

Evans SN Series

Sanitary Ball Valves



SN Series

- 1/4" - 6" Sizes
- True Bore Design
- SIP/CIP Port Options
- Cavity Free TFM Seats

The Evans SN Series line of sanitary ball valves for the Pharmaceutical and Bio-pharm Industries

The valves are designed with a true bore and come standard with “Cavity Free” TFM seat inserts which makes them ideal for applications which require maximum flow capacity at minimum pressure drop, where sterility, clean-ability and drain-ability are essential. The SN Series ball valve provides tight shutoff and has exceptional cycle life performance.

| | |
|--------------------|---|
| Size Range: | 1/2” - 4” |
| Service: | Clean Steam, Purified Water, Water for Injection (WFI), Gas, Chemicals, Solvents |
| Standards: | Conforming to ASME BPE-2002, ANSI B16.34, API 598 |
| Operation: | Hand operated, Air operated (spring return, double acting), solenoid assist, limit switch |

Features & Specifications:

Stem: Incorporates Viton O-ring for increased cycle life, stem packing seals to be conforming to **ASTM/BPE 2002 SG-4.1.1.1**. Grounded (Anti-Static) Design

Seats: TFM 1600, non-slotted design to meet **ASTM/BPE 2002 SD-3.6.1, SG-4.1.1.1.6, SG-4.1.1.8**

Steam Pressure Rated: 150 psig at 350F

Max Pressure Rating: 1/2” - 2” 1000 psig / 63 bar
2-1/2” - 4” 300 psig / 55 bar

Temperature Range: -4 to 356F / -20 to 180C

Internal Finish: Polished to meet **ASME/BPE 2002 DT-12** and Table SF-6, mechanically polished to SFV1, electro polished to SFV4.

Markings: Valves shall be marked to conform to **ASME/BPE 2002 DT-3**

Packing: Valves shall conform to **ASME/BPE 2002 DT-12**

Options: Air Operators, Solenoid assist, Limit switch

Mechanical Specifications:

The ID for the valve flow path (ball, seats, end flanges) shall be the same ID as the tubing as per **ASME/BPE 2002 DT-1**

Cast Ball Valve

Body, Cap: ASTM A351 Gr. CF8M or ASTM A351 Gr. CF3M

Ball, Stem: SS 316 or SS 316L

T-Clamp Style Flange: ASTM A351 Gr. CF8M or ASTM A351 Gr. CF3M, dimension per **ASME/BPE 2002 DT-10**

Butt-weld Flange: ASTM A351 Gr. CF3M, dimension per **ASME/BPE 2002 DT-5**

***CF3M:** Sulfur content between 0.005% and 0.017%

Conversion Table for Surface Finishes

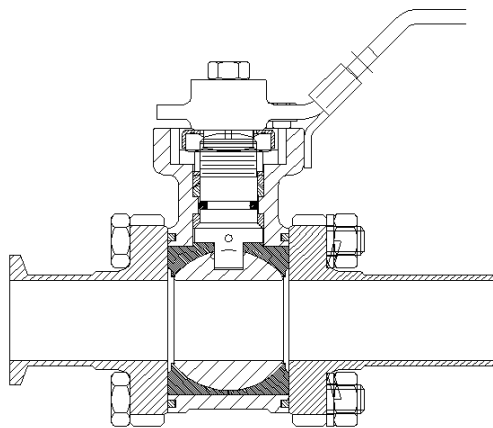
Table SF-3 R_a Readings for Product Contact Surfaces

| Evans Code | ASME/BPE Surface Designation | Mechanically Polished [Note (1)] | |
|------------|------------------------------|--|-----------------------|
| | | μ-in. | μm |
| None | SF0 | No finish requirement | No finish requirement |
| MP1 | SF1 | 20 | 0.51 |
| MP2 | SF2 | 25 | 0.64 |
| MP3 | SF3 | 30 | 0.76 |
| | | Mechanically Polished [Note (1)] and Electropolished | |
| | | R _a Max. | |
| | | μin. | μm |
| EP1 | SF4 | 15 | 0.38 |
| EP2 | SF5 | 20 | 0.51 |
| EP3 | SF6 | 25 | 0.64 |

Surface finishes of the flow path for Evans SN Series valves come standard machined to a 20 Ra (Grit 240) mechanical surface finish, other surface finishes available upon request.

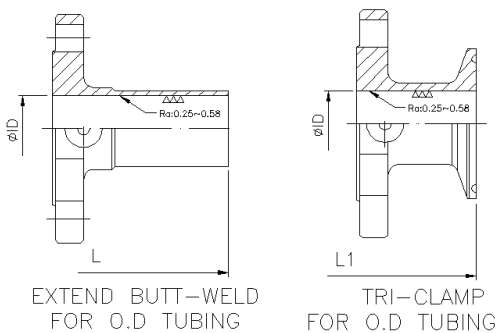
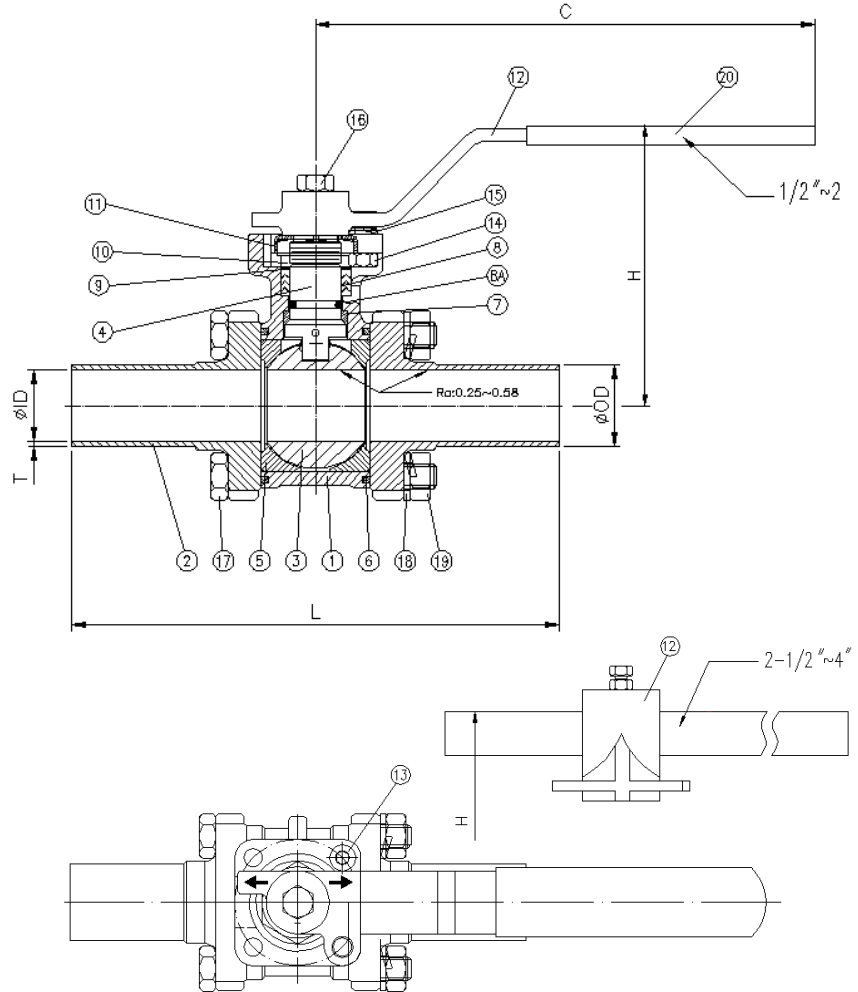
True Port Body & Stem Construction

The ball valve construction is designed in accordance with ANSI B16.34. The cavity free seal is fully encapsulated which offers improved sealing under a variety of demanding applications. The center body comes standard with an ISO 5211 mounting pad for attaching air operators, limit switches, etc. All wetted parts of the body are machined to a high finish. All valves have a blowout proof stem. The stem assembly incorporates a viton O-ring that compensates for pressure, temperature and wear. The stem is highly polished for better sealing and the handle comes standard with lockout feature.



Manual Materials of Construction

| Item | Description | Material | Qty. |
|------|------------------|-------------|------|
| 1 | Body | CF8M | 1 |
| 2 | End Cap | CF3M/CF8M | 2 |
| 3 | Ball | CF8M | 1 |
| 4 | Anti Static Stem | SS316 | 1 |
| 5 | Ball Seat | TFM1600 | 2 |
| 6 | Body Seal | PTFE,TEFLON | 2 |
| 7 | Thrust Washer | PTFE,TEFLON | 1 |
| 8A | O-Ring | VITON | 1 |
| 8 | Stem Packing | PTFE,TEFLON | 1 |
| 9 | Thrust Washer | PTFE,TEFLON | 1 |
| 10 | Stem Nut | SS304 | 1 |
| 11 | Lock Saddle | SS304 | 1 |
| 12 | Handle | SS304 | 1 |
| 13 | Stop Bolt | SS304 | 1 |
| 14 | Stop Nut | SS304 | 1 |
| 15 | Stop Washer | SS304 | 1 |
| 16 | Handle Bolt | SS304 | 1 |
| 17 | Body Bolt | SS304 | 4 |
| 18 | Bolt Washer | SS304 | 4 |
| 19 | Bolt Nut | SS304 | 4 |
| 20 | Handle Sleeve | VINYL | 1 |

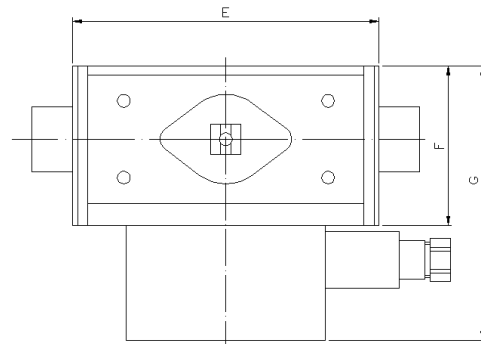
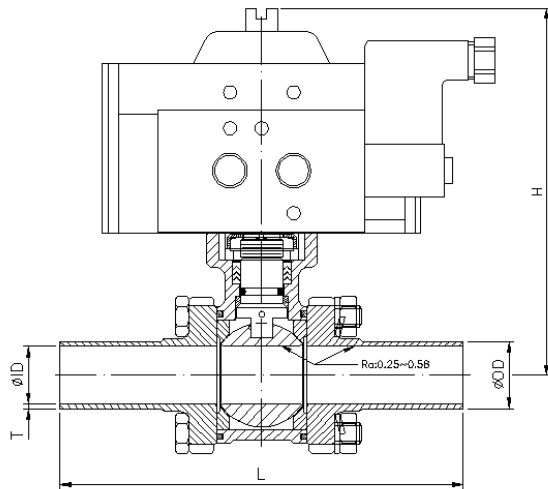


IN/mm

| SIZE | Cv | øID | T | øOD | L | L1 | C | øE | øA | øB | h | H |
|-------|------|--------------|--------------|---------------|-------------|-------------|--------------|------------|-----|-----|-----------|-------------|
| 1/2 | 19 | .370 9.4 | .065 1.65 | .500 12.7 | 5.31 135 | 3.66 93 | 4.96 126 | .354 9 | F03 | F04 | .31 8 | 2.95 75 |
| 3/4 | 35 | .622 15.8 | .065 1.65 | .750 19.05 | 5.31 135 | 4.13 105 | 4.96 126 | .354 9 | F03 | F04 | .31 8 | 3.07 78 |
| 1 | 50 | .870 22.1 | .065 1.65 | 1.00 25.4 | 5.98 152 | 4.49 114 | 6.14 156 | .433 11 | F04 | F05 | .39 10 | 3.43 87 |
| 1-1/4 | 110 | 1.12 28.5 | .065 1.65 | 1.25 31.8 | 6.18 157 | 4.72 120 | 6.14 156 | .433 11 | F04 | F05 | .39 10 | 3.66 93 |
| 1-1/2 | 200 | 1.37 34.8 | .065 1.65 | 1.50 38.1 | 7.48 190 | 4.88 124 | 7.13 181 | .551 14 | F05 | | .51 13 | 4.49 114 |
| 2 | 350 | 1.87 47.5 | .065 1.65 | 2.00 50.8 | 8.03 204 | 5.71 145 | 7.13 181 | .551 14 | F05 | F07 | .51 13 | 4.80 122 |
| 2-1/2 | 650 | 2.37 60.2 | .065 1.65 | 2.50 63.5 | 10.0 254 | 6.85 174 | 11.81 300 | .669 17 | F07 | | .63 16 | 5.47 139 |
| 3 | 1100 | 2.87 72.9 | .065 1.65 | 3.00 76.2 | 11.0 280 | 7.56 192 | 11.81 300 | .669 17 | F07 | F10 | .63 16 | 5.87 149 |
| 4 | 2100 | 3.83 97.4 | .083 2.11 | 4.00 101.6 | 12.0 306 | 8.66 220 | 19.69 500 | .866 22 | F07 | F10 | .83 21 | 7.01 178 |

Dimensions are +/- 0.3"
*C/F - Consult Factory

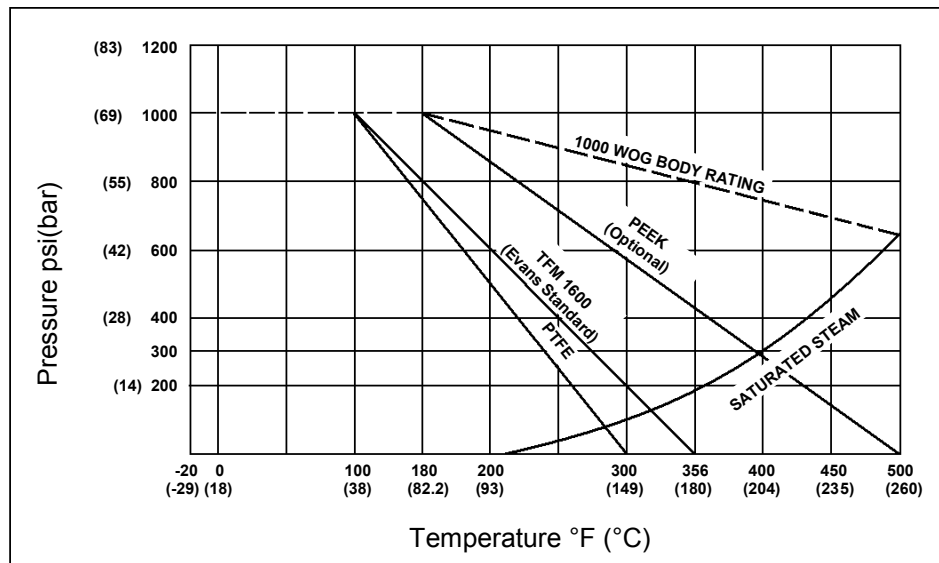
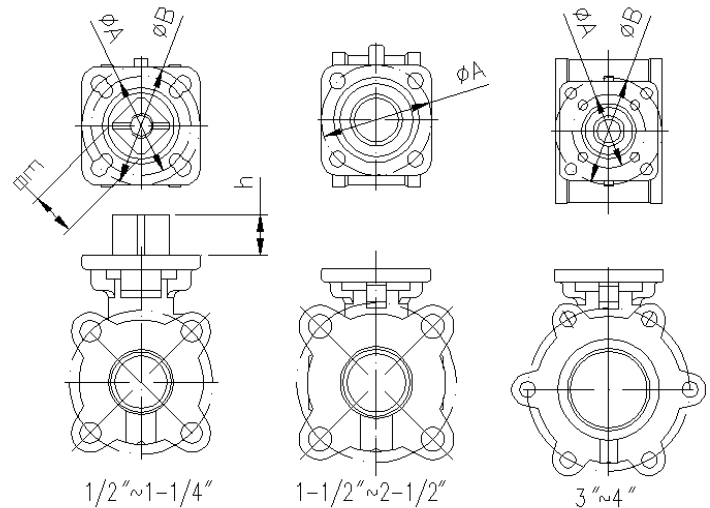
Air Operated Valve Dimensions



IN/mm

| SIZE | Cv | ϕID | T | ϕOD | L | L1 | H | E | F | G |
|-------|------|-----------|------|-----------|-------|------|-------|------|------|------|
| 1/2 | 19 | .402 | .065 | 0.50 | 5.315 | 3.66 | 5.04 | 4.72 | 2.48 | 4.61 |
| | | 10 | 1.65 | 12.7 | 135 | 93 | 128 | 120 | 63 | 117 |
| 3/4 | 35 | .622 | .065 | 0.75 | 5.315 | 4.13 | 5.16 | 4.72 | 2.48 | 4.61 |
| | | 15.8 | 1.65 | 19 | 135 | 105 | 131 | 120 | 63 | 117 |
| 1 | 50 | .870 | .065 | 1.00 | 5.984 | 4.49 | 5.98 | 5.71 | 3.23 | 5.35 |
| | | 22 | 1.65 | 25.4 | 152 | 114 | 152 | 145 | 82 | 136 |
| 1-1/4 | 110 | 1.122 | .065 | 1.25 | 6.181 | 4.72 | 6.18 | 5.71 | 3.23 | 5.35 |
| | | 28.5 | 1.65 | 31.8 | 157 | 120 | 157 | 145 | 82 | 136 |
| 1-1/2 | 200 | 1.370 | .065 | 1.50 | 7.480 | 4.88 | 6.81 | 5.71 | 3.23 | 5.35 |
| | | 34.8 | 1.65 | 38 | 190 | 124 | 173 | 145 | 82 | 136 |
| 2 | 350 | 1.870 | .065 | 2.00 | 8.031 | 5.71 | 7.87 | 5.91 | 3.74 | 5.79 |
| | | 47.5 | 1.65 | 50.8 | 204 | 145 | 200 | 150 | 95 | 147 |
| 2-1/2 | 650 | 2.370 | .065 | 2.50 | 10.00 | 6.85 | 8.35 | 5.91 | 3.74 | 5.79 |
| | | 60.2 | 1.65 | 63.5 | 254 | 174 | 212 | 150 | 95 | 147 |
| 3 | 1100 | 2.870 | .065 | 3.00 | 11.02 | 7.56 | 9.68 | 7.20 | 4.68 | 6.81 |
| | | 72.9 | 1.65 | 76.2 | 280 | 192 | 246 | 183 | 119 | 173 |
| 4 | 2100 | 3.835 | .083 | 4.00 | 12.05 | 8.66 | 10.83 | 7.20 | 4.68 | 6.81 |
| | | 97.4 | 2.1 | 101.6 | 306 | 220 | 275 | 183 | 119 | 173 |

Dimensions are +/- 0.3"
*C/F - Consult Factory



Part Numbering

| | | | | | | | | | | | | |
|-----------|---|-----------|--|---------------|--|-----------|---|------------|--|-----------|---|-----------|
| <u>SN</u> | - | <u>16</u> | | <u>STR</u> | | <u>TT</u> | - | <u>XXX</u> | | <u>TF</u> | - | <u>NC</u> |
| Series | | Size | | Configuration | | End Conn. | | CIP Ports | | Seat | | Options |
| 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 |

Upstream — | Body | — Downstream

1. Series Designator

SN - 316L Stainless B.V.

2. Valve Size Designator

| | |
|-------------|-------------|
| 04 - 1/4" | 32 - 2" |
| 06 - 3/8" | 40 - 2-1/2" |
| 08 - 1/2" | 48 - 3" |
| 12 - 3/4" | 64 - 4" |
| 16 - 1" | 96 - 6" |
| 24 - 1-1/2" | |

3. Configuration

STR - Straight Pattern

4. End Connections

T - Clamp Fitting
 M - 316L Tube Extension
 C - Compression
 U - 150 lb flange

5. CIP Ports

(Upstream/Body/Downstream)

X - No Port
 P - Compression Port
 T - Clamp Fitting Port

6. Seat Option

CFT - Cavity Free TFM 1600
 TF - Non-cavity Free TFM 1600
 PE - Non-cavity Free Peek
 CFPE - Cavity Free Peek

7. Options

Mechanical Polished

MP1 - 20 Ra SF1
 MP2 - 25 Ra SF2
 MP2 - 30 Ra SF3

Electro Polished

EP1 - 15 Ra SF4
 EP2 - 20 Ra SF5
 EP2 - 25 Ra SF6

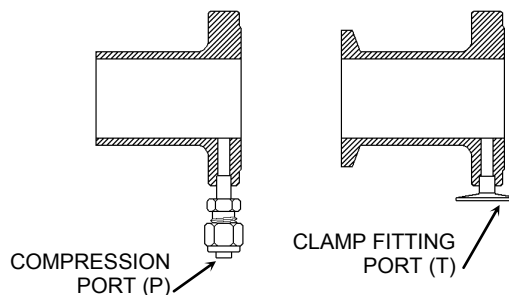
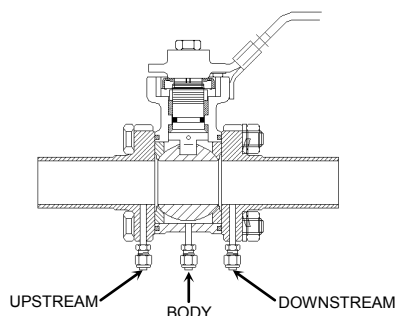
Air Actuators

NC - Normally Closed Air-op
 NO - Normally Open Air-op
 DA - Double Acting Air-op

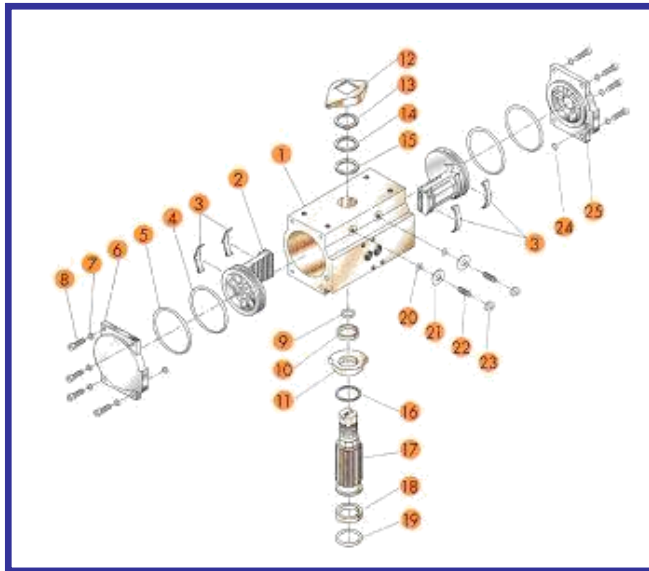
Solenoid Assist / Limit Switch

24 - 24 VDC Solenoid Assist
 120 - 120 VAC Solenoid Assist
 240 - 240 VAC Solenoid Assist
 LS - Nema 4.4 X Limit Switch
 W/ Beacon
 EX - Explosion Proof Option

Sanitary Ball Valve SIP/CIP Port Options



Air Operator, Limit Switch and Solenoid Specifications



| | | | |
|----|---|----|---|
| 1 | BODY: Extruded aluminum alloy (Hard anodized) | 13 | RETAINING RING: Stainless steel |
| 2 | PISTONS: Die cast aluminum alloy | 14 | WASHER: Stainless steel |
| 3 | BEARING: Nylon | 15 | BEARING: Nylon |
| 4 | O-RING: Buna-N | 16 | RETAINING RING: Stainless steel |
| 5 | O-RING: Buna-N | 17 | PINION: Carbon steel (Electro-less nickel plated) |
| 6 | END CAP(L): Die cast aluminum alloy | 18 | BEARING: Nylon |
| 7 | WASHER: Stainless steel | 19 | O-RING: Buna-N |
| 8 | CAP SCREW: Stainless steel | 20 | O-RING: Buna-N |
| 9 | O-RING: Buna-N | 21 | WASHER: Stainless steel |
| 10 | BEARING: Nylon | 22 | NUT: Stainless steel |
| 11 | STOP CAM: Sinteral steel | 23 | NUT: Stainless steel |
| 12 | PISTON INDICATOR: Polyethylene | 24 | O-RING: Buna-N |
| | | 25 | END CAP(R): Die cast aluminum alloy |

Limit Switch Specifications

Area Classification: NEMA 4, 4X, Explosion proof (optional)

Enclosure: Terminal Strip 8 point standard

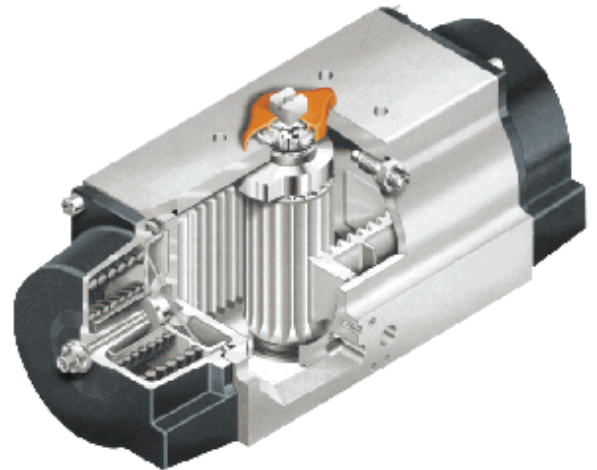
Materials of Construction

Housing & Cover: Engineered Resin

Shaft: Stainless Steel

Fasteners: Stainless Steel

Beacon Monitor: Copolyester



Performance

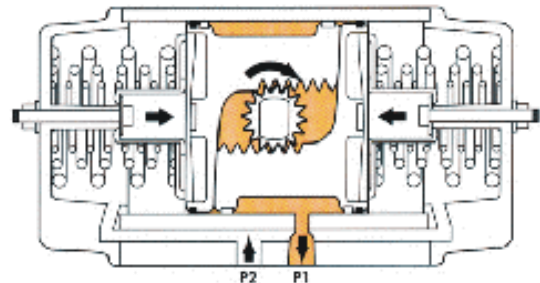
Operating Pressure Range: 40 to 120PSIG.

Maximum Allowable Working Pressure: 150PSIG.

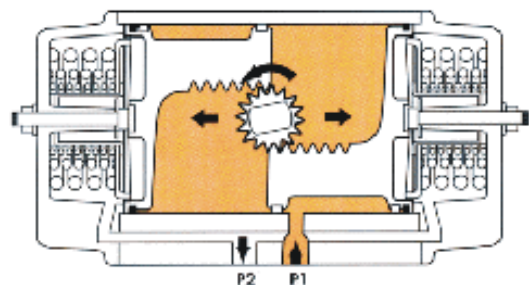
Maximum Operating Pressure: 120PSIG

Operating Temperature Standard: -40°F to +200°F

Operation



For clockwise output, the volume between the pistons is exhausted at P1, causing the springs to force the pistons together. The volume outside the pistons is vented at P2.



For counterclockwise output, apply pressure to P1, which force the pistons apart and compress the springs. The linear travel of the pistons is converted to a rotation of the drive shaft by the rack to pinion connection. The volume outside each piston is exhausted at P2.

Standard features

- Robust, reliable patented 2 piston / 4 pillar poppet valve design provides bubble-tight shut-off for millions of cycles
- 5/2 function or 3/2 function selectable via 180° turn of the patented rotary sealing plate
- Direct NAMUR standard mounting
- Corrosion and impact resistant glass fiber reinforced composite material
- Low maintenance through non lubrication design
- High air flow ($C_v > 1,1$) and fast response
- Exhaust feedback - provides actuator with clean instrument air, preventing corrosion and galling
- Wide operating temperature range: - 40°C to 50°C (-40°F to 125°F)
- Pressure range 2.5 - 8 Bar (35 - 120 PSI)
- Coils easily changed with a wide selection of voltages available
- Coil duty cycle 100%
- Coil can be fixed at any 90° increment
- Manual override with on / off indicator
- Weatherproof IP65
- NEMA types 4 and 4X
- All series CE certified



Evans Components, Inc.

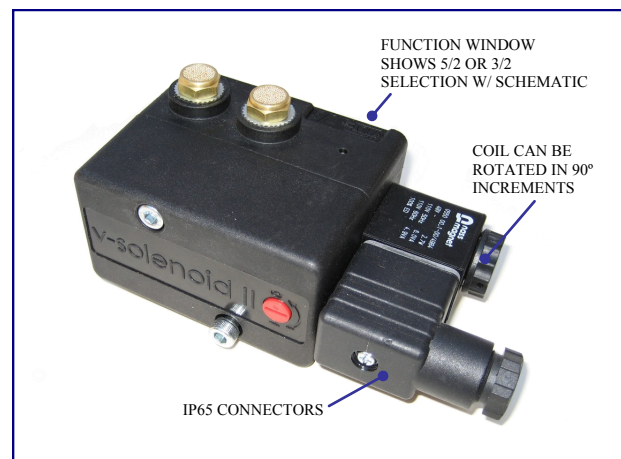
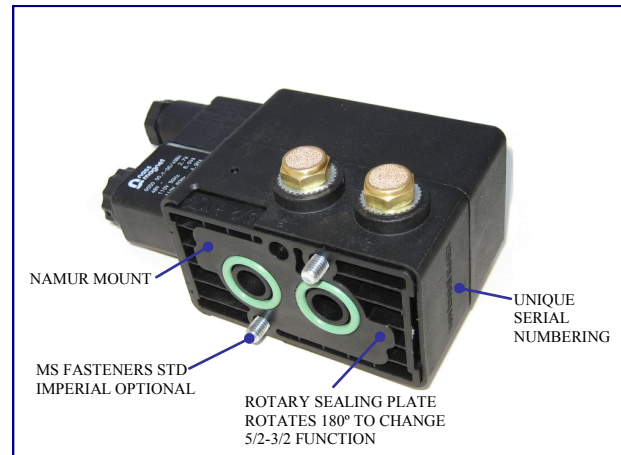
7606 Bridgeport Road

Portland, Oregon 97224

Phone: 971-249-1600

Fax: 971-249-1601

Web Site: www.evanscomponents.com



NOTE: Product availability and specifications contained herein are subject to change without notice. Consult local distributor or factory for potential revisions.