Actuator piston position Sensor Type SHE

Applications:
Non-contact detection of piston position in the actuator

Contents

<table>
<thead>
<tr>
<th>Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>2</td>
</tr>
<tr>
<td>Components</td>
<td>2</td>
</tr>
<tr>
<td>Installation</td>
<td>3</td>
</tr>
<tr>
<td>Amplifier / Display</td>
<td>3</td>
</tr>
<tr>
<td>Cable strain relief</td>
<td>3</td>
</tr>
<tr>
<td>Adjusting the signal point</td>
<td>4</td>
</tr>
<tr>
<td>Sensor connectivity / schematic</td>
<td>5</td>
</tr>
<tr>
<td>Part list</td>
<td>6</td>
</tr>
<tr>
<td>Conformity</td>
<td>6</td>
</tr>
<tr>
<td>Errors - Warning signs - Trouble shooting</td>
<td>6</td>
</tr>
</tbody>
</table>
Today’s molding processes require a thorough monitoring system for a fully automatic operation. Disruptions need to be automatically detected and transferred to the machine control. The function of our shut-off nozzle is monitored by the type SHE sensor. The sensor is integrated in the hydraulic or pneumatic actuator and detects the end position of the piston. From both signals the shut-off condition "open" or "closed" can be derived and passed on to the machine control through the signal amplifier.

Criteria:
- compact design
- exact, non-contact detecting of piston position
- continuous trouble free operation up to 155°C
- Signal amplifier with switch display

Retrofit:
All Herzog shut-off nozzles can be retrofitted in minutes by replacing the actuator and extending with Hall sensors, signal amplifier and connection cables.

The piston position sensor consists of:
- 2x Hall sensors with cable
- Amplifier with display unit
- Connection cable (amplifier ↔ machine control panel)

---

**Description**

**Components**

**The piston position sensor consists of:**
- 2x Hall sensors with cable
- Amplifier with display unit
- Connection cable (amplifier ↔ machine control panel)

**Hall sensor (x2)**
- Temperature range: -50…+155 °C
- High magnetic sensitivity
- Switching frequency up to 100kHz
- Sensing distance: 0…8 mm (depending on magnetic field)
- Fixing screw installation

**Amplifier with display unit**
- Operating voltage: 4…30 V
- Load current: 350mA
- Electrical isolated outputs
- PNP or NPN output possible
- Temperature range: -20…+70 °C
- Industry conforming steel housing

**Connection cable**
- 6-Pole Type: LIYY 6*0.25
- Color conformity to DIN 74100
Installation

Preparation:
The shut-off nozzle must be fitted with our SHE actuator. Also required: the sensor cable with marked sensors A / B, the delivered screws with washers for fixing the sensors, connection cable and the signal amplifier (connection cable delivered without plug).

Note:
Sensor A in Boring A (piston retracted) = LED A lights
Sensor B in Boring B (piston extended) = LED B lights

Instructions:
1. Insert Sensors into the designated boreholes and loosely hold in place with washer and screw.
2. Find the signal point (see Adjusting on the next page) and fix.
3. Place amplifier in cool area. Pay attention that the cable is not strained.

Piston position indication on the amplifier unit:
With needle shut-off nozzle:
   LED B = Nozzle open (piston extended)
   LED A = Nozzle closed (piston retracted)

With bolt shut-off nozzle:
   LED A = Nozzle open (piston retracted)
   LED B = Nozzle closed (piston extended)

Important
Place amplifier in a cool area: max. 70°C.
Secure with screws or cable ties

Amplifier unit with switch display

Cable strain-relief
Example:
Sensor cable attached with cable ties to the cylinder supply.
Adjusting

Preparation (also see pages 2 and 3):
- Cylinder must be mounted on the shut-off nozzle.
  (The piston’s end position is influenced by the shut-off mechanism)
- Sensors should be loosely fitted with washer and screws in the cylinder.
- Assemble sensor cable, signal amplifier and connection cable, and connect to the machine control. The green LED (power) should light.

Borehole A) → piston position retracted
1. Make sure piston is fully retracted
2. Pull back sensor (with screw) until end of slot
3. Push sensor slowly into borehole
4. When a signal is received; insert sensor 2-3 mm further
5. Fix sensor in place with screw

Borehole B) → piston position extended
1. Make sure piston is fully extended
2. Insert the sensor (with screw) as far as possible
3. Pull back the sensor slowly
4. When a signal is received; retract sensor 2-3 mm further
5. Fix sensor in place with screw
Because of universal connectivity, the Sensor can be used in conjunction with all types of standard control systems.
Part list

<table>
<thead>
<tr>
<th>Pos. 1</th>
<th>Pos. 2</th>
<th>Pos. 3</th>
<th>Pos. 4</th>
<th>Pos. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw M3</td>
<td>Spring washer M3</td>
<td>Hall sensor with cable</td>
<td>Amplifier</td>
<td>Connection cable</td>
</tr>
</tbody>
</table>

Conformity

The manufacturer confirms conformity with all the European Union (EU) Directives relating to this product. The CE marking must therefore be seen as proof of conformity with the Directives and has an official status, directed at the supervisor authorities in charge.

Following pertinent EC Directives:
- Low-voltage Directive 73/23/EEC
- EMC Directive 89/336/EEC

Errors - Warning signs - Trouble shooting

<table>
<thead>
<tr>
<th>Error</th>
<th>Action</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red does not light</td>
<td>Adjust sensor axially until red lights</td>
<td>Sensor not in the correct position</td>
<td>Re-position sensor in the correct position</td>
</tr>
<tr>
<td>Red lights but no signal at the machine</td>
<td>Check contacts on machine-side connector</td>
<td>Interrupted signal transmission</td>
<td>Pin assignment on machine-side connector acc. to schematic</td>
</tr>
<tr>
<td>Green does not light</td>
<td>Check contacts</td>
<td>Electrical current broken</td>
<td>Pin assignment on machine-side connector acc. to schematic</td>
</tr>
<tr>
<td>Green does not light</td>
<td>Remove sensor cable from amplifier</td>
<td>If green lights, the sensor is defective</td>
<td>Replace sensor</td>
</tr>
<tr>
<td>Green does not light</td>
<td>Remove sensor cable from amplifier</td>
<td>If green does NOT light, the amplifier is defective</td>
<td>Replace amplifier</td>
</tr>
</tbody>
</table>