Specialty & Control Valves
Directional Control Valves

The Series 38MP is a 3 or 2 way, 2 position composite body solenoid valve designed to take the place of a fitting using a female inlet and male outlet port. The valve is generally mounted into an air cylinder port to control a single acting linear actuator. Component features include the proven solenoid operator available in brass/stainless or all stainlessless pilot design, optional seal materials and nylon encapsulated coil. The “basket” orifice design feature allows the possibility of changing the orifice diameter to meet flow requirements.

The DuPont Zytel FE 5015, FDA approved composite material is media compatible eliminating the need for stocking multiple body materials.

### Dimensional Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>0.6 mm</th>
<th>1.0 mm</th>
<th>1.2 mm</th>
<th>1.5 mm</th>
<th>2.0 mm</th>
<th>2.4 mm</th>
<th>3.0 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>270</td>
<td>270</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>200</td>
</tr>
<tr>
<td>DC</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>AC</td>
<td>250</td>
<td>250</td>
<td>200</td>
<td>180</td>
<td>180</td>
<td>160</td>
<td>150</td>
</tr>
<tr>
<td>DC</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>AC</td>
<td>170</td>
<td>150</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>DC</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Features**

- Composite material
- Chemical compatibility
- FDA approved versions
- 7 orifice sizes
- Easily replaceable orifice
- Vacuum holding & flow applications
- Pressure to 270 psi
- DIN spades or flying leads

Specifications and prices subject to change without notice or incurring obligation
## Technical Data

### Function:
- 2-way, 2 position and 3-way, 2 position
- Direct acting, normally closed or normally open

### Port Sizes:

<table>
<thead>
<tr>
<th>Function</th>
<th>Inlet</th>
<th>Outlet</th>
<th>Exhaust</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/2 NC</td>
<td>1/8 Male NPT</td>
<td>1/8 NPT or 1/4&quot; Push-to-connect</td>
<td>- - -</td>
</tr>
<tr>
<td>2/2 NO</td>
<td>1/8 Male NPT</td>
<td>10-32 TOP</td>
<td>- - -</td>
</tr>
<tr>
<td>3/2 NC</td>
<td>1/8 NPT or 1/4&quot; Push-to-connect</td>
<td>1/8 Male NPT</td>
<td>10-32 TOP</td>
</tr>
<tr>
<td>3/2 NO</td>
<td>10-32 TOP</td>
<td>1/8 Male NPT</td>
<td>1/8 NPT</td>
</tr>
</tbody>
</table>

### Orifice Sizes / Flow Factor:
- 0.6 mm / .025 Cv
- 1.0 mm / .05 Cv
- 1.2 mm / .065 Cv
- 1.5 mm / .08 Cv
- 2.0 mm / .17 Cv
- 2.4 mm / .24 Cv
- 3.0 mm / .31 Cv

### Pressure Range:
- 0-270 PSI (depending on orifice size and function)

### Temp. Range:
- (Media 90°C max.) Ambient - 10 to +50°C

### Response Time:
- 12-14 ms complete cycle

### Materials:
- Operator: 400 Series Stainless and Brass standard (400 and 300 Stainless optional)
- Shading Ring: Copper
- Springs: 300 Series Stainless
- Seals: Viton standard (other materials available on request)
- Valve Body: Celcon GB25 DuPont Zytel FE 5105. FDA Approved.

### Media:
- Air, oil, inert gas, water, caustics, etc.

### Mounting:
- 1/8 NPT male port

### Coil Data:
- Glass filled nylon encapsulation (Class F, continuous duty)
- DIN spades (11 mm centers) or flying leads – 22 ga. wire w/PVC insulation – 18" long
- 5 watt standard (other wattages available on request)
- All standard industrial voltages
- Voltage Tolerance: +/- 10%
- Connectors available for DIN Spades – see page bottom for part numbers.

## How To Order

**38MP - O**  

**Seat Material:**  
- **O - Viton**

**Orifice / Pressure / Wattage / Cv / NC/NO**
- 1 - 0.6 mm / 250 PSI / 5.0 w / .025 / NC
- 2 - 1.0 mm / 200 PSI / 5.0 w / .05 / NC
- 3 - 1.2 mm / 180 PSI / 5.0 w / .065 / NC
- 4 - 1.5 mm / 150 PSI / 5.0 w / .08 / NC
- 5 - 2.0 mm / - / 5.0 w / .17 / NC
- 6 - 2.4 mm / - / 5.0 w / .24 / NC
- 7 - 3.0 mm / - / 5.0 w / .31 / NC
- D - 1.5 mm / - / 5.0 w / .08 / NO

**Materials in Contact with Media**
- A - Brass / Nylon
- B - Stainless Steel / Nylon

**Function**
- 2 - 2-way
- 3 - 3-way

**Voltage**
- 2 - 12 VDC
- 3 - 24 VDC
- 7 - 120 VAC / 50/60 Hz
- 8 - 240 VAC / 50/60 Hz
- B - 12 VDC Flying Lead
- C - 24 VDC Flying Lead
- G - 120 VAC / 50/60 Hz Flying Lead
- I - 240 VAC / 50/60 Hz Flying Lead

**PORT**
- 8 - 1/8 NPT
- C - 1/4 Push-to-Connect

---

*Not Available in All functions*  
*NOTE: Pressure ratings, if shown, are for 3/2 NC valve with DC voltage*

Connectors for DIN Spades (11 mm centers):

P/N 122-09-N ............... Black housing - No LED  
P/N 122-09-T-A.1-Voltage ........ Transparent housing and LED
The Series 3853 is a composite body solenoid valve offered in both 2-way and 3-way normally open or closed functions and seven orifice sizes. Component features include the proven solenoid operator available in brass/stainless or all stainless pilot design, optional seal materials and nylon encapsulated coil. The "basket" orifice design feature allows the possibility of changing the orifice diameter to meet flow requirements.

The DuPont Zytel FE 5105, FDA approved composite material is media compatible eliminating the need for stocking multiple body materials.

<table>
<thead>
<tr>
<th>Dimensional Data</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>#10-32 UNF THREAD PORT (3-WAY VERSIONS &amp; 2/2 NO ONLY)</td>
<td>• Composite material</td>
</tr>
<tr>
<td>1.10</td>
<td>• Easily replaceable orifice</td>
</tr>
<tr>
<td>1.58</td>
<td>• Chemical compatibility</td>
</tr>
<tr>
<td>.433 (11mm)</td>
<td>• Vacuum holding &amp; flow applications</td>
</tr>
<tr>
<td>2.44</td>
<td>• FDA approved versions</td>
</tr>
<tr>
<td>2.22</td>
<td>• Pressure to 270 psi</td>
</tr>
<tr>
<td>.88</td>
<td>• 7 orifice sizes</td>
</tr>
<tr>
<td>Ø.150 DIA FOR #8 SELF TAPPING SCREW / 2 PLCS.</td>
<td>• DIN spades or flying leads</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ORIFICE SIZE / VOLTAGE</th>
<th>0.6 mm</th>
<th>1.0 mm</th>
<th>1.2 mm</th>
<th>1.5 mm</th>
<th>2.0 mm</th>
<th>2.4 mm</th>
<th>3.0 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>DC</td>
<td>AC</td>
<td>DC</td>
<td>AC</td>
<td>DC</td>
<td>AC</td>
<td>DC</td>
</tr>
<tr>
<td>2/2 NC</td>
<td>270</td>
<td>270</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>2/2 NO</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>250</td>
</tr>
<tr>
<td>3/2 NC</td>
<td>250</td>
<td>250</td>
<td>200</td>
<td>200</td>
<td>180</td>
<td>180</td>
<td>160</td>
</tr>
<tr>
<td>3/2 NO</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>170</td>
</tr>
</tbody>
</table>

MAX. PRESSURE RANGE
**Technical Data**

**Function:** 2-way, 2 position and 3-way, 2 position

**Port Sizes:**

<table>
<thead>
<tr>
<th>Function</th>
<th>Inlet</th>
<th>Outlet</th>
<th>Exhaust</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/2 NC</td>
<td>1/8 NPT</td>
<td>1/8 NPT</td>
<td>- - -</td>
</tr>
<tr>
<td>2/2 NO</td>
<td>1/8 NPT</td>
<td>10-32 TOP</td>
<td>- - -</td>
</tr>
<tr>
<td>3/2 NC</td>
<td>1/8 NPT</td>
<td>1/8 NPT</td>
<td>10-32 TOP</td>
</tr>
<tr>
<td>3/2 NO</td>
<td>10-32 TOP</td>
<td>1/8 NPT</td>
<td>1/8 NPT</td>
</tr>
</tbody>
</table>

**Orifice Sizes/Flow Factor:**

- 0.6 mm / .025 Cv
- 1.0 mm / .05 Cv
- 1.2 mm / .065 Cv
- 1.5 mm / .08 Cv
- 2.0 mm / .17 Cv
- 2.4 mm / .24 Cv
- 3.0 mm / .31 Cv

**Pressure Range:**

0-270 PSI (depending on orifice size and function)

**Temp. Range:**

(Media 90°C max.) Ambient - 10 to +50°C

**Response Time:**

12-14 ms complete cycle

**Materials:**

- **Operator:** 400 Series Stainless and Brass standard (400 and 300 Stainless optional)
- **Shading Ring:** Copper
- **Springs:** 300 Series Stainless
- **Seals:** Viton standard (other materials available on request)
- **Valve Body:** DuPont Zytel FE 5105. FDA Approved.

**Media:**

Air, oil, inert gas, water, caustics, etc.

**Mounting:**

Ø.150" drill, 2 places for a #8 self-tapping screw

**Coil Data:**

- Glass filled nylon encapsulation (Class F, continuous duty)
- DIN spades (11 mm centers) or flying leads – 22 ga. wire w/PVC insulation – 18" long
- 5 watt standard (other wattages available on request)
- All standard industrial voltages
- Voltage Tolerance: +/- 10%
- Connectors available for DIN Spades – see page bottom for part numbers.

**How To Order**

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**Orifice / Pressure / Wattage / Cv / NC/NO**

<table>
<thead>
<tr>
<th>Orifice</th>
<th>Pressure*</th>
<th>Wattage</th>
<th>Cv</th>
<th>NC/NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6 mm</td>
<td>250 PSI</td>
<td>5.0 w</td>
<td>.025</td>
<td>NC†</td>
</tr>
<tr>
<td>1.0 mm</td>
<td>200 PSI</td>
<td>5.0 w</td>
<td>.05</td>
<td>NC†</td>
</tr>
<tr>
<td>1.2 mm</td>
<td>180 PSI</td>
<td>5.0 w</td>
<td>.065</td>
<td>NC†</td>
</tr>
<tr>
<td>1.5 mm</td>
<td>150 PSI</td>
<td>5.0 w</td>
<td>.08</td>
<td>NC†</td>
</tr>
<tr>
<td>2.0 mm</td>
<td>–</td>
<td>5.0 w</td>
<td>.17</td>
<td>NC†</td>
</tr>
<tr>
<td>2.4 mm</td>
<td>–</td>
<td>5.0 w</td>
<td>.24</td>
<td>NC†</td>
</tr>
<tr>
<td>3.0 mm</td>
<td>–</td>
<td>5.0 w</td>
<td>.31</td>
<td>NC†</td>
</tr>
<tr>
<td>1.5 mm</td>
<td>–</td>
<td>5.0 w</td>
<td>.08</td>
<td>NO</td>
</tr>
</tbody>
</table>

**Materials in Contact with Media**

- A - Brass / Nylon
- B - Stainless Steel / Nylon

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*Not Available in all functions

**NOTE:** Pressure ratings, if shown, are for 3/2 NC valve with DC voltage

**Connectors for DIN Spades (11 mm centers):**

- P/N 122-09-N ............... Black housing - No LED
- P/N 122-09-T-A.1-Voltage .. Transparent housing and LED

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Specifications and prices subject to change without notice or incurring obligation
The 3953 contains all the features of the Series 3853 but can be stacked into a multiple output bank of solenoid valves. The Series 3953 features a fully encapsulated coil, spring compensated plunger seats for long life and a miniature stackable composite valve body. The advantage to this design is the versatility to stock single units and build, mix and match to meet specifications. In most cases the Series 3953 reduces inventory costs and lowers cost per installation over conventional manifold valve series. The coils are available with DIN quick connect pin out or flying leads.

### Dimensional Data

<table>
<thead>
<tr>
<th>Dimensional Data</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chemical compatibility</td>
<td>• Vacuum holding &amp; flow applications</td>
</tr>
<tr>
<td>• Direct poppet actuation</td>
<td>• Pressure to 270 psi</td>
</tr>
<tr>
<td>• Composite valve body</td>
<td>• DIN spades or flying leads</td>
</tr>
<tr>
<td>• Available 2 or 3-way</td>
<td>• Single inlet with multiple outlets (3/2 NC only)</td>
</tr>
<tr>
<td>• Stock components to build desired number of outlets reduces inventory costs</td>
<td></td>
</tr>
</tbody>
</table>
Technical Data

Function: 2-way, 2 position and 3-way, 2 position
direct acting, normally closed

Port Sizes: 1/8" NPT

Orifice Sizes/Flow Factor: 0.6 mm / .025 Cv
1.0 mm / .05 Cv
1.2 mm / .065 Cv
1.5 mm / .08 Cv
2.0 mm / .17 Cv
2.4 mm / .24 Cv
3.0 mm / .31 Cv

Pressure Range: 0-270 PSI (depending on orifice size and function)
Temp. Range: (Media 90°C max.) Ambient - 10 to +50°C
Response Time: 12-14 ms complete cycle

Materials: Operator: 400 Series Stainless and Brass (400 and 300 Stainless optional)
Shading Ring: Copper
Springs: 300 Series Stainless
Seals: Viton standard (other materials available on request)
Valve Body: DuPont Zytel FE 5105. FDA Approved
Media: Air, oil, inert gas, water, caustics, etc.
Mounting: Ø.150" drill, .250" deep for #8 self tapping screw
Coil Data: Glass filled nylon encapsulation (Class F, continuous duty)
DIN spades (11 mm centers) or flying leads – 22 ga. wire w/PVC insulation – 18° long
5 watt Standard (other wattages on request)
All standard industrial voltages
Voltage Tolerance: +/- 10%
Connectors available for DIN Spades – see page bottom for part numbers.

How To Order

Seat Material
O - Viton

Orifice / Pressure / Wattage / Cv / NC/NO
1 - 0.6 mm / 250 PSI* / 5.0 w / .025 / NC†
2 - 1.0 mm / 200 PSI* / 5.0 w / .05 / NC†
3 - 1.2 mm / 180 PSI* / 5.0 w / .065 / NC†
4 - 1.5 mm / 150 PSI* / 5.0 w / .08 / NC†
5 - 2.0 mm / / 5.0 w / .17 / NC†
6 - 2.4 mm / / 5.0 w / .24 / NC†
7 - 3.0 mm / / 5.0 w / .31 / NC†

Materials in Contact with Media
A - Brass / Nylon
B - Stainless Steel / Nylon

Function
2 - 2-way
3 - 3-way
† Not Available in all functions

Voltage
2 - 12 VDC
3 - 24 VDC
7 - 120 VAC / 50/60 Hz
8 - 240 VAC / 50/60 Hz
B - 12 VDC Flying Lead
C - 24 VDC Flying Lead
G - 120 VAC / 50/60 Hz Flying Lead
I - 240 VAC / 50/60 Hz Flying Lead

Stations
1 - 1 Station
2 - 2 Stations
3 - 3 Stations
4 - 4 Stations
5 - 5 Stations
6 - 6 Stations

Connectors for DIN Spades (11 mm centers):
P/N 122-09-N ........ Black housing - No LED
P/N 122-09-T-A.1-Voltage . Transparent housing and LED

Specifications and prices subject to change without notice or incurring obligation
2-Way, 2-Position normally closed/open
Process Solenoid Valves

The Series 3500 2-way, 2-position Solenoid valve uses the latest combinations of technologies for materials and function which provide the user with the highest quality, smallest size per Cv of flow and most competitive pricing of any valve on the market. The 3500 utilizes the latest injection molding and forging technologies available which combined garner the highest quality yields of components. When coupled with the solenoid operator and used as a direct acting/pilot operated valve, the 3500 gives full flow throughout the pressure range starting

with an MOPD of zero psi. The forged body section gives strength and robustness to the valve and is available in 1/4", 3/8" and 1/2" NPT sizes. The orifice for all sizes is 12.5mm or 1/2". The molded pilot section features a push non-locking manual override, high cycle life solenoid parts and quick connect DIN 43650 "A" electrical connection. Typical applications include air control, inert gas control, water, inert fluids, condensate drainage, hot water plumbing and sprinkler systems.

### Technical Data

**Function:**
2-way, 2 position normally closed
internal pilot diaphragm

**Port Sizes:**
1/4", 3/8", 1/2" NPT

**Orifice Sizes:**
1/2"

**Pressure Range:**
0 to 230 PSI 1/4" to 1/2" NPT
(Valve requires 1.5 PSI differential to fully open.)

**Flow Factors:**
- 1/4" NPT 1.55 Cv
- 3/8" NPT 1.95 Cv
- 1/2" NPT 2.45 Cv

**Temperature Range:**
(Fluid max. 90°C) Ambient -10° to +80°C

**Response Time:**
20 to 80 ms complete cycle

**Materials:**
- Operator: AISI 400 and 300 Series Stainless Steel or Brass
- Shading Ring: Copper (Silver on request)
- Seal: Viton standard (Nitrile, EPDM optional)
- Diaphragm: Viton standard (Nitrile, EPDM optional)
- Valve Body: Forged brass & glass filled Nylon

**Manual Override:**
Push non-locking

**Media:**
Air, oil, water, emulsion, inert gases

**Coil Data:**
Glass filled nylon encapsulation (Class F, continuous duty)
10 watt VDC, 8 watt VAC. All standard industrial voltages.
Voltage tolerance: +/- 10%
Connectors available for ISO “C-Tab” Spades – see next page for part numbers.

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### Principle of Operation

**Closed Position**
With no supply pressure and the valve de-energized, spring force from the armature holds the valve closed. As the supply pressure is increased, pressure builds up on top of the diaphragm via the bleed hole. This force, acting on the larger effective area, holds the valve closed (in conjunction with the armature spring).

**Open Position**
When energized with no supply pressure, the armature lifts allowing the pre-loaded diaphragm to lift, opening the valve. When supply pressure is applied, pressure above the diaphragm is relieved via the open pilot gallery. The fluid pressure below assists in holding the diaphragm open.
**Directional Control Valves**

**Series 3500**

1/4, 3/8, 1/2 NPT

2-Way normally closed/open

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### Dimensional Data

**TUBE AND FITTING INSTALLED WITH NORMALLY OPEN VERSION ONLY**

**DIMENSIONAL TABLE**

<table>
<thead>
<tr>
<th>Ports</th>
<th>1/4&quot; - 3/8&quot; - 1/2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.75&quot;</td>
</tr>
<tr>
<td>B</td>
<td>3.50&quot;</td>
</tr>
<tr>
<td>C</td>
<td>1.10&quot;</td>
</tr>
<tr>
<td>D</td>
<td>1.50&quot;</td>
</tr>
<tr>
<td>E</td>
<td>1/4&quot; - 3/8&quot; - 1/2&quot; NPT</td>
</tr>
<tr>
<td>F</td>
<td>4.45&quot;</td>
</tr>
</tbody>
</table>

**Function**

0 - 2-way, Normally Closed

1 - 2-way, Normally Open

**Seal Material**

1 - Viton

2 - Buna N / Nitrile

3 - EPDM

**Port Size / Orifice / Pressure / Cv**

1 - 1/4" NPT / 1/2" / 0 to 230 PSI / 1.550

2 - 3/8" NPT / 1/2" / 0 to 230 PSI / 1.95

3 - 1/2" NPT / 1/2" / 0 to 230 PSI / 2.45

**Voltage**

1 - 6 VDC

2 - 12 VDC

3 - 24 VDC

4 - 120 VDC

5 - 12 VAC / 50/60 Hz

6 - 24 VAC / 50/60 Hz

7 - 120 VAC / 50/60 Hz

8 - 240 VAC / 50/60 Hz

**Replacement Diaphragm Kit**

Includes Diaphragm, Spring & Brass Insert

<table>
<thead>
<tr>
<th>Specify Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Norm. Closed</strong></td>
</tr>
<tr>
<td><strong>Norm. Open</strong></td>
</tr>
<tr>
<td>Viton</td>
</tr>
<tr>
<td>3500-01-0001</td>
</tr>
<tr>
<td>3500-01-0003</td>
</tr>
<tr>
<td>Buna N / Nitrile</td>
</tr>
<tr>
<td>3500-B1-0001</td>
</tr>
<tr>
<td>3500-B1-0003</td>
</tr>
<tr>
<td>EPDM</td>
</tr>
<tr>
<td>3500-E1-0001</td>
</tr>
<tr>
<td>3500-E1-0003</td>
</tr>
</tbody>
</table>

**Order Example:**

3500-01-423-7

2-way, normally closed, 1/2" NPT,
120 VAC / 50/60 Hz, 0 to 230 psi

**Connector for ISO “C-Tab” Spades:**

P/N 5100-1080000 . . . . . . . Black housing - No LED

Specifications and prices subject to change without notice or incurring obligation

- Specifications and prices subject to change without notice or incurring obligation

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- Specifications and prices subject to change without notice or incurring obligation

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- Specifications and prices subject to change without notice or incurring obligation

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- Specifications and prices subject to change without notice or incurring obligation

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- Specifications and prices subject to change without notice or incurring obligation
Directional Control Valves

2-Way, 2-Position Process Composite Solenoid Valves

The Series 3510 2-way, 2-position Solenoid valve uses the latest technologies for materials and function which provide the user with the highest quality, smallest size per Cv of flow and most competitive pricing of any valve on the market. The 3510 utilizes the latest injection molding technologies available which make the 3510 compatible with many fluids and other media. When coupled with the solenoid operator and used as a direct acting/pilot operated valve, the 3510 gives full flow throughout the pressure range starting with an MOPD of zero psi. The polymer body section is available in 1/4", 3/8" and 1/2" NPT sizes and features a stainless steel anti-flex ring for port strength. The orifice for all sizes is 12.5mm or 1/2". The molded pilot section features a push non-locking manual override, high cycle life solenoid parts and quick connect DIN 43650 “A” electrical connection. Typical applications include air control, inert gas control, potable water (NSF versions), condensate drainage, hot water plumbing and sprinkler systems.

Technical Data

Function: 2-way, 2 position normally closed internal pilot diaphragm
Port Sizes: 1/4", 3/8", 1/2" NPT
Orifice Sizes: 1/2"
Pressure Range: 0 to 150 PSI 1/4" to 1/2" NPT (Valve requires 1.5 PSI differential to fully open.)
Flow Factors: 1/4" NPT 1.55 Cv
3/8" NPT 1.95 Cv
1/2" NPT 2.45 Cv
Temperature Range: (Fluid max. 90°C) Ambient -10°C to +50°C
Response Time: 20 to 80 ms complete cycle
Materials:
Operator: AISI 400 and 300 Series Stainless Steel or Brass
Shading Ring: Copper (Silver on request)
Seal: Viton standard (Nitrile, EPDM optional)
Diaphragm: Viton standard (Nitrile, EPDM optional)
Valve Body: DuPont Zytel® 77G33, glass filled nylon, NSF approved
Manual Override: Push non-locking
Media: Air, oil, water, potable water, emulsion, inert gases
Coil Data:
Glass filled nylon encapsulation (Class F, continuous duty)
10 watt VDC, 8 watt VAC. All standard industrial voltages.
Voltage tolerance: +/- 10%
Connectors available for ISO “C-Tab” Spades – see next page for part numbers.

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Principle of Operation

Closed Position
With no supply pressure and the valve de-energized, spring force from the armature holds the valve closed. As the supply pressure is increased, pressure builds up on top of the diaphragm via the bleed hole. This force, acting on the larger effective area, holds the valve closed (in conjunction with the armature spring).

Open Position
When energized with no supply pressure, the armature lifts allowing the pre-loaded diaphragm to lift, opening the valve. When supply pressure is applied, pressure above the diaphragm is relieved via the open pilot gallery. The fluid pressure below assists in holding the diaphragm open.
**Directional Control Valves**

**1/4, 3/8, 1/2 NPT**

**2-Way normally closed/open**

**Series 3510**

---

**Dimensional Data**

**TUBE AND FITTING INSTALLED WITH NORMALLY OPEN VERSION ONLY**

**WARNNING - WHEN USING METAL FITTINGS DO NOT EXCEED 40 IN LBS TORQUE OR MATERIAL FAILURE CAN OCCUR.**

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**How To Order**

**3510 - [ ] - [ ] - [ ] - [ ]**

**Function**
- 0 - 2-way, Normally Closed
- 1 - 2-way, Normally Open

**Seal Material**
- 1 - Viton
- 2 - Buna N / Nitrile
- 3 - EPDM

**Materials in Contact with Media**
- A - Brass / Nylon
- B - Stainless Steel / Nylon

**Order Example:**
3510-01-A23-7
Zytel®, 2-way, normally closed, 1/2" NPT, 120 VAC / 50/60 Hz, 0 to 150 psi

**Connector for ISO “C-Tab” Spades:**
P/N 5100-1080000 . . . . . . . Black housing - No LED

---

**DIMENSIONAL TABLE**

<table>
<thead>
<tr>
<th>Ports</th>
<th>1/4&quot; - 3/8&quot; - 1/2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.75&quot;</td>
</tr>
<tr>
<td>B</td>
<td>3.50&quot;</td>
</tr>
<tr>
<td>C</td>
<td>1.10&quot;</td>
</tr>
<tr>
<td>D</td>
<td>1.50&quot;</td>
</tr>
<tr>
<td>E</td>
<td>1/4&quot; - 3/8&quot; - 1/2&quot; NPT</td>
</tr>
<tr>
<td>F</td>
<td>4.45&quot;</td>
</tr>
</tbody>
</table>

**Voltage**
- 1 - 6 VDC
- 2 - 12 VDC
- 3 - 24 VDC
- 4 - 120 VDC
- 5 - 12 VAC / 50/60 Hz
- 6 - 24 VAC / 50/60 Hz
- 7 - 120 VAC / 50/60 Hz
- 8 - 240 VAC / 50/60 Hz

**Port Size / Orifice / Pressure / Cv**
- 1 - 1/4" NPT / 1/2" / 0 to 150 PSI / 1.55
- 2 - 3/8" NPT / 1/2" / 0 to 150 PSI / 1.95
- 3 - 1/2" NPT / 1/2" / 0 to 150 PSI / 2.45

**Replacement Diaphragm Kit**
Includes Diaphragm, Spring & Brass Insert

<table>
<thead>
<tr>
<th>Specify Part Number</th>
<th>Norm. Closed</th>
<th>Norm. Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viton</td>
<td>3500-01-0001</td>
<td>3500-01-0003</td>
</tr>
<tr>
<td>Buna N / Nitrile</td>
<td>3500-B1-0001</td>
<td>3500-B1-0003</td>
</tr>
<tr>
<td>EPDM</td>
<td>3500-E1-0001</td>
<td>3500-E1-0003</td>
</tr>
</tbody>
</table>

Specifications and prices subject to change without notice or incurring obligation
Directional Control Valves

1/4 & 3/8 NPT
4-Way, 3 Position

14 & 34 Series

New Spools for 14 & 34 Series Air Valves

New 5 Ported, 3-Position 4-Way Operation

4-Way - 5 Ported - 3 Position - Type B
"Blocked"
Center position - All ports blocked and isolated. Use on conventional block and hold circuits.

4-Way - 5 Ported - 3 Position - Type F
"Float"
Center position - Inlet blocked
Cylinders open to exhaust
Used to vent both ends of cylinder to allow cylinder to float with a manual or machine movement. Flow controls or exhaust speed controls should not be used.

1/4 NPT & 3/8 NPT Ported, Manual & Pilot Operated Air Valves

5 Ported, 3-Position 4-Way Operation

Features
- Aluminum bar body
- Anodized black
- Honed and burnished bore
- Delrin spool, Pressure balanced
- Buna N seals
- May be used as either single inlet-dual exhaust or dual inlet-single exhaust
- Pre-lubed with Magnalube-G® grease

Operating Range
- Operating Pressure ............. 0 to 150 psi
- Minimum Pilot Pressure ...... 50 psi
- Temperature ...................... 0° to 180°F
- Cv = 1.0  (56.2 SCFM free flow to atmosphere @ 80 psi supply)

Options
- Viton Seals, Specify Option –V

Model Number Guide: 3-Position, Pilot Operated

<table>
<thead>
<tr>
<th>Spool Type</th>
<th>1/4 NPT Ports</th>
<th>3/8 NPT Ports</th>
<th>Replacement Spool and Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Spool</td>
<td>14 DPB</td>
<td>34DPB</td>
<td>1400-904B</td>
</tr>
<tr>
<td>F Spool</td>
<td>14DPF</td>
<td>34DPF</td>
<td>1400-904F</td>
</tr>
</tbody>
</table>

Valve Dimensions

Model 14-DPB Shown

Specifications and prices subject to change without notice or incurring obligation

2-15-06
### Features

Hardened and plated steel shaft with unique connections results in positive shifting
- Aluminum bar body
- Anodized black
- Honed and burnished bore
- Delrin spool, Pressure balanced
- Buna N seals
- May be used as either single inlet-dual exhaust or dual inlet-single exhaust
- Pre-lubed with Magnalube–G® grease

### Operating Range

- Operating Pressure ............. 0 to 150 psi
- Temperature ......................... 0° to 180°F
- \( Cv = 1.0 \) (56.2 SCFM free flow to atmosphere @ 80 psi supply)

### Options

Viton Seals, Specify Option –V

---

### Model Number Guide: 3-Position, Hand Lever Operated

<table>
<thead>
<tr>
<th>Spool Type</th>
<th>1/4 NPT Ports</th>
<th>3/8 NPT Ports</th>
<th>Replacement Spool &amp; Seals</th>
<th>1/4 NPT Ports</th>
<th>3/8 NPT Ports</th>
<th>Replacement Spool &amp; Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Spool</td>
<td>14HLSB</td>
<td>34HLSB</td>
<td>1400-934SB</td>
<td>14HLB</td>
<td>34HLB</td>
<td>1400-934B</td>
</tr>
<tr>
<td>F Spool</td>
<td>14HLSF</td>
<td>34HLSF</td>
<td>1400-934F</td>
<td>14HLF</td>
<td>34HLF</td>
<td>1400-934F</td>
</tr>
</tbody>
</table>

### Dimensions – Spring Centered Spool

- 3.94
- 0.25 (3.38)
- 0.19 (1.75)
- 4.88

### Dimensions – Detented Spool

- 4.00
- 0.25 (3.38)
- 0.19 (1.75)
1/4 NPT & 3/8 NPT Ported, 53 Style Solenoid Controlled, Pilot Operated Air Valves

5 Ported, 3-Position 4-Way Operation

**Features**
- Aluminum bar body
- Anodized black
- Honed and burnished bore
- Delrin spool
- Buna N seals
- Cv = 1.0 (56.2 SCFM free flow to atmosphere @ 80 psi supply)
- Operation to 150 psi
- Pre-lubed with Magnalube–G® grease

**Operating Range**
- Internal Pilot Supply - Standard
  - Inlet .................................. 50 to 150 psi
- External Pilot Supply Option –X
  - Inlet .................................. 0 to 150 psi
  - Pilot Supply .......................... 50 to 150 psi

**Ordering**
Choose valve model number from table below, add option suffixes as required and specify voltage/hertz.

---

**Stocked 53 Style Coils, Housings**

**Conduit Housing “C”** and **Grommet Housing “G”**
- Non-molded – Class A 221°F (105°C) Rating
- 24” Leads of AWG #18 Wire
- Stocked Voltages:
  - 24, 120 and 240 Volt at 50 or 60 Hertz
  - 6, 12 and 24 Volt DC
- Temperature Range: 0° to +180°F
  - (-18° to +82.2°C) including ambient
- Typical response times:
  - AC 4 to 8 milliseconds to open or close
  - DC 9 to 15 milliseconds to open
  - DC 5 to 12 milliseconds to close

**Male Mini-DIN Housing “F”**
- Molded – Water tight
- Class A 221°F (105°C) Rating
- European (DIN) Style – 11 mm spacing for popular quick connectors.
- Can also be connected with individual .25” quick-connect terminals
- Stocked Voltages:
  - 24, 120 and 240 Volt at 50 or 60 Hertz
  - 12 and 24 Volt DC
- Temperature Range: 0° to +180°F
  - (-18° to +82.2°C) including ambient
- Typical response times:
  - AC 4 to 8 milliseconds to open or close
  - DC 9 to 15 milliseconds to open
  - DC 5 to 12 milliseconds to close

**Options for 53 Style Solenoids**
- Yoke with standard coil, Option –YB
- Yoke with molded coil, Option –YM
- Yoke with molded spade terminal coil, Option –KM
- Explosion Proof Option –EP
  - UL File #E37780
  - CSA File #LR-26894
- Molded coil with two .25” spade terminals (UL File #E37780)

**Options for 53 Style Solenoids**
- Viton Seals Option –V
  - (-15° to +400°F)
- Strain Relief Connector Option –Q
- “AN” Connector Option –W
- Splice Box Option –J
- Mounting Bracket Option –R
- Third Wire Ground Option –CC
  - A CSA requirement

---

**Model Number Guide: 4-Way, 3-Position, Spring Centered Double Solenoid Valves**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B Spool</td>
<td>14-CCB</td>
<td>34-CCB</td>
<td>14-GGB</td>
<td>34-GGB</td>
<td>14-FFB</td>
<td>34-FFB</td>
<td>1400-904B</td>
</tr>
<tr>
<td>F Spool</td>
<td>14-CCF</td>
<td>34-CCF</td>
<td>14-GGF</td>
<td>34-GGF</td>
<td>14-FFF</td>
<td>34-FFF</td>
<td>1400-904F</td>
</tr>
</tbody>
</table>

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14 Specifications and prices subject to change without notice or incurring obligation 4-7-06
53 Style Solenoid Operators

Standard 53 Style Operator
The solenoid operator is a 3-way NC valve which, upon receiving an electrical signal, directs pressure to shift the main valve spool. As standard, the operator is internally supplied with air pressure from the main valve inlet.

53 Style Operator with External Pilot Option –X
In the following listed applications, as well as many others, a proper air supply may not be available from the main valve inlet. For these applications, an external pilot supply port is available (Option –X). A proper air supply to this port then supplies the solenoid with air pressure for piloting the main valve spool.
- Dual inlet, single exhaust
- Insufficient Pressure at main valve inlet
- Media at main valve inlet is other than air
- Extreme fast cycling

Valve Dimensions

Conduit Housing "C"
Housing can rotate 360°

Grommet Housing "G"
Housing can rotate 360°

Male Mini-DIN Housing "F"

Connectors for DIN Spades (11 mm centers):
P/N 122-09-N
Black housing - No LED
P/N 122-09-T-A.1-Voltage
Transparent housing and LED
Fabco-Air Product Catalog Library

Cylinders, Valves & Accessories Cat. CV9
Describes Pancake®, Square 1®, Longstroke™, Multi-Power®, and HiPower™ cylinder lines. Also details valves, air-over-oil tanks, boosters and accessories.

See catalog #CV9 for other valve models not shown in this bulletin

New Linear Thrusters Bulletin GB-JA02
Features longer strokes to 10” – and 4mm round profile sensors with surge suppression and polarity protection.

Multi-Power® Air Presses Catalog FP16
Details the powerful line of precision, force-multiplying air presses. Deliver forces to 11,000 pounds.

Stainless Steel Body Air Cylinders Catalog SSB-03
Exact interchange in bores from 5/16” to 3”, strokes to 32”. Popular options includes magnetic piston, non-rotating, and position feedback.

Dual Function Slides Bulletin EDF-10
Either of two slide styles (gantry or thruster) can be made from a single set of parts. Users can inventory less parts and assemble styles as needed.

Pancake® II Cylinders Catalog Pan2-2
The direct industrial interchange. High strength composite cylinder barrel. 4 popular styles: Standard, Nonrotating, Multi-Power® and 3-position.

Global Series™ Air Cylinders Cat. GC-15
Widest choice of models and options. Features non-lube service to 150 psi. Bores 12mm to 100mm • Strokes 5mm - 150mm • NPT or Metric ports

Stopper Cylinders Bulletin #ST-DIX04
Standard magnetic piston and a wide selection of styles. Roller direction is adjustable. Magnetic sensors can be mounted on body.

Pneumatic Grippers Catalog GR-8
• SPG & LPG parallel jaw motion with strokes from 1/4” to 24” & forces to 402 lbs. • GR & GS angular jaw styles with on-the-fly adjustment.

Swing Clamps Bulletin #SC-DB04
Clamp arm rotates 90° as it extends away from the workpiece. Features standard magnetic piston.

Linear Slides Catalog LS-03
Line includes 6 families of slides, pick & place units, and thin parts placers. 5/16” to 4” bores. Guide shafts 1/4” to 1-1/2”.

NFPA Interchangeable Air Cylinders Catalog NF-6
All the desirable NFPA mounts. Bores from 1-1/2” to 6”; strokes to 99”. Aluminum or high strength composite cylinder body. Magnetic position sensing.