



# LSB Series Valve Position Monitor



All innovation  
on driving your valve automation

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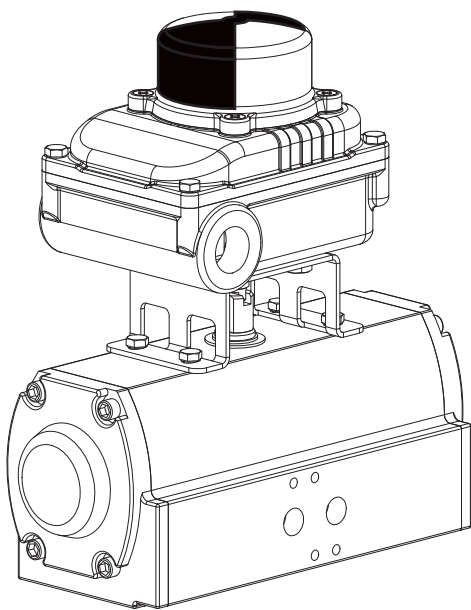




**Robust valve position monitor with a good recognizable beacon, various switches and feedback options**

### 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

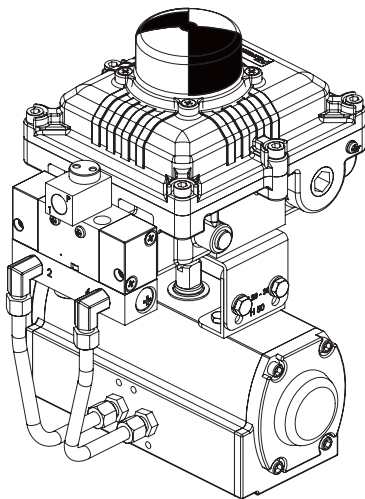
- ▶ 4 x SPDT mechanical limit switch
- ▶ 4 x P&F proximity sensor
- ▶ 4 x Hermetically-sealed magnetic sensor
- ▶ 2 x GO switch
- ▶ 4 - 20mA output position transmitter

### 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+H<sub>2</sub> 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

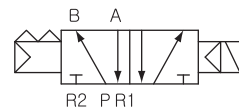
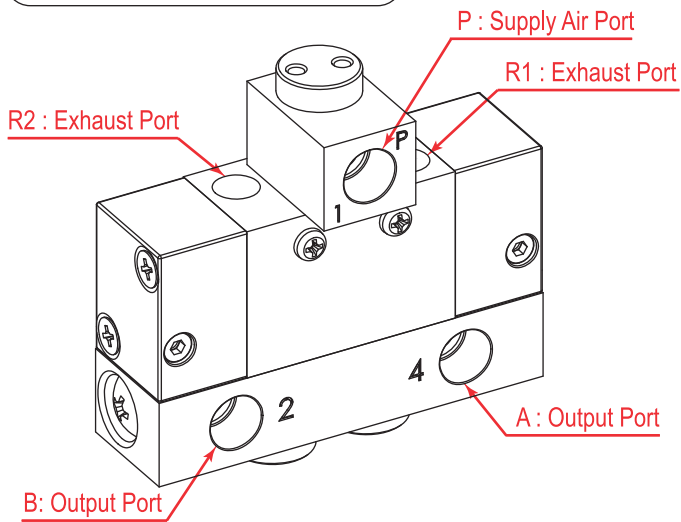
- ▶ 4 x SPDT mechanical limit switch
- ▶ 4 x P&F proximity sensor
- ▶ 2 x Hermetically-sealed magnetic sensor
- ▶ 4 - 20mA output position transmitter

### Specifications

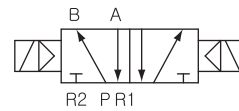
Model	LSB-7000	LSB-7100	LSB-7200
Explosion proof / Protection Class	IECEX / ATEX / KC Ex d IIB+H <sub>2</sub> T6 - IP67		
Operating Air Pressure	1.5 ~ 10 bar		
Air Supply Pressure	Max. 10 bar		
Mechanical Switches/Proximity Sensors	See page 5		
Operating Voltage of Solenoid Valve	24 VDC / 48 VDC / 110 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**



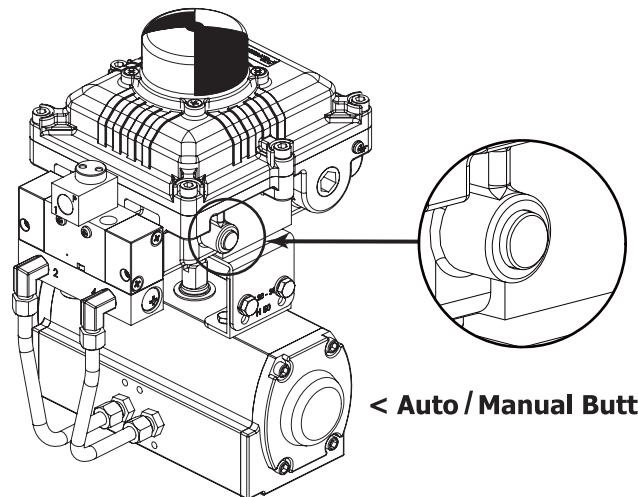
2 Position with Single Coil



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 <sup>2</sup> )		19.0 mm <sup>2</sup>
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
<b>Nominal Ratings</b>	
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
<b>Nominal Ratings</b>	
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

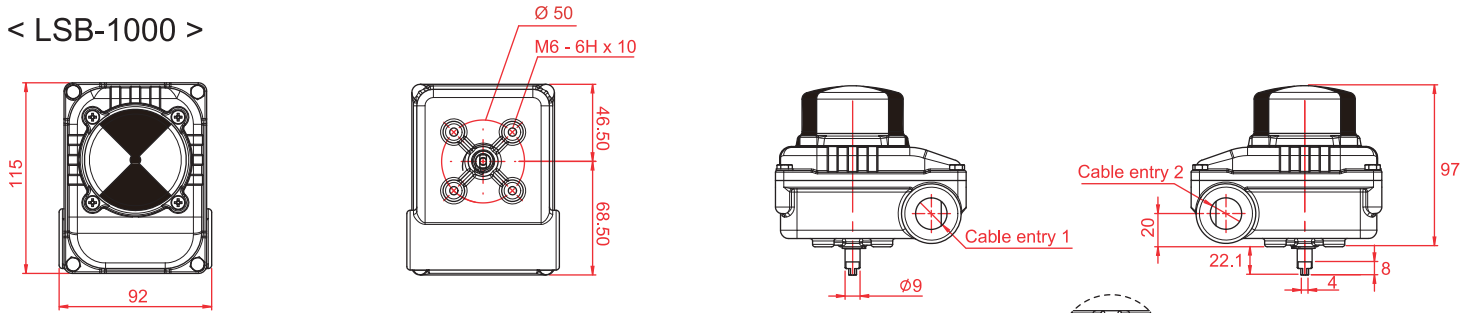


Part Number / Maker	MS Switch
Switch type	SPDT (Form C)
Contacts	Rhodium / Tungsten
Approvals	UL, CSA
Electrical Ratings	
MS20 : 830 mA / 24VDC, 180 mA / 120VAC	
MS25 : 1 A / 24VDC, 200 mA / 120VAC	
MS100 : 2 A / 24VDC, 3 A / 120VAC, 1.5 A / 240VAC	
Operating Temperature	-40 ~ +130°C

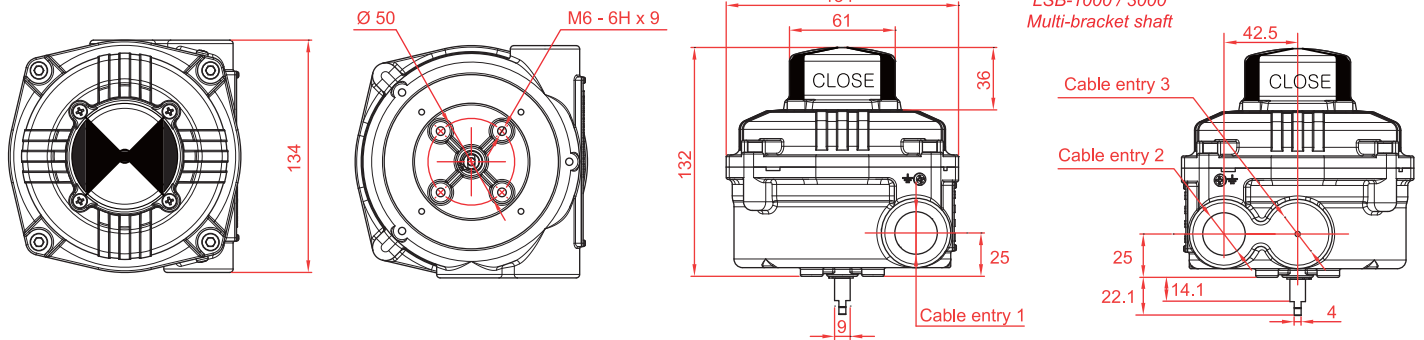
Part Number / Maker	GO Switch Model 35 / Topworx
Switch type	SPDT (Form C)
Contacts	Silver cadmium oxide, gold flashed
Approvals	UL, CSA
Electrical Ratings	
4 amps / 120 VAC, 2 amps / 240 VAC	
3 amps / 24 VDC	
Operating Temperature	-40 ~ +100°C

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
<b>LSB-1</b> Weatherproof type	<b>0</b> Aluminum die-cast	<b>Mechanical switches</b> 0 (2) SPDT 2 (4) SPDT  <b>P&amp;F Sensors</b> 4 (2) NJ2-V3-N 7 (2) NBB3-V3-Z4 9 (2) NBB2-V3-E2 <b>Autonics sensors</b> 8 (2) PSN17-5D  <b>Honeywell</b> J (2) SPDT  <b>Hermetically-sealed sensors</b> A (2) MS-25 (1A) C (2) MS-20 (0.8A)	<b>0</b> None	<b>7</b> Weatherproof IP67  <b>8</b> Weatherproof IP68	<b>N</b> None  <b>A</b> Beacon indicator 90° (Open / Close)  <b>T</b> T port indicator  <b>L</b> L port indicator	<b>A</b> PF 3/4  <b>B</b> NPT 3/4  <b>C</b> PF 1/2  <b>D</b> NPT 1/2  <b>E</b> M20 x 1.5  <b>I</b> M25 x 1.5  <b>H</b> PG 13.5	<b>2</b> 2 pcs	<b>Rotary type</b> <b>N</b> NAMUR shaft  <b>F</b> Fork lever  <b>Linear type</b> <b>B</b> Stroke 5 ~ 65mm  <b>C</b> Stroke 5 ~ 130mm  <b>D</b> Stroke 80 ~ 200mm	<b>Rotary type</b> <b>N</b> None  <b>1</b> 30x80 x20(H)  <b>2</b> 30x80 x30(H)  <b>3</b> 30x130 x30(H)  <b>4</b> 30x130 x50(H)  <b>M</b> Multi-size Bracket  <b>R</b> Other on request			
<b>LSB-3</b> Explosion-proof type	<b>0</b> Aluminum die-cast  <b>1</b> Stainless steel 316  <b>2</b> Stainless steel 316L (On request)	<b>Mechanical switches</b> 0 (2) SPDT 2 (4) SPDT 3 (2) DPDT  <b>P&amp;F sensors</b> 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  <b>Sensors</b> 8 (2) PSN17-5D PNP or NPN N (2) D2VW-5L1-1M  <b>Hermetically-sealed proximity sensors</b>	<b>0</b> None  <b>T</b> 4~20mA output signal  <b>1</b> 0~1k output signal  <b>2</b> 0~10k output signal	<b>K7 KC</b> Ex d IIC - IP67  <b>A7</b> ATEX/IECEX Ex d IIC - IP67  <b>I7</b> KC Ex ia IIC - IP67  <b>K8</b> KC Ex d IIC - IP68  <b>A8</b> ATEX/IECEX Ex d IIC - IP68  <b>I8</b> KC Ex ia IIC - IP68	<b>N</b> None  <b>A</b> Beacon indicator 90° (Open / Close)  <b>B</b> Bottom indicator 90° (Open / Close)  <b>C</b> Beacon & bottom indicator 90° (Open / Close)  <b>T</b> T port indicator  <b>L</b> L port indicator	<b>A</b> PF 3/4  <b>B</b> NPT 3/4  <b>C</b> PF 1/2  <b>D</b> NPT 1/2  <b>E</b> M20 x 1.5  <b>I</b> M25 x 1.5	<b>2</b> 2 pcs  <b>3</b> 3 pcs	<b>Rotary type</b> <b>N</b> NAMUR shaft  <b>F</b> Fork lever  <b>Linear type</b> <b>B</b> Stroke 5 ~ 65mm  <b>C</b> Stroke 5 ~ 130mm  <b>D</b> Stroke 80 ~ 200mm	<b>Rotary type</b> <b>N</b> None  <b>M</b> Multi-size Bracket  <b>R</b> Other on request	<b>N</b> None  <b>S</b> Single coil  <b>D</b> Dual coil	<b>N</b> None  <b>A</b> 220VAC  <b>B</b> 110VAC  <b>C</b> 24VDC  <b>D</b> 48VDC	<b>N</b> None  <b>1</b> PT 1/4  <b>2</b> NPT 1/4
<b>LSB-7</b> Explosion-proof type (built-in solenoid v/v)	<b>0</b> Aluminum die-cast  <b>1</b> Aluminum die-cast switch box / 316SS solenoid V/V  <b>2</b> 316SS switch box & solenoid V/V	<b>(Amp@24VDC)</b> 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)  <b>Honeywell switches</b> J (2) SPDT(SILVER) K (4) SPDT(SILVER) L (2) SPDT(GOLD) M (4) SPDT(GOLD)  <b>Other on request</b>	<b>0</b> None  <b>T</b> 4~20mA output signal	<b>K KC</b> Ex d IIB+H2 - IP67  <b>A</b> ATEX/IECEX Ex d IIB+H2 - IP67	<b>N</b> None  <b>A</b> Beacon indicator 90° (Open / Close)  <b>T</b> T port indicator  <b>L</b> L port indicator	<b>A</b> PF 3/4  <b>B</b> NPT 3/4  <b>C</b> PF 1/2  <b>D</b> NPT 1/2  <b>E</b> M20 x 1.5  <b>I</b> M25 x 1.5  <b>F</b> PF 1  <b>G</b> NPT 1	<b>2</b> 2 pcs  <b>3</b> 3 pcs  <b>4</b> 4 pcs	<b>Rotary type</b> <b>N</b> NAMUR shaft  <b>F</b> Fork lever  <b>Linear type</b> <b>B</b> Stroke 5 ~ 65mm  <b>C</b> Stroke 5 ~ 130mm  <b>D</b> Stroke 80 ~ 200mm	<b>Rotary type</b> <b>N</b> None  <b>M</b> Multi-size Bracket  <b>R</b> Other on request	<b>N</b> None  <b>S</b> Single coil  <b>D</b> Dual coil	<b>N</b> None  <b>A</b> 220VAC  <b>B</b> 110VAC  <b>C</b> 24VDC  <b>D</b> 48VDC	<b>N</b> None  <b>1</b> PT 1/4  <b>2</b> NPT 1/4
<b>Switch Box Type</b>	<b>Body Material</b>	<b>Switches / Sensors</b>	<b>Position Transmitter</b>	<b>Explosion Proof</b>	<b>Beacon / Indicator</b>	<b>Electrical Connections</b>	<b>Number of Electrical Connections</b>	<b>Feedback Shaft</b>	<b>Mounting Bracket</b>	<b>Coil type</b>	<b>Power Supply</b>	<b>Pneumatic Connections</b>

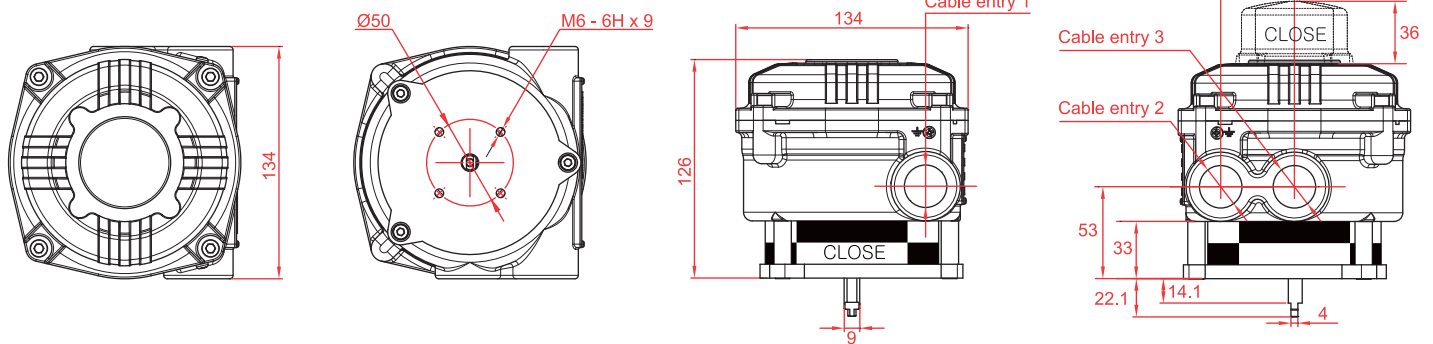
## < LSB-1000 >



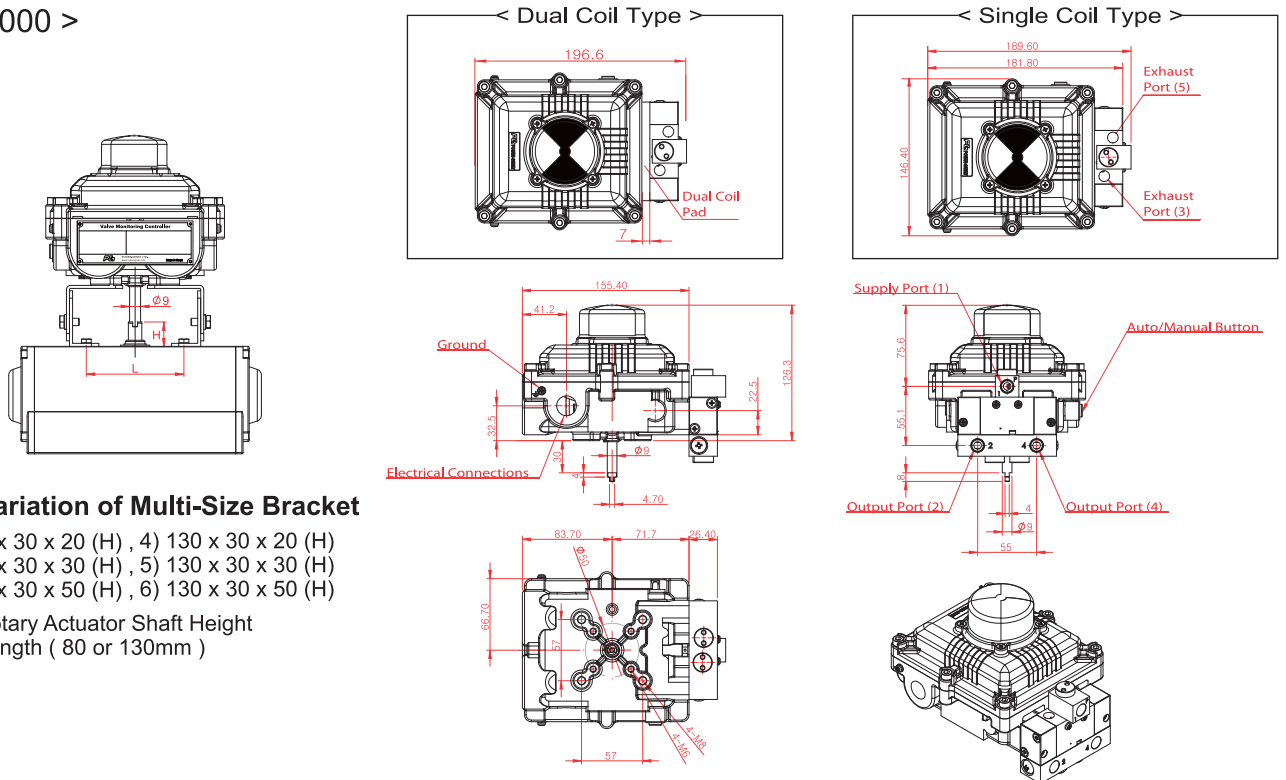
## < LSB-3000 - Beacon Indicator >



## < LSB-3000 - Bottom Indicator >



## < LSB-7000 >



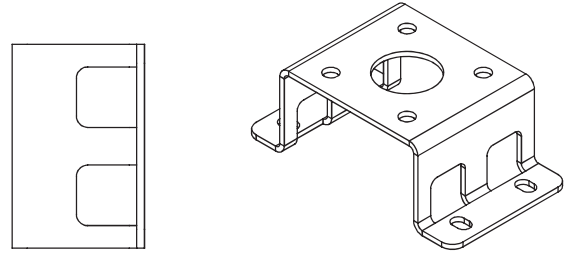
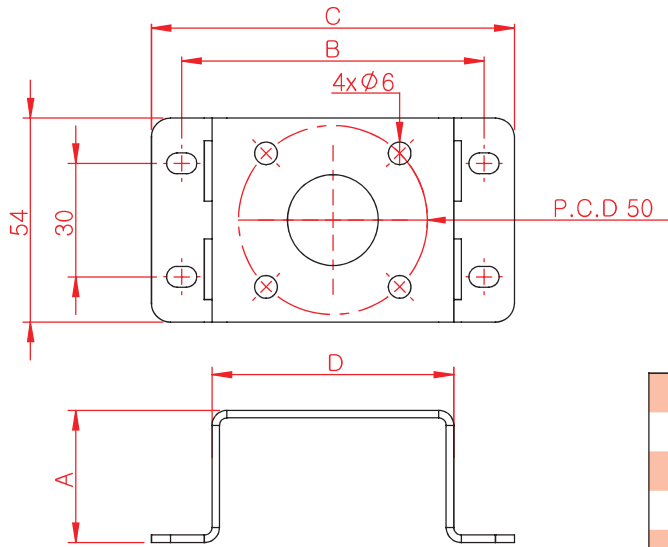
### Size Variation of Multi-Size Bracket

- 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 )

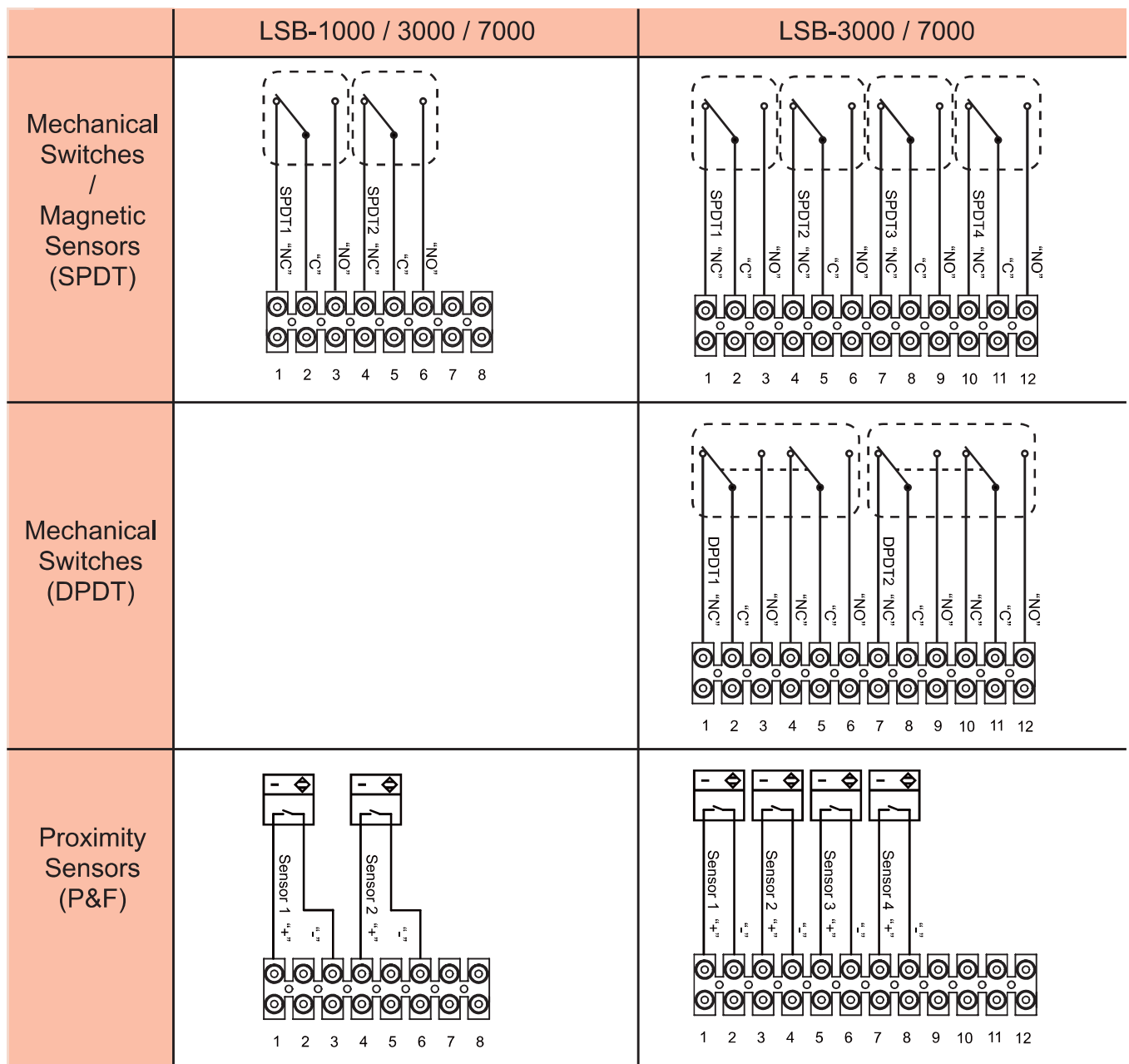


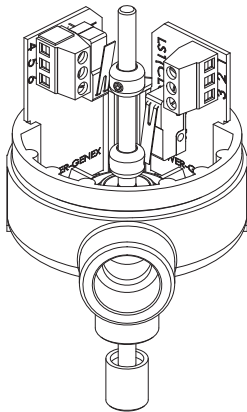
## < Bracket : LSB-1000 / 3000 >



	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

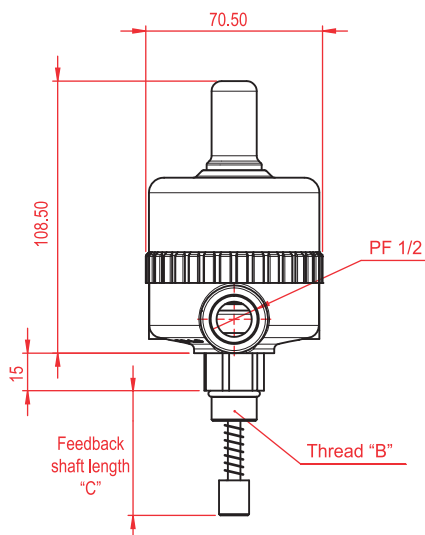
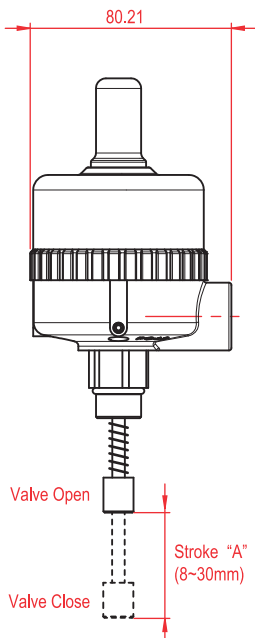
### Specifications

	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

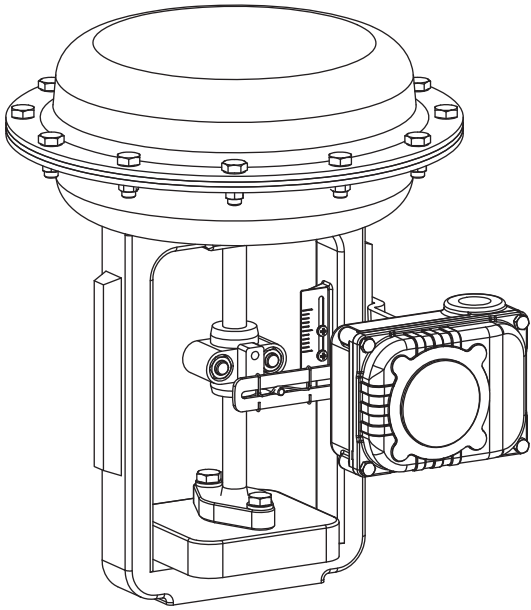
**LSB-2000** - Stroke "A" - Mounting Threads "B" - Feedback Shaft Length "C"

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

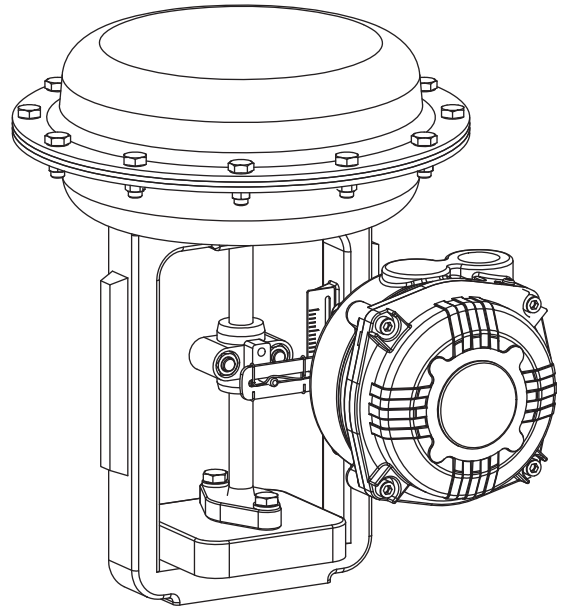


### < SPDT Mechanical Switch - OMRON >

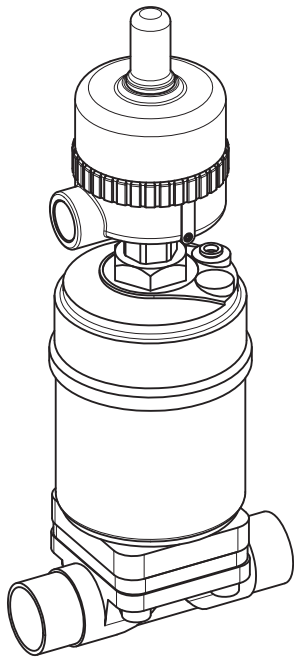
Technical Data	
Switch type	SPDT (Form C)
Contacts	Silver-plated
Approvals	UL, CSA
Electrical Rating	10.1 Amps / 250 VAC
Operating Temp.	-25 ~ +85 °C



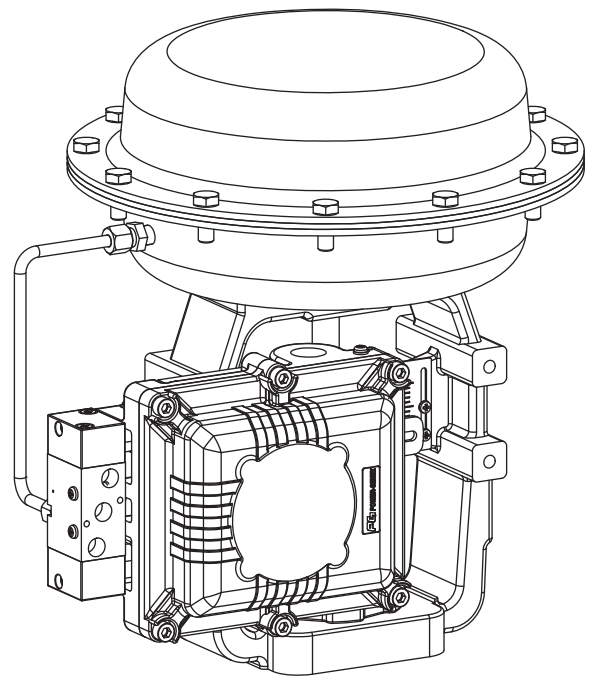
< Linear type - LSB-1000 >



< 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)

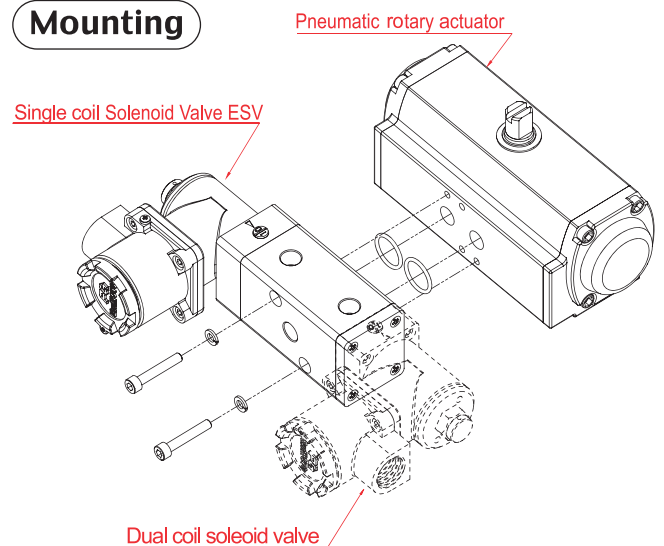


**ESV-3S**  
(SS316 body)

## 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



**PG** POWER-GENEX®

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