Air Actuated 3-Way Brass Ball Valves

T-Port, Lead Free Brass, Full Port
1/4" to 2" NPT

SERIES
5416
5417

Features

- Functions as a diverter valve
- Environmentally friendly lead free brass body
- Industrial grade and designed for low operating torque
- Energized PTFE ball seats for lower torque and longer life
- Leak free Triple PTFE/FKM stem seal packing
- Certified per NSF372 and NSF61 for potable/drinking water
- 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, vacuum and other media compatible with the materials of construction. These valves are ideal where lead free and NSF approved construction are required for potable drinking water.Steam service up to 25 PSI with optional high temperature mounting bracket. Cycle times 0.3 to 1.2 seconds per 90° rotation. 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.

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. Full port for unrestricted flow. High quality 316 stainless steel ball and stem (vs plated brass.) Ball seats are energized PTFE for low torque and extended life. Unique leak free triple stem seal design with PTFE and dual Viton seals stem seal design. Standard Namur mounting pads for optional accessory confirmation switches and pilot valves.

Construction

Valve Body	Lead free brass C69300
Ball/Stem	316 stainless steel, full port
Ball Seats	(4) PTFE (Teflon) energized with FKM (Viton)
Stem Seals	(1) PTFE/ Viton
Anti-Static Device	PTFE (Teflon) with dual FKM (Viton) seals
Actuator Seals	NBR
Actuator Body/ End Covers	Hard anodized aluminium/ Polyester coasted aluminium
Position Indicator	Glass filled Polyamide
Fasteners	ASTM 304 Stainless Steel

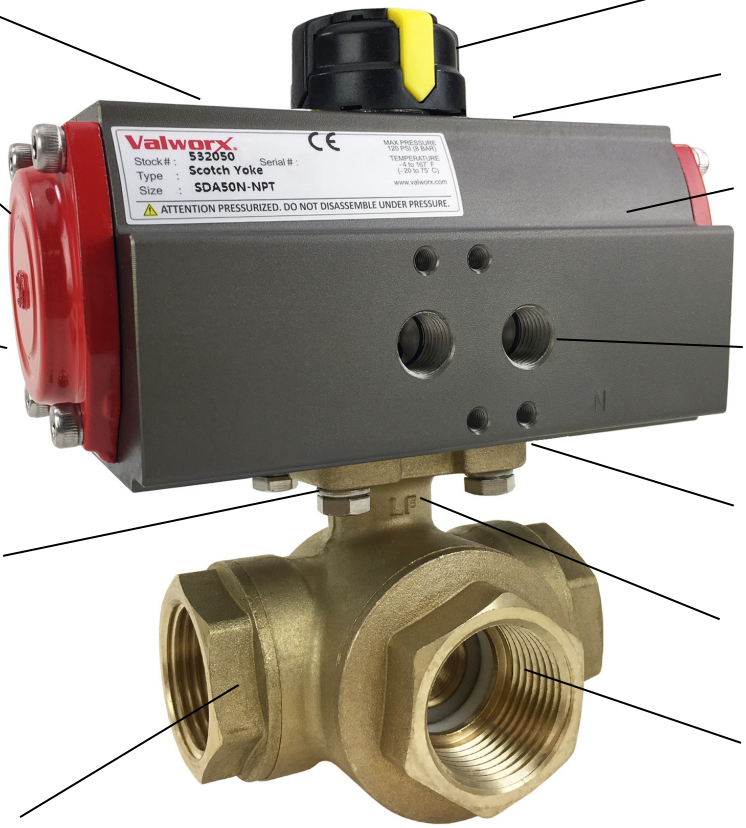
Approvals– Actuators

- CE Declaration of conformity– MD 2006/42/CE
- EN ISO 12100:2010
- EN ISO 4414:2010
- ISO5211/ DIN3337 valve mounting

Standards– Valves

- IAPMO RT certified to:
  - NSF/ANSI 61 - 2015
  - -NSF/ANSI 372 - 2011 Drinking Water
  - California Health & Safety 116875
  - Section 1417 of Safe Drinking Water Act
  - Weighted average lead content < =0.25%
- Meets design MSS-SP-110

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

316 stainless steel stem with PTFE and dual FKM (Viton) stem seals

Energized PTFE ball seats for reduced torque and extended cycle life

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 lead free brass ball valve, certified for use with potable/drinking water, identified by LF mark for “Lead Free”

Full Port 316 stainless steel ball

International standard ISO5211 valve mounting pad

Pressure Rating*: 400 PSI CWP (27 Bar) non-shock
25 PSI saturated steam with high temp kit
Vacuum service to 29”Hg

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

Max Air Pilot Pressure: 120 PSI

Valve Temperature Rating: -4° to 344° F (-20 to 173°C)
*Max potable water contact temperature 180°F (82°C)

*See P/T Chart

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						
541702	1/4	0.4	3.2	400	0.3-0.5	1/4
541703	3/8	0.4	3.5	400	0.3-0.5	1/4
541704	1/2	0.6	4.5	400	0.3-0.5	1/4
541706	3/4	0.8	10.0	400	0.3-0.5	1/4
541708	1	1.0	16.0	400	0.4-0.6	1/4
541710	1-1/4	1.2	31.0	400	0.4-0.6	1/4
541712	1-1/2	1.5	49.0	400	0.6-0.9	1/4
541716	2	2.0	82.0	400	0.7-1.2	1/4
VALVE WITH DOUBLE ACTING ACTUATOR						
541602	1/4	0.4	3.2	400	0.3	1/4
541603	3/8	0.4	3.5	400	0.3	1/4
541604	1/2	0.6	4.5	400	0.3	1/4
541606	3/4	0.8	10.0	400	0.3	1/4
541608	1	1.0	16.0	400	0.3	1/4
541610	1-1/4	1.2	31.0	400	0.3	1/4
541612	1-1/2	1.5	49.0	400	0.4	1/4
541616	2	2.0	82.0	400	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 to176° F (reduced pressure at higher temperatures—see P/T chart)

Pressure/Temperature Chart (PSI/°F)

P/T Chart						
PSI	400	400	400	400	375	300
°F	0	50	100	176	200	250

Specifications (Metric units)

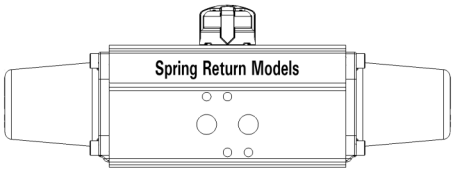
Stock Number	Pipe Size (NPT)	Orifice Size (mm)	Kv Flow Factor	Pressure Max.(Bar)*	Cycle Time/90° (seconds)	Pilot Air Port (NPT)
VALVE WITH SPRING RETURN ACTUATOR						
541702	1/4	10.0	2.8	27.0	0.3-0.5	1/4
541703	3/8	10.0	3.0	27.0	0.3-0.5	1/4
541704	1/2	15.0	3.9	27.0	0.3-0.5	1/4
541706	3/4	20.0	8.6	27.0	0.3-0.5	1/4
541708	1	25.0	14.0	27.0	0.4-0.6	1/4
541710	1-1/4	31.0	27.0	27.0	0.4-0.6	1/4
541712	1-1/2	38.0	42.0	27.0	0.6-0.9	1/4
541716	2	50.0	70.0	27.0	0.7-1.2	1/4
VALVE WITH DOUBLE ACTING ACTUATOR						
541602	1/4	10.0	2.8	27.0	0.3	1/4
541603	3/8	10.0	3.0	27.0	0.3	1/4
541604	1/2	15.0	3.9	27.0	0.3	1/4
541606	3/4	20.0	8.6	27.0	0.3	1/4
541608	1	25.0	14.0	27.0	0.3	1/4
541610	1-1/4	31.0	27.0	27.0	0.3	1/4
541612	1-1/2	38.0	42.0	27.0	0.4	1/4
541616	2	50.0	70.0	27.0	0.6	1/4

* Pressure range @ -18 to 80°C (reduced pressure for higher temperatures—see P/T chart)

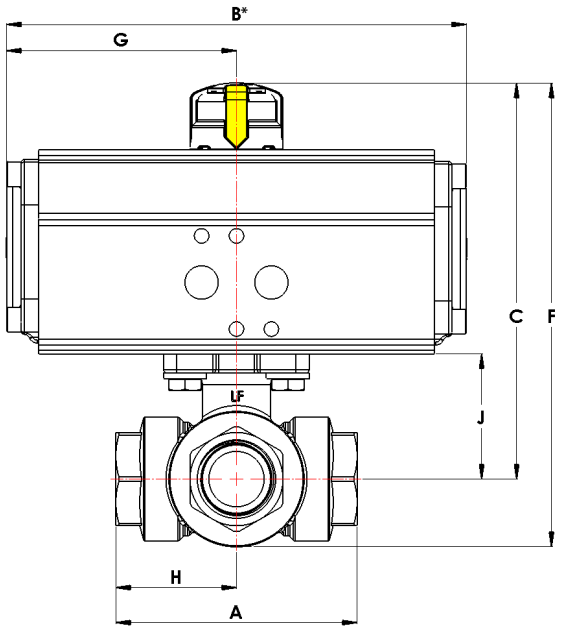
Pressure/Temperature Chart (Bar/°C)

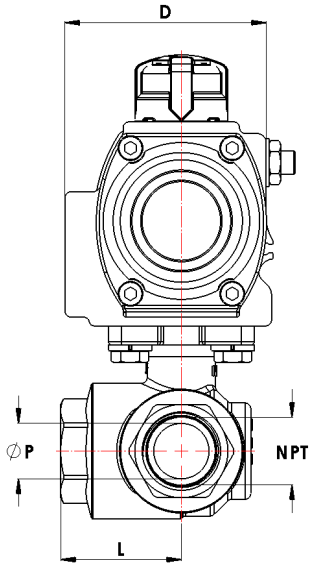
P/T Chart						
Bar	27	27	27	27	25	20
°C	-18	10	38	80	93	121

Dimensions: Spring Return



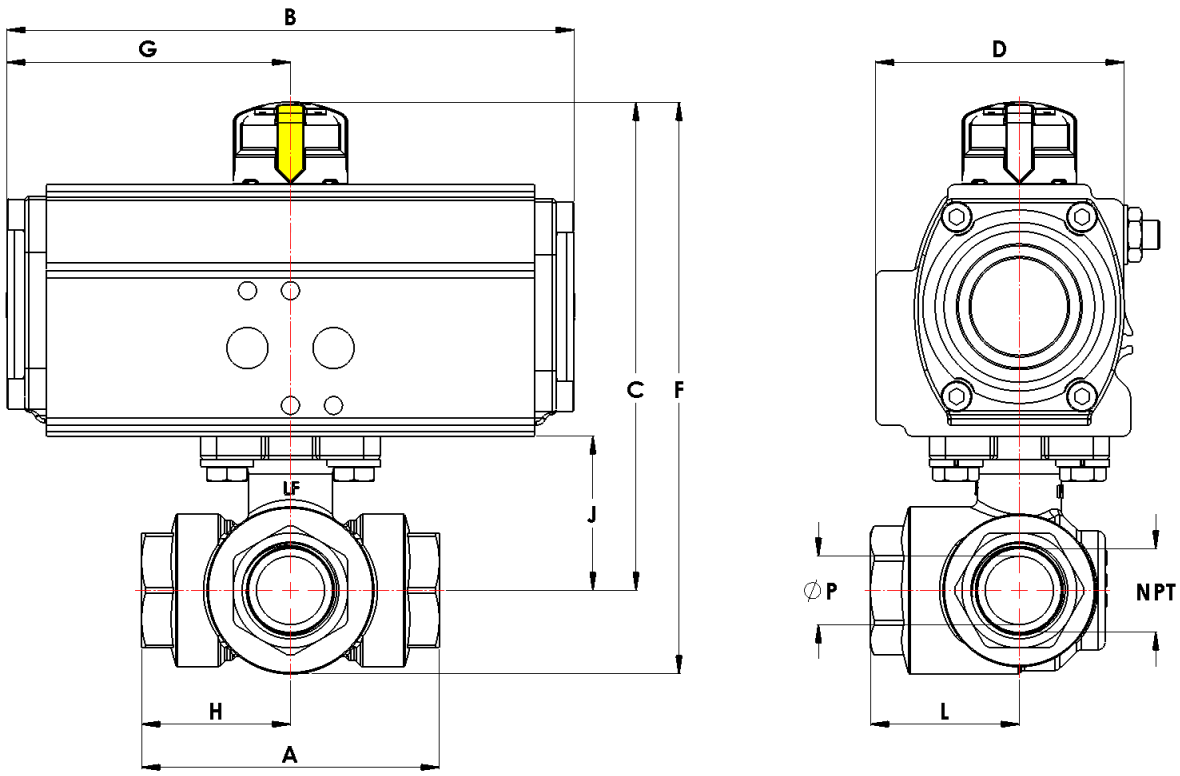
B*- Spring Return Actuator





Stock Number	Pipe Size		A	B* (SR)	C	D	F	G	H	J	L	P	A & B Ports (NPT)	Weight
541702	1/4	inch	2.2	10.1	4.6	2.9	5.2	5.1	1.1	1.0	1.1	0.4	1/4	4.4 lb
		mm	55.9	256.5	2.1	73.7	2.4	129.5	27.9	25.4	27.9	10.0	-	2.0 kg
541703	3/8	inch	2.2	10.1	4.6	2.9	5.2	5.1	1.1	1.0	1.1	0.4	1/4	4.3 lb
		mm	55.9	256.5	2.1	73.7	2.4	129.5	27.9	25.4	27.9	10.0	-	2.0 kg
541704	1/2	inch	2.9	10.1	4.9	2.9	5.7	5.1	1.4	1.3	1.4	0.6	1/4	4.9 lb
		mm	73.7	256.5	2.2	73.7	2.6	129.5	35.6	33.0	35.6	15.0	-	2.2 kg
541706	3/4	inch	3.3	10.1	5.3	2.9	6.2	5.1	1.6	1.7	1.6	0.8	1/4	5.9 lb
		mm	83.8	256.5	2.4	73.7	2.8	129.5	40.6	43.2	40.6	20.0	-	2.7 kg
541708	1	inch	3.8	12.3	6.0	3.5	7.1	6.2	1.9	1.9	1.8	1.0	1/4	9.7 lb
		mm	96.5	314.0	2.4	88.9	3.2	157.5	48.3	48.3	45.7	25.0	-	4.4 kg
541710	1-1/4	inch	4.2	12.3	6.3	3.5	7.6	6.2	2.1	2.2	2.0	1.3	1/4	10.6 lb
		mm	106.7	314.0	2.9	88.9	3.4	157.5	53.3	55.9	50.8	32.0	-	4.8 kg
541712	1-1/2	inch	5.0	16.5	7.4	3.9	9.0	8.3	2.5	2.6	2.3	1.5	1/4	18.6 lb
		mm	127.0	419.1	3.4	99.1	4.1	210.8	63.5	66.0	58.4	38.0	-	8.4 kg
541716	2	inch	5.9	19.6	8.7	5.0	10.7	9.8	2.9	3.0	2.7	2.0	1/4	31.2 lb
		mm	149.9	497.8	3.9	127.0	4.9	248.9	73.7	76.2	68.6	50.0	-	14.2 kg

Dimensions: Double Acting



Stock Number	Pipe Size		A	B	C	D	F	G	H	J	L	P	A & B Ports (NPT)	Weight
541602	1/4	inch	2.2	6.3	4.4	2.9	5.2	3.2	1.1	1.0	1.1	0.4	1/4	4.0 lb
		mm	55.9	160.0	2.0	73.7	2.4	81.3	27.9	25.4	27.9	10.0	-	1.8 kg
541603	3/8	inch	2.2	6.3	4.4	2.9	5.2	3.2	1.1	1.0	1.1	0.4	1/4	3.9 lb
		mm	55.9	160.0	2.0	73.7	2.4	81.3	27.9	25.4	27.9	10.0	-	1.8 kg
541604	1/2	inch	2.9	6.3	4.7	2.9	5.5	3.2	1.4	1.3	1.4	0.6	1/4	4.5 lb
		mm	73.7	160.0	2.1	73.7	2.5	81.3	35.6	33.0	35.6	15.0	-	2.0 kg
541606	3/4	inch	3.3	6.3	5.1	2.9	6.0	3.2	1.6	1.7	1.6	0.8	1/4	5.5 lb
		mm	83.8	160.0	2.3	73.7	2.7	81.3	40.6	43.2	40.6	20.0	-	2.5 kg
541608	1	inch	3.8	6.3	5.3	2.9	6.4	3.2	1.9	1.9	1.8	1.0	1/4	6.2 lb
		mm	96.5	160.0	2.4	73.7	2.9	81.3	48.3	48.3	45.7	25.0	-	2.8 kg
541610	1-1/4	inch	4.2	6.3	5.6	2.9	6.9	3.2	2.1	2.2	2.0	1.3	1/4	7.1 lb
		mm	106.7	160.0	2.5	73.7	3.1	81.3	53.3	55.9	50.8	32.0	-	3.2 kg
541612	1-1/2	inch	5.0	7.9	6.7	3.5	8.3	4.0	2.5	2.6	2.3	1.5	1/4	12.0 lb
		mm	127.0	200.7	3.0	88.9	3.8	101.6	63.5	66.0	58.4	38.0	-	5.4 kg
541616	2	inch	5.9	9.9	7.8	3.9	9.8	5.0	2.9	3.0	2.7	2.0	1/4	18.9 lb
		mm	149.9	251.5	3.5	99.1	4.4	127.0	73.7	76.2	68.6	50.0	-	8.6 kg