

# 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.

<b>Size Range:</b>	1/2" - 4"
<b>Service:</b>	Clean Steam, Purified Water, Water for Injection (WFI), Gas, Chemicals, Solvents
<b>Standards:</b>	Conforming to ASME BPE-2002, ANSI B16.34, API 598
<b>Operation:</b>	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

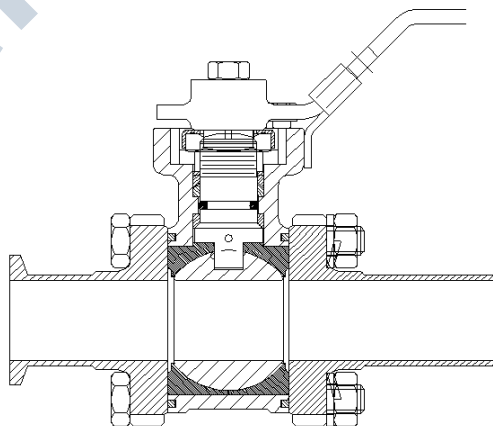
**Table SF-3 R<sub>a</sub> Readings for Product Contact Surfaces**

Evans Code	ASME/BPE Surface Designation	Mechanically Polished [Note (1)]	
		R <sub>a</sub> Max.	
		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 <sub>a</sub> 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.

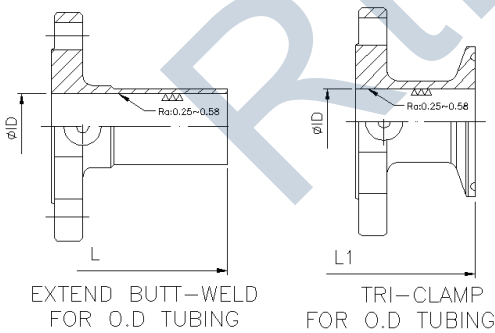
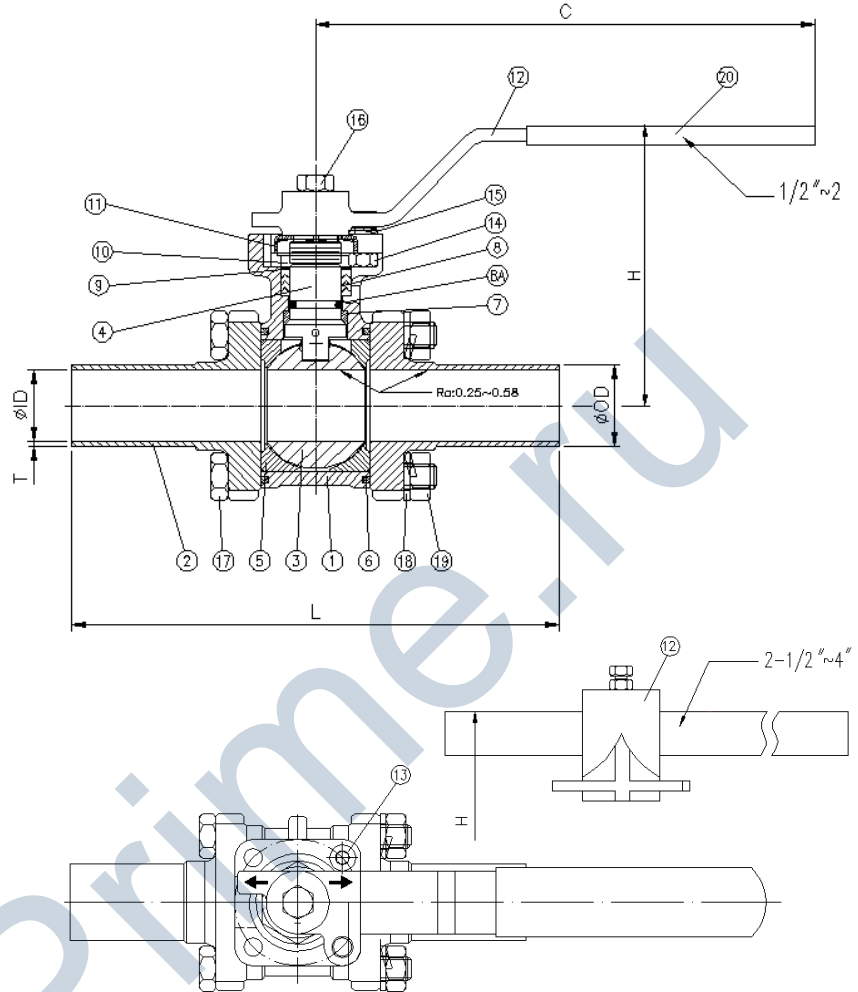
## True Port Body & Stem Construction

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

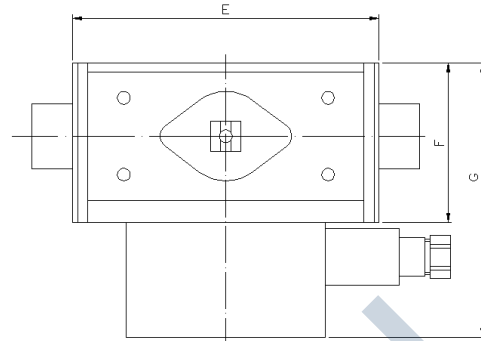
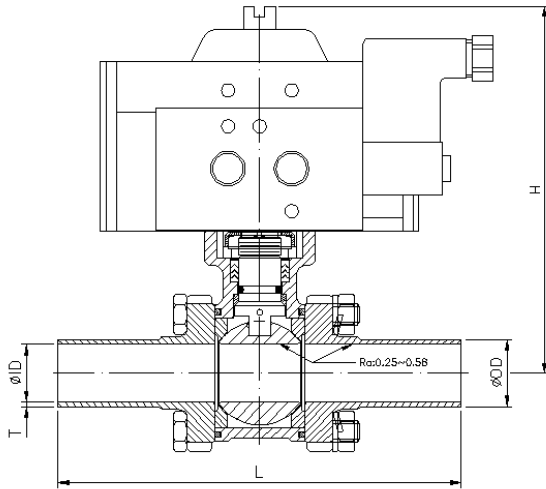


### IN/mm

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

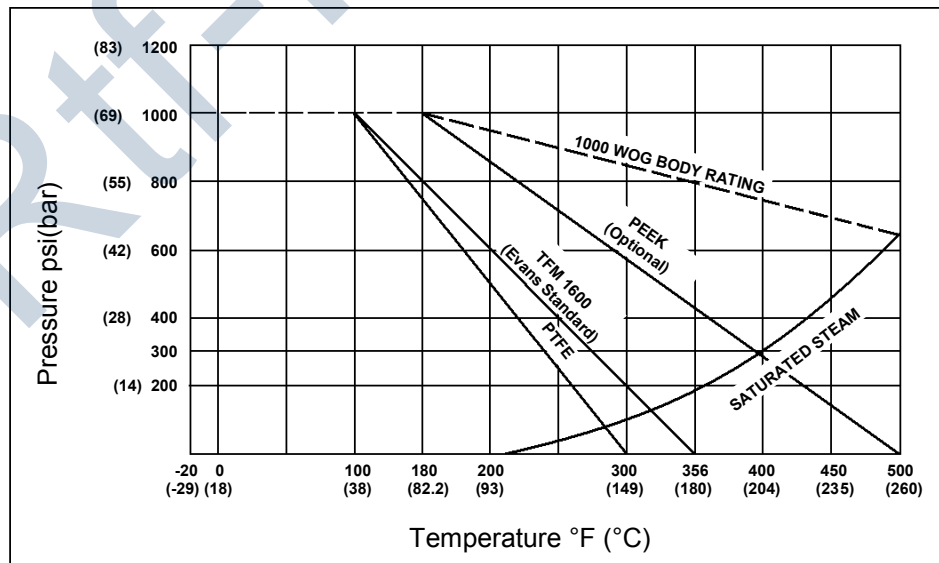
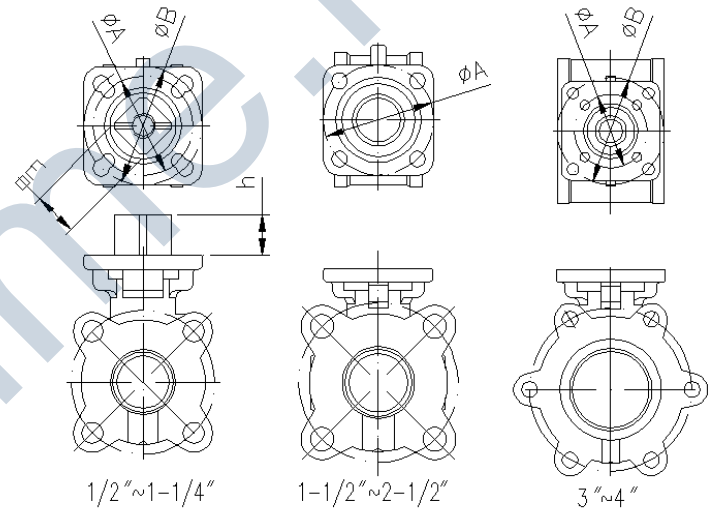
## Air Operated Valve Dimensions



### IN/mm

SIZE	Cv	øID	T	øOD	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

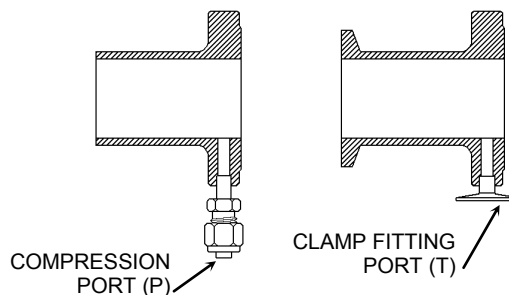
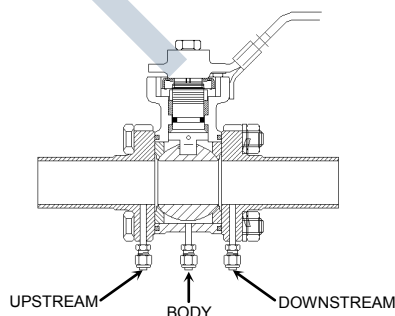
*Air Actuators*

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

*Solenoid Assist / Limit Switch*

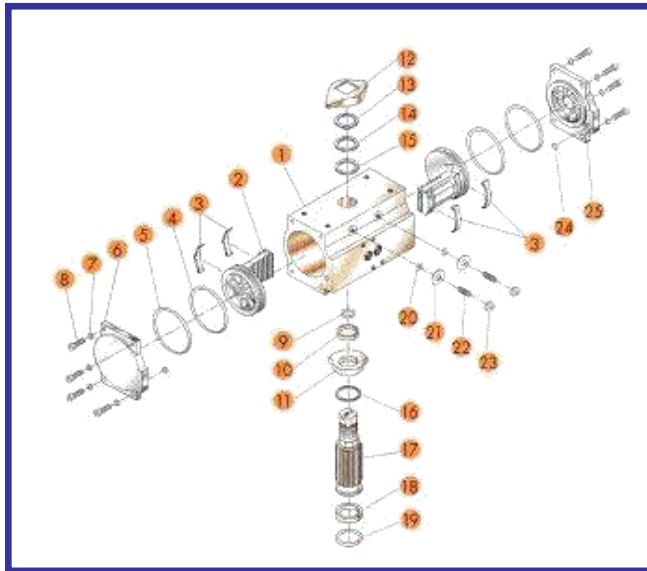
24 - 24 VDC Solenoid Assist  
 120 - 120 VAC Solenoid Assist  
 240 - 240 VAC Solenoid Assist  
 LS - Nema 4.4 X Limit Switch  
 W/ Beacon  
 EX - Explosion Proof Option

## 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
		15	BEARING: Nylon
3	BEARING: Nylon	16	RETAINING RING: Stainless steel
4	O-RING: Buna-N	17	PINION: Carbon steel (Electro-less nickel plated)
5	O-RING: Buna-N		
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
		21	WASHER: Stainless steel
9	O-RING: Buna-N	22	NUT: Stainless steel
10	BEARING: Nylon	23	NUT: Stainless steel
11	STOP CAM: Sinteral steel	24	O-RING: Buna-N
12	PISTON INDICATOR: Polyethylene	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

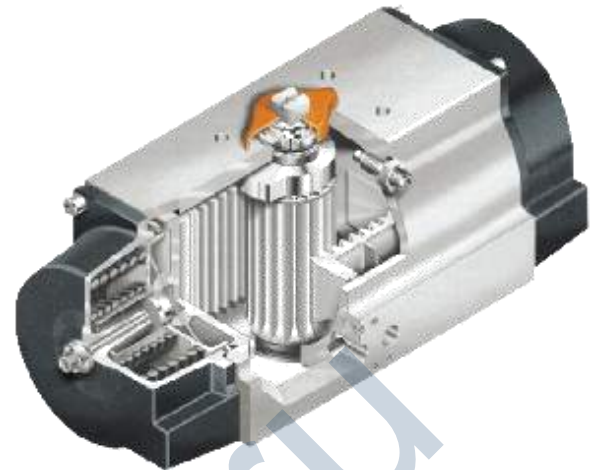
### Materials of Construction

Housing & Cover: Engineered Resin

Shaft: Stainless Steel

Fasteners: Stainless Steel

Beacon Monitor: Copolyester



### Performance

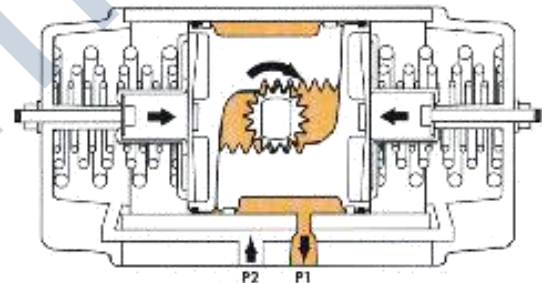
Operating Pressure Range: 40 to 120PSIG.

Maximum Allowable Working Pressure: 150PSIG.

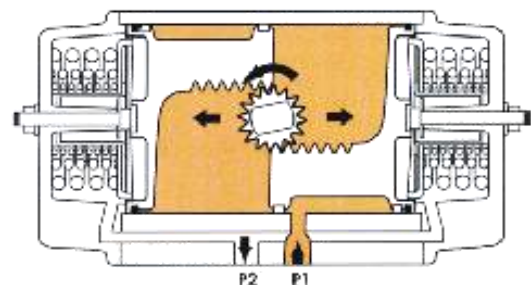
Maximum Operating Pressure: 120PSIG

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

### Operation



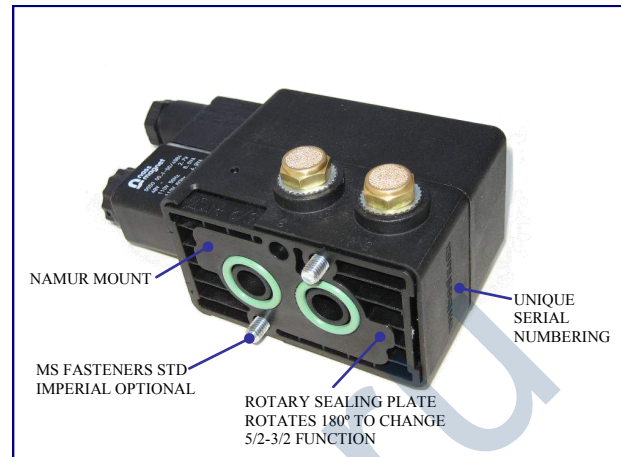
For clockwise output, the volume between the pistons is exhausted at P1, causing the springs to force the pistons together. The volume outside the pistons is vented at P2.



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



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