

1 Read before use

This document may be changed without notice. The manual and the datasheet are both useful references. The latest versions of these documents are always available on our website.

1.1 Warranty

The product has a warranty period of 12 months after delivery. However the following cases are not warranted:

- By other use than what is recommended for this product.
- If the product has been modified.
- Decreased performance due to usage. Performance of potentiometric products will change during usage. Please consult us before designing the application.
- Due to natural disaster, etc.

1.2 Symbols

Please pay special attention to sections marked with the following symbols.



Danger of electric shock



General attention





Danger of fire



Forbidden

1.3 Attention on safety

Please use this document as a reference when designing for and using the product. The guidelines help to ensure safety and function of this product.

-  Design the application so that the entire system is safe even if this sensor breaks down and the output becomes irregular.
-  Design so that the entire system is safe even if the sensor is subjected to abnormalities such as disturbance in power supply, noises, the vibrations, impacts, etc.

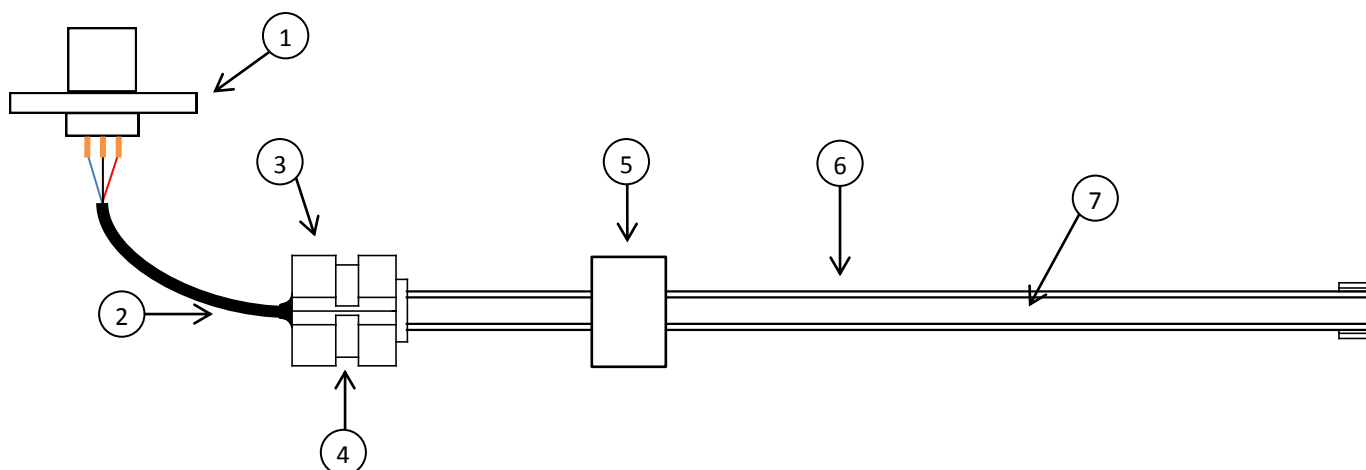
2 Outline

- Sensor for absolute measurement of cylinder position.
- Mounts inside the cylinder.
- High performance potentiometer technology.
- High linearity and repeatability.
- Install together with pressure contact 6140 or 6100 to ensure a 350 bar sealed system.
- For low pressure systems the 6150 contact can be used.

2.1 Each part name

Table 1. Suggested parts on 6300.

1. Connector; 6100, 6140, 6150 or other
2. Wires
3. Sensor head
4. Slot for set screw
5. Wiper
6. Rod
7. Track



3 Installation

The sensor system is sealed at the connector. Use Figure 1, Figure 2 and Figure 3 as reference while following the instructions.

3.1 Installation of wiper

1. Place the spring washer followed by a flat washer in the hole in the piston where the wiper will be installed.
2. Install the wiper in the piston, ⚠ make sure to mount it so that the **white** side is outwards. The rotation is not critical since both halves of the wiper are identical.
3. Place the flat washer on the wiper.
4. Fix the wiper by mounting the retaining ring.

3.2 Installation of probe fixed by set screw

This mounting option is possible for all cylinders. The installation procedure is as follows:

1. Install the wiper as described in 3.1
2. Thread the sensor in the wiper.
3. Feed a suitable wire through the cylinder and the hole where the sensor will be mounted. This wire will be used to pull the sensor in place.
4. Attach the end of the wire the existing wires of the sensor.
5. ⚠ Gently pull the sensor into place by simultaneously pull the wire while pushing the piston rod with the wiper and the sensor into the cylinder.
6. Fix the sensor in position by attaching a set screw. ⚠ Make sure to use suitable sealing compound on the set screw.
7. Mount the connector according to section 3.4.

3.3 Installation of probe fixed by retaining ring

This mounting option is possible for cylinders where the head of the sensor can be reached with a retaining ring tool. In principle only cylinders bolted in the rear end fulfill this criterion.

The installation procedure is as follows:

1. Install the wiper as described in 3.1
2. Feed the wires through the mounting hole in the detached the rear end of the cylinder and make sure they are reachable from the hole where the connector will be installed on the cylinder.
3. Mount the sensor in place.
4. Place the spring washer, flat washer and finally the retaining ring. Alternatively the sensor can be fixed by a set screw.
5. Mount the connector according to section 3.4.
6. Push the piston in through the cylinder so that the wiper is visible at the bottom.
7. Take the entire rear end with the sensor installed and thread the sensor in the wiper. ⚠ Make sure that the rod slides on the wiper without obstacle.
8. Assemble the cylinder.

3.4 Installation of connector 6100, 6140 or 6150

When sealing at connector one of the 6100 (MIL), 6140 (M12), 6150 (M12) is recommended. The 6150 is only suitable for low pressure systems (max 12 bar).

Installation procedure 6100 and 6140:

1. Place a suitable o-ring on the connector.
2. Cut the wires to suitable length.
3. Place heat shrink tube on each wire.
1. Strip 10 mm of the wires and twist them in place in the holes of the connector. The order to connect the wires is given in Cut the wires to suitable length.
2. Strip 5 mm of the wires and solder them in place in the connector. The order to connect the wires is given in Table 2
3. Carefully fit the connector in place and orient the seal correctly. ⚠ Make sure that none of the wires is stuck between the connector and the cylinder.
4. Mount the connector.
4. Table 2.
5. Solder the joints.
6. Center the heat shrink tubes over the joints and heat them in place.
7. Carefully fit the connector in place. ⚠ Make sure that none of the wires is stuck between the connector and the cylinder.
8. Mount the connector.

Installation procedure 6150: strip 5 mm of the wires and put in the solder cups

5. Place the seal over the wires.
6. Cut the wires to suitable length.
7. Strip 5 mm of the wires and solder them in place in the connector. The order to connect the wires is given in Table 2
8. Carefully fit the connector in place and orient the seal correctly. ⚠ Make sure that none of the wires is stuck between the connector and the cylinder.
9. Mount the connector.

Table 2. Connection and function of cable wires.

Function	wire color channel 1	6100 pin	6140 pin	6150 pin
V _{ref}	Blue	C	1	1
0V	Black	A	3	3
Output	Red	B	4	4

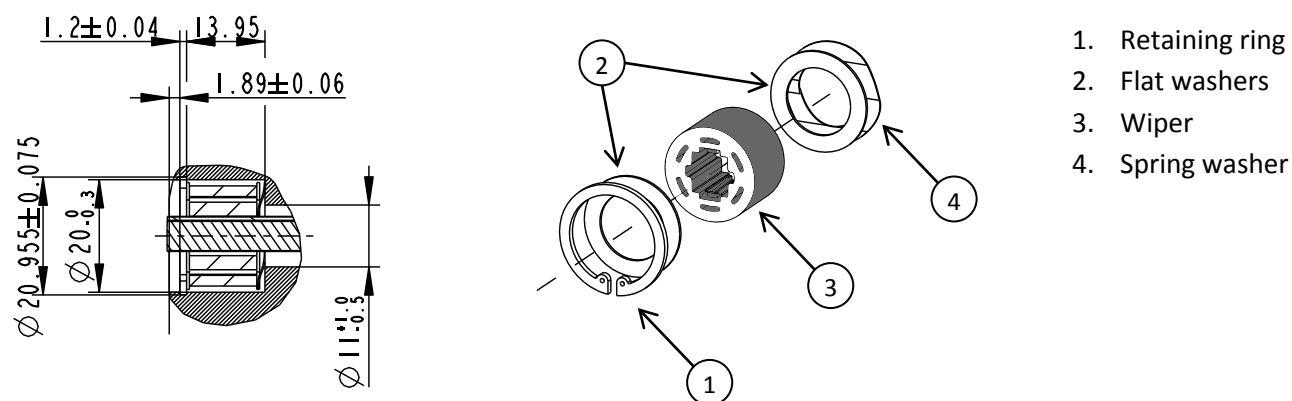


Figure 1. Wiper mounting in piston. Note that the white colored side should be towards the retaining ring.

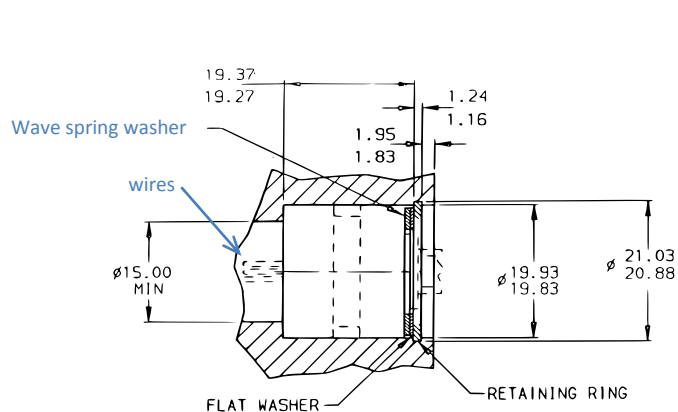


Figure 2. Mounting of head in cylinder using retaining ring.

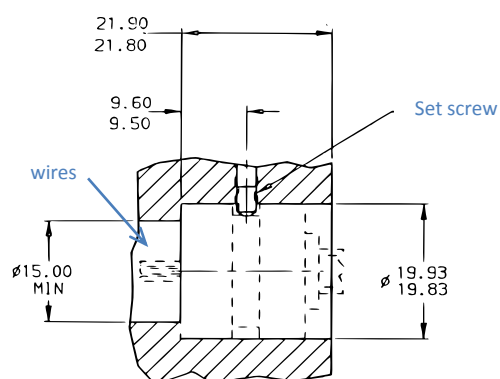


Figure 3. Mounting of head in cylinder using set screw.

4 Wiring

PS6300 should always be installed as a voltage divider for best performance. A voltage reference is needed and the output will vary 0..100% of that voltage. The current needed can be calculated by ohms law where the track resistance for the actual stroke length can be located in the PS6300 datasheet.

Input impedance of the equipment measuring the output of PS6300 should be very high, at least 100 x track resistance. Since the output current will be very small it may be affected by electrical disturbances. It is therefore recommended to use shielded cable and avoid placing the cable near noise sources such as power cables and switching equipment. Recommended cables:

- For M12: 8405, 8410 and 8490.
- For MIL: 6101 and 6102.

A recommended auxiliary is the RCE420-M12 which is a signal converter that interfaces directly with the potentiometer and provides a 4..20mA current output with a 24VDC supply. The unit is compact and built in a M12 cable so that the conversion is made close to the actual sensor. Please see the documentation on the RCE420-M12 for more information.