Table of Contents

1 Service for the Position Sensor .................................................................3
1.1 Tools for the Position Sensor Service .................................................. 3
1.2 Basic Position Sensor Information ......................................................... 4
1.3 Installing the Position Sensor ............................................................... 4
1.4 Installing of the Actuator with Position Sensor on the Hot Runner .......... 6
1.5 Operation with SynFlow® ...................................................................... 6
1.6 Position Sensor Troubleshooting Guide ................................................ 7
1 Service for the Position Sensor

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Danger to Life by Electric Shock</strong></td>
</tr>
<tr>
<td>Electrical work must be carried out by qualified persons.</td>
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<tr>
<td>For any work on the Hot Runner System, check that the system is properly grounded.</td>
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<tr>
<td>For first aid contact your medical / safety representing.</td>
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</tbody>
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1.1 Tools for the Position Sensor Service

Use the Position Sensor Service Toolkit, each toolkit contains:
- Magnetic polarity indicator
- Position Sensor tester incl. DC power supply
- Spare Position Sensor cable

The Position Sensor Service Toolkit is used by Synventive Service Technicians to confirm that system wiring is correct and all signals are working. Contact Synventive to determine if the Toolkit can be purchased or borrowed for your application.

Magnetic Polarity Indicator
Used to search for a magnet and detect magnet polarity.

Position Sensor Tester
Basic Position Sensor Operation can be confirmed with the Position Sensor Tester.
1.2 Basic Position Sensor Information

Position Sensor - Part Number

- HESASSY03 (with 3 m Cable)
- HESASSY05 (with 5 m Cable)

Position Sensor Temperature Rating

- Sensor: 150 °C
- Cable temperature rating: 200 °C

Position Sensor has internal temperature change compensation

1.3 Installing the Position Sensor

**NOTICE**

Danger of Material Defects

Do not pinch signal wire

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**NOTICE**

Keep surfaces in contact with the Position Sensor clean.

1) Wipe down surface where Position Sensor is to be attached

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2) Attach Position Sensor (7) with four DIN7985-M3x3 screws (8) to the actuator housing (1.1).

**NOTICE**

Torque value is 1.5 Nm

Do not touch the printed circuit board, instead handle the steel enclosure.
Check the Operation of the Position Sensor

**NOTICE**

Connect the sensor to the Position Sensor tester.
The output should be within the range of 0.0 v to 5.0 v.
The voltage should be high when the valve gate is in the closed position and low when the valve gate is open.

**Basic sensor operation can be confirmed with**

- Position Sensor Tester powered up by either
  - Switching to the battery setting \( \text{\( \sim \)} \) (A) to the left.
  - or switching to the outlet setting \( \text{12V} \) (B) on the right and plugging in DC Power supply (C)
- Attach Position Sensor (H) into the Position Sensor Tester (I).
- and to a cylinder mounted sensor (K)

**NOTICE**

The output of the sensor as read by the tester should change at every position.
For the HYC4016M series the output should be high when the valve gate is closed and low when the valve gate is open.
1.4 Installing of the Actuator with Position Sensor on the Hot Runner

1) The sensor cable must be routed to the wire-guard.

**NOTICE**

An awareness of the cut-out in the top clamp plate is necessary to avoid the cable being damaged during assembly. Wire ties or fiberglass tape can be used to secure the cable to a safe path.

**NOTICE**

The Position Sensor should be used with water cooling while the manifold heater is in operation and requires SynCool® to protect it during shut-down. The temperature rating of the Position Sensor is 150 °C.

**NOTICE**

The SynFlow® system must be calibrated in the hot condition, allow hot runner system to reach temperature set point before calibrating. An additional calibration 1 hour after operation is recommended for improved sensor accuracy. Refer to SynFlow® user guidel for further detail about the overall operation of the SynFlow® system with the Position Sensor actuator.
1.6 Position Sensor Troubleshooting Guide

Use the Position Sensor Service Toolkit, each toolkit contains a magnet probe, a Position Sensor tester and a spare Position Sensor.

1) Turn on the tester by switch to the battery setting (A) or outlet setting (B) and plugging in DC Power supply (C).

2) Connect the Position Sensor dSub (D) to the tester.

3) Read the voltage on the Tester Readout (E).

4) Red LED (F) indicates a short in the sensor and should be replaced with a new sensor.

5) Green LED (G) indicates proper operation of the sensor and testing can continue.

**NOTICE**

The output of the sensor as read by the tester should change at every position.

For the HYC4016M series the output should be high when the valve gate is closed and low when the valve gate is open.

Some Potential Issues may be:

**Magnetic Polarity Indicator**

1) **Issue**

Sensor output is not changing with any piston move.

   a) Check that sensor cable for obvious damage.

   b) Use magnetic polarity indicator to confirm that a magnet is present and correct magnet polarity is aimed towards the sensor assembly (North in the HYC4016M).

   After HES removal have the magnetic polarity indicator touch the cylinder and scan the surface facing the sensor position.

   i) If magnet is incorrect or missing, replace piston with magnetized piston.

   ii) If magnet is present, use the spare sensor in the service toolkit to confirm bad sensor.

Use the magnetic polarity indicator to scan the surface facing the sensor position, by touching the cylinder.
2) **Issue**

Sensor output changes for some of the stroke but not the whole stroke. There is a “dead band.”

a) Confirm the position of the sensor and that sensor is properly torqued into position.

b) Cycle the actuator assembly with top clamp plate removed.

If it is still not performing, confirm with the magnetic polarity indicator that a magnet is present and correct magnet polarity (North in the HYC4016M) is aimed towards the sensor assembly.

3) **Issue**

Sensor voltage output is reversed

a) The sensor may have been flipped mounted at the actuator housing, verify that the sensor is not rotated 180°.

i) If it is not flipped, try the spare sensor.

b) Confirm that the magnet polarity is correct by using the magnet tester.

i) If magnet polarity is incorrect, replace the piston.