FMC Measurement Solutions 300 Series Sphere/Pig Detectors are ideal for meter prover service and pipeline sphere/pig passage detection.

Features

- Wide Pressure Range
- Bidirectional Detection
- Stainless Steel, Corrosion Resistant Parts
- Easy Operation
- Simple Installation
- Multiple Accessory Flexibility

Model 300 - Sphere/Pig Detector

The Model 300 Sphere/Pig Detector is designed to detect the passage of spheres, steel body pigs, and all urethane pigs in pipelines and liquid meter provers. The Model 300 detector has many applications ranging from pipeline pig detection to defining the calibrated section of a positive displacement liquid meter prover.

It is designed to operate in liquid or gas service at operating pressures up to 2,160 psig. The model 300 body is designed to withstand 3,000 psig operating pressure. The sphere or pig passage is indicated by a highly visible red flag (Model 310), an electrical indication (Model 320), or a combination of visual and electrical indication (Model 330).

The Model 300 base assembly is common to all the various other Series 300 models. The special design features of this unit are:

Pressure Balanced Operation
By reducing the required spring force on the actuating shaft, the Model 300's pressurized balanced operation provides optimum response and reliability.

Product Isolation
The actuation mechanism is totally isolated from the flowing stream ensuring protection against product contamination – especially important with magnetically operated switch mechanisms.

Durability
All components are selected for the broadest range of application. The Actuation Shaft seals are specially designed for superior sealing performance combined with low friction.

Model 310 - Visual Indication

The Model 310 Detector is the basic Model 300 with a red visual flag to indicate the passage of the sphere or pig at a particular point.

Applications
The Model 310 is used on pipeline launchers and receivers to indicate that the sphere or pig has been launched or received.
It can be located at various locations on the pipeline such as valve stations or lateral connections to detect spheres or pigs.

**Operation**

The Model 310 Detector requires the red visual indicator flag to be manually set (Figure 1) so that it is parallel to the pipe it is installed on (Figure 2).

As the sphere or pig passes under the Model 310 the detector shaft is moved upward which actuates the flag moving it to a vertical position (Figure 3).

After the passage of the sphere or pig the detector shaft returns to its normal position (Figure 4). The flag then needs to be reset manually to be ready for the next service (Figure 1).

**Model 320 - Electrical Indication**

The Model 320 Detector is the basic Model 300 with an electrical proximity switch to indicate the passage of the sphere or pig.

As many as three electrical detectors can be provided on the same basic Model 300.

The Model 320 uses a single pole, double throw switch for electrical indication. The contacts are installed in a hermetically sealed enclosure with an NEC Class 1, Group D rating approved for hazardous areas. The switch is UL rated. CSA rating is optional.

**Applications**

Positive displacement liquid meter prover service.

Remote indication of sphere or pig launch, receive, or passage.

Signal and Control: Can be used for actuation of valving such as in Station By-Pass Systems.

**Operation**

The electrical switch is magnetically activated as the sphere or pig passes beneath the detector and raises the ferritic stainless steel actuator shaft.

The switch is mounted in the non-pressurized portion of the Model 320 away from contact with the line fluid. This prevents any magnetic particles from collecting on the detector switch causing inaccurate actuation or malfunction.

**Model 330 - Electrical and Visual Indication**

The Model 330 Detector is the basic Model 300 with a combination of the red visual flag indicator and the electrical switch indicator to provide both forms of indication if required.

**Application**

Backup: The visual indicator is used many times as a backup in case the electrical signal is not received. The visual indicator will show if the sphere or pig has passed.
**Ordering Information**

When ordering, provide the following information:

1. Pipe O.D.
2. Pipe wall thickness
3. Maximum operating pressure
4. Type of service (gas, liquid, sphere or pig, prover, etc.)
5. Operating temperature (minimum and maximum)
6. Ambient temperature (minimum and maximum)
7. NACE requirement
8. Type of sphere/pig indication: mechanical, electrical, or both.
9. For electrical indication, specify how many detector switches (up to a maximum of three)

**Detector Assembly Parts List**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Description</th>
<th>Material</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Detector Cap</td>
<td>304 Stainless Steel</td>
<td>24-50688</td>
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<tr>
<td>2</td>
<td>4</td>
<td>Cap Screw</td>
<td>Cad. Plated</td>
<td>24-50686</td>
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<tr>
<td>3</td>
<td>2</td>
<td>Spring Loaded Seal</td>
<td>Teflon&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td>4</td>
<td>2</td>
<td>Retainer</td>
<td>304 Stainless Steel</td>
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<td>5</td>
<td>1</td>
<td>Shaft</td>
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<td>1</td>
<td>Electrical Indication Assembly</td>
<td>304 Stainless Steel</td>
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<tr>
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<td>Spring Shaft</td>
<td>Inconel</td>
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<tr>
<td>8</td>
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<td>Spring Pin</td>
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<td>9</td>
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<td>O-Ring</td>
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<td>1</td>
<td>Visual Indication Assembly</td>
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<td>24-50366</td>
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</table>

<sup>1</sup>Teflon and Viton are trademarks of I.E. Dupont De Neumours and Co.

*Note: Detector is not to be removed when pipeline is under pressure.*