Bus / Coach
Door Obstruction Detection

Bulletin 0600-B79

Parker
Door Sensing

Door sensing for the Bus and Coach Industry

Door sensing a legal requirement

Within the Bus and Coach industry there are requirements to provide obstruction detection within the door system. This should reverse the movement of the door should a passenger or some other obstruction restrict the doors operation.

This can be achieved either by using a sensitive edge or by sensing of the door actuator pressure and providing an electrical or pneumatic output signal to the door control system to initiate door opening.

The schematic diagram provides either an electrical or a pneumatic output to reverse the door should the door become obstructed prior to fully closing. This is achieved by sensing pressure differential within the door actuator.

Order Codes

<table>
<thead>
<tr>
<th>Door Sensing Valve</th>
<th>74010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic switches</td>
<td></td>
</tr>
<tr>
<td>PXB-B1011</td>
<td>Normally none passing (NNP)</td>
</tr>
<tr>
<td>PXB-B1021</td>
<td>Normally passing (NP)</td>
</tr>
<tr>
<td>Electrical switches</td>
<td></td>
</tr>
<tr>
<td>ZB2-BE101</td>
<td>Normally open (depict NO contact)</td>
</tr>
<tr>
<td>ZB2-BE102</td>
<td>Normally closed (depict NC contact)</td>
</tr>
</tbody>
</table>
Obstruction Detection Sensor and Valve Module

How the system works.
Momentary input from the door close button shifts the valve to initiate door closing.
Loss of back pressure, caused by an obstruction, triggers the pressure switch to shift the valve and initiate door opening. A remotely mounted normally closed reed switch overrides the detection at the doors fully closed position.

System Setup:
1. Load.
The supply pressure should be adjusted (regulated) to satisfy the load requirement of the system.
- The supply pressure range can be adjusted with a standard regulator.
- The supply pressure range of the Obstruction Detection module is between 45 and 116 PSI.

2. Speed.
The flow controls on the Obstruction Detection module should be adjusted to satisfy the speed requirement of the door.
- The exhaust throttle flow control can be adjusted with a flat head screwdriver.

The pressure switch should be adjusted to meet the obstruction detection sensitivity requirement of the door.
- The pressure switch can be adjusted by a flat head screwdriver.
- A clockwise adjustment results in more sensitivity.
- A counter-clockwise adjustment results in less sensitivity.

See product brochure for installation schematics.

Product Features:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Voltage</th>
<th>Connections</th>
<th>Working Pressure</th>
<th>Flow</th>
<th>Temperature*</th>
</tr>
</thead>
<tbody>
<tr>
<td>HO-BD0800061</td>
<td>12 VDC</td>
<td>Flying Leads</td>
<td>15 to 145 psi (1 to 10 bar)</td>
<td>CV 0.75 – 2.7</td>
<td>-40°C/+70°C (-40°F to 158°F)</td>
</tr>
<tr>
<td>HO-BD0400108</td>
<td>24 VDC</td>
<td>DIN</td>
<td>15 to 145 psi (1 to 10 bar)</td>
<td>CV 0.75 – 2.7</td>
<td>-40°C/+70°C (-40°F to 158°F)</td>
</tr>
</tbody>
</table>

Inlet: 3/8" DOT Tube
Outlet: 1/4" DOT Tube

Note: Metric sizes available
Obstruction Detection Pressure Switch
Fully Adjustable Pressure Differential Sensing Valve
- Electrical Output KNS1838

Designed primarily for use as an obstruction detection control valve incorporating pneumatic sensing.

**Product Features:**
- Media - compressed air / vacuum
- Pneumatic switching
- Preset or adjustable switching pressures
- Dry or lubricated operation
- Exhaust only sensing
- Differential pressure sensing

**Materials:**
- Body - Aluminum
- Diaphragm seal: Nitrile

**Mounting:**
- Diaphragm valve mounts via M20 x 1.5 (Nose mount nut included)

**Specifications**
- Maximum pressure: 8 bar (116 PSI)
- Adjustable pressure range: 0.2 To 4.0 bar (3 to 58 PSI)
- Temperature range: -20°C to 60°C (-4°C to 140°C)
- Port connections: 4mm or 5/32" push-in

Obstruction Detection Pneumatic Switch
Fully Adjustable Pressure Differential Sensing Valve
- Remote Bleed Operated KNS1696

Designed primarily for use as an obstruction detection control valve incorporating pneumatic sensing.

**Product Features:**
- Media - compressed air / vacuum
- Pneumatic switching
- Preset or adjustable switching pressures
- Dry or lubricated operation
- Exhaust only sensing
- Differential pressure sensing

**Materials:**
- Body - Zinc based alloy
- Diaphragm seal: Nitrile

**Mounting:**
- Diaphragm valve mounts via M20 x 1.5 (Nose mount nut included)

**Requirements:**
- Requires remote valve for output switching.

**Specifications**
- Maximum pressure: 8 bar (116 PSI)
- Adjustable pressure range: 0.2 To 4.0 bar (3 to 58 PSI)
- Temperature range: -20°C to 60°C (-4°C to 140°C)
- Port connections: 4mm push-in connections
Obstruction Detection Valves
Diaphragm Actuated (Bleed Spool Valves)

Sub-base and Manifold Mounted - For Obstruction Detection KV38C43
3/2 Valves, 5/2 Function Also Available

Materials:
- Body: Aluminum
- Spool: Aluminum
- Seals: Irradiated Polyethylene, Polyurethane

Sizes:
- G1/8, Ø4mm, Ø6mm

Product Features:
- Low friction diaphragm operation
- Indirect action
- Sensitive, accurate, repeatable switching
- Trigger action even on slowly changing pressures

Features
- Function: 3/2, (5/2 on request)
- Port connections: Via separate sub-base or manifold
  - Thread G1/8 BSP
  - Push-in fitting Ø4mm
  - Push-in fitting Ø6 mm
  - Detection ports M5
- Lubrication: Dry or lubricated
- Filtration: 50 μm
- Temperature range: -20°C min to +50°C max (-4°F to 122°F)
- Main pressure range: -1 bar min to +8 bar max (-14.5 to 116 PSI)
- Pilot air flow when operated: 0.11 nl/s @ 5.5 bar (80 PSI)
- Lubrication: Dry or lubricated
- Filtration: 50 μm
- Temperature range: -20°C min to +50°C max (-4°F to 122°F)
- Main pressure range: -1 bar min to +8 bar max (-14.5 to 116 PSI)
- Pilot air flow when operated: 0.11 nl/s @ 5.5 bar (80 PSI)

Additional information:
- *Port Connections: These valves require a separate sub-base or manifold to enable pneumatic port connections to be made.
- There are two types of sub-bases to choose from:
  - Side entry - with G1/8 threaded ports;
  - Bottom entry - with integral push-in fitting cartridges.

<table>
<thead>
<tr>
<th>Part number</th>
<th>Pilot pressure bar (min.)</th>
<th>Pilot pressure bar (max.)</th>
<th>Flow nl/s dm³/s @ 5.5 bar</th>
<th>Cv</th>
<th>Effective Ø mm</th>
<th>Switching pressure bar</th>
<th>Over pressure bar (max.)</th>
<th>Differential pressure bar (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KV38C43</td>
<td>3</td>
<td>8</td>
<td>7.0</td>
<td>0.26</td>
<td>3.2</td>
<td>0.1 to 4.0</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valve type</th>
<th>Subbase option A</th>
<th>Subbase option B</th>
<th>Subbase option C</th>
<th>Part number</th>
<th>Port connection</th>
<th>Function</th>
<th>Actuation “I”</th>
<th>Actuation “O”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side thread G1/8</td>
<td>Button push-in fitting for Ø6mm OD tubing</td>
<td>Button push-in fitting for Ø4mm OD tubing</td>
<td>KV38C43</td>
<td>*</td>
<td>3/2</td>
<td>Diaphragm bleed</td>
<td>Air return</td>
<td></td>
</tr>
</tbody>
</table>

* See subbase / manifold Chart