - Mounting Threads "B" - Feedback Shaft Length "C"

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

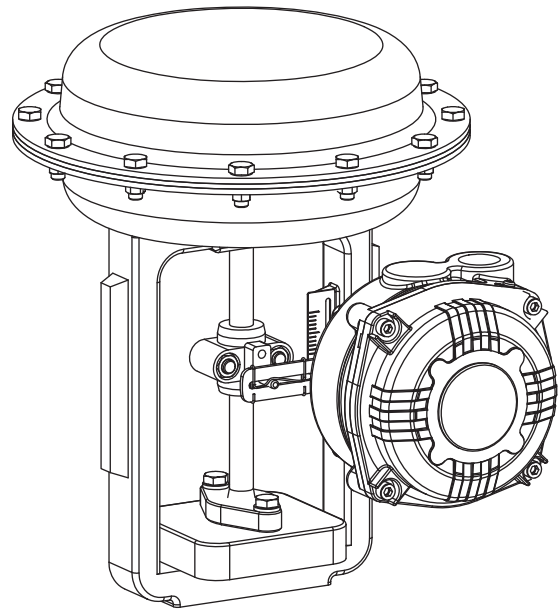


< SPDT Mechanical Switch - OMRON >

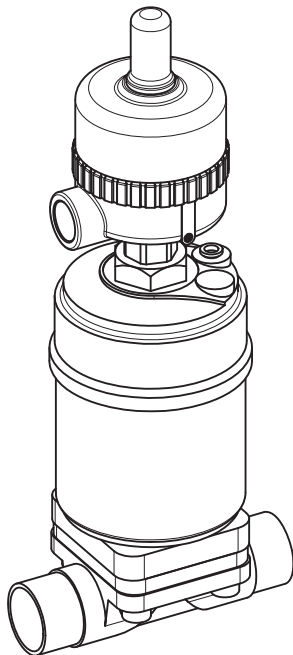
Technical Data	
Switch type	SPDT (Form C)
Contacts	Silver-plated
Approvals	UL, CSA
Electrical Rating	10.1 Amps / 250 VAC
Operating Temp.	-25 ~ +85℃



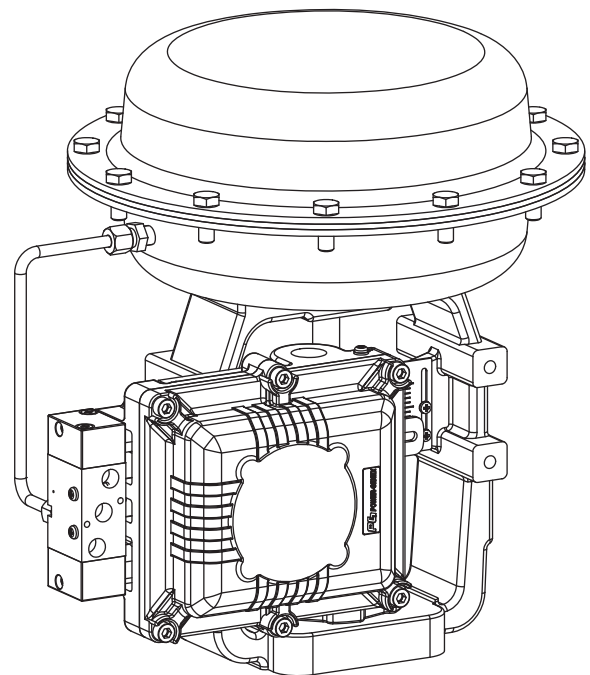
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< Linear type - LSB-3000 >



< 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)

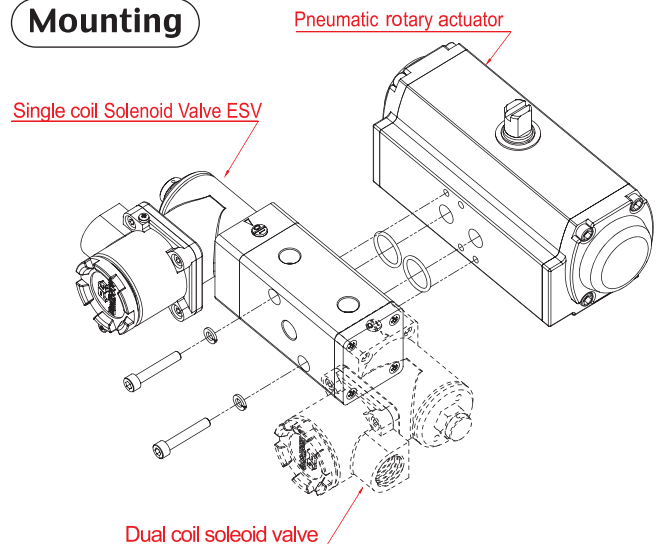


ESV-31
(3/2 way)

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



PG POWER-GENEX®

POWER-GENEX LTD.

99, Eunbong-ro, Namdong-gu,
Incheon 405-848 Korea
Tel : +82-32-812-6644
Fax : +82-32-812-6645
Website : <http://www.powergenex.com>
E-mail : sales@powergenex.com (overseas sales)
sales2@powergenex.com (domestic sales)