Series 8000 Air Actuated Valves for liquid service

- **Pneumatically actuated valves** with powerful closing spring for reliable operation
- **Compact design** with integral solenoid, quick exhaust and position switches that protects components, simplifies piping and minimizes space requirements
- **Factory Mutual (FM), CSA (6.5 C/I & 3.9), IECEx, INMETRO and KTL (KC mark) approved** safety shut-off valves
- **Hazardous Location approved**: Intrinsically Safe for Class I, Div. 1 (and ATEX Zone 1/21); Non-Incendive for Class I, Div. 2
- Large top mounted 360-degree open-shut visual position indication, configurable in red/green or yellow/black color schemes
- **Cast iron and carbon steel body assemblies** with internal trim options to handle general purpose or severe fluids
- **Ambient temperature ranges** of -40°F (-40°C) to 140°F (60°C); **Fluid temperature range** of -40°F (-40°C) to 550°F (288°C)
- **Application flexibility** provided with 3/8" (DN10) through 2" (DN50) line sizes & line pressures up to 51 bar
- **Actuator assemblies are field-replaceable** and available in 120VAC 50/60 Hz, 240VAC 50/60 Hz, and 24VDC (with low power option), rated for NEMA 4, NEMA 4X and IP65
- Option available to utilize customer-supplied, externally mounted solenoids. When used in hazardous locations, the component must be rated for the Class and Division of the hazardous area.
Features & Benefits

MAXON Series 8000 Air Actuated Valves combine a unique space-saving design with a maintenance-free body and a replaceable actuator for easy installation and smooth, trouble-free operation.

The valve’s quick exhaust and powerful closing spring provide valve closure in less than one second and reliable, long-life operation.

Series 8000 Valve's compact design simplifies piping design and minimizes space requirements.

The field-replaceable actuator provides easier maintenance and reduced downtime. The actuator can also be rotated around the valve body in 90° increments to fit your specific application requirements.

A unique stem seal design eliminates packing adjustments for reduced maintenance and minimized drag on closing.

The large top-mounted open-shut indicator is visible from all angles for easy proof of valve position. FM and CSA approvals for use as a fuel safety shut-off valve making easy integration with worldwide certifications.
Switch Assemblies

- Provides positive valve position - open or closed
- Complies with "proof of closure" requirements
- Easily integrates with an analog control system, DCS or PLC

**VOS2/VCS2 Switch Assemblies** with Terminal Blocks and Leads Mounted

- Factory-mounted to terminal strip to shorten installation time
- Easy replacement (2 screws)
- Locating pins guarantee accurate mounting position
- No adjustment required

**Body and Trim Selections**

**Cast iron and carbon steel body assemblies** feature metal-to-metal seating that meets FCI 70-2 control valve standard for Class VI seat leakage. Industrial-strength high alloy discs and hex nuts are available for severe fluids. Contact MAXON with your specific application details.

**Valve bodies** are available in your choice of threaded, flanged and socket-welded connections. Bodies are currently available in 3/8" (DN10) through 2" (DN50).

**Normally-closed shut-off valves** use instrument air to open quickly. Removal of electrical signal allows release of control air through solenoid and quick exhaust valve allowing the Series 8000 Valve to close in less than one second. Optional speed control set kit available for slower opening adjustment.

**Series 8031, 8032 & 8033**

require 2.1-6.9 bar instrument air

**Series 8131, 8132 & 8133**

require 2.1-6.9 bar instrument air
## Valve cycle requirements

This is based on the standards that MAXON valves are approved to and the corresponding minimum number of cycles to be completed without failure as shown in the chart below.

<table>
<thead>
<tr>
<th>Valve Cycle Requirements</th>
<th>CSA (CSA 6.5)</th>
<th>FM (FM 7400)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic - Normally Closed</td>
<td>100,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>
Valve Model Number Description

Every MAXON Series 8000 Valve can be accurately identified by the model number shown on the valve nameplate. The example below shows a typical Series 8000 Valve model number, along with the available choices for each item represented in the model number. The first five choices determine the valve’s configured item number. Valve body and actuator options are identified by the next eight characters in the model number.

<table>
<thead>
<tr>
<th>Configured Item Number</th>
<th>Valve Body</th>
<th>Actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Valve Size</td>
<td>Flow Capacity</td>
</tr>
<tr>
<td>038</td>
<td>S</td>
<td>81</td>
</tr>
</tbody>
</table>

Valve Size
- 038 – 3/8” (DN 10)
- 050 – 1/2” (DN 15)
- 075 – 3/4” (DN 20)
- 100 – 1” (DN 25)
- 125 – 1-1/4” (DN 32)
- 150 – 1-1/2” (DN 40)
- 200 – 2” (DN 50)

Flow Capacity
- H – High
- S – Standard

Operating Pressure Rating
- 80 – Pneumatic Standard Pressure
- 81 – Pneumatic High Pressure

Normal Position
- 3 – Normally-Closed Liquid Shut-Off Valve

Area Classification
- 1 – General Purpose
- 2 – Non-incendive, Class I, II and III Division 2
- 3 – Intrinsically Safe, Class I, II and III Division 1 (and ATEX Zone 1/21) [1]
- 4 – Valve Body Only

Note [1]: 50°C maximum ambient temperature limit

Body Connection
- A – NPT
- B – ANSI Class 300 Flanged
- C – ISO 7-1 Threaded
- E – Socket Welded Nipple
- F – Socket Welded Nipple w/Class 150 (PN20) Flanges
- G – Socket Welded Nipple w/Class 300 (PN50) Flanges
- H – EN 1092-1 PN16 Flanged
- I – Socket Welded Nipple w/Class 600 (PN110) Flanges
- J – Butt-Welded Nipple
- X – Special

Body Seals & Stem Packing
- A – Buna-N w/Teflon
- B – Viton w/Teflon
- C – Ethylene-Propylene w/Teflon
- D – Kalrez w/Grafoil
- X – Special

Body Material
- 1 – Cast Iron
- 2 – Carbon Steel
- X – Special

Body Trim Package
- B – Ductile
- D – Stellite
- P – PEEK
- X – Special

Primary Voltage
- A – 120VAC 50Hz
- B – 120VAC 60Hz
- D – 240VAC 50Hz
- E – 240VAC 60Hz
- G – 24VDC
- H – 24VDC IS [1]
- J – 24VDC IS-ATEX [1]
- X – Actuator Only

Switch Option
- 0 – None
- 1 – VOS1/VCS1 - V7
- 2 – VOS2/VCS2 - V7
- 3 – VOS1/VCS1 - IP67
- 4 – VOS2/VCS2 - IP67
- X – Special

Enclosure Rating
- A – NEMA 4, IP65
- B – NEMA 4X, IP65
- X – Actuator Only

Instruction Language
- 0 – English
- 1 – French
- 3 – German
- 4 – Portuguese
- 5 – Spanish

Visual Indication
- 1 – Red-closed/green-open
- 2 – Red-open/green closed
- 3 – Yellow-open/black-closed
## Valve Body Assembly Options & Specifications

### Series 8000 normally-closed liquid shut-off valves

<table>
<thead>
<tr>
<th>Nominal pipe size</th>
<th>Flow capacity</th>
<th>Actuator pressure class</th>
<th>Body connections available</th>
<th>Body material</th>
<th>Trim package options</th>
<th>Cv rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot; (DN10)</td>
<td>Standard High</td>
<td>A,C</td>
<td>1</td>
<td>D</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>1/2&quot; (DN15)</td>
<td>Standard High</td>
<td>A,C, 1,2</td>
<td>E,F,G,I,J</td>
<td>D, P</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>3/4&quot; (DN20)</td>
<td>Standard High</td>
<td>A,C, 1,2</td>
<td>E,F,G,I,J</td>
<td>D, P</td>
<td>9.6</td>
<td></td>
</tr>
<tr>
<td>1&quot; (DN25)</td>
<td>Standard</td>
<td>A,C</td>
<td>E,F,G,I,J</td>
<td>B,D,P</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>1-1/4&quot; (DN32)</td>
<td>Standard</td>
<td>A,C</td>
<td>E,F,G,I,J</td>
<td>B,D,P</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>High Cap.</td>
<td>Standard</td>
<td>A,C, E,F,G,I,J</td>
<td>2</td>
<td>D</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Standard</td>
<td>B,H</td>
<td>2</td>
<td>D</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>2&quot; (DN50)</td>
<td>Standard</td>
<td>B,H</td>
<td>2</td>
<td>D</td>
<td>218</td>
<td></td>
</tr>
</tbody>
</table>

### Body Connections:
- A - NPT
- B - ANSI Class 300 Flanged
- C - ISO 7-1 Threaded
- E - Socket Welded Nipple
- F - Socket Welded Nipple w/ Class 150 (PN20) Flange
- G - Socket Welded Nipple w/ Class 300 (PN50) Flange
- H - EN 1092-1 (PN16) Flanged
- I - Socket Welded Nipple w/ Class 600 (PN110) Flange
- J - Butt-Welded Nipple
- X - Special

### Body Material:
- 1 - Cast Iron
- 2 - Cast Steel

### Trim Package Options and Typical Material:
- B - Ductile
- D - Stellite
- P - PEEK

### Body Seals:
Standard elastomers are Buna-N, Viton, Ethylene-Propylene and Kalrez. Standard packings are Teflon and Grafoil.
## Maximum operating pressure ratings

### Series 8000 normally-closed liquid shut-off valves

<table>
<thead>
<tr>
<th>Nominal pipe size</th>
<th>Flow capacity</th>
<th>Actuator pressure class</th>
<th>Cv rating</th>
<th>Maximum MOPD Rating (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Group 1</td>
</tr>
<tr>
<td>3/8” (DN10)</td>
<td>Standard</td>
<td>High</td>
<td>3.4</td>
<td>28</td>
</tr>
<tr>
<td>1/2” (DN15)</td>
<td>Standard</td>
<td>High</td>
<td>3.4</td>
<td>51</td>
</tr>
<tr>
<td>3/4” (DN20)</td>
<td>Standard</td>
<td>High</td>
<td>9.6</td>
<td>51</td>
</tr>
<tr>
<td>1” (DN25)</td>
<td>Standard</td>
<td>Standard</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td></td>
<td>51</td>
</tr>
<tr>
<td>1-1/4” (DN32)</td>
<td>Standard</td>
<td>Standard</td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td></td>
<td>51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>1-1/2” (DN40)</td>
<td>Standard</td>
<td>Standard</td>
<td>123</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>2” (DN50)</td>
<td>Standard</td>
<td>Standard</td>
<td>218</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>

Group 1 fluids include:
JP4, Kerosene, No. 1 fuel oil, No. 2 fuel oil, and Ammonia

Group 2 fluids include:
No. 4 fuel oil, No. 5 fuel oil, and No.6 fuel oil

Group 3 fluids include:
Liquid Ethanol, Liquid Methanol, No. 6 fuel oil (heavy), Liquid Butane and Liquid Propane

Group 4 fluids include:
Residual fuel oil and Steam

NOTE: MOP ratings are based on a viscosity of 150 SSU or less. Higher viscosities may result in further reductions. Contact MAXON for details.
NOTE: Ratings are in accordance with ASME B16.4, ASME B16.5, EN 1092-1 or ISO 7005.
Class 250 applies to: connection choice A
PN20 applies to: connection choice C
Class 150 applies to: connection choice F
Class 300 applies to: connection choices A, B, E, G, I, and J
PN16 applies to: connection choices C, E, H, and J

NOTE: EN 1092-1 and ISO 7005 allow PN16 products to be used in PN10 systems. The MOPD ratings are reduced in those instances.
Valve Body Capacities with #2 Oil

To select a valve for your application, use either Cv factor calculations, or this graph showing approximate pressure drop at various flows of #2 oil. Typically, pressure drop for fuel flows should not exceed 10% of inlet pressure.

Maxon SSOV Liquid Flow Capacities

For preheated #5 or #6 oil, multiply the required flow rate in M³H by the factor given in the table at right, then select a valve based upon that equivalent flow of #2 oil and the allowable drop.

<table>
<thead>
<tr>
<th>Oil Grade</th>
<th>#5</th>
<th>#6</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C @ Inlet</td>
<td>51.7</td>
<td>71.1</td>
</tr>
<tr>
<td>Factor</td>
<td>1.43</td>
<td>1.11</td>
</tr>
</tbody>
</table>

For example: To size for 5 PSIG drop with a 3500 M³H flow of #6 oil preheated to 60°C, the multiplier is 2. Equivalent flow of #2 oil is then 3500 x 2, or 7000 M³H. Chart shows that a 5 PSIG drop will require use of a valve body having a Cv factor of at least 45.
Swinging gate body/trim specifications

3/8” (DN10) through 3/4” (DN20) threaded body valves

1) Body o-ring
2) Body o-ring
3) Stem o-ring
4) Stem packing ring
5) Body
6) Hex nut / renewable seat
7) Stem bushing
8) Stem
9) Stem spring
10) Disc carrier
11) Disc
12) Disc spring
13) Back-up rings
14) Body gaskets
15) Stem bushing gasket
16) Packing nut

1” (DN25) through 1-1/4” (DN32) threaded body valves

1) Body o-ring
3) Stem o-ring
4) Stem packing ring
5) Body
6) Hex nut / renewable seat
7) Stem bushing
8) Stem
9) Stem spring
10) Disc carrier
11) Disc
12) Disc spring
13) Back-up rings
14) Body gaskets
1-1/2” (DN40) through 2” (DN50) flanged body valves

1) Body o-ring
2) Stem o-ring
3) Inner stem thrust ring
4) Stem packing ring
5) Body
6) Hex nut / renewable seat
7) Stem bushing
8) Stem
9) Stem spring
10) Disc carrier
11) Disc
12) Disc spring
13) Body gaskets
14) Body gaskets
15) Outlet flange

Valve Body Assembly Options & Accessories

3/8” (DN10) through 3/4” (DN20) Valves
1" (DN25) to 1-1/4" (DN32) Valves

SECTION B-B

1-1/2" (DN40) to 2" (DN50) Valves

SECTION C-C
### Body seals and packing materials

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Standard Temperature</th>
<th>High Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body o-ring</td>
<td>Viton</td>
<td>Kalrez</td>
</tr>
<tr>
<td>2</td>
<td>Body o-ring</td>
<td>Viton</td>
<td>Kalrez</td>
</tr>
<tr>
<td>3</td>
<td>Inner stem thrust ring</td>
<td>Teflon</td>
<td>Grafoil</td>
</tr>
<tr>
<td>4</td>
<td>Stem packing ring</td>
<td>Teflon</td>
<td>Envex</td>
</tr>
</tbody>
</table>

### Body, seat & outlet specifications

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Trim 1</th>
<th>Trim 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Body</td>
<td>Cast Iron</td>
<td>Carbon Steel</td>
</tr>
<tr>
<td>6</td>
<td>Hex nut / renewable seat</td>
<td>ASTM A126, Class B</td>
<td>ASTM A216 Gr. WCB</td>
</tr>
<tr>
<td>17</td>
<td>Outlet flange</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Nippled valves or nippled valves with flanges are available only in steel.

### Internal trim material specifications

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Trim B</th>
<th>Trim D</th>
<th>Trim P</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Hex nut / renewable seat (face only)</td>
<td>#420 stainless steel</td>
<td>Hard-faced steel</td>
<td>Hard-faced steel</td>
</tr>
<tr>
<td>8</td>
<td>Stem</td>
<td>#416 stainless steel</td>
<td>#416 stainless steel</td>
<td>#416 stainless steel</td>
</tr>
<tr>
<td>9</td>
<td>Stem spring</td>
<td>Steel</td>
<td>Steel</td>
<td>Steel</td>
</tr>
<tr>
<td>10</td>
<td>Disc carrier</td>
<td>Steel</td>
<td>Steel</td>
<td>Steel w/PEEK insert</td>
</tr>
<tr>
<td>11</td>
<td>Disc</td>
<td>Nodular iron</td>
<td>Hard-faced steel</td>
<td>Hard-faced steel</td>
</tr>
<tr>
<td>12</td>
<td>Disc spring</td>
<td>#302 stainless steel</td>
<td>#302 stainless steel</td>
<td>#302 stainless steel</td>
</tr>
<tr>
<td>13</td>
<td>Back-up rings</td>
<td>Teflon</td>
<td>Teflon</td>
<td>Teflon</td>
</tr>
<tr>
<td>14</td>
<td>Body gaskets</td>
<td>Soft iron</td>
<td>Soft iron</td>
<td>Soft iron</td>
</tr>
<tr>
<td>15</td>
<td>Stem bushing gasket</td>
<td>Soft iron</td>
<td>Soft iron</td>
<td>Soft iron</td>
</tr>
<tr>
<td>16</td>
<td>Packing nut</td>
<td>Zinc-plated steel</td>
<td>Zinc-plated steel</td>
<td>Zinc-plated steel</td>
</tr>
<tr>
<td>18</td>
<td>Adapter bracket</td>
<td>Steel</td>
<td>Steel</td>
<td>Steel</td>
</tr>
</tbody>
</table>

[1] 1-1/2" & 2" stem bushings are #416 stainless steel

### Adapter base material specifications

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Pressure Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>20</td>
<td>Sleeve bearing</td>
<td>Bronze</td>
</tr>
<tr>
<td>21</td>
<td>Operating rod</td>
<td>17-4PH Stainless steel</td>
</tr>
<tr>
<td>22</td>
<td>Stop collar</td>
<td>#303 Stainless steel</td>
</tr>
<tr>
<td>23</td>
<td>Spring</td>
<td>17-7PH Stainless steel wire</td>
</tr>
<tr>
<td>24</td>
<td>Lower spring retainer</td>
<td>N/A</td>
</tr>
</tbody>
</table>

[1] 1-1/2" & 2" standard pressure adapter base is cast iron
[2] 3/8" - 3/4" high pressure adapter base is cast aluminum
[3] Treated for rust prevention
### Media compatibility and valve approval certifications

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Body seals &amp; stem packing</td>
<td>Body material</td>
<td>Internal trim</td>
</tr>
<tr>
<td>Ammonia (anhydrous)</td>
<td>AMMA</td>
<td>C,D</td>
<td>1,2</td>
<td>D</td>
</tr>
<tr>
<td>Ethanol (liquid)</td>
<td>ETHL</td>
<td>A,C,D</td>
<td>2</td>
<td>D,P</td>
</tr>
<tr>
<td>JP4</td>
<td>JP4</td>
<td>A,B,D</td>
<td>1,2</td>
<td>B,D</td>
</tr>
<tr>
<td>Kerosene</td>
<td>KERO</td>
<td>A,B,D</td>
<td>1,2</td>
<td>B,D</td>
</tr>
<tr>
<td>Methanol (liquid)</td>
<td>METHL</td>
<td>A,C,D</td>
<td>1,2</td>
<td>B,D,P</td>
</tr>
<tr>
<td>No. 1 Fuel Oil</td>
<td>NO1OIL</td>
<td>A,B,D</td>
<td>1,2</td>
<td>B,D</td>
</tr>
<tr>
<td>No. 2 Fuel Oil</td>
<td>NO2OIL</td>
<td>A,B,D</td>
<td>1,2</td>
<td>B,D</td>
</tr>
<tr>
<td>No. 4 Fuel Oil (125 SSU max)</td>
<td>NO4OIL</td>
<td>A,B,D</td>
<td>1,2</td>
<td>B,D</td>
</tr>
<tr>
<td>No. 5 Fuel Oil (900 SSU max)</td>
<td>NO5OIL</td>
<td>A,B,D</td>
<td>1,2</td>
<td>B,D</td>
</tr>
<tr>
<td>No. 6 Fuel Oil (2500 SSU max)</td>
<td>NO6OIL</td>
<td>A,B,D</td>
<td>1,2</td>
<td>B,D</td>
</tr>
<tr>
<td>No. 6 Fuel Oil (7000 SSU max)</td>
<td>NO6OILH</td>
<td>A,B,D</td>
<td>1,2</td>
<td>B,D</td>
</tr>
<tr>
<td>Residual oil (15000 SSU max)</td>
<td>RESID</td>
<td>A,B,D</td>
<td>1,2</td>
<td>B,D</td>
</tr>
<tr>
<td>Butane (liquid)</td>
<td>BUTL</td>
<td>A,D</td>
<td>1,2</td>
<td>B,D,P</td>
</tr>
<tr>
<td>Propane (liquid)</td>
<td>PROPL</td>
<td>A,D</td>
<td>1,2</td>
<td>B,D,P</td>
</tr>
<tr>
<td>Steam</td>
<td>STEAM</td>
<td>D</td>
<td>1,2</td>
<td>B,D,P</td>
</tr>
</tbody>
</table>

[1] Group 2 fluid MOP ratings are typically 5% lower than standard MOP ratings (refer to chart on page 10-30.4-7)  
[2] Group 3 fluid MOP ratings are typically 30% lower than standard MOP ratings (refer to chart on page 10-30.4-7)  
[3] Group 4 fluid MOP ratings are typically 40% lower than standard MOP ratings (refer to chart on page 10-30.4-7)  
[4] MOP ratings for fuel oils are based on a viscosity of 150 SSU or less. Higher viscosities may result in further reductions to MOP ratings. Contact MAXON for details.  
[5] For elevated fluid temperatures, the MOP is to be reduced in accordance to the applicable piping standard(s).  
[6] Indicated SSU maximum is based on 38°C standard.  
[7] CSA certification does NOT apply if the body connections are either ISO threaded or EN1092 flanged.

### Body Seals & Packing:  
- A - Buna-N w/ Teflon  
- B - Viton w/ Teflon  
- C - Ethylene-Polypropylene w/ Teflon  
- D - Kalrez w/ Grafoil

### Body Material:  
- 1 - Cast Iron  
- 2 - Cast Steel  
- B - Ductile  
- D - Stellite  
- P - PEEK
Valve Actuator Assembly Specifications

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Item Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Base Plate</td>
<td>29</td>
<td>M6-1.0 x 20 Cap Screw</td>
</tr>
<tr>
<td>2</td>
<td>Bonnet Gasket</td>
<td>30</td>
<td>3/4&quot; Pipe Plug</td>
</tr>
<tr>
<td>3</td>
<td>Drive Pin</td>
<td>31</td>
<td>1/8&quot; Inlet Pipe Plug</td>
</tr>
<tr>
<td>4</td>
<td>Filter Vent</td>
<td>32</td>
<td>Info Plate</td>
</tr>
<tr>
<td>5</td>
<td>Cylinder Assembly</td>
<td>33</td>
<td>Actuator Bolts (Not Shown)</td>
</tr>
<tr>
<td>6</td>
<td>M6 Lock Washer</td>
<td>34</td>
<td>Switch Assembly</td>
</tr>
<tr>
<td>7</td>
<td>M5-0.8 x 40 Hex Screw</td>
<td>35</td>
<td>Liquid Tight Connector</td>
</tr>
<tr>
<td>8</td>
<td>O-Ring</td>
<td>36</td>
<td>Solenoid w/Quick Exhaust Assembly</td>
</tr>
<tr>
<td>9</td>
<td>O-Ring</td>
<td>36A</td>
<td>Solenoid Cap</td>
</tr>
<tr>
<td>10</td>
<td>Solenoid Adapter Inlet</td>
<td>36B</td>
<td>Solenoid Cap</td>
</tr>
<tr>
<td>11</td>
<td>Housing</td>
<td>37</td>
<td>Switch &amp; Terminal Bracket</td>
</tr>
<tr>
<td>12</td>
<td>Housing Gasket</td>
<td>38</td>
<td>DIN Rail</td>
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<tr>
<td>13</td>
<td>M6-1.0 x 60 Soc HD Cap Screw</td>
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<td>End Stop</td>
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<td>14</td>
<td>O-Ring</td>
<td>40</td>
<td>Terminal Block</td>
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<tr>
<td>15</td>
<td>Top Plate</td>
<td>41</td>
<td>End Cover</td>
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<td>16</td>
<td>Switch Indicator</td>
<td>42</td>
<td>Marker Strips</td>
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<tr>
<td>17</td>
<td>Washer</td>
<td>43</td>
<td>M4-0.7 x 6 Slotted Screw</td>
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<tr>
<td>18</td>
<td>M5-0.8 x 10 Ground Screw</td>
<td>44</td>
<td>Switch Bracket</td>
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<td>Top Housing</td>
<td>45</td>
<td>Switch Insulator</td>
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<tr>
<td>20</td>
<td>M4-0.7 x 6 Slotted Screw</td>
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<td>V7 Switch</td>
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<td>21</td>
<td>Terminal Block Cover Gasket</td>
<td>46A</td>
<td>IP67 Switch</td>
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<tr>
<td>22</td>
<td>Info Label</td>
<td>47</td>
<td>#4-40 x 0.75 Slotted Screw</td>
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<tr>
<td>23</td>
<td>Terminal Block Cover</td>
<td>47A</td>
<td>#2-56 x 0.38 Slotted Screw</td>
</tr>
<tr>
<td>24</td>
<td>M5-0.8 x 12 Cap Screw</td>
<td>48</td>
<td>#4-40 Hex Nut</td>
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<tr>
<td>25</td>
<td>Top Housing Gasket</td>
<td>48A</td>
<td>#2-56 Hex Nut</td>
</tr>
<tr>
<td>26</td>
<td>External retaining ring</td>
<td>49</td>
<td>Wire</td>
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<td>27</td>
<td>O-Ring</td>
<td>50</td>
<td>Visual indicator</td>
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<tr>
<td>28</td>
<td>Indicator Cover</td>
<td>51</td>
<td>Spring</td>
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</tbody>
</table>
Electrical Data

General

Series 8000 Valves are pneumatically operated and a solenoid valve controls the air supply. The solenoid valve is directly wired into the control system.

Position switch wiring diagrams (reproduced below) are part of each valve assembly, summarizing electrical data and wiring for a valve equipped with terminal block and a full complement of optional switches.

Good practice normally dictates that auxiliary switches in valves should be used for signal duty only, not to operate additional safety devices.

Valve position switches are offered in SPDT (Single Pole/Double Throw). Recommended packages include one open switch and one closed switch, (VOS1/VCS1) and additional auxiliary switches designated by VOS2/VCS2.

VCS (Valve Closed Switch) is actuated at the end of the closing stroke.

VOS (Valve Open Switch) is actuated at the end of the opening stroke.

Switch amperage ratings are shown on the schematic wiring diagram below. DO NOT EXCEED rated amperage or total load shown. Diagrams show valve with a full complement of switches. The indicated internal wiring is present only when the appropriate auxiliary switches are specified.

Figure 1: Normally-Closed Shut-Off Valve
### General Purpose - Series 8031 & 8131

#### Solenoid valve power ratings

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Amperage (A)</th>
<th>Power</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-Rush</td>
<td>Holding</td>
<td>In-Rush</td>
</tr>
<tr>
<td>24VDC</td>
<td>0.20</td>
<td>0.20</td>
<td>4.8 W</td>
</tr>
<tr>
<td>120VAC 50 Hz</td>
<td>0.09</td>
<td>0.07</td>
<td>11 VA</td>
</tr>
<tr>
<td>120VAC 60 Hz</td>
<td>0.08</td>
<td>0.05</td>
<td>9.4 VA</td>
</tr>
<tr>
<td>240VAC 50 Hz</td>
<td>0.05</td>
<td>0.04</td>
<td>11 VA</td>
</tr>
<tr>
<td>240VAC 60 Hz</td>
<td>0.04</td>
<td>0.03</td>
<td>9.4 VA</td>
</tr>
</tbody>
</table>

#### Standard switch amperage ratings as shown on the valve switch wiring diagram

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Maximum Amperage (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24VDC</td>
<td>0.5</td>
</tr>
<tr>
<td>120VAC 50/60 Hz</td>
<td>11</td>
</tr>
<tr>
<td>240VAC 50/60 Hz</td>
<td>11</td>
</tr>
</tbody>
</table>

### Class I, Div. 2 Hazardous Location - Series 8032 & 8132

#### Solenoid valve power ratings

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Amperage (A)</th>
<th>Power</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-Rush</td>
<td>Holding</td>
<td>In-Rush</td>
</tr>
<tr>
<td>24VDC</td>
<td>0.20</td>
<td>0.20</td>
<td>4.8 W</td>
</tr>
<tr>
<td>120VAC 50 Hz</td>
<td>0.09</td>
<td>0.07</td>
<td>11 VA</td>
</tr>
<tr>
<td>120VAC 60 Hz</td>
<td>0.08</td>
<td>0.05</td>
<td>9.4 VA</td>
</tr>
<tr>
<td>240VAC 50 Hz</td>
<td>0.05</td>
<td>0.04</td>
<td>11 VA</td>
</tr>
<tr>
<td>240VAC 60 Hz</td>
<td>0.04</td>
<td>0.03</td>
<td>9.4 VA</td>
</tr>
<tr>
<td>24VDC IS</td>
<td>0.09</td>
<td>0.09</td>
<td>2.1 W</td>
</tr>
</tbody>
</table>

#### IP67 switch amperage ratings as shown on the valve switch wiring diagram

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Maximum Amperage (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24VDC</td>
<td>2.0</td>
</tr>
<tr>
<td>120VAC 50/60 Hz</td>
<td>2.0</td>
</tr>
<tr>
<td>240VAC 50/60 Hz</td>
<td>2.0</td>
</tr>
</tbody>
</table>
The Series 8000 Valve achieves Class I Div.1 hazardous location certification through the Intrinsically Safe (IS) protection method. Below is a representation of the Control Drawing. The MAXON standard offering does not include the barriers/isolators that are depicted below in the non-hazardous location; however, they can be provided as an additional accessory. Consult MAXON for details.

The intrinsic safety and operational criteria for most applications can be met with a 24 VDC supply and the barriers described in the Control Drawing. Specific installations with long cable runs, low power requirements, or other complications may require a barrier with different parameters.

NOTES:
1) The Intrinsic Safety Entity concept allows the interconnection of two FM approved (CSA certified when installed in Canada) Intrinsically safe devices with entity parameters not specifically examined in combination as a system when:
   \[ V_{oc} \text{ or } U_o \leq V_{\text{max}} \text{ or } I_o \leq I_{\text{max}} \text{ or } C_o \geq C_i + C_{\text{cable}} \text{ or } L_o \geq L_i + L_{\text{cable}}, \text{ and for FM only: } P_o \leq P_i. \]
2) Dust-tight conduit seal must be used when installed in Class II and Class III environments.
3) Control equipment connected to the Associated Apparatus must not use or generate more than 250 Vrms or Vdc.
4) Installation in the U.S. should be in accordance with ANSI/ISA RP12.06.01 “Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations” and the National Electric Code® (ANSI/NFPA 70) Sections 504 and 505.
5) Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.
6) Installation in the European Union should be in accordance to Directive 94/9/EC (ATEX 95). In case the valve and/or its switches have a safety function, the use of fail safe equipment is required.
7) The configuration of associated Apparatus must be FM Approved (CSA certified when in Canada) under Entity Concept.
8) Associated Apparatus manufacturer’s installation drawing must be followed when installing this equipment.
9) No revision to drawing without prior authorization from FM Approval and CSA International.
Control drawing for customer-supplied, externally mounted solenoids

NOTES:

1) The Intrinsic Safety Entity concept allows the interconnection of two FM approved (CSA Certified when installed in Canada) Intrinsically safe devices with entity parameters not specifically examined in combination as a system when:
   \[ V_{oc} \text{ or } U_o \text{ or } V_t \leq V_{max}, \text{ or } I_{sc} \text{ or } I_o \text{ or } I_t \leq I_{max}, \text{ or } C_a \text{ or } C_o \geq C_i + C_{cable}, \text{ or } L_a \text{ or } L_o \geq L_i + L_{cable}, \text{ and for FM only: } P_o \leq P_i. \]

2) Dust-tight conduit seal must be used when installed in Class II and Class III environments.

3) Control equipment connected to the Associated Apparatus must not use or generate more than the maximum permissible safe area voltage (Um) for the barrier.

4) Installation in the U.S. should be in accordance with ANSI/ISA RP12.06.01 “Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations” and the National Electric Code® (ANSI/NFPA 70) Sections 504 and 505.

5) Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.

6) Installation in the European Union should be in accordance to Directive 94/9/EC (ATEX 95).

7) The configuration of associated Apparatus must be FM Approved (CSA Certified when in Canada) under Entity Concept.

8) Associated Apparatus manufacturer’s installation drawing must be followed when installing this equipment.

9) No revision to drawing without prior authorization from FM Approval and CSA International.
To select a different safety barrier, choose a design that limits voltage, current, and power under worst-case fault conditions to values less than the IS entity parameters, while still meeting the minimum operational requirements under worst-case non-fault conditions. The IS entity parameters and operational requirements are listed in the following tables.

The barrier will specify a maximum voltage peak \( V_{oc} \) [1], a maximum short-circuit current, \( I_{sc} \) [2] and maximum power output \( P_o \) [3]. These barrier ratings must be less than or equal to the IS entity parameters of the field device, i.e., \( V_{oc} \leq V_{max} \), \( I_{sc} \leq I_{max} \) and \( P_o \leq P_i \). The barrier will also specify a maximum allowed capacitance \( C_a \) and inductance \( L_a \), which must be greater than or equal to the sum of those of the load device and field wiring, i.e., \( C_a \geq C_i + C_{cable} \) and \( L_a \geq L_i + L_{cable} \).

The solenoid requires a minimum current \( (I_{min}) \) to operate properly. The nominal barrier input voltage \( (V_{working}) \), as specified by the barrier, must be adequate to provide \( I_{min} \) through the maximum barrier resistance, the maximum wiring resistance, the resistance of any fuses, and the maximum solenoid resistance \( (R_i) \).

NOTE: \( V_{working} \) will always be less than \( V_{max} \) or \( V_{oc} \). Never intentionally supply \( V_{oc} \) to the barrier, as this could blow an internal fuse and ruin the barrier.

[1] The maximum voltage possible at the barrier input or output under a no-load condition.
[2] Found when the barrier input is at \( V_{oc} \) and a short-circuit appears on the barrier output.
[3] Found when the barrier input is at \( V_{oc} \) and a matched load appears on the barrier output. Note that this value is the transmitted power, and does not include the power dissipated by the barrier itself.
### Barrier selection criteria for solenoid

<table>
<thead>
<tr>
<th>IS entity parameters [1]</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum voltage input ($V_{\text{max}}$)</td>
<td>28 V [2]</td>
</tr>
<tr>
<td>Maximum current input ($I_{\text{max}}$)</td>
<td>115 mA</td>
</tr>
<tr>
<td>Maximum power input ($P_i$)</td>
<td>1.6 W</td>
</tr>
<tr>
<td>Internal capacitance ($C_i$)</td>
<td>0 µF</td>
</tr>
<tr>
<td>Internal inductance ($L_i$)</td>
<td>0 µH</td>
</tr>
</tbody>
</table>

**Operational Parameters**

| Minimum operational current ($I_{\text{min}}$) | 37 mA |
| Switch internal resistance ($R_i$) | 275 ohms ± 8% |

### Barrier selection criteria for switch

<table>
<thead>
<tr>
<th>IS entity parameters (simple apparatus)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum voltage input ($V_{\text{max}}$)</td>
<td>30 V [3]</td>
</tr>
<tr>
<td>Maximum current input ($I_{\text{max}}$)</td>
<td>500 mA [3]</td>
</tr>
<tr>
<td>Maximum power input ($P_i$)</td>
<td>1.3 W [4]</td>
</tr>
<tr>
<td>Internal capacitance ($C_i$)</td>
<td>0 µF</td>
</tr>
<tr>
<td>Internal inductance ($L_i$)</td>
<td>0 µH</td>
</tr>
</tbody>
</table>

**Operational Parameters**

| Minimum operational current ($I_{\text{min}}$) | Application specific |
| Switch internal on-resistance ($R_i$) | < 1 ohm |

[1] Obtained from the manufacturer’s published entity parameters.
[2] Never intentionally supply $V_{\text{max}}$ to the barrier, as this could blow an internal fuse and ruin the barrier.
## Dimensions & Weights

Series 8030 Valve Bodies: 1” (DN25) and 1-1/4” (DN32) - Standard pressure

<table>
<thead>
<tr>
<th>Valve size</th>
<th>Flow capacity</th>
<th>Body connection</th>
<th>Body material</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>N Ø</th>
<th>P Ø</th>
<th>R Ø</th>
<th>S # of holes</th>
<th>Body assembly</th>
<th>Adapter assembly</th>
<th>Actuator assembly</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1” (DN25)</td>
<td>S</td>
<td>A, C</td>
<td>Cast iron</td>
<td>48</td>
<td>104</td>
<td>N/A</td>
<td>5</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>A, C</td>
<td>Steel</td>
<td>48</td>
<td>104</td>
<td>178</td>
<td>366</td>
<td>6</td>
<td>14</td>
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<td>I</td>
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<td>305</td>
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</tr>
<tr>
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<td>J,K</td>
<td>A, C</td>
<td>Steel</td>
<td>48</td>
<td>104</td>
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<td></td>
<td>I</td>
<td>Steel</td>
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<tr>
<td></td>
<td>J,K</td>
<td>Steel</td>
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<td>145</td>
<td>297</td>
<td>N/A</td>
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<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Flow Capacity:**
- S - Standard
- H - HC Body Construction

**Body Connection:**
- A - NPT
- B - ANSI Class 300 Flanged
- C - ISO 7-1 Threaded
- E - Socket Welded Nipple
- F - Socket Welded Nipple w/ Class150 Flange (ISO 7005 PN20)
- G - Socket Welded Nipple w/ Class 300 Flange (ISO 7005 PN50)
- H - EN1092-1 PN16 (ISO 7005-1 PN16)
- I - Socket welded nipples with Class 600 Flange (ISO 7005 PN110)
- J - Butt welded nipples
Series 8030 Valve Actuators: 1” (DN25) and 1-1/4” (DN32) - Standard pressure

1) 1/8” NPT air inlet connection
2) Visual indication of valve position
3) Air exhaust - do not block
4) 2x 3/4” conduit connection

<table>
<thead>
<tr>
<th>Valve size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>Clearance needed to remove [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1” (DN25)</td>
<td>94</td>
<td>71</td>
<td>305</td>
<td>66</td>
<td>74</td>
<td>64</td>
<td>462</td>
<td>64</td>
<td>533</td>
</tr>
<tr>
<td>1-1/4” (DN32)</td>
<td>94</td>
<td>71</td>
<td>305</td>
<td>66</td>
<td>74</td>
<td>64</td>
<td>462</td>
<td>64</td>
<td>533</td>
</tr>
</tbody>
</table>

[1] From pipe center line
Series 8030 Valve Bodies: 1-1/2” (DN40) and 2” (DN50) - Standard pressure

<table>
<thead>
<tr>
<th>Valve size</th>
<th>Flow capacity</th>
<th>Body connection</th>
<th>Body material</th>
<th>Approximate dimensions (mm)</th>
<th>Approximate weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2” (DN40)</td>
<td>S</td>
<td>B</td>
<td>Steel</td>
<td>59 64 290 154 114 22 4 20 2 7</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td></td>
<td></td>
<td>150 110 18</td>
<td></td>
</tr>
<tr>
<td>2” (DN50)</td>
<td>S</td>
<td>B</td>
<td>Steel</td>
<td>76 69 302 165 127 20 8 23 2</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td></td>
<td></td>
<td>124 18 4</td>
<td></td>
</tr>
</tbody>
</table>

**Flow Capacity:**
- S - Standard
- H - HC Body Construction

**Body Connection:**
- A - NPT
- B - ANSI Class 300 Flanged
- C - ISO 7-1 Threaded
- E - Socket Welded Nipple
- F - Socket Welded Nipple w/ Class150 Flange (ISO 7005 PN20)
- G - Socket Welded Nipple w/ Class 300 Flange (ISO 7005 PN50)
- H - EN1092-1 PN16 (ISO 7005-1 PN16)
- I - Socket welded nipples with Class 600 Flange (ISO 7005 PN110)
- J - Butt welded nipples
Series 8030 Valve Actuators: 1-1/2” (DN40) and 2” (DN50) - Standard pressure

1) 1/8” NPT air inlet connection
2) Visual indication of valve position
3) Air exhaust - do not block
4) 2x 3/4” conduit connection

<table>
<thead>
<tr>
<th>Valve size</th>
<th>Approximate dimensions (mm)</th>
<th>Clearance needed to remove [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2” (DN40)</td>
<td>A 94, B 71, C 376, D 66, E 69, F 117, G 594, H 64</td>
<td>701</td>
</tr>
<tr>
<td>2” (DN50)</td>
<td>A 604, B 709</td>
<td>709</td>
</tr>
</tbody>
</table>

[1] From pipe center line
## Series 8130 Valve Bodies: 3/8" (DN10) to 1-1/4" (DN32) - High pressure bodies

<table>
<thead>
<tr>
<th>Valve size</th>
<th>Flow capacity</th>
<th>Body connection</th>
<th>Body material</th>
<th>Approximate dimensions (mm)</th>
<th>Approximate weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A,C, C</td>
<td>Cast iron</td>
<td>J  K  L  N  Ø  P  Ø  R  Ø  S  # of holes</td>
<td>Body assembly  Adapter assembly  Actuator assembly  Total</td>
</tr>
<tr>
<td>3/8&quot; (DN10)</td>
<td>S</td>
<td>A,C, C</td>
<td>Cast iron</td>
<td>31  38  81  N/A  5/4  6  15  17  19  6  14  13  13  13  13</td>
<td></td>
</tr>
<tr>
<td>1/2&quot; (DN15)</td>
<td>S</td>
<td>A,C, C, E, F, G, H, I</td>
<td>Steel</td>
<td>31  38  81  N/A  5/4  6  15  17  19  6  14  13  13  13  13</td>
<td></td>
</tr>
<tr>
<td>3/4&quot; (DN20)</td>
<td>S</td>
<td>A,C, C</td>
<td>Cast iron</td>
<td>31  38  81  N/A  5/4  6  15  17  19  6  14  13  13  13  13</td>
<td></td>
</tr>
<tr>
<td>1&quot; (DN25)</td>
<td>S</td>
<td>A,C, C</td>
<td>Cast iron</td>
<td>31  38  81  N/A  5/4  6  15  17  19  6  14  13  13  13  13</td>
<td></td>
</tr>
</tbody>
</table>
### Series 8130 Valve Bodies: 3/8” (DN10) to 1-1/4” (DN32) - High pressure bodies

<table>
<thead>
<tr>
<th>Valve size</th>
<th>Flow capacity</th>
<th>Body connection</th>
<th>Body material</th>
<th>Approximate dimensions (mm)</th>
<th>Approximate weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/4” (DN32)</td>
<td>S</td>
<td>A,C</td>
<td>Cast iron</td>
<td>48</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A,C</td>
<td></td>
<td>178</td>
<td>363</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E</td>
<td></td>
<td>381</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td>118</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G</td>
<td></td>
<td></td>
<td>133</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H</td>
<td></td>
<td></td>
<td>140</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I</td>
<td></td>
<td></td>
<td>133</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J</td>
<td></td>
<td></td>
<td>145</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>A,C</td>
<td>Steel</td>
<td>112</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E</td>
<td></td>
<td>178</td>
<td>363</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td></td>
<td>185</td>
<td>381</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G</td>
<td></td>
<td></td>
<td>118</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H</td>
<td></td>
<td></td>
<td>133</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I</td>
<td></td>
<td></td>
<td>140</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J</td>
<td></td>
<td></td>
<td>133</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J</td>
<td></td>
<td></td>
<td>145</td>
</tr>
</tbody>
</table>

**Flow Capacity:**
- S - Standard
- H - HC Body construction

**Body Connection:**
- A - NPT
- B - ANSI Class 300 flanged
- C - ISO threaded
- E - Socket welded nipples
- F - Socket welded nipples w/ 150# flanges
- G - Socket welded nipples w/ 300# flanges
- H - EN1092-1 PN10/PN16 flanged
- I - Socket welded nipples w/ 600# flanges
- J - Butt-welded nipples
Series 8130 Valve Actuators: 3/8” (DN10) to 1-1/4” (DN32) - High pressure

1) 1/8” NPT air inlet connection
2) Visual indication of valve position
3) Air exhaust - do not block
4) 2x 3/4” conduit connection

<table>
<thead>
<tr>
<th>Valve size</th>
<th>Approximate dimensions (mm)</th>
<th>Clearance needed to remove [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>3/8” (DN10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2” (DN15)</td>
<td>94</td>
<td>71</td>
</tr>
<tr>
<td>3/4” (DN20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1” (DN25)</td>
<td>376</td>
<td>74</td>
</tr>
<tr>
<td>1-1/4” (DN32)</td>
<td>74</td>
<td>64</td>
</tr>
</tbody>
</table>

[1] From pipe center line
Series 8130 Valve Bodies: 1-1/2” (DN40) and 2” (DN50) - High pressure bodies

<table>
<thead>
<tr>
<th>Valve size</th>
<th>Flow capacity</th>
<th>Body connection</th>
<th>Body material</th>
<th>Approximate dimensions (mm)</th>
<th>Approximate weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2” (DN40)</td>
<td>S</td>
<td>B</td>
<td>Steel</td>
<td>J 60 K 64 L 290 N Ø 154 P Ø 114 R Ø 22 S 4</td>
<td>Body assembly: 20 Adapter assembly: 3 Actuator assembly: 8 Total: 30</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2” (DN50)</td>
<td>S</td>
<td>B</td>
<td>Steel</td>
<td>J 76 K 69 L 302 N Ø 165 P Ø 127 R Ø 20 S 4</td>
<td>Body assembly: 23 Adapter assembly: 8 Actuator assembly: 34 Total: 34</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Flow Capacity:
- S - Standard
- H - HC Body construction

Body Connection:
- A - NPT
- B - ANSI Class 300 flanged
- C - ISO threaded
- E - Socket welded nipples
- F - Socket welded nipples w/ 150# flanges
- G - Socket welded nipples w/ 300# flanges
- H - EN1092-1 PN10/PN16 flanged
- I - Socket welded nipples w/ 600# flanges
- J - Butt-welded nipples
Series 8130 Valve Actuators: 1-1/2” (DN40) and 2” (DN50) - High pressure

1) 1/8” NPT air inlet connection
2) Visual indication of valve position
3) Air exhaust - do not block
4) 2x 3/4” conduit connection

<table>
<thead>
<tr>
<th>Valve size</th>
<th>Approximate dimensions (mm)</th>
<th>Clearance needed to remove [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2” (DN40)</td>
<td>A 117, B 84, C 414, D 91, E 69, F 117, G 632, H 76</td>
<td>767</td>
</tr>
<tr>
<td>2” (DN50)</td>
<td>A 642, B 775</td>
<td>775</td>
</tr>
</tbody>
</table>

[1] From pipe center line
Minimum required cylinder pressures

Pressure Required to Actuator
Series 8000: 1" - 2"
Group 1 Fluids

Pressure Required to Actuator
Series 8100: 3/8" - 2"
Group 1 Fluids
Group 1 fluids include:
JP4, Kerosene, No. 1 Fuel oil, No. 2 Fuel oil, and Ammonia

Pressure Required to Actuator
Series 8000: 1" - 2"
Group 2 Fluids

Actuator Pressure Required (bar)

Application Fluid Pressure (bar)
Group 2 fluids include:
No. 4 fuel oil, No. 5 fuel oil, and No. 6 fuel oil
Group 3 fluids include:
Liquid Ethanol, Liquid Methanol, No. 6 Fuel oil (heavy), Liquid Butane and Liquid Propane
Group 4 fluids include:
Residual fuel oil and Steam
Accessories

Speed Control Set Kits

Manually adjustable valve restricts flow to the actuator inlet and so reduces opening speed of the normally closed shut-off valve.

- Available in carbon steel and stainless steel construction
- 90° mating elbow provided for easy assembly
- Tamper-proof set screw prevents accidental misadjustment

Kit No. 1067124
Carbon Steel construction

Kit No. 1067125
Stainless Steel construction

Intrinsic Safety Interfaces

Approved units interposed between the hazardous and safe area circuits limit parameters such as voltage, current or power.

- Suitable for use in Class I, Div. 2 areas
- DIN rail mounted
- Complements intrinsically safe Series 8000 Valves

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>IS interface type</th>
<th>Model no.</th>
<th>Application</th>
<th>MAXON no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTL</td>
<td>Zener Diode [1]</td>
<td>MTL 7728+</td>
<td>Solenoid</td>
<td>1067656</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MTL 7787+</td>
<td>Switch [2]</td>
<td>1067655</td>
</tr>
<tr>
<td></td>
<td>Isolator [3]</td>
<td>MTL 5025</td>
<td>Solenoid</td>
<td>1067660</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MTL 5018</td>
<td>Switch [4]</td>
<td>1067659</td>
</tr>
</tbody>
</table>

[1] Circuit must be isolated from earth in hazardous area
[2] Two barriers required for VOS1 / VCS1
[3] Circuit may be earthed at one point in hazardous area
[4] One barrier required for VOS1 / VCS1
Please read the operating and mounting instructions before using the equipment. Install the equipment in compliance with the prevailing regulations.

Bedrijfs- en montagehandleiding voor gebruik goed lezen! Apparaat moet volgens de geldende voorschriften worden geïnstalleerd.

Lire les instructions de montage et de service avant utilisation! L’appareil doit imperativement être installé selon les règlementations en vigueur.

Betriebs- und Montageanleitung vor Gebrauch lesen! Gerät muß nach den geltenden Vorschriften installiert werden.
The Installation, Operating and Maintenance Instructions contain important information that must be read and followed by anyone operating or servicing this product. Do not operate or service this equipment unless the instructions have been read. IMPROPER INSTALLATION OR USE OF THIS PRODUCT COULD RESULT IN BODILY INJURY OR DEATH.

Description

The Series 8000 Valve is a pneumatically operated fuel shut-off valve. These valves require compressed air for actuation. The 8000 Series Valve will open by the addition of a control voltage signal. Removal of the signal will cause a fast acting return to the closed position.

The Series 8000 Valve has optional configurations that meet hazardous locations.

Nameplate and Abbreviations

Consult the nameplate on your valve. This lists the maximum operating pressure, temperature limitations, voltage requirements and service conditions of your specific valve. Do not exceed nameplate ratings.

<table>
<thead>
<tr>
<th>Abbreviation or Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.O.P.</td>
<td>Maximum Operating Pressure</td>
</tr>
<tr>
<td>$P_{\text{ACT}}$</td>
<td>Required actuator pressure</td>
</tr>
<tr>
<td>$T_{\text{AMB}}$</td>
<td>Ambient temperature range</td>
</tr>
<tr>
<td>$T_{F}$</td>
<td>Fluid temperature range</td>
</tr>
<tr>
<td>Visual indication</td>
<td>Visual indication determined by text, color and symbol; valve is shown in open position</td>
</tr>
<tr>
<td></td>
<td>Visual indication determined by text, color and symbol; valve is shown in closed position</td>
</tr>
<tr>
<td>Valve is closed</td>
<td>Valve is closed</td>
</tr>
<tr>
<td>Valve is partially open</td>
<td>Valve is partially open</td>
</tr>
<tr>
<td>Valve is fully open</td>
<td>Valve is fully open</td>
</tr>
<tr>
<td>VOS-1/2</td>
<td>Valve open switch(es)</td>
</tr>
<tr>
<td>VCS-1/2</td>
<td>Valve closed switch(es); proof of closure</td>
</tr>
</tbody>
</table>
Component identification

1) Flow arrow
2) Visual indication
3) Terminal block cover screws, M5 x 12
4) Switch access cover
5) Terminal block cover
6) Actuator bolts, M10 x 50 - M10 x 62 or M10 x 35
7) Valve body
8) Actuator
9) Switch access cover screws, M6 x 20
10) Nameplate
11) Nameplate screws M4 x 6
Installation

1. A filter or strainer of 40 mesh (0.6 mm maximum) or greater is recommended in the fuel piping to protect the downstream safety shut-off valves.

2. Properly support and pipe the valve in the direction of the flow arrow on the valve body. Valve seats are directional. Sealing will be maintained at full rated pressures in one direction only. Sealing will be provided in reverse flow only at reduced pressures.

3. Mount valve so that open/shut indicator will not face downward.

4. Series 8000 Valves require clean, dry compressed air or gas piped to the inlet of the actuator. Guidelines for various actuating gases:
   A. Compressed Air
      1. The vent, located on the underside of the base plate, should be protected from blockage.
      2. Although MAXON Series 8000 Valves do not require lubrication, they do contain Buna-N (-40°C) seals in the actuator sub-assembly. Compressed air supply must not contain any lubricant that is not compatible with Buna-N elastomers.
   B. Natural gas and other fuel gases can be used to actuate the Series 8000 Valve when the appropriate considerations are taken into account.
      1. Apply only the intrinsically safe Series 8000 Valve for the application. The general purpose and non-incendive options are not suitable for fuel gas activation.
      2. The activating fuel gas must be clean and free of moisture. The Series 8000 actuator contains Buna-N elastomers and brass components that will come in contact with the activating gas. The quality of the gas must not contain any constituents that are not compatible with Buna-N or brass.
      3. The exhaust gas must be vented to the atmosphere in a safe manner by piping from the filtered vent, located on the underside of the actuator’s base. A 1/8” NPT female connection in the base plate allows for proper piping.
      4. The use of fuel gases for actuation is not permitted in EC areas due to ATEX Zone 2 restrictions.
      5. Actuators for fuel gas actuation are only rated from -40°C to 60°C.

5. In some instances, it may be desired to utilize a slow opening feature for either application or code-related reasons. If a slow opening feature is required for normally closed shut-off valves, use MAXON’s optional speed control set kit.

6. Wire the valve in accordance with all applicable local and national codes and standards. In U.S. and Canada, wiring must conform to the NEC ANSI/NFPA 70 and/or CSA C22.1, Part 1.
   A. Supply voltages must agree with valve’s nameplate voltage within -15%/+10% for proper operation. For electrical wiring schematic, see instructions or sample affixed inside valve terminal block cover.
   B. Grounding is achieved with a grounding screw, which is located in the top assembly.
   C. Customer connections are provided via terminal block located in the top assembly.
   D. Main power wiring (120 VAC or 240 VAC) must be segregated from lower voltage 24 VDC signal wiring, when both are required.
      WARNING: For Division 2 installations using the intrinsically safe solenoid, the power source is not to exceed 28VDC with a minimum series resistance of 300 ohms.

7. Maintain integrity of the Series 8000 actuator enclosure by using the appropriate electrical connectors for the (2) 3/4” NPT conduit threaded connections. The Series 8000 electrical enclosure is NEMA 4 and IP65 rated with an option for NEMA 4X.

8. All access cover plate screws should be tightened using an alternate cross-corner tightening pattern to the values shown in Table 1 below.

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Terminal Block Cover Screws, M5 x 12</td>
<td>2.25 N.m</td>
</tr>
<tr>
<td>9</td>
<td>Switch Access Cover Screws, M6 x 20</td>
<td>2.25 N.m</td>
</tr>
<tr>
<td>6</td>
<td>Actuator Bolts, M10 x 50 - M10 x 62</td>
<td>17.6 N.m</td>
</tr>
<tr>
<td>6</td>
<td>Actuator Bolts, M10 x 35</td>
<td>17.6 N.m</td>
</tr>
<tr>
<td>11</td>
<td>Nameplate Screws, M4 x 6</td>
<td>1.13 N.m</td>
</tr>
</tbody>
</table>

9. Verify proper installation and operation by electrically actuating the valve for 10-15 cycles prior to the first introduction of liquid.

10. When customer-supplied, externally mounted solenoids are used, the component must be rated for the Class and Division of the hazardous area. MAXON 8032 and 8132 valve will only carry FM Approval to FM 3611, 3600 and 3810 standards. MAXON 8033 and 8133 valves will only carry FM Approval to FM 3610, 3600 and 3810 standards.
Operating characteristics

- Opening time varies per valve size, 3 seconds or less for largest size. For slower opening, a speed control set can be supplied by MAXON.
- Closing time is less than 1 second.
- Type of medium [4] [5].

<table>
<thead>
<tr>
<th>Media compatibility and valve approval certifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Media</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Ammonia (anhydrous)</td>
</tr>
<tr>
<td>Ethanol (liquid)</td>
</tr>
<tr>
<td>JP4</td>
</tr>
<tr>
<td>Kerosene</td>
</tr>
<tr>
<td>Methanol (liquid)</td>
</tr>
<tr>
<td>No. 1 Fuel Oil</td>
</tr>
<tr>
<td>No. 2 Fuel Oil</td>
</tr>
<tr>
<td>No. 4 Fuel Oil (125 SSU max) [6]</td>
</tr>
<tr>
<td>No. 5 Fuel Oil (900 SSU max) [6]</td>
</tr>
<tr>
<td>No. 6 Fuel Oil (2500 SSU max) [6]</td>
</tr>
<tr>
<td>No. 6 Fuel Oil (7000 SSU max) [6]</td>
</tr>
<tr>
<td>Residual oil (15000 SSU max) [6]</td>
</tr>
<tr>
<td>Butane (liquid)</td>
</tr>
<tr>
<td>Propane (liquid)</td>
</tr>
<tr>
<td>Steam</td>
</tr>
</tbody>
</table>

[1] Group 2 fluid MOP ratings are typically 5% lower than standard MOP ratings (refer to chart on page 10-30.4-7)
[2] Group 3 fluid MOP ratings are typically 30% lower than standard MOP ratings (refer to chart on page 10-30.4-7)
[3] Group 4 fluid MOP ratings are typically 40% lower than standard MOP ratings (refer to chart on page 10-30.4-7)
[4] MOP ratings for fuel oils are based on a viscosity of 150 SSU or less. Higher viscosities may result in further reductions to MOP ratings. Contact MAXON for details.
[5] For elevated fluid temperatures, the MOP is to be reduced in accordance to the applicable piping standard(s).
[6] Indicated SSU maximum is based on 38°C standard.
[7] CSA certification does NOT apply if the body connections are either ISO threaded or EN1092 flanged.

Body Seals & Packing:
A - Buna-N w/ Teflon
B - Viton w/ Teflon
C - Ethylene-Polypropylene w/ Teflon
D - Kalrez w/ Grafoil

Body Material:
1 - Cast Iron
2 - Cast Steel
3 - PEEK

Internal Trim Package
B - Ductile
D - Stellite
P - PEEK

Auxiliary Features

- Non-adjustable Proof of Closure Switch(es) with valve seal over travel interlock.
- Auxiliary switch for indication of full travel (open for normally closed valves).

Operating Environment

- Fluid temperature range of -40°C to 288°C.
- Actuators are rated for NEMA 4, IP65 or optional NEMA 4X, IP65.
- Ambient temperature range of -40°C to 60°C for the 8031 and 8131 General Purpose and 8032 and 8132 Non-Incendive series valves.
- Ambient temperature range of -40°C to 50°C for 8033 and 8133 Intrinsically Safe series valves.
- All valves for oxygen service or using Ethylene Propylene body seals are limited to a minimum ambient and fluid temperature of -17°C.
Electrical Data

Normally-Closed Shut-Off Valves

General Purpose Normally-Closed Valves

Series 8031 & Series 8131
Switches: V7
Solenoid Valve: Standard
24 VDC, 4.8W
120VAC, 50/60 Hz, 11/9.4 VA Peak, 8.5/6.9 VA Holding
240VAC, 50/60 Hz, 11/9.4 VA Peak, 8.5/6.9 VA Holding
See catalog page 10-30.4-15 or inside valve cover for wiring schematic.

Class I, Div. 2 Hazardous Location Normally-Closed Valves

Series 8032 & Series 8132
Switches: IP67
Solenoid Valve: Standard
24 VDC, 4.8W
120VAC, 50/60 Hz, 11/9.4 VA Peak, 8.5/6.9 VA Holding
240VAC, 50/60 Hz, 11/9.4 VA Peak, 8.5/6.9 VA Holding
24VDC IS, 0.09W

Class I, Div. 1 and ATEX Zone 1 Intrinsically Safe Hazardous Location Normally-Closed Valves

Series 8033 & Series 8133
Switches: V7 with optional IP67
Solenoid Valve: Intrinsically Safe

NOTES:

1) The Intrinsic Safety Entity concept allows the interconnection of two FM approved (CSA certified when installed in Canada) intrinsically safe devices with entity parameters not specifically examined in combination as a system when:
\[
V_{oc} \text{ or } U_{oc} \text{ or } V_{t} \leq V_{max}, \text{ or } I_{sc} \text{ or } I_{o} \text{ or } I_{t} \leq I_{max}, \text{ or } C_{a} \text{ or } C_{o} \geq C_{i} + C_{\text{cable}}, \text{ or } L_{a} \text{ or } L_{o} \geq L_{i} + L_{\text{cable}}, \text{ and for FM only: } P_{o} \leq P_{i}.
\]

2) Dust-tight conduit seal must be used when installed in Class II and Class III environments.

3) Control equipment connected to the Associated Apparatus must not use or generate more than 250 V rms or Vdc.

4) Installation in the U.S. should be in accordance with ANSI/ISA RP12.06.01 “Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations” and the National Electric Code® (ANSI/NFPA 70) Sections 504 and 505.

5) Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.

6) Installation in the European Union should be in accordance with Directive 94/9/EC (ATEX 95). In case the valve and/or its switches have a safety function, the use of fail safe equipment is required.

7) The configuration of associated Apparatus must be FM approved (CSA certified when in Canada) under Entity Concept.

8) Associated Apparatus manufacturer’s installation drawing must be followed when installing this equipment.

9) No revision to drawing without prior authorization from FM Approval and CSA International.
Class I, Div. 1 and ATEX Zone 1 Intrinsically Safe Hazardous Location Normally-Closed Valves

Series 8033 & Series 8133
Switches: V7 with optional IP67
Solenoid Valve: Customer-supplied, externally mounted

NOTES:
1) The Intrinsic Safety Entity concept allows the interconnection of two FM approved (CSA Certified when installed in Canada) Intrinsically safe devices with entity parameters not specifically examined in combination as a system when:
   \[ V_{oc} \text{ or } U_{o} \text{ or } V_{i} \leq V_{\text{max}}, C_{a} \text{ or } C_{o} \geq C_{i}, C_{\text{cable}}, L_{a} \text{ or } L_{o} \geq L_{i} + L_{\text{cable}}, \text{ and for FM only: } P_{o} \leq P_{i}. \]
2) Dust-tight conduit seal must be used when installed in Class II and Class III environments.
3) Control equipment connected to the Associated Apparatus must not use or generate more than the maximum permissible safe area voltage (Um) for the barrier.
4) Installation in the U.S. should be in accordance with ANSI/ISA RP12.06.01 “Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations” and the National Electric Code® (ANSI/NFPA 70) Sections 504 and 505.
5) Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.
6) Installation in the European Union should be in accordance to Directive 94/9/EC (ATEX 95).
7) The configuration of associated Apparatus must be FM Approved (CSA Certified when in Canada) under Entity Concept.
8) Associated Apparatus manufacturer’s installation drawing must be followed when installing this equipment.
9) No revision to drawing without prior authorization from FM Approval and CSA International.
Actuator Assembly Rotation/Replacement

MAXON Series 8000 Valves should be ordered in a configuration compatible with planned piping. If valve orientation is not correct, the actuator assembly can be rotated in 90° increments around the valve body center line axis using the procedure below. This procedure should also be followed for field replacement of the actuator.

- Shut off all electrical power and close off upstream manual cock.
- Remove terminal block access cover plate [5] and disconnect power lead wires. Caution: Label all wires prior to disconnection when servicing valve. Wiring errors can cause improper and dangerous operation.
- Remove conduit and electrical leads.
- Remove all pneumatic lines.
- Remove front lower cover from adapter base assembly.
- Unscrew the actuator/adapter bolts [6] screwed up from the bottom. These bolts secure the valve actuator [8] to the adapter base [7].
- Gently lift the actuator [8] off adapter base assembly enough to break the seal between body assembly and the rubber gasket adhering to the bottom of the actuator base plate.

For assembly rotation:
- Carefully rotate actuator assembly to the desired position.
- Reposition the actuator back down onto the adapter base assembly.

For assembly replacement:
- Carefully lift the actuator over the spring, which is part of the adapter base assembly. Position the new actuator over the spring and then carefully lower it back onto the adapter base assembly.
- Realign holes in adapter base casting with the corresponding tapped holes in the bottom of the actuator base plate. Be sure the gasket is still in place between the adapter and actuator base plate.
- Reinsert the adapter bolts up from the bottom through the adapter and carefully engage threads of the actuator assembly. Tighten securely referring to Table 1 on page 10-30.4-38 for appropriate torque specifications.
- Reconnect conduit, electrical leads, and all pneumatic lines, then check that signal switch wands are properly positioned. Failure to correct any such misalignment can result in extensive damage to the internal mechanism of your valve.
- Energize valve and cycle several times from closed to full open position. Also electrically trip the valve in a partially opened position to prove valve operates properly.
- Replace and secure all cover plates. Refer to torque values shown in Table 1 on page 10-30.4-38.
- Verify proper operation after servicing.

1) Flow arrow on valve body
2) Open/shut indicator [1]
3) Name plate
4) Switch access cover
5) Terminal block cover and screws
6) Actuator/body bolts
7) Valve body
8) Actuator assembly
9) Switch access cover screws

[1] Open/shut indication is 360°. If required, the observation window may be cleaned with a damp cloth.
Field Installation of Valve Position Switch

Instructions below are written for normally-closed shut-off valves.

General: Shut off fuel supply upstream of valve, then de-energize valve electrically. Remove top cover and terminal block cover to provide access (see page 10-30.4-37, items 4 & 5), being careful not to damage gasket.

See pages 10-30.4-44 and 45 for instructions on adding or replacing switches.

Substitution of components may affect suitability for Hazardous Locations.

Field Replacement Items

- Position Switches
- Actuators
- Solenoids

Contact MAXON with valve serial numbers to locate appropriate switch kit assembly.

Figure 1:
Typical Switch Sub-Assembly

Replacement Switches

- Carefully remove field wiring from the terminal block. Insure field wires are clearly marked to correct terminal.
- Unwire the solenoid valve lead wires from terminals labeled #1 and #2.
- Remove screws that secure the switch sub-assembly to the actuator housing. The switch sub-assembly should be easily removable from actuator assembly (see Figure 1: Typical Switch Sub-Assembly).
- Note wand position and mounting hole location. Carefully remove the 2 screws and lift existing switch. Reference Figures 2 through 5 (page 10-30.4-45) to ensure correct switch location.
- Install replacement switch in same mounting holes on bracket and verify correct wand position.
- Replace existing wiring one connection at a time, following original route and placement.
- Reassemble switch sub-assembly in actuator housing. Dowel pins are provided to insure proper placement of switch sub-assembly.
- Wire the solenoid valve leads to terminals labeled #1 and #2.
- Cycle valve, checking switch actuation points carefully. VCS switch actuates at top of stem stroke and VOS at bottom for normally-closed shut-off valves.
- Replace covers using torque values shown in Table 1 on page 10-30.4-38, and then return valve to service.
Add Switches

- Carefully remove field wiring from the terminal block. Insure field wires are clearly marked to correct terminal.
- Unwire the solenoid valve lead wires from terminals labeled #1 and #2.
- Remove screws that secure the switch sub-assembly to the actuator housing. The switch sub-assembly should be easily removable from actuator assembly (see Figure 1: Typical Switch Sub-Assembly).
- Reference Figures 2 through 5 to ensure correct switch location. Valve size is depicted in the model number by the first 4 digits. For example, a 1-1/4" H valve should have Model No. 125H.
- Install switch and insulators, when provided, to correct hole. Insure proper alignment. VCS switch should have activation wand pointed upward and VOS activation wand should be pointed downward.
- Wire new switches to terminals provided.
- Reassemble switch sub-assembly in actuator housing. Dowel pins are provided to insure proper placement of switch sub-assembly.
- Wire the solenoid valve leads to terminals labeled #1 and #2.
- Cycle valve, checking switch actuation points carefully. VCS switch actuates at top of stem stroke and VOS at bottom for normally-closed shut-off valves.
- Replace covers using torque values in Table 1 on page 10-30.4-38, and then return valve to service.
**Operating Instructions**

Refer to appropriate catalog bulletin and specification page for operating sequence applying to your specific valve. Never operate valve until all essential allied equipment is operative and any necessary purges completed. Failure of valve to operate normally indicates that it is not powered or supply air pressure is not adequate. Check this first!

Main system shut-off should always be accomplished with an upstream leak-tight manual fuel cock.

Normally-closed shut-off valves begin opening cycle immediately upon being powered.

**Alternate operator pressures**

Series 8000 Valves may be operated within a range of cylinder pressures. Consult charts for application fluid pressure and corresponding required actuator pressure.

**Maintenance Instructions**

MAXON Series 8000 Valves are endurance tested far in excess of the most stringent requirements of the various approval agencies. They are designed for long life even if frequently cycled, and to be as maintenance-free and trouble-free as possible.

A valve operational test should be performed on an annual basis. If abnormal opening or closing is observed, the valve should be removed from service and your MAXON representative should be contacted. (See Valve Technical Data page 10-35.1.)

Valve leak test should be performed on an annual basis to assure continued safe and reliable operation. Every MAXON valve is operationally tested and meets the requirements of FCI 70-2 Class VI Seat Leakage when in good operable condition. Zero leakage may not be obtained in the field after it has been in service. For specific recommendations on leak test procedures, see MAXON Valve Technical Data page 10-35.2. Any valve that exceeds the allowable leakage, as set forth by your local codes or insurance requirements, should be removed from service and your MAXON representative should be contacted.

**Actuator assembly components require no field lubrication** and should never be oiled.

Auxiliary switches, solenoids or complete actuator may be replaced in the field.

Do not attempt field repair of valve body or actuator. Any alterations void all warranties and can create potentially hazardous situations.

If foreign material or corrosive substances are present in the fuel line, it will be necessary to inspect the valve to make certain it is operating properly. If abnormal opening or closing is observed, the valve should be removed from service. Contact your MAXON representative for instructions.

Operator should be aware of and observe characteristic opening/closing action of the valve. Should operation ever become sluggish, remove valve from service and contact MAXON for recommendations.

**Specific conditions of use:**

Clean the enclosure only with a damp cloth to prevent the accumulation of electrostatic charges.

Address inquiries to MAXON. Local worldwide offices may be located at www.maxoncorp.com or by phoning 001-765-284-3304. Include valve serial number and nameplate information.
Solenoid replacement procedure

- All power sources both pneumatic and electric must be de-energized and follow all proper safety procedures prior to servicing valve.
- Use a 4 mm allen wrench to remove the top plate. A 3 mm allen wrench is used to remove the terminal block cover.
- Use a 5/16" open end wrench to hold the cylinder shaft, then use a pair of pliers to unthread the switch indicator from the cylinder shaft. When using pliers, grab the switch indicator from the top.

- Loosen the liquid tight connector nut where the solenoid wires come into the top housing. Remove #1 and #2 wire from the terminal block.

1) Top plate screw M6 x 20, socket head cap screw
2) M6 Lock washer
3) Top plate
4) Switch indicator
5) Cylinder shaft
6) Terminal block cover
7) M5 Lock washer
8) Terminal block cover screw M5 x 12, socket head cap screw

1) Liquid tight connector
Use a 3/4” wrench to remove the solenoid inlet fitting. An adjustable wrench is used to loosen the housing collar. Slightly loosen the housing collar but do not remove, due to the nut and o-ring located inside the housing becoming dislocated.

1) Housing collar  
2) Solenoid inlet fitting

Use a 4 mm allen wrench and remove the 4 screws that hold the housing to the base plate. Pull the housing straight up and remove. Old solenoid wires will pass through the liquid tight connector.

1) Housing  
2) Base plate  
3) Housing screws M6 x 20 cap screws

Use a 4 mm allen wrench and remove the 2 screws that hold the solenoid on. Replace the solenoid ensuring that there are 2 o-rings, one on the solenoid inlet and one on the solenoid outlet. The solenoid must be level when tightening screws.

1) Solenoid o-ring  
2) Solenoid  
3) M5 x 40 socket head cap screw  
4) Solenoid o-ring
Run the new solenoid wires back up through the liquid tight connector in the housing and align the cylinder shaft with the hole in the housing. Carefully slide housing back into position. Replace the 4 housing screws and leave loose.

Verify the o-ring is still on the solenoid inlet by looking through the housing collar. Reinstall solenoid inlet fitting tight. Leave the housing collar loose.

Reinstall solenoid wire #1 and #2 back to the terminal block and tighten down the liquid tight connector nut.

A locking sealant must be used on the cylinder shaft threads and then reinstall switch indicator. Make sure to remove any locking sealant that runs down the cylinder shaft. Re-energize pneumatic and electric power and cycle the valve several times to ensure it operates smoothly. Tighten down the 4 housing screws that hold the housing to the base plate using a cross pattern (see torque values in Table 1 on page 10-30.4-38). Then tighten the housing collar on the solenoid inlet fitting. The o-ring under the housing collar must not be pinched while tightening the housing collar.

Cycle valve several more times to see if it still operates smoothly. If not, loosen the 4 screws that hold the housing to the base plate and cycle again. Retighten the 4 housing screws. Put the top plate and terminal block covers back on valve (see torque values in Table 1 on page 10-30.4-38).