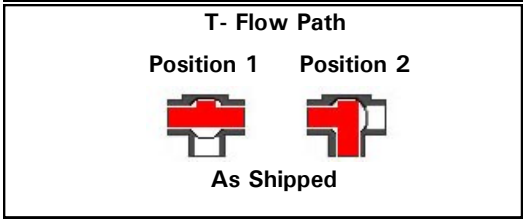
Air Actuated 3-Way Stainless Ball Valves

T-Port, Stainless Steel, Full Port
1/4" to 2" NPT

SERIES
5439
5440

Features

- Functions as diverter valve
- 316 stainless steel body, ball, & stem
- RTFE (reinforced Teflon) ball seats
- Triple PTFE/Viton live loaded stem seals, adjustable
- Valves are tested per API 598
- Valve Anti-static device
- Spring Return or Double Acting Actuators
- Type IP66 & IP68 weatherproof actuator
- Rugged scotch yoke construction tested for 1 million+ cycles
- Anodized aluminum body with epoxy-polyester end covers
- Namur and ISO mounting standards
- Highly visible valve position indicator
- Actuator factory lubricated for normal lifetime



Applications

On-off control of water, air, oil, and other media compatible with the materials of construction. Unique four ball seat design allows for full pressure at any port. Cycle times 0.3 to 1.2 seconds per 90° rotation. Steam service up to 25 PSI with optional high temperature mounting bracket. Suitable for vacuum service to 29"Hg.

Operation

Double acting scotch yoke actuators use air pressure to open and air pressure to close the ball valve (4-way pilot). Spring return scotch yoke actuators use air pressure to open and springs to close the ball valve (3-way pilot). Actuator will work with filtered dry or lubricated compressed air. Recommended air supply pilot pressure should be between 58 and 87 PSI. Easy to read visual valve position indicator located on top of actuator.

Construction

Valve Body	316 Stainless Steel ASTM A351 CF8M
Ball/Stem	316 Stainless Steel
Ball Seats	RTFE (reinforced Teflon)
Stem Seals	PTFE/ Viton
Anti-Static Device	Ball to Stem (1/4"- 2") + Stem to Body (1-1/2"- 2")
Actuator Seals	NBR
Actuator Body/ End Covers	Hard anodized aluminium/ Polyester coasted aluminium
Position Indicator	Glass filled Polyamide
Fasteners	ASTM 304 Stainless Steel

Description

Heavy duty quarter turn scotch yoke actuators designed for long life and tested for a minimum 1 million+ operations. Three port valve has a T-Port flow path for diverter applications. Adjustable live loaded stem seal packing helps compensate for wear, pressure or temperature fluctuations, extending the cycle life of the valve. Blow-out proof stem. Standard Namur mounting pads for optional accessories, including position confirmation switches and pilot solenoid valves.

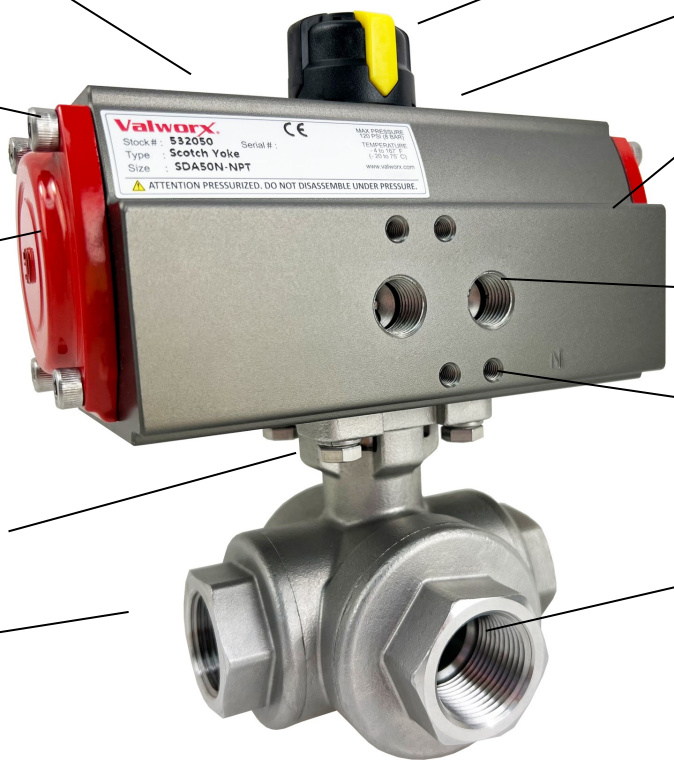
Approvals– Actuators

- CE Conformance– MD 2006/42/CE
- ISO5211/ DIN3337 valve mounting
- Namur VDI/VDE 3845 accessory mounting

Standards– Valves

- Design: API 608
- Testing: API 598
- Threaded Connection: ASME B1.20.1 (NPT)/ ISO 228-1/ BS21
- Pressure/Temperature Rating: ASME B16.34
- Marking: MSS SP-25
- CE Conformance– PED 2014/68/UE

Features



Heavy duty rugged scotch yoke design

Anodized aluminum alloy covers with 40 micron polyester powder coating

Spring return models use multiple pre-compressed spring cartridges with polyester coating

Triple PTFE/ Viton live loaded stem seal design, adjustable

316SS Ball and Stem, RTFE ball seats

Visual valve position indicator

Standard Namur top mounting for optional limit switches

Extruded aluminum body with 35 micron hard anodzing

NPT pilot air ports and additional Namur VDI/ VDE-3845 solenoid mounting pad

Direct mount ISO5211 flange, no brackets required

Full Port 316 stainless steel ball valve

International standard ISO5211 valve mounting pad

Pressure-Temperature

Pressure Rating*: 1000 PSI* (69 Bar), 25 PSI saturated steam with high temp kit, Vacuum 29in Hg

Valve Temperature Rating: -4° to 392° F (-20 to 200°C)

*See P/T Chart

Recommended Air Pilot Pressure: 58-87 PSI (4-6 Bar)

Max Air Pilot Pressure: 120 PSI

Actuator Temperature Rating: -4 to 167° F (-20 to 75° C)

*See P/T chart

Optional Accessories

DMS: Direct Mount Solenoid
- pilot to electrically operate the ball valve
VPS: Valve Position Switches
- limit switches to confirm valve position
HTB: High Temperature Bracket
- increases media working temperature

Specifications (English units)

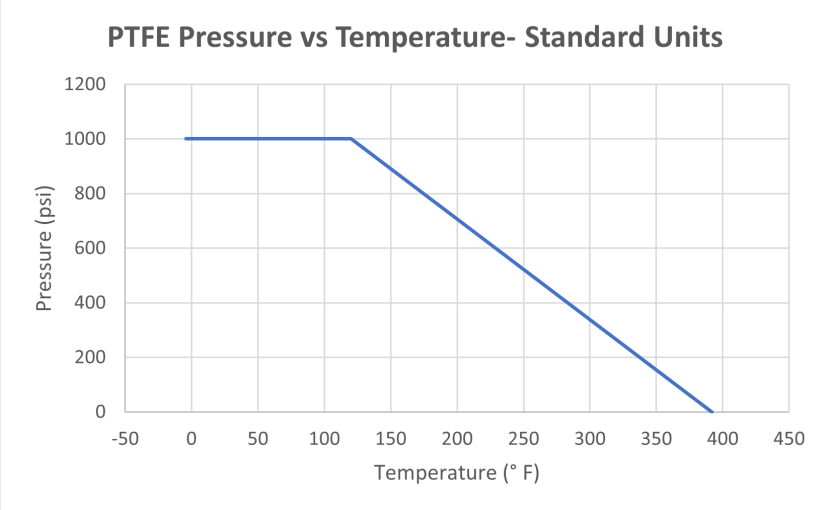
Stock Number	Pipe Size (NPT)	Orifice Size (inch)	Cv Flow Factor	Pressure Max.(PSI)*	Cycle Time /90° (seconds)	Pilot Air Port (NPT)
VALVE WITH SPRING RETURN ACTUATOR						
544002A	1/4	0.4	5.0	1000	0.3-0.5	1/4
544003A	3/8	0.4	7.3	1000	0.3-0.5	1/4
544004A	1/2	0.6	8.9	1000	0.3-0.5	1/4
544006A	3/4	0.8	18.9	1000	0.3-0.5	1/4
544008A	1	1.0	32.0	1000	0.4-0.6	1/4
544010A	1-1/4	1.3	41.2	1000	0.6-0.9	1/4
544012A	1-1/2	1.5	52.1	1000	0.6-0.9	1/4
544016A	2	2.0	79.3	1000	0.7-1.2	1/4
VALVE WITH DOUBLE ACTING ACTUATOR						
543902A	1/4	0.4	5.0	1000	0.3	1/4
543903A	3/8	0.4	7.3	1000	0.3	1/4
543904A	1/2	0.6	8.9	1000	0.3	1/4
543906A	3/4	0.8	18.9	1000	0.3	1/4
543908A	1	1.0	32.0	1000	0.3	1/4
543910A	1-1/4	1.3	41.2	1000	0.4	1/4
543912A	1-1/2	1.5	52.1	1000	0.4	1/4
543916A	2	2.0	79.3	1000	0.6	1/4

Cv = The GPM of water at 60° F that will pass through the valve with 1 PSI pressure drop

* Pressure @ 0 to100° F (reduced pressure at higher temperatures—see P/T chart)

Pressure/Temperature Chart (PSI/°F)

P/T Chart (PSI/°F)					
PSI	1000	1000	900	700	0
°F	-4	104	167	212	392



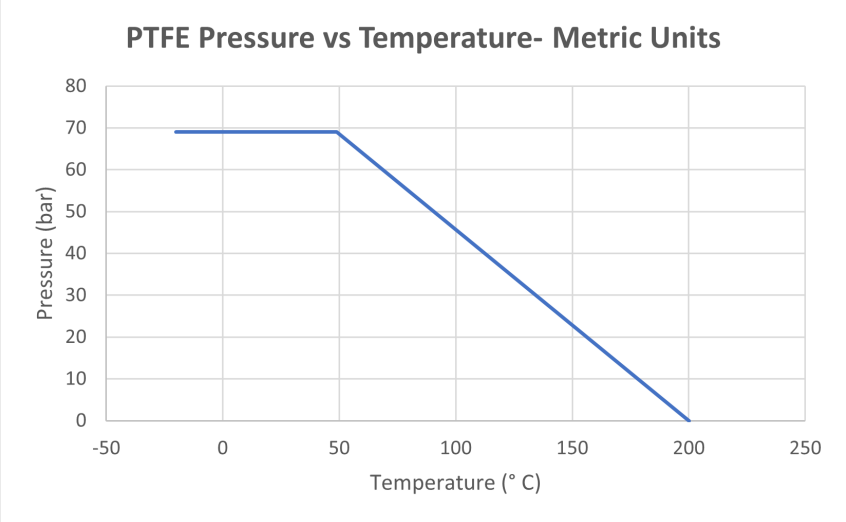
Specifications (Metric units)

Stock Number	Pipe Size (NPT)	Orifice Size (mm)	Kv Flow Factor	Pressure Max.(Bar)*	Cycle Time/90° (seconds)	Pilot Air Port (NPT)
VALVE WITH SPRING RETURN ACTUATOR						
544002A	1/4	11.0	4.3	69	0.3-0.5	1/4
544003A	3/8	11.0	6.3	69	0.3-0.5	1/4
544004A	1/2	15.0	7.7	69	0.3-0.5	1/4
544006A	3/4	20.0	16.3	69	0.3-0.5	1/4
544008A	1	25.0	27.7	69	0.4-0.6	1/4
544010A	1-1/4	32.0	35.6	69	0.6-0.9	1/4
544012A	1-1/2	38.0	45.1	69	0.6-0.9	1/4
544016A	2	50.0	68.6	69	0.7-1.2	1/4
VALVE WITH DOUBLE ACTING ACTUATOR						
543902A	1/4	11.0	4.3	69	0.3	1/4
543903A	3/8	11.0	6.3	69	0.3	1/4
543904A	1/2	15.0	7.7	69	0.3	1/4
543906A	3/4	20.0	16.3	69	0.3	1/4
543908A	1	25.0	27.7	69	0.3	1/4
543910A	1-1/4	32.0	35.6	69	0.4	1/4
543912A	1-1/2	38.0	45.1	69	0.4	1/4
543916A	2	50.0	68.6	69	0.6	1/4

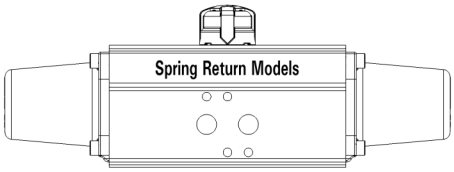
* Pressure range @ -18 to 38°C (reduced pressure for higher temperatures—see P/T chart)

Pressure/Temperature Chart (Bar/°C)

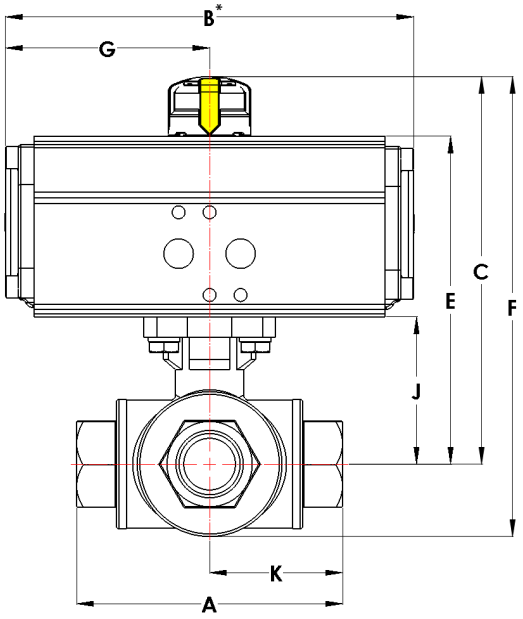
P/T Chart (BAR/°C)					
BAR	69	69	62	48	0
°C	-20	40	75	100	200

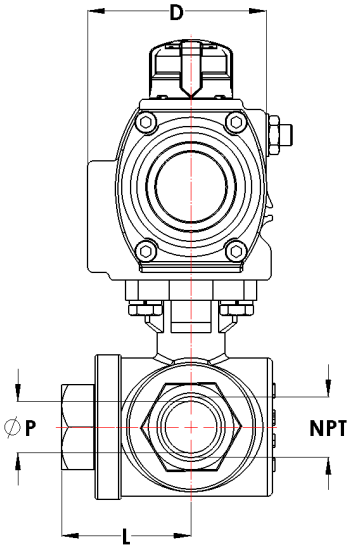


Dimensions: Spring Return



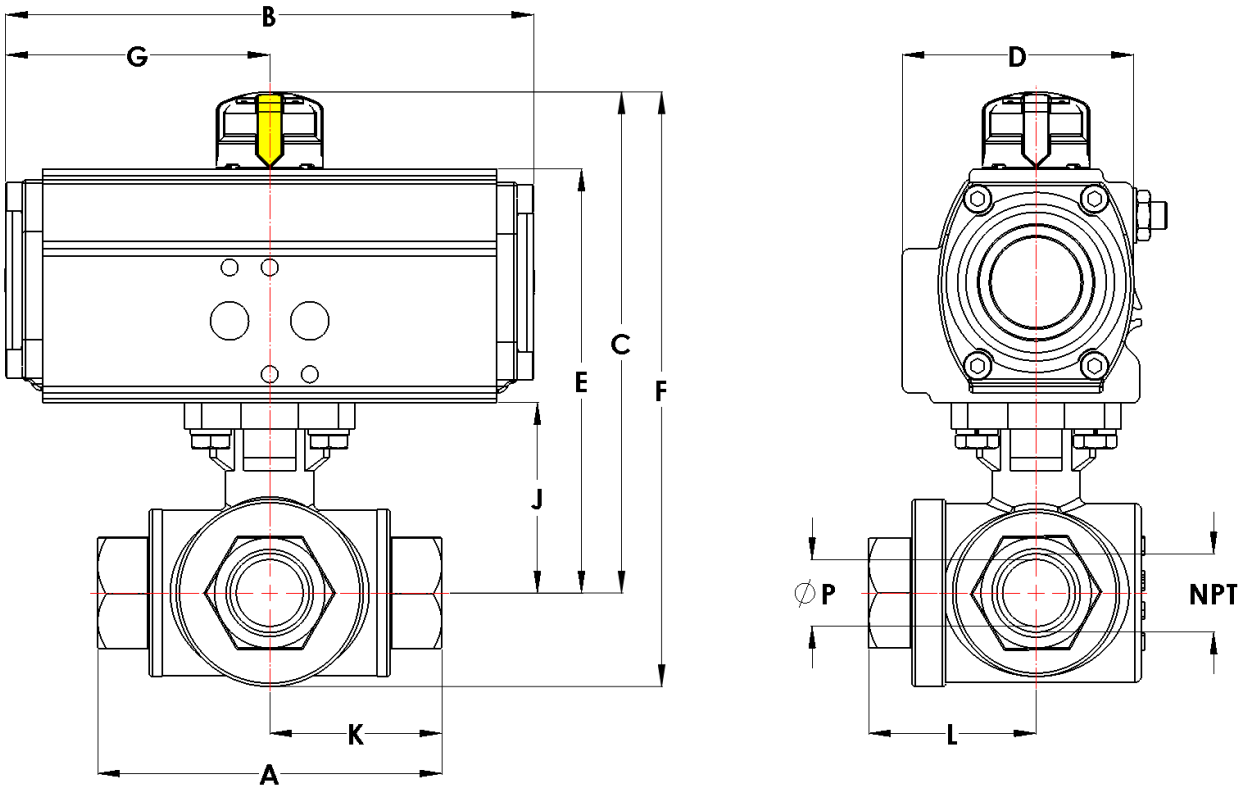
B*- Spring Return Actuator





Stock Number	Pipe Size		A	B* (SR)	C	D	E	F	G	J	K	L	P	A & B Ports (NPT)	Weight
544002A	1/4	inch	2.9	10.1	4.9	2.9	4.2	5.7	5.1	1.5	1.5	1.5	0.4	1/4	5.1 lb
		mm	76.0	256.5	124.5	73.7	106.7	144.8	129.5	38.2	38.0	38.5	11.0	-	2.3 kg
544003A	3/8	inch	2.9	10.1	4.9	2.9	4.2	5.7	5.1	1.5	1.5	1.5	0.4	1/4	5.1 lb
		mm	76.0	256.5	124.5	73.7	106.7	144.8	129.5	38.2	38.0	38.5	11.0	-	2.3 kg
544004A	1/2	inch	3.3	10.1	5.2	2.9	4.5	6.1	5.1	1.8	1.7	1.8	0.6	1/4	5.8 lb
		mm	85.0	256.5	132.1	73.7	114.3	154.9	129.5	45.2	42.5	45.0	15.0	-	2.6 kg
544006A	3/4	inch	3.9	10.1	5.6	2.9	4.9	6.7	5.1	2.2	1.9	2.0	0.8	1/4	7.2 lb
		mm	98.0	256.5	142.2	73.7	124.5	170.2	129.5	56.5	49.0	51.5	20.0	-	3.3 kg
544008A	1	inch	4.4	12.3	6.5	3.5	5.8	7.9	6.2	2.4	2.2	2.3	1.0	1/4	12.0 lb
		mm	112.5	314.0	165.1	88.9	147.3	200.7	157.5	61.9	56.3	58.0	25.0	-	5.4 kg
544010A	1-1/4	inch	4.9	16.5	7.9	3.9	7.2	9.4	8.3	3.1	2.5	2.5	1.3	1/4	19.9 lb
		mm	125.0	419.1	200.7	99.1	182.9	238.8	210.8	78.3	62.5	63.0	32.0	-	9.0 kg
544012A	1-1/2	inch	5.6	16.5	8.2	3.9	7.5	10.2	8.3	3.4	2.8	2.9	1.5	1/4	24.6 lb
		mm	141.0	419.1	208.3	99.1	190.5	259.1	210.8	87.4	70.5	74.5	38.0	-	11.2 kg
544016A	2	inch	6.7	19.6	9.9	5.0	9.2	12.0	9.8	4.2	3.4	3.4	2.0	1/4	38.8 lb
		mm	171.0	497.8	251.5	127.0	233.7	304.8	248.9	105.8	85.5	85.5	50.0	-	17.6 kg

Dimensions: Double Acting



Stock Number	Pipe Size		A	B	C	D	E	F	G	J	K	L	P	A & B Ports (NPT)	Weight
543902A	1/4	inch	2.9	6.3	4.9	2.9	4.2	5.7	3.2	1.5	1.5	1.5	0.4	1/4	4.7 lb
		mm	76.0	160.0	124.5	73.7	106.7	144.8	81.3	38.2	38.0	38.5	11.0	-	2.1 kg
543903A	3/8	inch	2.9	6.3	4.9	2.9	4.2	5.7	3.2	1.5	1.5	1.5	0.4	1/4	4.7 lb
		mm	76.0	160.0	124.5	73.7	106.7	144.8	81.3	38.2	38.0	38.5	11.0	-	2.1 kg
543904A	1/2	inch	3.3	6.3	5.2	2.9	4.5	6.1	3.2	1.8	1.7	1.8	0.6	1/4	5.4 lb
		mm	85.0	160.0	132.1	73.7	114.3	154.9	81.3	45.2	42.5	45.0	15.0	-	2.4 kg
543906A	3/4	inch	3.9	6.3	5.6	3.5	4.9	6.7	4.0	2.2	1.9	2.0	0.8	1/4	6.8 lb
		mm	98.0	160.0	142.2	88.9	124.5	170.2	101.6	56.5	49.0	51.5	20.0	-	3.1 kg
543908A	1	inch	4.4	6.3	5.8	3.5	5.1	7.2	4.0	2.4	2.2	2.3	1.0	1/4	8.5 lb
		mm	112.5	160.0	147.3	88.9	129.5	182.9	101.6	61.9	56.3	58.0	25.0	-	3.9 kg
543910A	1-1/4	inch	4.9	7.9	7.2	3.9	6.5	8.7	5.0	3.1	2.5	2.5	1.3	1/4	13.3 lb
		mm	125.0	200.1	182.9	99.1	165.1	221.0	127.0	78.3	62.5	63.0	32.0	-	6.0 kg
543912A	1-1/2	inch	5.6	7.9	7.5	3.9	6.8	9.5	5.0	3.4	2.8	2.9	1.5	1/4	18.0 lb
		mm	141.0	200.1	190.5	99.1	172.7	241.3	127.0	87.4	70.5	74.5	38.0	-	8.2 kg
543916A	2	inch	6.7	9.9	9.0	5.0	8.3	11.1	6.1	4.2	3.4	3.4	2.0	1/4	26.5 lb
		mm	171.0	251.5	228.6	127.0	210.8	281.9	154.9	105.8	85.5	85.5	50.0	-	12.0 kg