DESCRIPTION

The Magnetrol® Pneumatic Tuffy® Liquid Level Switch is designed for horizontal mounting in a tank or vessel through threaded or flanged pipe connections. The single pneumatic switch mechanism is used for high or low level alarm or control applications.

FEATURES

- All 316 SS wetted components
- Cage pressures to 2200 psig (151 bar)
- NACE and/or ASME B31.3 construction
- Specific gravity as low as 0.40
- 2” NPT mounting
- Process temperatures from -40 to +300 °F (-40 to +149 °C)

TYPICAL INSTALLATION

OPTIONS

- Commercially constructed external cage with two 1” NPT top and bottom connections
- ANSI flanges
- NACE or ASME B31.3 external cage with two 1” NPT top and bottom connections available. Consult factory

APPLICATIONS

- Sour service (NACE)
- High/low alarm
- Day storage tanks
- Clean liquids
- Process vessels
**PRINCIPLE OF OPERATION**

Figures 1 and 2 illustrate the simple Magnetrol® operating principle. Switching action is obtained through the use of a magnet which is attached to a float and a switching mechanism. These two basic component assemblies are separated by a non-magnetic, pressure tight barrier.

![Figure 1](image1)
**Figure 1**
Low Level

![Figure 2](image2)
**Figure 2**
High Level

<table>
<thead>
<tr>
<th>Port</th>
<th>3-way</th>
<th>2-way</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N.O.</td>
<td>N.C.</td>
</tr>
<tr>
<td>A</td>
<td>Inlet</td>
<td>Exhaust</td>
</tr>
<tr>
<td>B</td>
<td>Exhaust</td>
<td>Inlet</td>
</tr>
<tr>
<td>C</td>
<td>Outlet</td>
<td>Outlet</td>
</tr>
</tbody>
</table>

Note: Orientation of ports may vary from unit to unit.

**DIMENSIONAL SPECIFICATIONS**

**PNEUMATIC SWITCH MODELS**

Optional accessories

![Cage](image3)

![Square Flange](image4)
Flange Part No. 04-6804-001
Flange Rating: 250 psig @ +400° F
(17 bar @ +204° C)

![ASME Flange](image5)
(Consult factory when ordering)
**Model Number**

**Basic Model Number**
- 039 | Tuffy® Float Switch

**Switch Action**
- 6 | Pneumatic

**Housing**
- 0 | 316 Stainless steel with ¼” NPT airline connections

**Specific Gravity and Pressure Ratings**
- 0 | 0.60 minimum S.G., 1500 psi maximum pressure
- 4 | 0.40 minimum S.G., 500 psi maximum pressure

**Mechanical Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>0.6 SG 1500 psi at +300 °F (103 bar at +149 °C)</td>
</tr>
<tr>
<td></td>
<td>0.4 SG 500 psi at +300 °F (34 bar at +149 °C)</td>
</tr>
<tr>
<td>Process Temperature</td>
<td>-40 to +300 °F (-40 to 149 °C)</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>Max. 100 °F (38 °C) with maximum process temperature</td>
</tr>
<tr>
<td>Pneumatic Switch Supply Pressure</td>
<td>Vacuum to 200 psi (13.8 bar) maximum</td>
</tr>
<tr>
<td>Maximum Leakage Rate</td>
<td>0.5 SCFH (0.015 SCMH @ 100 psi (6.9 bar))</td>
</tr>
<tr>
<td>Minimum Air Flow</td>
<td>2.0 SCFM (0.06 SCMM @ 100 psi (6.9 bar))</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.6 minimum or 0.4 minimum</td>
</tr>
<tr>
<td>Materials of Construction</td>
<td>316/316L SS wetted components including NACE and ASME B31.3</td>
</tr>
<tr>
<td>Housing</td>
<td>316 stainless steel</td>
</tr>
<tr>
<td>Cage (optional)</td>
<td>Carbon steel or stainless steel *</td>
</tr>
<tr>
<td>Cage Rating</td>
<td>Schedule 80 2200 psi at +300 °F (151 bar at +149 °C)</td>
</tr>
<tr>
<td></td>
<td>Schedule 40 1200 psi at +300 °F (83 bar at +149 °C)</td>
</tr>
</tbody>
</table>

* NACE or ASME B31.3 external cage available. Consult factory.
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