



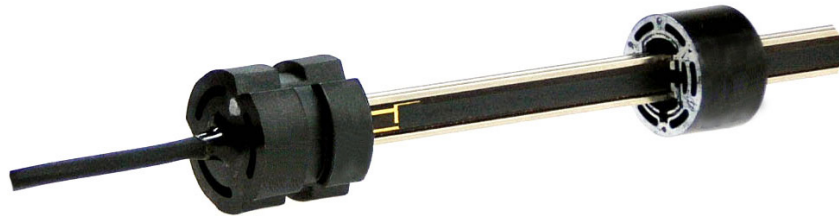
REGASENSE®

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Installation Manual

PS6300

Potentiometric cylinder sensor






Introduction

Intended use

Regasense PS6300 sensors are designed to be installed in hydraulic cylinders with the purpose of absolute linear positioning.

 PS6300 shall not be used in, or exposed to, fluids with conductive properties. This will cause malfunction of the sensor.

This manual shall be read together with the data-sheet.

Safety instructions

Installation and commissioning shall be performed by technical personnel with appropriate training and expertise. Whom are trained in the field of applicable automation technology and installation, commissioning and/or service operations of the hydraulic cylinder in use.

If sensor failure or malfunction can cause injury to person or damage to property, design the system with additional safety measures to prevent injury or damage.

Used symbols

 General attention

Storage instructions

The sensor must be stored in a dry environment within the temperature range specified in the data-sheet. The sensor shall not be under mechanical stress that can cause damage to the sensor rod.

Correct storage prior too installation is necessary to ensure proper function.

Warranty

Regal Components AB grants warranty according to Nordiska leveransbestämmelser (NL09) in applicable areas or Orgalime S2012. Warranty is not provided for defects due to improper use, storage or excessive stress on the product. Note that the performance of the sensor may change during its lifetime, this is a natural attribute of potentiometers.

Warranty is not provided if the product has been modified. No repairs are allowed, in event of sensor malfunction contact Regal Components AB.

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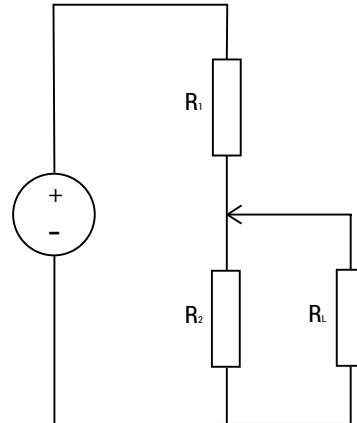


Product description

Potentiometer technology

Regasense PS6300 is a potentiometric absolute linear sensor. Potentiometers are voltage dividers and the output signal is proportional to the wiper position.

R₁: Resistance before the wiper.
R₂: Resistance after the wiper.
R_L: Input impedance



Scope of delivery

Sensor, wiper and installation accessories are included in the standard scope of delivery.

Installation accessories:

- 2 pcs Retaining ring
- 2 pcs Wave spring washer
- 3 pcs Flat washer

Accessories

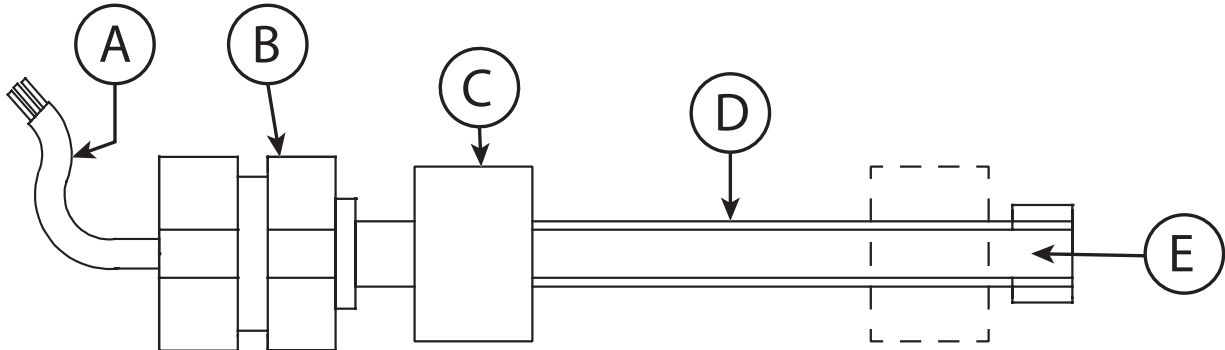
Additional accessories, not included in the standard scope of delivery are connectors and cables.

Connector 6140 is an pressure sealed M12 connector suitable with PS6300 as the sensor is not pressure sealed at the header. Fitting connecting sensor cables (shielded PUR) with overmolded M12-connector are available in different lengths.

More information on the different connectors and cables are available in the datasheets.



Part design



Sensor body

- A. Electrical connection
- B. Sensor header
- C. Wiper
- D. Sensor rod
- E. 2 x Sensor element




Installation

Pre-installation checklist

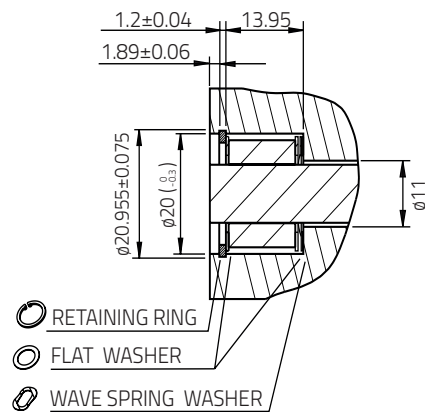
Make sure that there is no damage to the sensor.

- The sensor rod shall be straight.
- The sensor element shall be free from scratches, dents, contamination etc.
- The sensor header shall be intact.
- Make sure that the electrical connection is in good condition. Wires shall be firmly attached to the back-side of the header and the cable jacket shall be intact.
- Installation accessories shall be in good condition.

 The drilling dimensions in the cylinder must be within specified tolerances. Otherwise there is risk of malfunction and/or the sensor may vibrate in it's mount causing wear.

Wiper installation

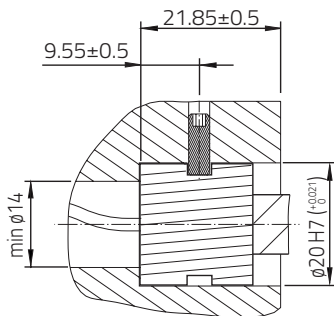
1. Place the wave spring washer followed by a flat washer in the piston.
2. Install the wiper with the white colored side outwards and make sure that the wiper fingers are on the same side as the sensor element.
3. Place a flat washer on the wiper.
4. Install the retaining ring.



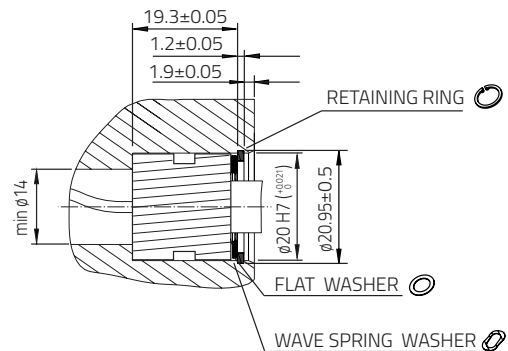


Installation of sensor

1. Feed the sensor wires thru the canal to the location where the connector shall be mounted. This step may vary depending on the design of the cylinder.
- ⚠ Make sure that the wires are free from mechanical stress.
2. Mount the sensor firmly in place.
3. Fix the sensor in position:
 - a. By a set-screw. Seal the set screw with suitable sealing compound.
 - b. Or use the retaining ring: Place the wave spring washer on the header, followed by the flat washer and then install the retaining ring.



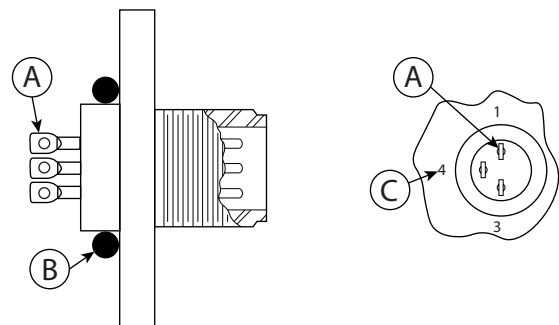
Installation using set screw



Installation using retaining ring

Installation of connector 6140

1. Place o-ring on connector. Recommended o-ring: 14 x 1,78 mm NBR70. Not included in scope of delivery.
2. Cut the sensor wires to suitable length.
3. Place heat shrink tube on the wires.
4. Strip 10 mm of the wires and twist them in place in the pins of the connector. See connection in table below.
5. Solder the joints.
- ⚠ Soldering shall be done by personnel with proper training.
6. Heat the heat shrink wires in place over the solder joints.
7. Mount the connector in place.
- ⚠ Make sure that the minibridge cable or wires are free from mechanical stress.



- A. Solder pins
- B. O-ring
- C. Pin number

Electrical connection 6140		
Solder pin	Sensor wire	Connection
1	Blue	+
3	Black	GND
4	Red	Output



Comissioning

⚠ PS6300 shall be operated as a voltage divider for proper performance. The sensor is not designed to be used as variable resistor, this may decrease the performance and lifetime.

Install connecting sensor cables with regards to electromagnetic combability (EMC), environmental conditions (temperatures, chemical exposure etc.) and mechanical stress, this is necessary to ensure proper function of the sensor. Use of shielded PUR cable, with overmolded M12 connector is recommended.

Recommended input impedance is 1000 x sensor resistance, the sensor resistance is specified for each stroke length in the datasheet.

⚠ Low input impedance causes linearity errors that vary with the wiper position.

Function test

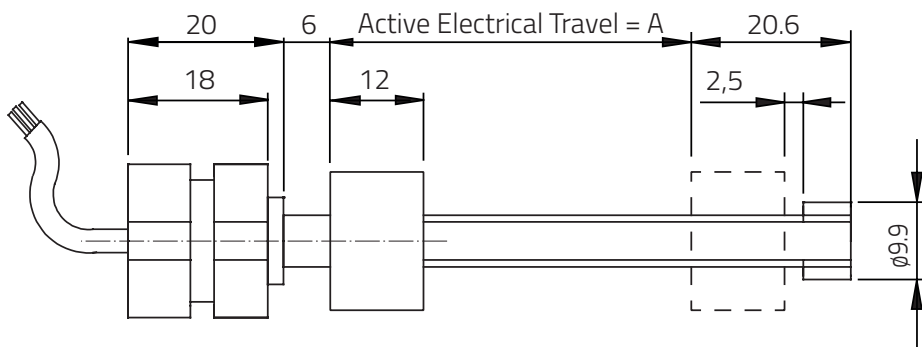
Function test when the sensor is installed in the cylinder and before commissioning of the cylinder is recommended.

If the full electrical stroke is used:

1. Connect the sensor to applicable power source and measuring equipment.
2. Set the sensor in home position, 6 mm from the header. The output signal shall be 0-10% of the supply voltage. Variations is possible depending on how close to the header the cylinder stroke ends.
3. Set the sensor in mid position. The output signal shall be 50 % of the supply voltage.
4. Set the sensor in end position, 6 mm + A from the header (A is specified in the datasheet). The output signal shall be 90-100 % of the supply voltage. Variations is possible depending on how close to the end of the sensor the cylinder stroke ends.

If the full electrical stroke is not used, then the correct output at a given position can be calculated as the output is proportional to the wiper position.

It is also possible to measure continuous output over a full stroke and check that the signal is within tolerance.





Error	Causes
No output signal	Broken wires between the sensor and connector. Damage to wiper or sensor element.
Uneven output signal or noise	Damage to wires between the sensor and connector. Damage to wiper or sensor element. The wiper mounted with the white side toward the piston i.e the wiper is mounted backwards. Low input impedance. Electromagnetic disturbances. Contamination in the cylinder.
The output is reversed	Supply and zero connection are switched. (This is not a technical issue for potentiometers, it can be used both ways)
The mid-position is not 50 % of the supply voltage (very high or very low)	The sensor is not connected with correct pin configuration.