Electric Actuated 3-Way Ball Valves- EPS Positioner

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

SERIES
5634
5635

Features

- Full Port 316SS diverter or selector valve
- Silicone free with RTFE ball seats
- Triple PTFE/Viton live loaded stem seals, adjustable
- Valve anti-static device
- EPS– Electronic Positioning System with 4-20mA input
- Rugged aluminum Type 4X weatherproof enclosure
- Heavy duty motors with overload protection
- Thermostatically controlled anti-condensation heater
- Manual override with end of travel mechanical stops
- Two auxiliary position confirmation limit switches
- Actuators CSA Listed per UL429 and CSA C22.2

L-port Diverter or Selector Valve Flow Pattern

Position 1 **Position 2**

Applications

Motorized stainless steel flow diverter or selector valve typically used to control water, air, oil and other media compatible with the materials of construction. Steam service up to 25 PSI with optional high temperature mounting bracket and vacuum service up to 29" Hg. Actuator designed for 70% duty cycle.

Flow pattern is highly non-linear. Refer to page 3 for flow vs position.

Operation

Electric actuated valves with EPS- Electronic Positioning System provide an accurate valve positioning function whereby the movement of the actuator is controlled by 4-20mA input control signal. Any change in the control input signal results in a corresponding and proportional change in the position of the actuator (valve disc). Flow is adjustable anywhere between 0-100%. Unique electronic positioning module is fully potted to help protect the electronics from vibration/moisture resistance.

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" - 1-1/2") + Stem to Body (1-1/4" - 2")
Gear Drive	Heavy duty alloy steel and aluminium bronze
Actuator Enclosure	Aluminum, polyester powder painted, Type 4X, IP67
Visual Valve Position Indicator	Clear polycarbonate cover, red/yellow open-closed
Fasteners	Stainless Steel
Auxiliary Limit Switches	2 x SPDT 3A@125/250VAC, 30VDC resistive load

Description

Electrically operated full port 3-way L-type flow pattern ball valve has four RTFE ball seats, allowing for full pressure at any port. Adjustable live loaded stem seal packing helps compensate for wear, pressure and temperature fluctuations, extending the cycle life of the valve. Rugged corrosion resistant electric actuator includes a manual override, 4-20mA servo controller, thermostatically controlled anti-condensation heater, and over-torque protection.

Approvals

Actuators

- CSA Listed:
  - UL429 and CSA C22.2 No. 139
  - Type 4X, IP67 weatherproof enclosure
- CE conformance– EN 60204-1:2006

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– PED2014/68/UE

Construction Features

4-20mA servo controller

Heavy duty integral motor design significantly reduces physical size of actuator

Rugged polyester powder coated aluminum Type 4X weatherproof enclosure.

Triple PTFE/ FKM (Viton) live loaded stem seals design, adjustable

Full Port 316 stainless steel 3-way ball valve

Anti-Condensation Heater

Terminal Box, wire directly to terminal strip via included cable connector, or optional 1/2" NPT conduit adapters.

Manual Override with protective cover

Self-locking all metal gear drive, no additional brake required

Direct mount ISO5211

316SS Ball and Stem, RTFE ball seats

Visual Valve Position Indicator

Pressure-Temperature*

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

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

Actuator Temperature Rating: -13 to 131° F (-25 to 55° C)

*See P/T chart

Pressure/Temperature Chart (PSI/°F)

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

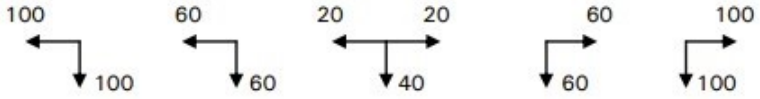
Pressure/Temperature Chart (Bar/°C)

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

Flow Path Features

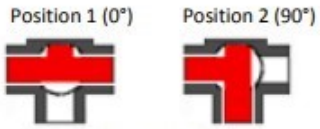
L-Port Diverter

Orifice Size %

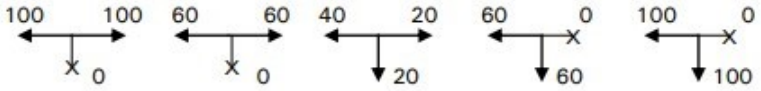


Manual Operation	0°	22.5°	45°	67.5°	90°
4-20 mA Input	4mA	8mA	12mA	16mA	20mA
0-10 volt Input	0V	2.5V	5V	7.5V	10V

T-Port Diverter

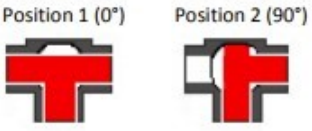


Orifice Size %

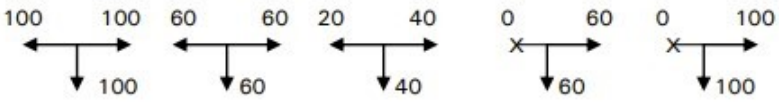


Manual Operation	0°	22.5°	45°	67.5°	90°
4-20 mA Input	4mA	8mA	12mA	16mA	20mA
0-10 volt Input	0V	2.5V	5V	7.5V	10V

T-Port Mixing



Orifice Size %



Manual Operation	0°	22.5°	45°	67.5°	90°
4-20 mA Input	4mA	8mA	12mA	16mA	20mA
0-10 volt Input	0V	2.5V	5V	7.5V	10V

Note: A) Orifice Size % is the approximate orifice size of each port shown as a percent of full open. B) Examples shown are 3-way quarter turn (90°) ball valves with full port design. Actuator at 0° is considered position 1 and 90° position 2.

Specifications (English units)

Stock Number	Pipe Size (NPT)	Orifice Size (inch)	Cv Flow Factor	Pressure Max.(PSI)*	Cycle Time/90° (seconds)	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
120 VAC ELECTRIC ACTUATED 3-WAY L-PORT STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input									
563402	1/4	0.4	5.0	1000	25/21	110 VAC, 50/60Hz	0.27	70%	E
563403	3/8	0.4	7.3	1000	25/21	110 VAC, 50/60Hz	0.27	70%	E
563404	1/2	0.6	8.9	1000	25/21	110 VAC, 50/60Hz	0.27	70%	E
563406	3/4	0.8	18.9	1000	25/21	110 VAC, 50/60Hz	0.27	70%	E
563408	1	1.0	32.0	1000	25/21	110 VAC, 50/60Hz	0.27	70%	E
563410	1-1/4	1.3	41.2	1000	25/21	110 VAC, 50/60Hz	0.27	70%	E
563412	1-1/2	1.5	52.1	1000	25/21	110 VAC, 50/60Hz	0.27	70%	E
563416	2	2.0	79.3	1000	30/25	110 VAC, 50/60Hz	0.73	70%	E
24 VDC ELECTRIC ACTUATED 3-WAY L-PORT STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input									
563502	1/4	0.4	5.0	1000	20	DC24	1.28	70%	GEY
563503	3/8	0.4	7.3	1000	20	DC24	1.28	70%	GEY
563504	1/2	0.6	8.9	1000	20	DC24	1.28	70%	GEY
563506	3/4	0.8	18.9	1000	20	DC24	1.28	70%	GEY
563508	1	1.0	32.0	1000	20	DC24	1.28	70%	GEY
563510	1-1/4	1.3	41.2	1000	20	DC24	1.28	70%	GEY
563512	1-1/2	1.5	52.1	1000	20	DC24	1.28	70%	GEY
563516	2	2.0	79.3	1000	30	DC24	3.57	70%	GEY

* Pressure @ 100° F (see P/T chart for higher temperatures)

Electric Actuated 3-Way L-port Valves

Valve positioning and how it works?

Valworx electric actuators with EPS- Electronic Positioning System provide an accurate valve positioning function whereby the movement of the actuator is controlled by a 4-20mA input control signal. Any change in the control input signal results in a corresponding and proportional change in the position of the actuator (valve).

This is achieved with a unique built in electronic positioning module. The module is fully potted to help protect the electronics from vibration and moisture resistance.

An internal microprocessor on the EPS circuit board continuously monitors the analog input and output signals and compares them to the physical position via a precision potentiometer feedback system, moving the actuator as required to balance the signals.

The EPS system is self-calibrating which virtually eliminates "hunting". The following functions are standard:

- Position monitoring output signal in same format as input. Ex: 4-20mA input, 4-20mA output
- Adjustable forward or reversing action.
- Deadband adjustment
- Selectable fail mode: fail closed, fail open or stop in place (for loss of input command signal).
- Electric manual control with onboard switches
- Fault LED lights indicate valve jam or signal loss
- Electronic brake function
- Refer to page 3 for signal vs flow characteristics

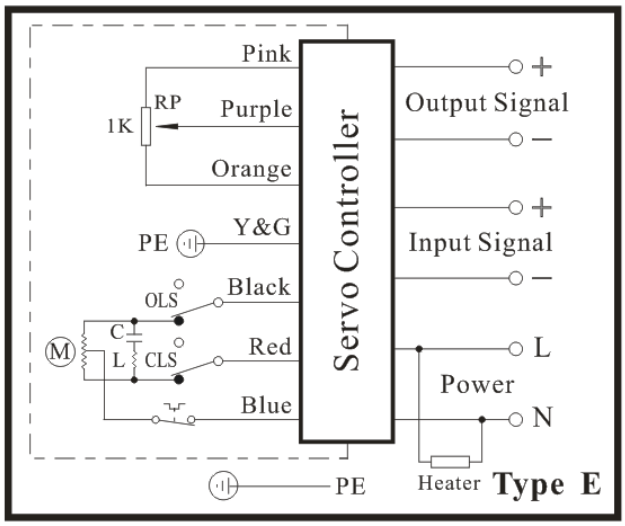
Specifications (Metric units)

Stock Number	Pipe Size (NPT)	Orifice Size (mm)	Kv Flow Factor	Pressure Max.(Bar)*	Cycle Time/90° (seconds)	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
120 VAC ELECTRIC ACTUATED 3-WAY L-PORT STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input									
563402	1/4	11	4.3	69	25/21	110 VAC, 50/60Hz	0.27	70%	E
563403	3/8	11	6.3	69	25/21	110 VAC, 50/60Hz	0.27	70%	E
563404	1/2	16	7.7	69	25/21	110 VAC, 50/60Hz	0.27	70%	E
563406	3/4	20	16.3	69	25/21	110 VAC, 50/60Hz	0.27	70%	E
563408	1	25	27.7	69	25/21	110 VAC, 50/60Hz	0.27	70%	E
563410	1-1/4	32	35.6	69	25/21	110 VAC, 50/60Hz	0.27	70%	E
563412	1-1/2	38	45.1	69	25/21	110 VAC, 50/60Hz	0.27	70%	E
563416	2	50	68.6	69	30/25	110 VAC, 50/60Hz	0.73	70%	E
24 VDC ELECTRIC ACTUATED 3-WAY L-PORT STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input									
563502	1/4	11	4.3	69	20	DC24	1.28	70%	GEY
563503	3/8	11	6.3	69	20	DC24	1.28	70%	GEY
563504	1/2	16	7.7	69	20	DC24	1.28	70%	GEY
563506	3/4	20	16.3	69	20	DC24	1.28	70%	GEY
563508	1	25	27.7	69	20	DC24	1.28	70%	GEY
563510	1-1/4	32	35.6	69	20	DC24	1.28	70%	GEY
563512	1-1/2	38	45.1	69	20	DC24	1.28	70%	GEY
563516	2	50	68.6	69	30	DC24	3.57	70%	GEY

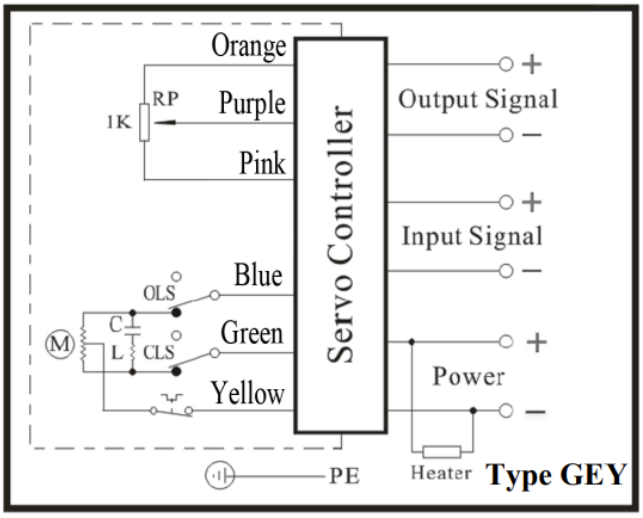
* Pressure @ 38° C (see P/T chart for higher temperatures)

Electrical Wiring

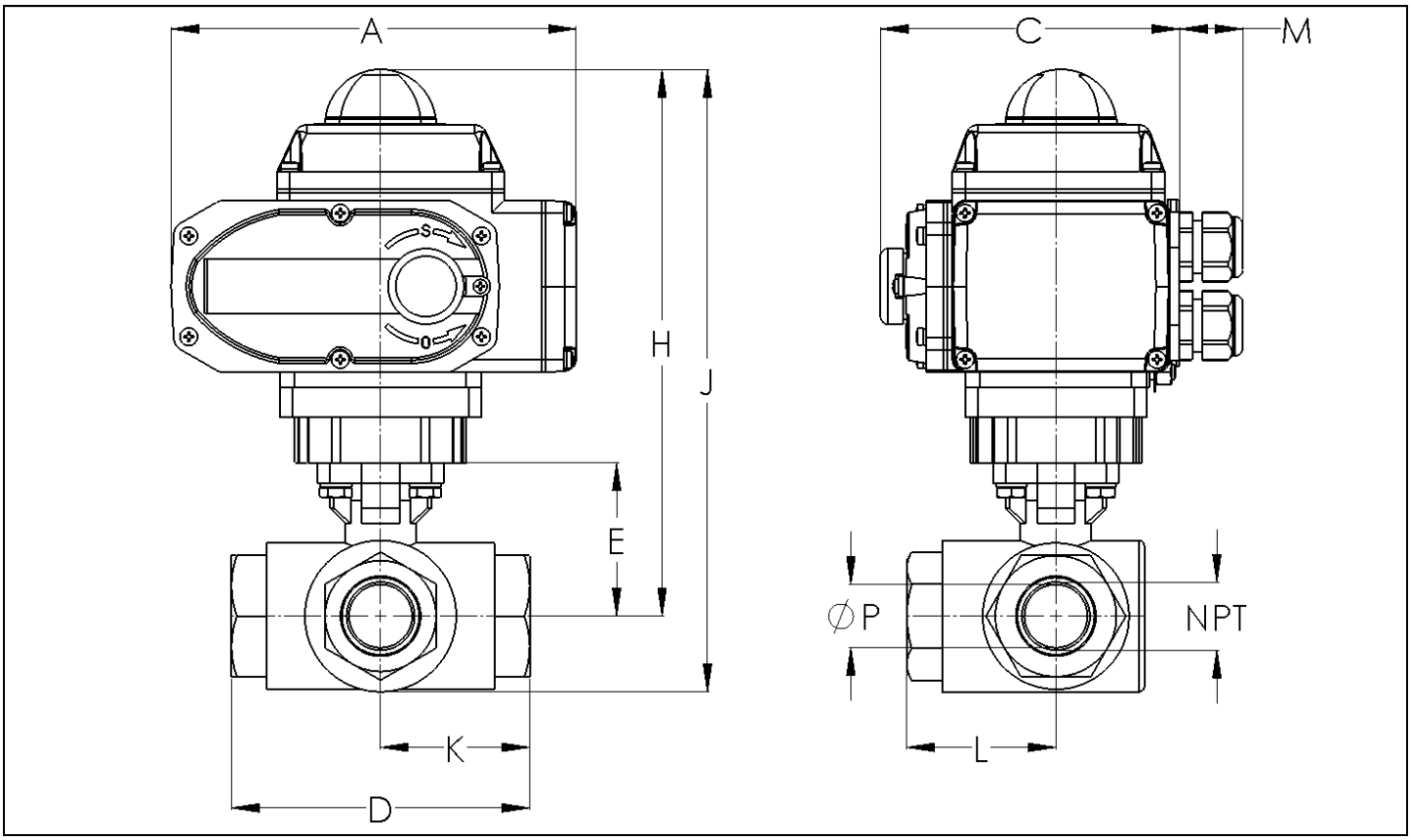
AC Voltages



DC Voltages



Dimensions:



Pipe Size (NPT)		A	C	D	E	H	J	K	L	M	P	Weight (AC/DC)
1/4	inch	6.4	4.7	2.9	1.5	7.7	8.5	1.5	1.5	1.0	0.4	7.6 lbs
	mm	162.0	118.5	76.0	38.2	195.5	215.9	38.0	38.5	25.0	11.0	3.4 kg
3/8	inch	6.4	4.7	2.9	1.5	7.7	8.5	1.5	1.5	1.0	0.4	7.6 lbs
	mm	162.0	118.5	76.0	38.2	195.5	215.9	38.0	38.5	25.0	11.0	3.4 kg
1/2	inch	6.4	4.7	3.3	1.8	8.0	8.9	1.7	1.8	1.0	0.6	8.3 lbs
	mm	162.0	118.5	85.0	45.2	203.2	226.0	42.5	45.0	25.0	16.0	3.8 kg
3/4	inch	6.4	4.7	3.9	2.2	8.4	9.5	1.9	2.0	1.0	0.8	9.4 lbs
	mm	162.0	118.5	98.0	56.5	213.3	241.3	49.0	51.5	25.0	20.0	4.3 kg
1	inch	6.4	4.7	4.4	2.4	8.6	10.0	2.2	2.3	1.0	1.0	11.0 lbs
	mm	162.0	118.5	112.5	61.9	218.4	254.0	56.3	58.0	25.0	25.0	4.9 kg
1-1/4	inch	6.4	4.7	4.9	3.1	9.3	10.8	2.5	2.5	1.0	1.3	13.1 lbs
	mm	162.0	118.5	125.0	78.3	236.2	274.3	63.0	63.0	25.0	32.0	5.9 kg
1-1/2	inch	6.4	4.7	5.6	3.4	9.8	11.6	2.8	2.9	1.0	1.5	18.2 lbs
	mm	162.0	118.5	141.0	87.4	248.9	294.6	70.5	74.5	25.0	38.0	8.3 kg
2	inch	10.1	6.3	6.7	4.2	12.7	14.8	3.4	3.4	1.0	2.0	36.5 lbs
	mm	256.0	160.0	171.0	105.8	322.5	375.9	85.5	85.5	25.0	50.0	16.6 kg