

## CLARK SOLUTIONS

# 8P Series Pneumatic Actuated Ball Valves

1/4" to 4" Brass & Stainless Steel, 2-way & 3-way configurations



### **SERIES 8P0080/82/135/136**

- 80: Direct mount 2-way brass full port valve, DA, double acting actuator  
 82: Direct mount 2-way brass full port valve, SR, spring return actuator  
 135: Direct Mount 2-way brass full port valve, SS stem, DA, double acting actuator  
 136: Direct Mount 2-way brass full port valve, SS stem, SR, spring return actuator

### **SERIES 8P0129/131(T,L)**

- 129: Direct mount 3-way brass T port valve, DA, Double Acting Actuator  
 131: Direct mount 3-way brass T port valve, SR, spring return actuator  
 130: Direct mount 3-way brass L port valve, DA, Double Acting Actuator  
 132: Direct mount 3-way brass L port valve, SR, spring return actuator

### **SERIES 8P0133/134**

- 133: Direct mount 2-way SS full port valve, DA, double acting actuator  
 134: Direct mount 2-way SS full port valve, SR, spring return actuator

### **SERIES 8P0139/141/143/145/140/142/144/146 (T,L)**

- 139: Direct mount, 3-way SS, "T" std port valve, DA, double acting actuator  
 141: Direct mount, 3-way SS, "T" std port valve, SR, spring return actuator  
 143: Direct mount, 3-way SS, "T" full port valve, DA, double acting actuator  
 145: Direct mount, 3-way SS, "T" full port valve, SR, spring return actuator  
 140: Direct mount, 3-way SS, "L" std port valve, DA, double acting actuator  
 142: Direct mount, 3-way SS, "L" std port valve, SR, spring return actuator  
 144: Direct mount, 3-way SS, "L" full port valve, DA, double acting actuator  
 146: Direct mount, 3-way SS, "L" full port valve, SR, spring return actuator

## GENERAL

Striving for low operating torque on ball valves has been the goal of every ball valve manufacturer. All 8P direct mount ball valves are designed with the lowest possible operating torque versus all other ball valves used in industry today. The traditional "floating" style ball valve that is so widely used today has sealing components that are forcibly compressed together in order to make an effective ball to seat connection. This ensures tight sealing in the field, which is a priority. However, during the assembly process the ball itself is being "driven" to seal on the downstream seat. This assembly technique, with contact of the O.D. of the ball to the downstream TFE seat forms a "set" or a deformation/indentation to the seat itself. This downstream sealing is the industry standard and perhaps the only way for general purpose ball valves to operate and effectively seal. The end result creates a high initial breakaway torque simply because, when operated, the ball is attempting to dislodge itself from the deformed downstream seating surface.

All 8P series brass and 2-way SS direct mount ball valves incorporate technologically advanced "O" ring back TFE seats to dramatically reduce operating torque. To start, viton "O" rings are inserted into grooves formed and located on the backside of the TFE seat itself. They are preassembled as a unit and then assembled into the valves.

### **VALVE FEATURES**

- Low Torque Valve Stem & Valve Seat Design Means Smaller Actuators
- Square Stem Valve Design With ISO 5211 Actuator Pad For Structural Strength
- Complete Design Control With Integrated Components From One Manufacturer
- Produced In An ISO 9001, ISO 14001, OHSAS 18001 Certified Factory

### **ACTUATOR FEATURES**

- 0-90° Rotation adjustable  $\pm 5^\circ$  by means of adjusting screws
- Standard Temp. range -40 to +185°F; Hi temp option -4 to 302°F, Lo temp option -40 to 185°F
- Twin Rack & Pinion Design
- Constant Torque Output
- Compact Design
- Standard position indicator
- Pre-lubricated for life of actuator
- Optional Limit Switches

**8P valves are designed to operate with a minimum of 80 PSI air supply**

The ball valve is fully assembled and tested with the "O" rings exerting only a minimum amount of pressure on the TFE seats. The o-rings in turn seal on both the upstream and downstream side of the ball, similar to the dynamics of a trunnion style ball valve. Due to light force exerted, only a "single point" of each seat comes in contact with the ball.

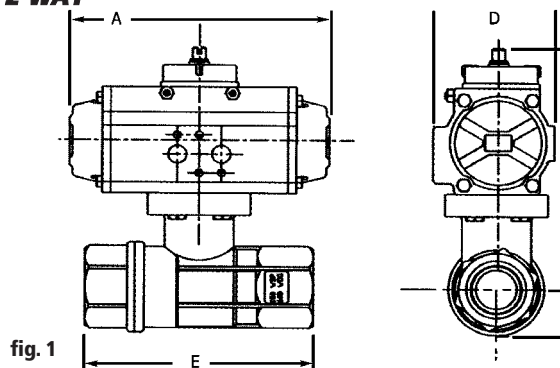
The stem sealing design of 8P direct mount valves also plays a role in lowering the torque. After each direct mount forging or investment casting is machined, they are transferred to a secondary "burnishing" operation performed on the stem sealing area. This special burnishing creates a micro finish in the I.D. area of the stem thus ridding each piece of potential machining imperfections and assisting in reducing the valve torque. The use of dual Viton "O" ring seals along with two TFE auxiliary seals insure an excellent stem seal that does not require field adjustment as is common to conventional style ball valves.

The technological advancement of superior stem sealing and the "O" ring back seat design has allowed 8P direct mount ball valves to enjoy the reputation of having the highest performance and lowest operating torque in the industry. Lower operating torque equates to the use of smaller size actuators and a smaller package profile.

| General Valve Specifications  |  |   |  |
|---|--|---|--|
| 8P080/82/135/136 2-Way Brass  | 8P0129/131(T,L) 3-Way Brass  | 8P0133/134 2-Way SS   | 8P0139/40/41/42/43/44/45/46 3-Way SS   |
| - Full Port from 1/4" to 4"<br>-*PSI Pressure Rating 600 WOG - 150 WSP<br>-Temperature to 366°F<br>-Blow out proof stem, chrome plated brass ball (SS Ball Model 68)<br>-P.T.F.E. seats w/o-ring backing for low operating torque<br>-P.T.F.E. seats and double o-ring stem packing<br>-100% tested in the open & closed position at 80 PSI | - "T" & "L" Ports from 1/4" to 3"<br>-*PSI Pressure Rating 400 WOG - 100 WSP<br>-Temperature to 344°F<br>Four seat design for sealing between pressurized ports<br>-Blow out proof stem, chrome plated brass ball<br>-P.T.F.E. seats w/o-ring backing for low operating torque<br>-P.T.F.E. seats and double o-ring stem packing<br>-100% tested in the open & closed position at 80 PSI | - Full Port from 1/4" to 3"<br>-2 pc stainless steel ASTM A351 - CF8M<br>-*PSI Pressure Rating 1000 WOG - 150 WSP<br>-Temperature to 366°F<br>-Blow out proof stem<br>-P.T.F.E. seats w/o-ring backing for low operating torque<br>-P.T.F.E. seats and double o-ring stem packing<br>-100% tested in the open & closed position at 80 PSI | - Full Port from 1/4" to 2"; Standard port from 1/2" to 2"<br>-Stainless steel ASTM A351 - CF8M<br>-Self adjusting stem packing<br>-*PSI Pressure Rating 1000 WOG (1/4 to 1"), 800 WOG (1/4" to 2")<br>-Temperature range -20°F to 450°F<br>-Blow out proof stem<br>-100% tested in the open & closed position at 80 PSI |
| * WOG-Water, Oil, Gas max. pressure capability over temp. range WSP- Working Steam Pressure, max. steam pressure at the highest temperature rating  |  |   |  |

## VALVE DIMENSIONS & MATERIALS OF CONSTRUCTION

### BRASS 2-WAY



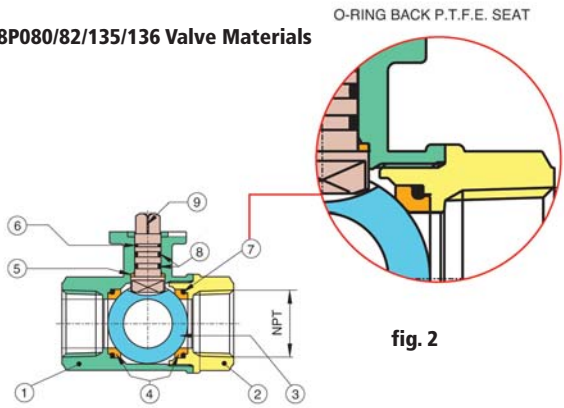
| *8P0080/8P0135 2-Way Brass Dimensions (inches) with Double Acting Actuator (fig. 1) |      |      |      |      |      |        |        |      |        |      |       |
|---|------|------|------|------|------|--------|--------|------|--------|------|-------|
| Size/NPT Conn.  | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"   | 2-1/2" | 3"   | 4"    |
| A   | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 | 4.33   | 5.51   | 5.51 | 6.37   | 6.37 | 9.37  |
| B   | 4.52 | 4.52 | 4.52 | 4.72 | 5.31 | 5.66   | 7.48   | 8.22 | 9.60   | 10.4 | 13.00 |
| C   | 3.85 | 3.85 | 3.85 | 3.93 | 4.37 | 4.48   | 6.06   | 6.41 | 7.40   | 7.83 | 9.76  |
| D   | 1.77 | 1.77 | 1.77 | 1.77 | 1.77 | 1.77   | 2.79   | 2.79 | 3.18   | 3.18 | 4.17  |
| E   | 2.63 | 2.63 | 2.63 | 3.99 | 3.54 | 4.01   | 4.48   | 5.43 | 6.18   | 7.40 | 8.85  |
| Actuator  | 32   | 32   | 32   | 32   | 32   | 32     | 52     | 52   | 63     | 63   | 85    |

\* 8P0135 is available for sizes 1/4" to 2" only

| *8P0082/8P0136 2-Way Brass Dimensions (inches) with Spring Return Actuator (fig. 1) |      |      |      |      |      |        |        |      |        |       |       |
|---|------|------|------|------|------|--------|--------|------|--------|-------|-------|
| Size/NPT Conn.  | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"   | 2-1/2" | 3"    | 4"    |
| A   | 5.51 | 5.51 | 5.51 | 5.51 | 5.51 | 5.51   | 6.37   | 6.37 | 9.37   | 9.37  | 10.70 |
| B   | 5.51 | 5.51 | 5.51 | 5.59 | 6.29 | 6.61   | 7.91   | 8.66 | 10.70  | 11.50 | 13.50 |
| C   | 4.84 | 4.84 | 4.84 | 4.92 | 5.31 | 5.47   | 6.49   | 6.85 | 8.50   | 8.93  | 10.20 |
| D   | 2.79 | 2.79 | 2.79 | 2.79 | 2.79 | 2.79   | 3.18   | 3.18 | 4.17   | 4.17  | 4.84  |
| E   | 2.63 | 2.63 | 2.63 | 2.99 | 3.54 | 4.01   | 4.48   | 5.43 | 6.18   | 7.40  | 8.85  |
| Actuator  | 52   | 52   | 52   | 52   | 52   | 52     | 63     | 63   | 85     | 85    | 100   |

\* 8P0136 is available for sizes 1/4" to 2" only

**8P080/82/135/136 Valve Materials**

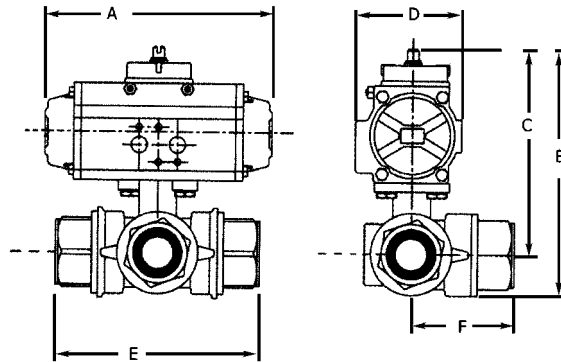


**fig. 2**

|   | Part Name      | Material<br>8P080/82   | Material<br>8P0135/136           | QTY |
|---|----------------|------------------------|----------------------------------|-----|
| 1 | Body           | *Brass CW617N (C37700) | *Brass CW617N (C37700)           | 1   |
| 2 | End Connection | *Brass CW617N (C37700) | *Brass CW617N (C37700)           | 1   |
| 3 | Ball           | *Brass CW617N (C37700) | Stainless Steel STM A351 - CF8M  | 1   |
| 4 | Ball Seat      | P.T.F.E.               | P.T.F.E.                         | 2   |
| 5 | Thrust Washer  | P.T.F.E.               | P.T.F.E.                         | 1   |
| 6 | Stem Seal      | P.T.F.E.               | P.T.F.E.                         | 1   |
| 7 | O-Ring Body    | FKM (Viton®)           | FKM (Viton®)                     | 2   |
| 8 | O-ring Stem    | FKM (Viton®)           | FKM (Viton®)                     | 2   |
| 9 | Stem           | *Brass CW617N (C37700) | Stainless Steel ASTM A351 - CF8M | 1   |

\* Order Option LF- Lead Free Brass, CW510L/ASTM C28500, NSF 61 Annex F + G approved

**BRASS 3-WAY**



**fig. 3**

| <b>8P0129 3-Way Brass "T" Port Dimensions (inches) with Double Acting Actuator (fig 3)</b> |      |      |      |      |      |        |        |      |        |       |  |
|--|------|------|------|------|------|--------|--------|------|--------|-------|--|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"   | 2-1/2" | 3"    |  |
| <b>A</b>   | 4.33 | 4.33 | 4.33 | 4.33 | 5.51 | 5.51   | 6.37   | 8.15 | 8.15   | 8.15  |  |
| <b>B</b>   | 4.44 | 4.44 | 4.44 | 4.61 | 6.16 | 6.59   | 7.77   | 9.24 | 10.20  | 10.20 |  |
| <b>C</b>   | 3.81 | 3.78 | 3.74 | 3.86 | 5.23 | 5.47   | 6.47   | 7.58 | 8.04   | 8.10  |  |
| <b>D</b>   | 1.77 | 1.77 | 1.77 | 1.77 | 2.80 | 2.80   | 3.17   | 3.72 | 3.72   | 3.72  |  |
| <b>E</b>   | 2.64 | 2.64 | 2.87 | 3.19 | 3.74 | 4.39   | 4.86   | 5.73 | 6.93   | 7.08  |  |
| <b>F</b>   | 1.32 | 1.32 | 1.44 | 1.60 | 1.87 | 2.20   | 2.43   | 2.87 | 3.47   | 3.51  |  |
| <b>Actuator</b>  | 32   | 32   | 32   | 32   | 52   | 52     | 63     | 75   | 75     | 75    |  |

| <b>8P0131 3-Way Brass "T" Port Dimensions (inches) with Spring Return Actuator (fig 3)</b> |      |      |      |      |      |        |        |       |        |       |  |
|--|------|------|------|------|------|--------|--------|-------|--------|-------|--|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"    | 2-1/2" | 3"    |  |
| <b>A</b>   | 5.51 | 5.51 | 5.51 | 6.37 | 6.37 | 6.37   | 9.35   | 10.70 | 10.70  | 10.70 |  |
| <b>B</b>   | 5.40 | 5.40 | 5.40 | 5.96 | 6.60 | 7.03   | 8.87   | 10.10 | 11.10  | 11.30 |  |
| <b>C</b>   | 4.77 | 4.77 | 4.77 | 5.24 | 5.67 | 5.91   | 7.57   | 8.41  | 8.89   | 9.05  |  |
| <b>D</b>   | 2.80 | 2.80 | 2.80 | 6.37 | 6.37 | 6.37   | 9.35   | 10.70 | 10.70  | 10.70 |  |
| <b>E</b>   | 2.64 | 2.64 | 2.87 | 3.19 | 3.24 | 4.39   | 4.86   | 5.93  | 6.93   | 7.09  |  |
| <b>F</b>   | 1.32 | 1.32 | 1.44 | 1.60 | 1.83 | 2.20   | 2.43   | 2.87  | 3.47   | 3.54  |  |
| <b>Actuator</b>  | 52   | 52   | 52   | 63   | 63   | 63     | 85     | 100   | 100    | 100   |  |

| <b>8P0130 3-Way Brass "L" Port Dimensions (inches) with Double Acting Actuator (fig 3)</b> |      |      |      |      |      |        |        |      |        |      |  |
|--|------|------|------|------|------|--------|--------|------|--------|------|--|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"   | 2-1/2" | 3"   |  |
| <b>A</b>   | 4.33 | 4.33 | 4.33 | 4.33 | 5.51 | 5.51   | 5.51   | 6.37 | 6.37   | 6.37 |  |
| <b>B</b>   | 4.44 | 4.44 | 4.44 | 4.61 | 6.16 | 6.59   | 7.33   | 8.59 | 9.54   | 9.58 |  |
| <b>C</b>   | 3.81 | 3.78 | 3.74 | 3.86 | 5.23 | 5.47   | 6.03   | 6.93 | 7.39   | 7.35 |  |
| <b>D</b>   | 1.77 | 1.77 | 1.77 | 1.77 | 2.80 | 2.80   | 2.80   | 3.17 | 3.17   | 3.17 |  |
| <b>E</b>   | 2.64 | 2.64 | 2.87 | 3.19 | 3.74 | 4.39   | 4.86   | 5.73 | 6.93   | 7.08 |  |
| <b>F</b>   | 1.32 | 1.32 | 1.44 | 1.60 | 1.87 | 2.20   | 2.43   | 2.87 | 3.47   | 3.54 |  |
| <b>Actuator</b>  | 32   | 32   | 32   | 32   | 52   | 52     | 52     | 63   | 63     | 63   |  |

| <b>8P0132 3-Way Brass "L" Port Dimensions (inches) with Spring Return Actuator (fig 3)</b> |      |      |      |      |      |        |        |      |        |       |  |
|--|------|------|------|------|------|--------|--------|------|--------|-------|--|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"   | 2-1/2" | 3"    |  |
| <b>A</b>   | 5.51 | 5.51 | 5.51 | 5.51 | 5.51 | 5.52   | 6.37   | 9.35 | 9.35   | 9.35  |  |
| <b>B</b>   | 5.40 | 5.40 | 5.40 | 5.52 | 6.16 | 6.59   | 7.77   | 9.69 | 10.50  | 10.60 |  |
| <b>C</b>   | 4.77 | 4.77 | 4.77 | 4.82 | 5.23 | 5.47   | 6.47   | 8.03 | 8.49   | 8.43  |  |
| <b>D</b>   | 2.80 | 2.80 | 2.80 | 2.80 | 2.80 | 2.80   | 3.17   | 4.17 | 4.17   | 4.17  |  |
| <b>E</b>   | 2.64 | 2.64 | 2.87 | 3.19 | 3.24 | 4.39   | 4.86   | 5.93 | 6.93   | 7.09  |  |
| <b>F</b>   | 1.32 | 1.32 | 1.44 | 1.60 | 1.83 | 2.20   | 2.43   | 2.87 | 3.47   | 3.54  |  |
| <b>Actuator</b>  | 52   | 52   | 52   | 52   | 52   | 52     | 63     | 85   | 85     | 85    |  |

**8P0130/32 Valve Materials**

O-RING BACK P.T.F.E. SEAT

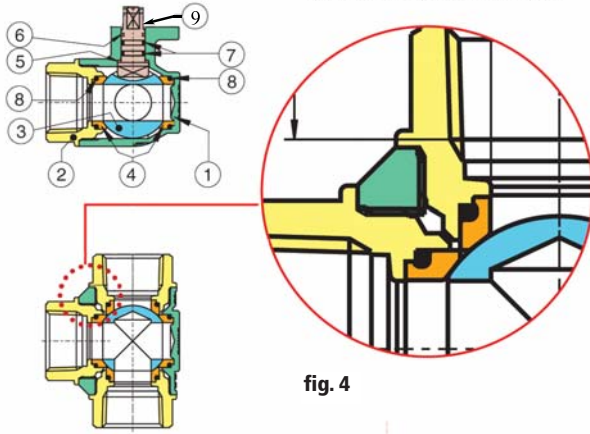


fig. 4

|   | Part Name      | Material<br>8P0130/32  | QTY |
|---|----------------|------------------------|-----|
| 1 | Body           | *Brass CW617N (C37700) | 1   |
| 2 | End Connection | *Brass CW617N (C37700) | 3   |
| 3 | Ball           | *Brass CW617N (C37700) | 1   |
| 4 | Ball Seat      | P.T.F.E.               | 4   |
| 5 | Thrust Washer  | P.T.F.E.               | 1   |
| 6 | Stem Seal      | P.T.F.E.               | 1   |
| 7 | O-Ring Stem    | FKM (Viton®)           | 2   |
| 8 | O-ring Body    | FKM (Viton®)           | 2   |
| 9 | Stem           | *Brass CW617N (C37700) | 1   |

\*\* Order Option LF- Lead Free Brass, CW510L/ASTM C28500, NSF 61 Annex F + G approved

**STAINLESS STEEL 2-WAY**

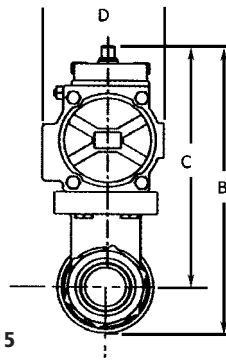
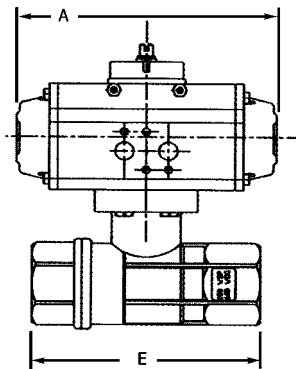


fig. 5

| 8P0133 2-Way Stainless Steel Dimensions (inches) with Double Acting Actuator (fig 5) |      |      |      |      |      |        |        |      |        |       |  |
|--|------|------|------|------|------|--------|--------|------|--------|-------|--|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"   | 2-1/2" | 3"    |  |
| A  | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 | 4.33   | 5.51   | 5.51 | 11.60  | 13.30 |  |
| B  | 4.80 | 4.80 | 4.52 | 4.76 | 5.35 | 5.74   | 7.51   | 8.30 | 11.50  | 12.70 |  |
| C  | 4.00 | 4.00 | 3.85 | 3.93 | 4.33 | 4.44   | 6.02   | 6.37 | 9.21   | 10.10 |  |
| D  | 1.77 | 1.77 | 1.77 | 1.77 | 1.77 | 1.77   | 2.79   | 2.79 | 3.72   | 4.17  |  |
| E  | 2.56 | 2.56 | 2.63 | 3.07 | 3.54 | 3.93   | 4.40   | 5.31 | 6.33   | 7.00  |  |
| Actuator   | 32   | 32   | 32   | 32   | 32   | 32     | 52     | 52   | 75     | 85    |  |

| 8P0134 2-Way Stainless Steel Dimensions (inches) with Spring Return Actuator (fig 5) |      |      |      |      |      |        |        |      |        |       |  |
|--|------|------|------|------|------|--------|--------|------|--------|-------|--|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"   | 2-1/2" | 3"    |  |
| A  | 5.51 | 5.51 | 5.51 | 5.51 | 5.51 | 5.51   | 6.37   | 6.37 | 18.50  | 20.90 |  |
| B  | 5.70 | 5.70 | 5.51 | 5.70 | 6.29 | 6.69   | 7.95   | 8.74 | 13.50  | 14.80 |  |
| C  | 5.00 | 5.00 | 4.80 | 4.88 | 5.27 | 5.43   | 6.45   | 6.81 | 11.70  | 12.40 |  |
| D  | 2.79 | 2.79 | 2.79 | 2.79 | 2.79 | 2.79   | 3.18   | 3.18 | 5.39   | 5.83  |  |
| E  | 2.86 | 2.86 | 2.63 | 3.07 | 3.54 | 3.93   | 4.40   | 5.31 | 6.33   | 7.00  |  |
| Actuator   | 52   | 52   | 52   | 52   | 52   | 52     | 63     | 63   | 115    | 125   |  |

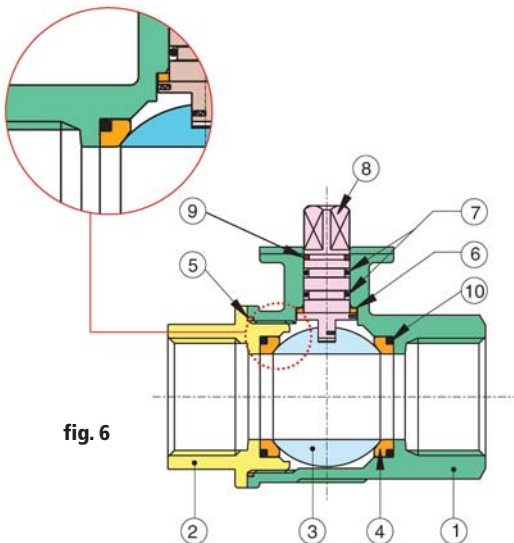
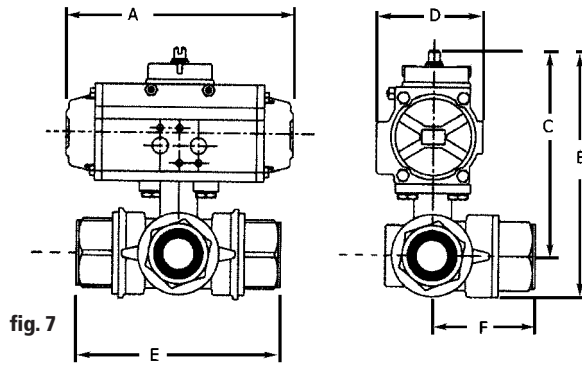


fig. 6

|    | Part Name      | Material<br>8P0133/34 | QTY |
|----|----------------|-----------------------|-----|
| 1  | Body           | ASTM A351 CF8M        | 1   |
| 2  | End Connection | ASTM A351 CF8M        | 1   |
| 3  | Ball           | ASTM A351 CF8M        | 1   |
| 4  | Ball Seat      | P.T.F.E.              | 2   |
| 5  | Seat           | P.T.F.E.              | 1   |
| 6  | Stem Seal      | P.T.F.E.              | 1   |
| 7  | O-Ring         | FKM (Viton®)          | 2   |
| 8  | Stem           | ASTM A351 CF8M        | 1   |
| 9  | Stem Seat      | P.T.F.E.              | 1   |
| 10 | O-Ring         | FKM (Viton®)          | 2   |

### STAINLESS STEEL 3-WAY



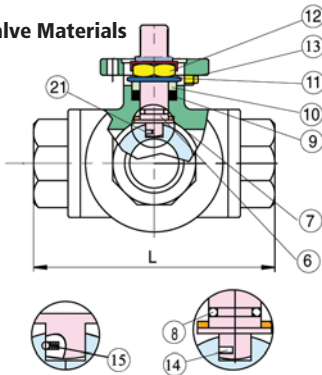
| 8P0139/143 3-Way Stainless Steel Std & Full "T" Port Dimensions (inches) with Double Acting Actuator (fig 7) |      |      |      |      |      |        |        |       |
|--|------|------|------|------|------|--------|--------|-------|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"    |
| <b>A</b>   | 5.49 | 5.49 | 5.49 | 6.38 | 6.38 | 8.15   | 9.35   | 10.60 |
| <b>B</b>   | 5.75 | 5.75 | 6.10 | 7.10 | 7.50 | 8.95   | 10.40  | 11.50 |
| <b>C</b>   | 4.72 | 4.72 | 5.14 | 6.50 | 6.90 | 7.50   | 8.60   | 9.60  |
| <b>D</b>   | 2.80 | 2.80 | 2.80 | 3.17 | 3.17 | 3.72   | 4.17   | 4.84  |
| <b>E</b>   | 2.83 | 2.83 | 3.26 | 3.89 | 4.40 | 4.92   | 5.86   | 6.85  |
| <b>F</b>   | 1.42 | 1.42 | 1.64 | 2.05 | 2.30 | 2.38   | 3.10   | 3.42  |
| <b>Actuator</b>  | 52   | 52   | 52   | 63   | 63   | 75     | 85     | 100   |

| 8P0141/145 3-Way Stainless Steel Std & Full "T" Port Dimensions (inches) with Spring Return Actuator (fig 7) |      |      |      |      |      |        |        |       |
|--|------|------|------|------|------|--------|--------|-------|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"    |
| <b>A</b>   | 6.38 | 6.38 | 6.38 | 8.15 | 8.15 | 10.60  | 10.60  | 14.40 |
| <b>B</b>   | 5.98 | 5.98 | 6.25 | 7.75 | 8.00 | 9.85   | 10.70  | 12.40 |
| <b>C</b>   | 5.38 | 5.38 | 6.05 | 6.65 | 7.00 | 8.50   | 9.23   | 10.90 |
| <b>D</b>   | 3.17 | 3.17 | 3.17 | 3.72 | 3.72 | 4.84   | 4.84   | 5.83  |
| <b>E</b>   | 2.83 | 2.83 | 3.26 | 3.89 | 4.40 | 4.92   | 5.86   | 6.85  |
| <b>F</b>   | 1.42 | 1.42 | 1.64 | 2.05 | 2.30 | 2.38   | 2.38   | 3.42  |
| <b>Actuator</b>  | 63   | 63   | 63   | 75   | 75   | 100    | 100    | 125   |

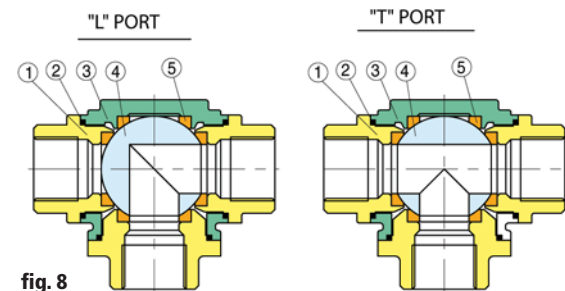
| 8P0140/144 3-Way Stainless Steel Std & Full "L" Port Dimensions (inches) with Double Acting Actuator (fig 7) |      |      |      |      |      |        |        |       |
|--|------|------|------|------|------|--------|--------|-------|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"    |
| <b>A</b>   | 5.49 | 5.49 | 5.49 | 6.38 | 6.38 | 8.15   | 9.35   | 10.60 |
| <b>B</b>   | 5.75 | 5.75 | 6.10 | 7.10 | 7.50 | 8.95   | 10.40  | 11.50 |
| <b>C</b>   | 4.72 | 4.72 | 5.14 | 6.50 | 6.90 | 7.50   | 8.60   | 9.60  |
| <b>D</b>   | 2.80 | 2.80 | 2.80 | 3.17 | 3.17 | 3.72   | 4.17   | 4.84  |
| <b>E</b>   | 2.83 | 2.83 | 3.26 | 3.89 | 4.40 | 4.92   | 5.86   | 6.85  |
| <b>F</b>   | 1.42 | 1.42 | 1.64 | 2.05 | 2.30 | 2.38   | 3.10   | 3.42  |
| <b>Actuator</b>  | 52   | 52   | 52   | 63   | 63   | 75     | 85     | 100   |

| 8P0142/146 3-Way Stainless Steel Std & Full "L" Port Dimensions (inches) with Spring Return Actuator (fig 7) |      |      |      |      |      |        |        |       |
|--|------|------|------|------|------|--------|--------|-------|
| Size/NPT Conn.   | 1/4" | 3/8" | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"    |
| <b>A</b>   | 6.38 | 6.38 | 6.38 | 8.15 | 8.15 | 10.60  | 10.60  | 14.40 |
| <b>B</b>   | 5.98 | 5.98 | 6.25 | 7.75 | 8.00 | 9.85   | 10.70  | 12.40 |
| <b>C</b>   | 5.38 | 5.38 | 6.05 | 6.65 | 7.00 | 8.50   | 9.25   | 10.90 |
| <b>D</b>   | 3.17 | 3.17 | 3.17 | 3.72 | 3.72 | 4.84   | 4.84   | 5.83  |
| <b>E</b>   | 2.83 | 2.83 | 3.26 | 3.89 | 4.40 | 4.92   | 5.86   | 6.85  |
| <b>F</b>   | 1.42 | 1.42 | 1.64 | 2.05 | 2.30 | 2.38   | 2.38   | 3.42  |
| <b>Actuator</b>  | 63   | 63   | 63   | 75   | 75   | 100    | 100    | 125   |

### 8P0139-146 Valve Materials



| 3-Way Stainless Steel Std & Full Port Orifice Sizes (inches) |      |       |      |      |      |        |        |      |
|--|------|-------|------|------|------|--------|--------|------|
| Size/NPT   | 1/4" | 3/8"  | 1/2" | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"   |
| <b>Full Port</b>   | 0.25 | 0.470 | 0.59 | 0.78 | 0.98 | 1.25   | 1.50   | 2.00 |
| <b>Standard Port</b>   | -    | -     | 0.47 | 0.59 | 0.78 | 0.98   | 1.25   | -    |



| Part Name                   | Material       | QTY |
|-----------------------------|----------------|-----|
| <b>1</b> End Cap            | ASTM A351 CF8M | 3   |
| <b>2</b> Gaslet             | P.T.F.E.       | 3   |
| <b>3</b> Body               | ASTM A351 CF8M | 1   |
| <b>4</b> Ball               | ASTM A351 CF8M | 1   |
| <b>5</b> Seats              | R.T.F.E.       | 4   |
| <b>6</b> Stem               | P.T.F.E.       | 1   |
| <b>7</b> Stem Seal          | R.P.T.F.E.     | 1   |
| <b>8</b> O-Ring             | FKM (Viton®)   | 1   |
| <b>9</b> Stem Packing       | FKM (Viton®)   | 1   |
| <b>10</b> Gland             | 304 SS         | 1   |
| <b>11</b> Disk Washer       | 301 SS         | 2   |
| <b>12</b> Stem Nut          | 304 SS         | 1   |
| <b>13</b> Pin Nut           | 304 SS         | 1   |
| <b>14</b> Insert Pin        | 316 SS         | 1   |
| <b>15</b> Antistatic Device | 316 SS         | 1   |

# VALVE ACTUATORS



## GENERAL SPECIFICATIONS

Types:

- DA- Double Acting
- SR- Spring Return

Actuation Pressure Rating: Minimum 80 PSI, maximum 115 PSI

Temperature Range:

- Standard (NBR Seals): -4°F to +185°F
- High Temp Option (Viton Seals): -4°F to +302°F
- Low Temperature Option (Silicon Seals): -40°F to +185°F

Rotation: 0-90° adjustable ±5° in both clockwise and counterclockwise directions by means of adjusting screws outside the internal supply chambers

Position Indicator: Standard

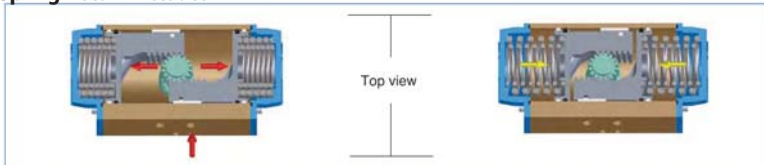
Air Supply Connections:

- Models 32, 52, 63, 75, 85- 1/8" NPT;
- Model 100- 1/4" NPT

Lubrication: Pre lubricated for life of actuator on assembly

## ACTUATOR OPERATION

### Spring Return Actuator



### Double Acting Actuator

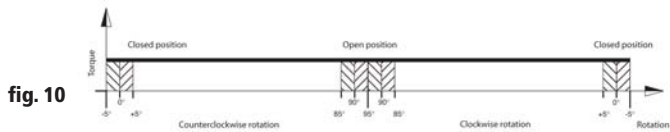
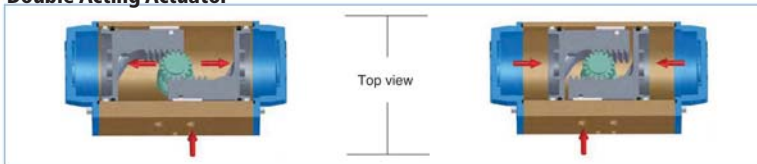


fig. 10

The torque of a double acting actuator remains constant throughout the complete actuation while the torque of the spring return actuator is not constant but decreasing. Series 8P valve assemblies have actuators selected by the factory to meet the valve torque requirements. This assumes the actuation supply pressure is a minimum of 80 PSI.

See series NMR1 4-way air supply solenoid valve on accessory page.

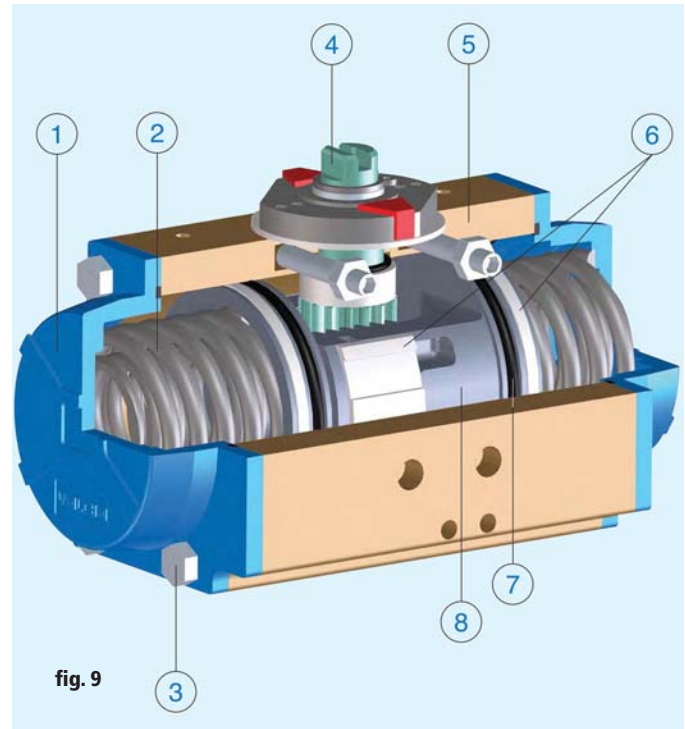


fig. 9

|   | Description  |
|---|--|
| 1 | <b>Die Cast Aluminum End Caps</b><br>-Standard polyester powder coated   |
| 2 | <b>Concentric Spring Sets</b><br>-Standard treatment phosphated–<br>-High resistance and reliability<br>- Long securing screws to allow safe dismantling for maintenance<br>-Same body dimensions for DA/SR versions         |
| 3 | <b>Assembling Screw</b><br>-Stainless Steel  |
| 4 | <b>Steel Pinion</b><br>- Standard version nickel plated<br>- Stainless steel for corrosive environments<br>-Anti-blow out design   |
| 5 | <b>Extruded Aluminum Body UNI 6060</b><br>-Hard-coat anodized finish 40-50 (microns)<br>-Nickel or epoxy coating optional<br>-Good Wear & high corrosion resistance<br>- Bore finish to high standard to ensure low friction |
| 6 | <b>POM Piston Guides</b><br>- Large contact area<br>-Low friction material with long life  |
| 7 | <b>Seals</b><br>- NBR: Standard<br>-Viton: High temp. version<br>-Silicon: Low temp. version   |
| 8 | <b>Pistons</b><br>- Die Cast Aluminum (nickel plating available)   |

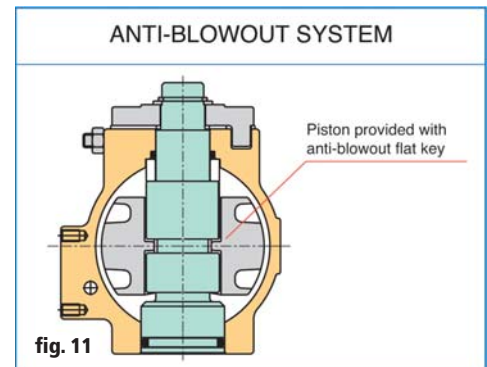


fig. 11

| Model   | 32   | 52   | 63    | 75    | 85    | 100   |
|---|------|------|-------|-------|-------|-------|
| <b>Working Time (sec)</b>                                 |      |      |       |       |       |       |
| Direct Acting Counterclockwise Rotation                   | 0.03 | 0.03 | 0.06  | 0.12  | 0.20  | 0.30  |
| Direct Acting Clockwise Rotation                          | 0.03 | 0.04 | 0.08  | 0.12  | 0.19  | 0.27  |
| Spring Return Counterclockwise Rotation                   | -    | 0.09 | 0.14  | 0.22  | 0.31  | 0.44  |
| Spring Return Clockwise Rotation                          | -    | 0.09 | 0.14  | 0.22  | 0.33  | 0.46  |
| <b>Actuator Air Consumption (cubic inches per stroke)</b> |      |      |       |       |       |       |
| Direct Acting Counterclockwise Rotation                   | 2.44 | 6.10 | 11.60 | 21.97 | 31.12 | 48.21 |
| Direct Acting Clockwise Rotation                          | 1.83 | 7.93 | 14.04 | 26.85 | 39.06 | 61.02 |
| Spring Return Clockwise Rotation                          | -    | 6.71 | 11.60 | 21.97 | 32.34 | 48.82 |
| <b>Weight (lbs)</b>                                       |      |      |       |       |       |       |
| Direct Acting   | 1.08 | 2.25 | 3.26  | 5.51  | 7.39  | 11.02 |
| Spring Return   | -    | 2.62 | 3.97  | 6.94  | 9.37  | 14.40 |

### ACTUATOR PARTS

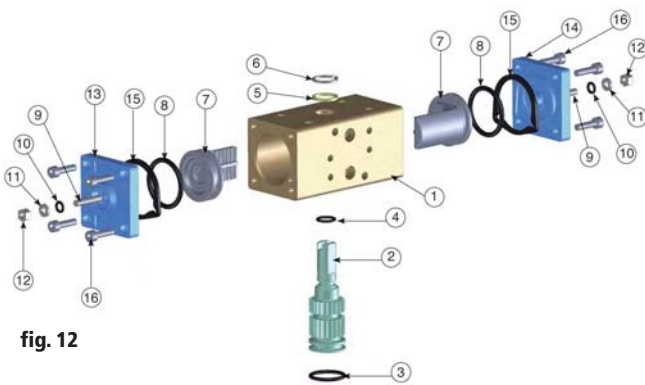


fig. 12

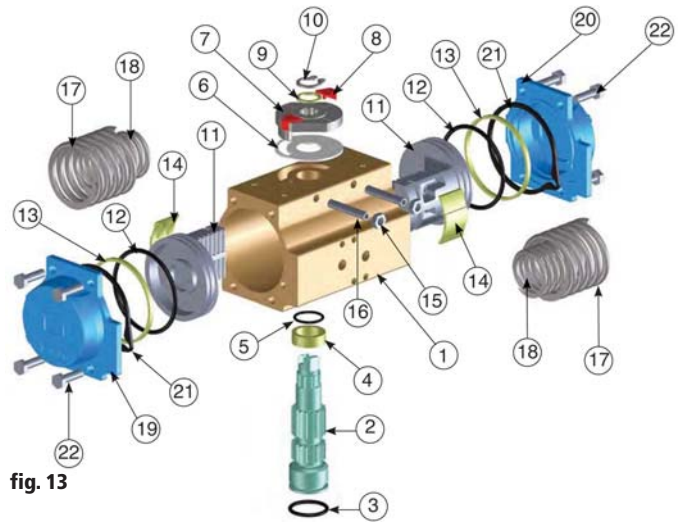


fig. 13

| Model 32 Actuator Parts (fig. 12) |                         |                   |               |     |
|-----------------------------------|-------------------------|-------------------|---------------|-----|
|                                   | Part Name               | Material          | Treatment     | QTY |
| 1                                 | Body                    | Extruded Aluminum | Hard Anodized | 1   |
| 2                                 | Anti-blowout pinion     | Steel             | Nickle plated | 1   |
| *3                                | Lower pinion o-ring     | NBR               |               | 1   |
| *4                                | Top pinion o-ring       | NBR               |               | 1   |
| *5                                | Spacer ring             | POM               |               | 1   |
| 6                                 | Pinion snap ring        | Steel             | Nickle plated | 1   |
| 7                                 | Piston                  | Die Cast Aluminum |               | 2   |
| *8                                | Piston o-ring           | NBR               |               | 2   |
| 9                                 | Stop bolt               | Stainless steel   |               | 2   |
| *10                               | Stop bolt o-ring        | NBR               |               | 2   |
| 11                                | Washer                  | Stainless steel   |               | 2   |
| 12                                | Stop bolt retaining nut | Stainless steel   |               | 2   |
| 13                                | Left end cap            | Die Cast Aluminum | Painted       | 1   |
| 14                                | Right end cap           | Die Cast Aluminum | Painted       | 1   |
| 15                                | End cap seats           | NBR               |               | 2   |
| 16                                | End fixing screw        | Stainless steel   |               | 8   |
| * Parts subject to wear           |                         |                   |               |     |

| Model 52-100 Actuator Parts (fig. 13)                       |                         |                           |                |        |        |  |
|---|-------------------------|---------------------------|----------------|--------|--------|--|
|   | Part Name               | Material                  | Treatment      | QTY DA | QTY SR |  |
| 1   | Body                    | Extruded Aluminum         | Hard Anodized  | 1      | 1      |  |
| 2   | Anti-blowout pinion     | Steel                     | Nickle plated  | 1      | 1      |  |
| *3  | Lower pinion o-ring     | NBR                       |                | 1      | 1      |  |
| *4  | Pinion spacer ring      | POM                       |                | 1      | 1      |  |
| *5  | Top pinion o-ring       | NBR                       |                | 1      | 1      |  |
| *6  | Cam spacer ring         | POM                       |                | 1      | 1      |  |
| 7   | Cam                     | Stainless steel           |                | 1      | 1      |  |
| 8   | Position Indicator      | Nylon                     |                | 2      | 2      |  |
| 9   | Pinion washer           | Stainless steel           |                | 1      | 1      |  |
| 10  | Pinion snap ring        | Reinforced steel UNI 7436 | Nickle plated  | 1      | 1      |  |
| 11  | Piston                  | Die Cast Aluminum         |                | 2      | 2      |  |
| *12   | Piston o-ring           | NBR                       |                | 2      | 2      |  |
| *13   | Anti-friction ring      | POM                       |                | 2      | 2      |  |
| *14   | Piston thrust block     | POM                       |                | 2      | 2      |  |
| 15  | Stop bolt retaining nut | Stainless steel           |                | 2      | 2      |  |
| 16  | Stop bolt               | Stainless steel           |                | 2      | 2      |  |
| 17  | External spring         | Steel                     | Zinc-phosphate | 0      | **     |  |
| 18  | Internal spring         | Steel                     | Zinc-phosphate | 0      | **     |  |
| 19  | Left end cap            | Die Cast Aluminum         | Painted        | 1      | 1      |  |
| 20  | Right end cap           | Die Cast Aluminum         | Painted        | 1      | 1      |  |
| 21  | End cap seats           | NBR                       |                | 2      | 2      |  |
| 22  | End cap fixing screw    | Stainless steel           |                | 8      | 8      |  |
| * Parts subject to wear ** Factory fixed dependent on model |                         |                           |                |        |        |  |

# ACTUATOR DIMENSIONS

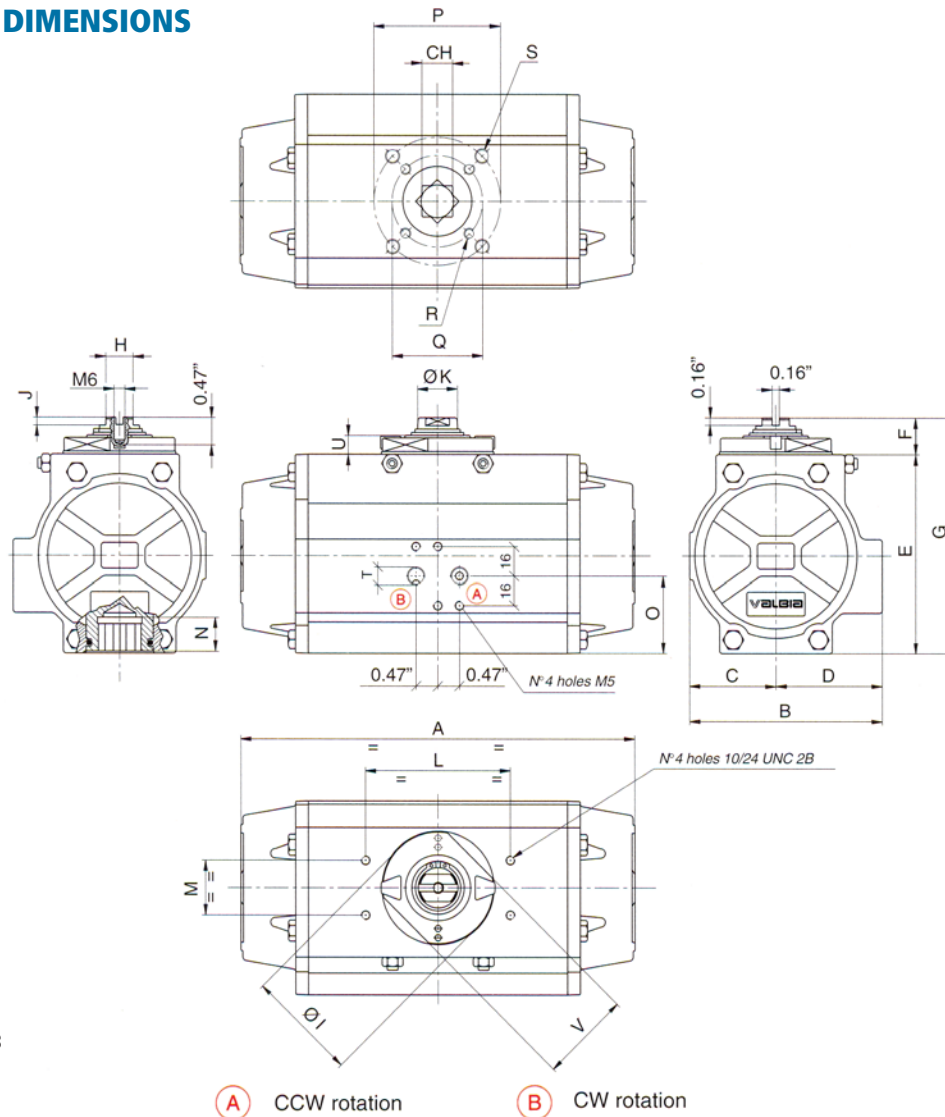


fig. 13

(A) CCW rotation (B) CW rotation

| Dimensions (inches) Models 52 to 100 (fig. 13) |                                |      |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                     |                     |       |      |      |
|--|--------------------------------|------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------|---------------------|-------|------|------|
| Mod.   | Valve Flange Drilling ISO 5211 | CH   | A         | B    | C    | D    | E    | F    | G    | H    | ØI   | J    | ØK   | L    | M    | N    | O    | P    | Q    | R                   | S                   | T NPT | U    | V    |
| 52   | F03-05                         | 0.43 | 5.49      | 2.80 | 1.18 | 1.61 | 2.74 | 0.79 | 3.52 | 0.35 | 1.65 | 0.24 | 0.47 | 3.15 | 1.18 | 0.47 | 1.04 | 1.97 | 1.42 | 10-24 UNC 2Bx0.29"  | 1/4-20 UNC 2Bx0.35" | 1/8"  | 0.35 | 1.50 |
| 63   | F05-F07                        | 0.55 | 6.38      | 3.17 | 1.40 | 1.77 | 3.17 | 0.79 | 3.96 | 0.43 | 1.89 | 0.24 | 0.59 | 3.15 | 1.18 | 0.63 | 1.08 | 2.76 | 1.97 | 1/4-20 UNC 2Bx0.31" | 5/16-18UNC 2Bx0.47" | 1/8"  | 0.35 | 1.61 |
| 75   | F05-F07                        | 0.67 | 8.15      | 3.72 | 1.65 | 2.07 | 3.82 | 0.79 | 4.61 | 0.51 | 2.40 | 0.18 | 0.75 | 3.15 | 1.18 | 0.75 | 1.38 | 2.76 | 1.97 | 1/4-20 UNC 2Bx0.31" | 5/16-18UNC 2Bx0.47" | 1/8"  | 0.41 | 1.97 |
| 85   | F05-F07                        | 0.67 | 9.35      | 4.17 | 1.87 | 2.30 | 4.27 | 0.79 | 5.06 | 0.59 | 2.40 | 0.18 | 0.87 | 3.15 | 1.18 | 0.75 | 1.65 | 2.76 | 1.97 | 1/4-20 UNC 2Bx0.31" | 5/16-18UNC 2Bx0.47" | 1/8"  | 0.41 | 1.97 |
| 100  | F07-F10                        | 0.67 | 10.6<br>9 | 4.84 | 2.17 | 2.68 | 4.78 | 0.79 | 5.57 | 0.59 | 2.40 | 0.18 | 0.87 | 3.15 | 1.18 | 0.81 | 1.97 | 4.02 | 2.76 | 5/16-18UNC 2Bx0.31" | 3/8-16 UNC 2Bx0.55" | 1/4"  | 0.41 | 1.97 |



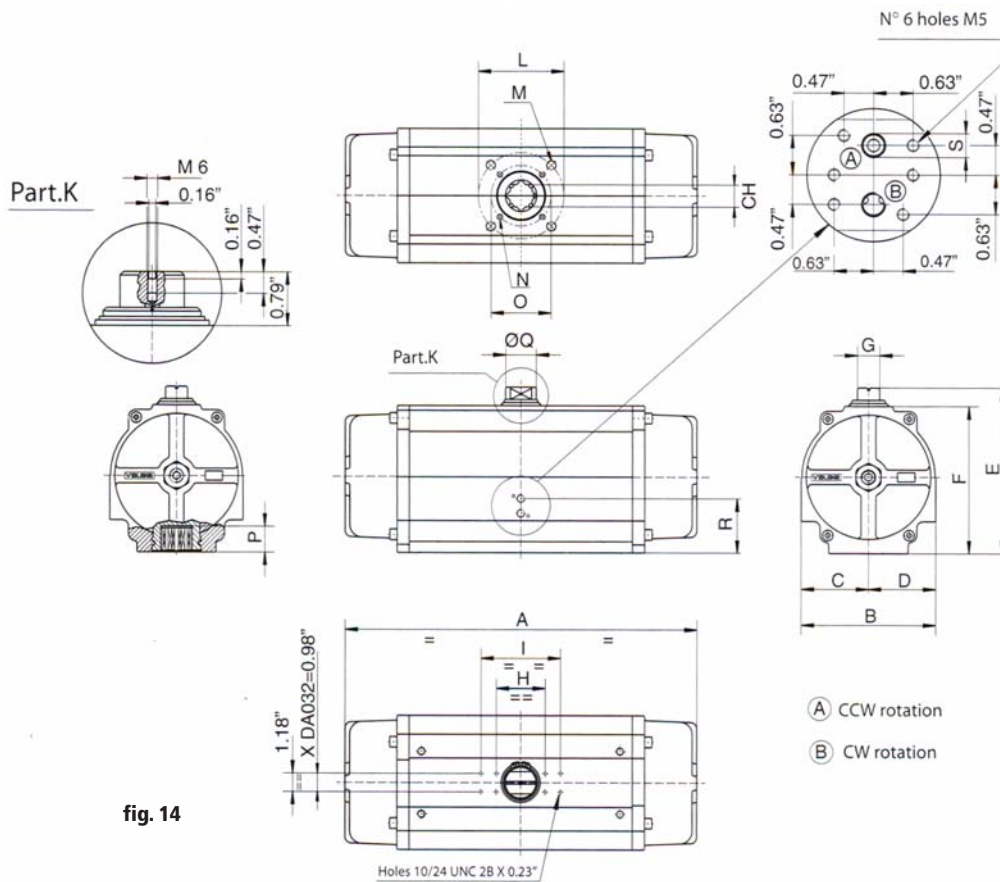


fig. 14

Dimensions (inches) Models 52 to 100 (fig. 14)

| Mod. | Valve Flange Drilling ISO 5211 | CH   | A    | B    | C    | D    | E    | F    | G    | H    | ØI   | J    | ØK   | L    | M    | N    | O    | P    | Q    | R                  | S                   | T NPT | U    | V    |
|------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------|---------------------|-------|------|------|
| 52   | FO3-05                         | 0.43 | 5.49 | 2.80 | 1.18 | 1.61 | 2.74 | 0.79 | 3.52 | 0.35 | 1.65 | 0.24 | 0.47 | 3.15 | 1.18 | 0.47 | 1.04 | 1.97 | 1.42 | 10-24 UNC 2Bx0.29" | 1/4-20 UNC 2Bx0.35" | 1/8"  | 0.35 | 1.50 |

## ORDERING INFORMATION

### A-B-C

EXAMPLE: 8P0129-S-2"

| A Model Double Acting Actuator  | B Actuator Ambient Temperature Range   | C Size/NPT Conn.  |
|---|--|---|
| 8P0080(LF)= Brass 2-way Full Port (Lead Free Option)<br>8P0135(LF)= Brass 2-way, SS Stem (Lead Free Option)<br>8P0129(LF)= Brass 3-way, "T" port (Lead Free Option)<br>8P0130(LF)= Brass 3-way, "L" port (Lead Free Option)<br>8P0133= SS 2-way<br>8P0139= SS 3-way, standard "T" port<br>8P0140= SS 3-way, standard "L" port<br>8P0144= SS 3-way, Full "T" port<br>8P0146= SS 3-way, Full "L" port | S= Standard (NBR Seals): -4°F to +185°F<br>H= High Temp Option (Viton Seals): -4°F to +302°F<br>L= Low Temperature Option (Silicon Seals): -40°F to +185°F | 1/4" = 1/4"<br>3/8" = 3/8"<br>1/2" = 1/2"<br>3/4" = 3/4"<br>1" = 1"<br>1-1/4" = 1-1/4"<br>1-1/2" = 1-1/2"<br>2" = 2"<br>2.5" = 2 1/2"<br>3" = 3"<br>4" = 4" |

### A-B-C-D

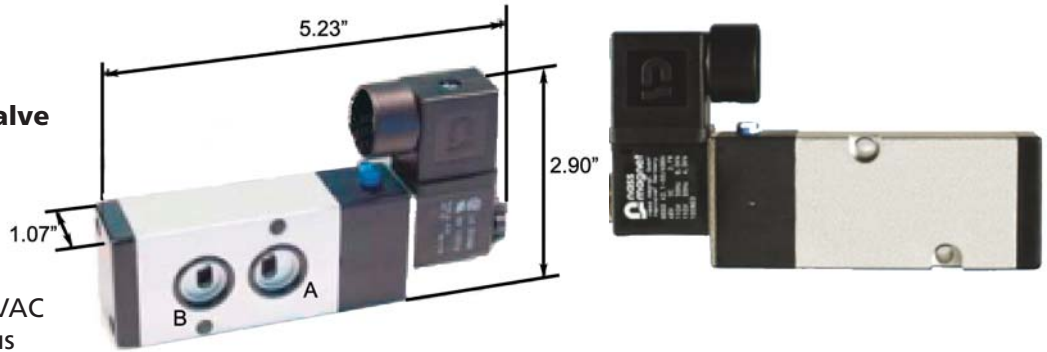
EXAMPLE: 8P0134-S-NC-1/2"

| A Model Spring Return Actuator  | B Actuator Ambient Temperature Range   | C Normal Position (no air pressure)      | D Size/NPT Conn.  |
|---|--|--|---|
| 8P0082(LF)= Brass 2-way Full Port (Lead Free Option)<br>8P0136(LF)= Brass 2-way, SS Stem (Lead Free Option)<br>8P0131(LF)= Brass 3-way, "T" port (Lead Free Option)<br>8P0132(LF)= Brass 3-way, "L" port (Lead Free Option)<br>8P0134= SS 2-way<br>8P0141= SS 3-way, standard "T" port<br>8P0142= SS 3-way, standard "L" port<br>8P0145= SS 3-way, Full "T" port<br>8P0146= SS 3-way, Full "L" port | S= Standard (NBR Seals): -4°F to +185°F<br>H= High Temp Option (Viton Seals): -4°F to +302°F<br>L= Low Temperature Option (Silicon Seals): -40°F to +185°F | NC= Normally Closed<br>NO= Normally Open | 1/4" = 1/4"<br>3/8" = 3/8"<br>1/2" = 1/2"<br>3/4" = 3/4"<br>1" = 1"<br>1-1/4" = 1-1/4"<br>1-1/2" = 1-1/2"<br>2" = 2"<br>2.5" = 2 1/2"<br>3" = 3"<br>4" = 4" |

## ACCESSORIES

### NMR1 Namur Solenoid Valve 4-way Conduit

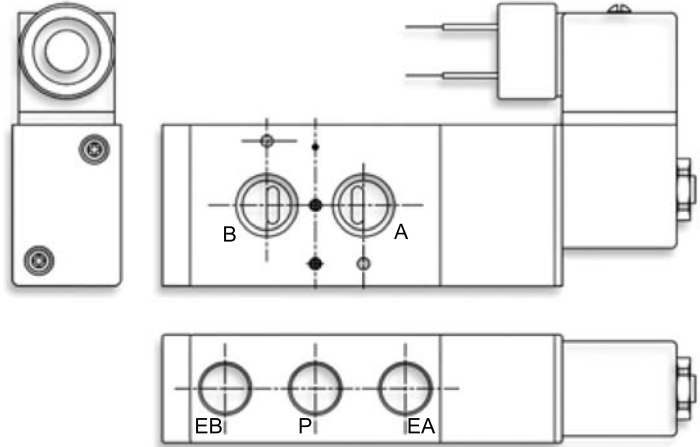
Cv: 1.68  
 Ports: 1/4" NPT  
 Pressure Range: 20-120 PSIG  
 Power: 12V or 24 VDC, 110VAC  
 Duty Cycle: 100% continuous  
 Power Consumption: 2.5 W



| Model     | Power   | Inrush Current |
|-----------|---------|----------------|
| NMR1-C1   | 110 VAC | 62 mA          |
| NMR1-C2   | 24 VDC  | 108 mA         |
| NMR1-C12  | 12 VDC  | 204 mA         |
| NMR1-EX1  | 110 VAC | 74 mA          |
| NMR1-EX2  | 24 VDC  | 190 mA         |
| NMR1-EX12 | 12 VDC  | 36 mA          |

Temperature Range: 35°-130°F  
 Standard Accessories Supplied: NBR o-rings  
 and mounting screws to affix valve  
 directly to actuator models 32-100

Enclosure: IP 65, NEMA 4X  
 Conduit Connection: 1/2" NPT  
 Solenoid Placement Option: Option R locates  
 the solenoid closest to the B Supply port



| Port | Standard Configuration                        | Solenoid Mounting Option R                    |
|------|---|---|
| A    | Air Supply, closed when solenoid de-energized | Air Supply, open when solenoid de-energized   |
| B    | Air Supply, open when solenoid de-energized   | Air Supply, closed when solenoid de-energized |
| EB   | Port B exhaust                                | Port B exhaust                                |
| P    | Pressure/Air Supply                           | Pressure/Air Supply                           |
| EA   | Port A exhaust                                | Port A exhaust                                |



| Ordering Information  |   |
|-----------------------|---|
| Model                 | Description   |
| NMR1-C1 (R)           | 110 VAC, 4-Way, Conduit Conn., (R Option, Solenoid Located to B Supply Port End of Valve Body)                  |
| NMR1-C2 (R)           | 24 VDC, 4-Way, Conduit Conn., (R Option Solenoid Located to B Supply Port End of Valve Body)                    |
| NMR1-C12 (R)          | 12 VDC, 4-Way, Conduit Conn., (R Option Solenoid Located to B Supply Port End of Valve Body)                    |
| NMR1-EX1 (R)          | 110 VAC, Explosion Proof, 4-Way, Conduit Conn., (R Option, Solenoid Located to B Supply Port End of Valve Body) |
| NMR1-EX2 (R)          | 24 VDC, Explosion Proof, 4-Way, Conduit Conn., (R Option Solenoid Located to B Supply Port End of Valve Body)   |
| NMR1-EX12 (R)         | 12 VDC, Explosion Proof, 4-Way, Conduit Conn., (R Option Solenoid Located to B Supply Port End of Valve Body)   |
| Exhaust Port Mufflers |   |
| SBM-2                 | 1/4" NPT Sintered Bronze Muffler  |
| SCM-2                 | 1/4" NPT Speed Control Muffler  |

**Explosion Proof Option**  
 Model NMR1-EX offers the same  
 operating performance as model  
 NMR1 except it is rated for haz-  
 ardous locations



Class I, Zone 1, Ex mII T4: AEx mII  
 Class I, Div. 1; Groups A, B, C, D  
 Class II, Groups A, B, C, D  
 T4 Ta= -20°C to +60°C  
 100% Duty Cycle



**NMR1-EX Solenoid**  
 Supplied with three  
 18", 18AWG wires  
 potted to the  
 connector, tinned  
 ends



SBM-2 Bronze Muffler



SCM-2 Speed Control Muffler