rexroth
A Bosch Company

Spool position sensor for CDV control valves

RE 18300-30
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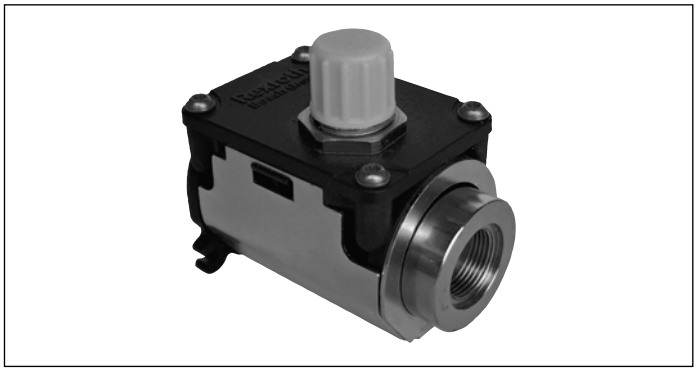
SPM



Analog voltage output signal
Operating voltage supply: 8 to 32 VDC (according to ISO 16750-2)
Electrical connection: M12 5 pin
Degree of IP protection: IP67 or IP69K (according to connection cable selection at page 2)
Maximum working pressure: 250 bar*

General specifications

Control blocks with spool feed-back requirements, e.g.:
- Loader cranes
- Telehandlers
- Aerial working platform
- Earth moving machinery
- Construction machinery
- Forestry and Agricultural

Universal device suitable for compact directional valves entire portfolio.
Contact-free detection of the control spool position via Hall effect sensor

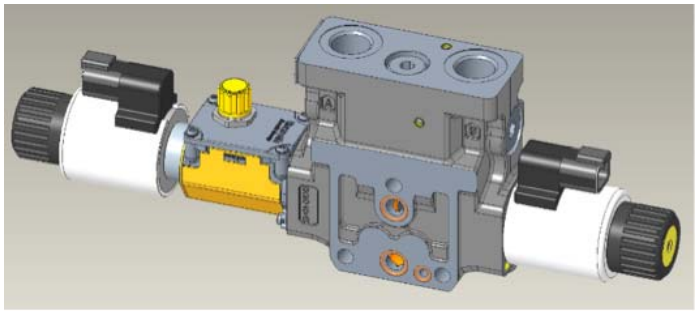
Contents

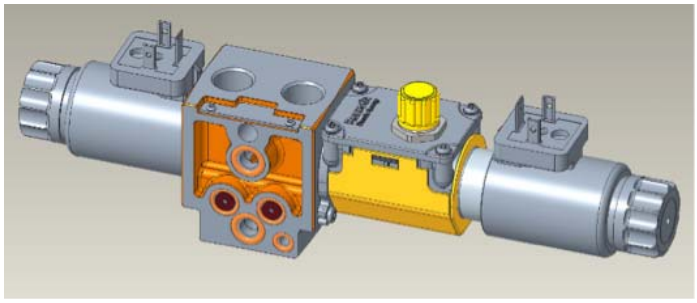
Note

* This pressure value is given by the T line channel max pressure allowed, which is in common with the pole tube of the valve considered, attached to the spool sensor. This is not related to the maximum working pressure of the valve.

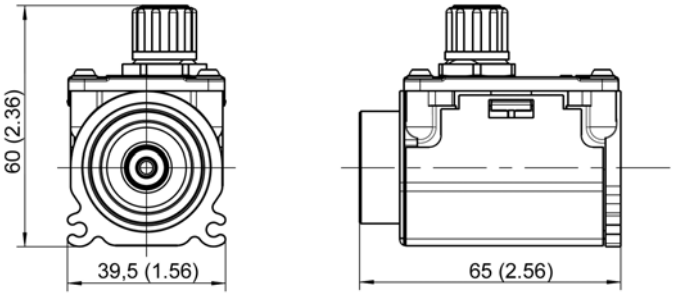
Type code

The spool position sensor has been developed as an option suitable for the compact directional valves entire portfolio (modular directional valve, flow diverters, etc...).
The valve must be ordered with spool sensor since beginning because each single unit must be set with special dedicated tool.
In case of failure, the valve must be returned to the company, any recalibration or resetting is only made by factory.





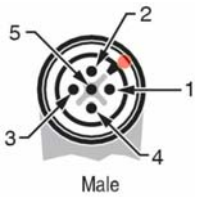
Dimensions



Connector on sensor

M12 5 PIN male connector (sensor view)

PIN1 = Reverse analog output (Vout-r) *
PIN2 = Analog output (Vout)
PIN3 = Supply voltage (U+)
PIN4 = Ground (GND-)
PIN5 = Not to be used



* Vout + Vout-r = Vtot =Constant (used to check the Vout)

Accessories: cables available from factory

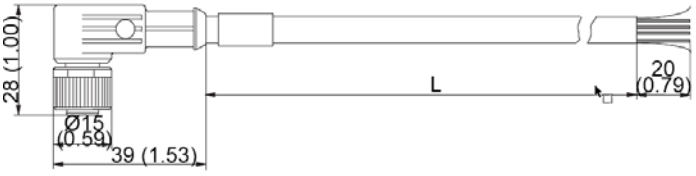
IP67
Shielded cable with connector M12 4 PIN female.

Cable dimensions

M12x1, straight, 4PM12 and 4PZ24

R900773031 L=2.000 (78.74)
R900064381 L=3.000 (118.11)
R900779489 L=5.000 (196.85)

M12x1, angled, 4PM12

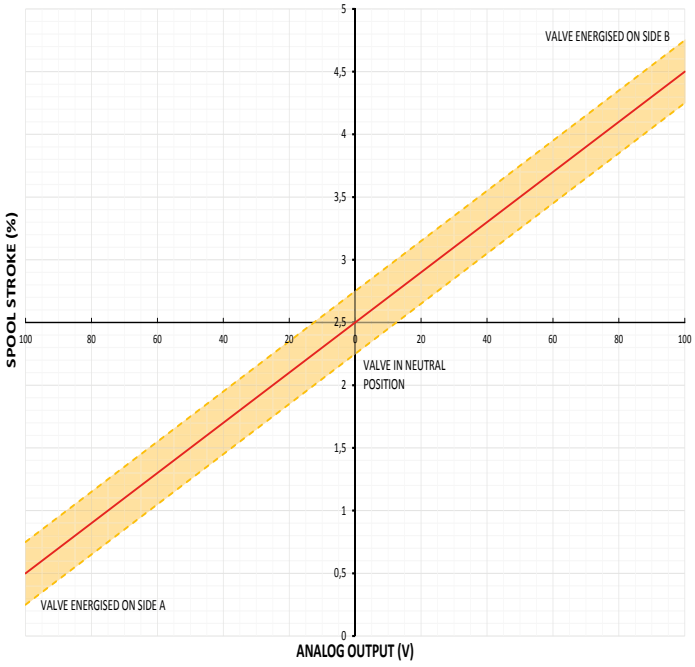


R900779504 L=2.000 (78.74)
R900779503 L=5.000 (196.85)

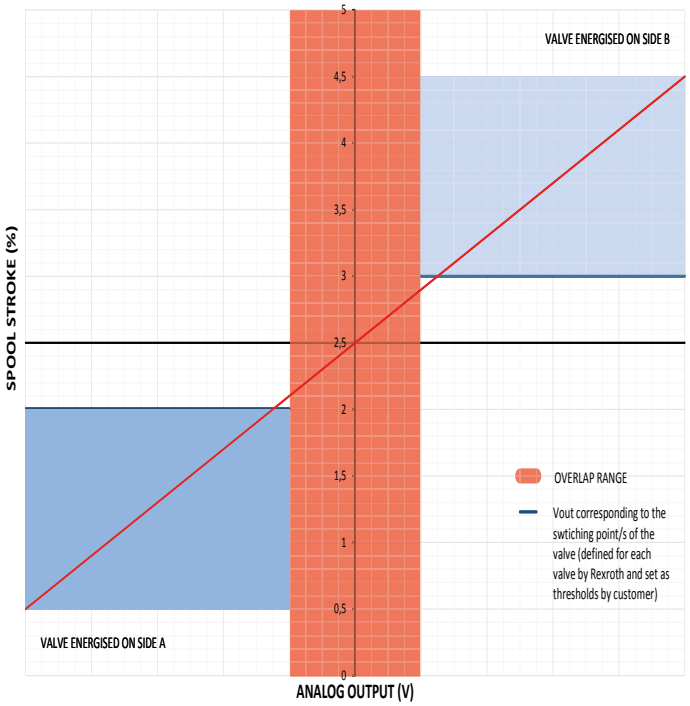
PIN1 = brown
PIN2 = white
PIN3 = blue
PIN4 = black

IP69K guaranteed from factory only using the following code
R901526925 L=10.000 (393.70)

Generic output graph for 3 position proportional valves



Generic output graph for 3 position On-Off valves



Functional description

The spool position sensor monitors the position of the control spool in directional CDV valves. The position of the control spool is detected and monitored by a contact- free Hall Effect sensor by reading the movement of the permanent magnet mechanically connected with the spool and is converted by the electronic board into an analog voltage signal through a calculation. When one coil is energized, it pushes the control spool and the "permanent magnet" changes position as well as the magnetic field. The Hall sensor reads the magnetic field translation and modifies electrical feedback. The electronic board is housed in a non-magnetic palstic box attached by two screws to the valve body. A metallic shield wraps the plastic box to protect the spool position sensor from electromagnetic disturbances. The anti-rotation device ensures repeatability of the readings.
The connector is a Molex Ultralock M12 5 PIN male.

Technical data

General		
Additional weight over assembled	kg (lbs)	0.255 (0.56)
Mounting position		On machine's chassis (grounded connected)
Ambient temperature range	°C (°F)	–30....+90 (-22....+194)
Oil temperature	°C (°F)	–30....+100 (-22....+212)
Storage temperature range	°C (°F)	–40....+115 (-104....+239)
Noise test (random) IEC 60068-2-36	Hz	g^2/Hz 0.05 20 to 2000 (10 gRMS duration per axis 24h)
Sinus vibration test DIN EN 60068-2-6	Hz	10 to 57; 1,5mm (PP); 57 to 2000; 10g; n°20 sweeps
Shock resistance DIN EN 60068-2-27	G	30 (11ms; half sine; 3x pos./ 3x neg.)
Shock resistance IEC 60068-2-29	G	25 (6ms; half sine; 1000x pos./ 1000x neg.)
Safety values		MTTFd available on request
Electronic		
Supply voltage Ud	Vdc	8 to 32, according to ISO 16750-2
Output signal Ua	Vdc	Ratiometric 0.5 - 4.5 For detailed graph behaviour please refer to valve datasheet
Max current	mA	20
Output signal response	ms	≤20
Reverse polarity protection		According to ISO 16750-2 to 32 Volt
Accuracy		+/- 5% f.s.
Pin assignment on the connector		See page 2
Type of protection according to ISO 20563		IP67, IP69K
Connection cable		Shielded Lmax< 30mt*
Electromagnetic compatibility EMC – EMI	EN 61000-6-2 EN 61000-6-4 EN 61326-2-3/EN12999	Industrial applications
	ISO 14982	Forestry and Agricultural
	EN 13309	Construction machinery
	ISO 13766	Earth moving machinery
Broadcast Noise ISO 11452	V/m	100
CE mark according to machine directive		Conformity according to EMC directives above mentioned

* Industrial application cable <10mt

Note
If the unit is used out of specification, please consult factory.
This sensor is NOT a safety device by itself.

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