Electric Actuated Ball Valve

3-Way T-Port Stainless Steel, Full Port
1/4" to 2" NPT-Explosion Proof

SERIES
5844
5845

Features

- Full port 3-way T flow pattern, functions as diverter valve
- 316SS CF8M investment cast body
- RTFE (reinforced Teflon) ball seats
- Triple PTFE/Viton live loaded stem seals, adjustable
- Silicone free
- Valves tested accordance with API 598
- Actuators CSA Listed per UL429 and CSA C22.2 and Explosion ratings per Approvals section
- Rugged aluminum Type 4X weatherproof enclosure
- Heavy duty motor with overload protection
- Manual override with end of travel mechanical stops
- Two auxiliary limit switches included with on-off units
- Electrical interface: Two 1/2" NPT threaded ports with temporary plugs. Remove and replace with corresponding explosion proof cable connectors, pipe or plugs (Not Included)

Applications

On-Off electric actuation of water, air, oil and other media compatible with the materials of construction. Suitable for vacuum service up to 29inchHg. Actuator designed for 70% duty cycle.

Operation

On-Off electric actuated valve uses power-to-open and power-to-close, stays in the last known position with loss of power. On receipt of a continuous voltage signal, the motor runs and via a rugged all metal gear system rotates the ball 90º. The motor is automatically stopped by internal cams striking limit switches. On receipt of a reversing continuous signal, the motor turns in the opposite direction reversing the valve position.

Construction

Valve Body	316SS ASTM A351, CF8M
Ball/Stem/End Caps	316SS CF8M
Ball Seats	RTFE (reinforced Teflon)
Stem Seals	PTFE, Viton
Gear Drive	Heavy duty alloy steel/aluminium bronze, self locking
Actuator Enclosure	Anti-corrosive durable painted aluminum alloy, Type 4X/ IP67
Visual Valve Position Indicator	High strength glass lens
Fasteners	Stainless Steel
Auxiliary Limit Switches	2 x SPDT (5A/125VAC), on-off actuators only

Description

Explosion Proof 3-way stainless steel T-port ball valves are investment cast with unrestricted flow and minimum pressure loss. Adjustable live loaded stem seal packing helps compensate for wear, pressure and/or temperature fluctuations, extending the cycle life of the valve. Rugged Type 4X explosion proof electric actuator includes a manual override, valve position confirmation switches (on-off models), over-torque protection.

Approvals– Actuators

ANTI EXPLOSION GRADE

The anti-explosion grade of these actuators is
- ♦ Class 1, Division 1, Groups C & D T5
- ♦ Ex db IIC T5 Gb Class 1 Zone 1
- ♦ AEx db IIC T5 Gb

Where:
Class I – Hazard Class
Division I/ Zone 1 – Area Classification
db – Explosion Proof Type
II – Electrical Equipment design for explosive atmospheres (except colliery)
C – Magnitude of the explosion
T5 - Highest allowed surface temperature of the actuator (+55C)
Gb – Protection Grade
The grades of combustible gas, steam and temperature group are listed in CSA 22.2 No 60079-0-2019, CSA 22.2 No 60079-1-2016, CSA 22.2 No 30-M1986(R2016), CSA 22.2 No 145-11(R2015), ANSI/UL 60079-2:2020, ANSI/UL 1203-2013, ANSI/UL 674 Fifth Edition. It is the user's responsibility to ensure compatibility with the applicable regulations.

- CE Conformance– EN 60204-1:2006

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

Construction Features

Auxiliary Limit Switches(2) for confirming valve position, on-off versions

Heavy duty integral motor design significantly reduces physical size of actuator

Rugged durable painted aluminum Type 4X/ IP67 weatherproof enclosure.

Triple PTFE/Viton live loaded stem seals

RTFE (Reinforced Teflon) ball seats

High strength glass position indicator

Circular field joints for superior explosion-proof reliability

Manual Override with protective cover

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

Machined 316SS ball

Investment casting 316 stainless steel valve body and end caps

Visual Valve
Position Indicator

Pressure Rating

Pressure Rating*: 1000 PSI (69 Bar) CWP non-shock 1/4" to 2" sizes
Vacuum 29inHg

* See P/T chart (pages 3 & 4)

Temperature Rating

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

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

* See P/T chart (pages 3 & 4)

Installation Requires-Two 1/2" NPT threaded explosion-proof connectors or pipe for electrical interface (Not included**)**

Specifications (English units)

Stock Number	Pipe Size (NPT)	Orifice Diameter (inch)	Cv Flow Factor*	Max Pressure (PSI)**	Cycle Time/ 90° (seconds)	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
110 VAC ELECTRIC ACTUATED 3–WAY T PORT STAINLESS BALL VALVES									
584402	1/4	0.4	5.0	1000	20	110 VAC, 50/60Hz	0.27	70%	B
584403	3/8	0.4	7.3	1000	20	110 VAC, 50/60Hz	0.27	70%	B
584404	1/2	0.6	8.9	1000	20	110 VAC, 50/60Hz	0.27	70%	B
584406	3/4	0.8	18.9	1000	20	110 VAC, 50/60Hz	0.27	70%	B
584408	1	1.0	32.0	1000	20	110 VAC, 50/60Hz	0.27	70%	B
584410	1-1/4	1.3	41.2	1000	20	110 VAC, 50/60Hz	0.27	70%	B
584412	1-1/2	1.5	52.1	1000	20	110 VAC, 50/60Hz	0.27	70%	B
584416	2	2.0	79.3	1000	30	110 VAC, 50/60Hz	0.63	70%	B
24 VDC ELECTRIC ACTUATED 3–WAY T PORT STAINLESS BALL VALVES									
584502	1/4	0.4	5.0	1000	20	DC24	1.8	70%	G
584503	3/8	0.4	7.3	1000	20	DC24	1.8	70%	G
584504	1/2	0.6	8.9	1000	20	DC24	1.8	70%	G
584506	3/4	0.8	18.9	1000	20	DC24	1.8	70%	G
584508	1	1.0	32.0	1000	20	DC24	1.8	70%	G
584510	1-1/4	1.3	41.2	1000	20	DC24	1.8	70%	G
584512	1-1/2	1.5	52.1	1000	20	DC24	1.8	70%	G
584516	2	2.0	79.3	1000	30	DC24	2.4	70%	G

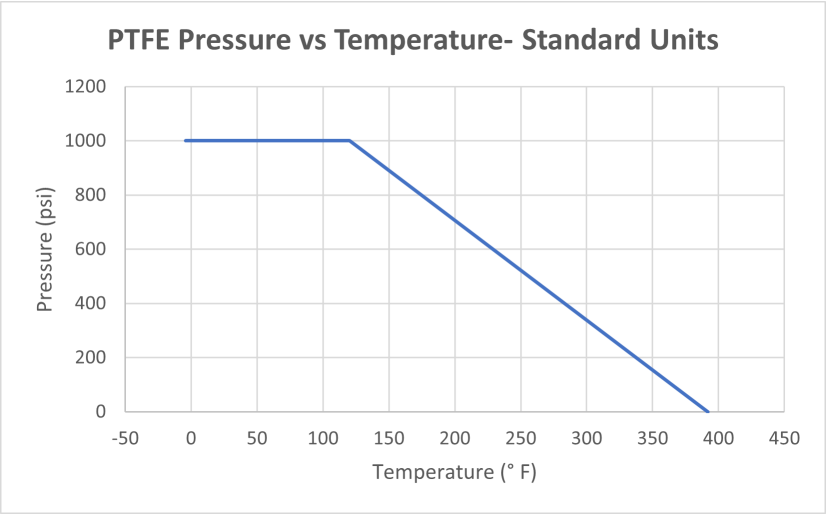
Cv = The GPM of water at 60° F that will pass through the valve with 1 PSI pressure drop

* Pressure @ 0-100° F (reduced pressure at higher temperatures—see P/T chart)

• Torque at 0 PSI and 75°F

Pressure/Temperature Chart (PSI/°F)

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



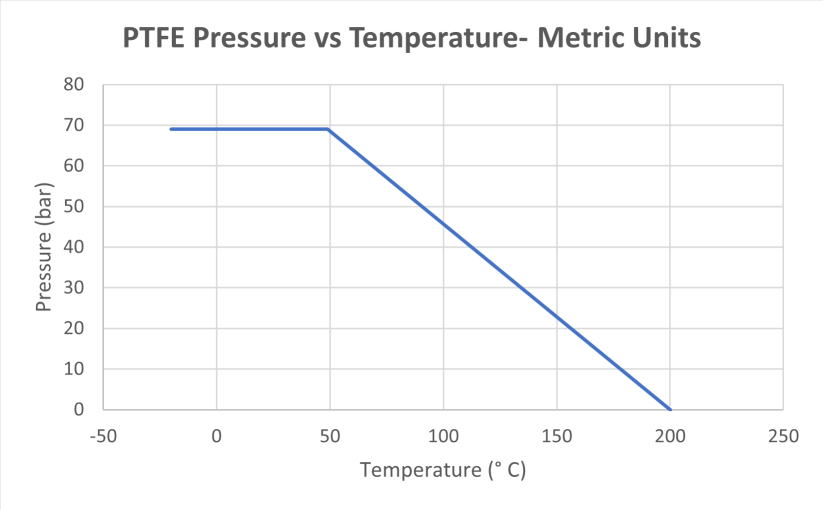
Specifications (Metric units)

Stock Number	Pipe Size (NPT)	Orifice Diameter (mm)	Kv Flow Factor*	Max Pressure (Bar)**	Cycle Time/90° (seconds)	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
110 VAC ELECTRIC ACTUATED 3–WAY T PORT STAINLESS BALL VALVES									
584402	1/4	11.0	4.3	69	20	110 VAC, 50/60Hz	0.27	70%	B
584403	3/8	11.0	6.3	69	20	110 VAC, 50/60Hz	0.27	70%	B
584404	1/2	16.0	7.7	69	20	110 VAC, 50/60Hz	0.27	70%	B
584406	3/4	20.0	16.3	69	20	110 VAC, 50/60Hz	0.27	70%	B
584408	1	25.0	27.7	69	20	110 VAC, 50/60Hz	0.27	70%	B
584410	1-1/4	32.0	35.6	69	20	110 VAC, 50/60Hz	0.27	70%	B
584412	1-1/2	38.0	45.1	69	20	110 VAC, 50/60Hz	0.27	70%	B
584416	2	50.0	68.6	69	30	110 VAC, 50/60Hz	0.63	70%	B
24 VDC ELECTRIC ACTUATED 3–WAY T PORT STAINLESS BALL VALVES									
584502	1/4	11.0	4.3	69	20	DC24	1.8	70%	G
584503	3/8	11.0	6.3	69	20	DC24	1.8	70%	G
584504	1/2	16.0	7.7	69	20	DC24	1.8	70%	G
584506	3/4	20.0	16.3	69	20	DC24	1.8	70%	G
584508	1	25.0	27.7	69	20	DC24	1.8	70%	G
584510	1-1/4	32.0	35.6	69	20	DC24	1.8	70%	G
584512	1-1/2	38.0	45.1	69	20	DC24	1.8	70%	G
584516	2	50.0	68.6	69	30	DC24	2.4	70%	G

* 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



Electrical Wiring– On/Off

ELECTRICAL WIRING

Confirm the actuator VOLTAGE is correct, then remove the terminal box cover and connect wiring to terminal strip according to appropriate wiring diagram.

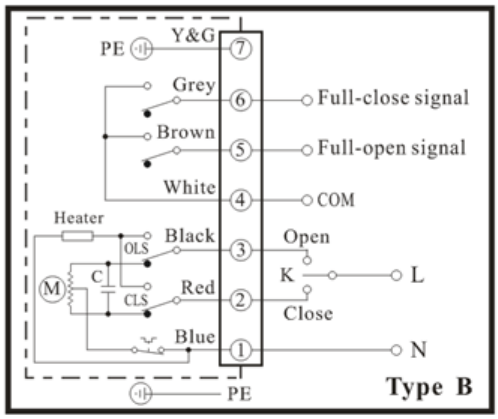
For convenience, wiring diagrams for each actuator are attached to the inside of the terminal box cover.

User/installer to supply a three way switch, control relay, PLC outputs, or other suitable switching device to control the actuator position. Actuator should have its own fused and isolated circuit. Do not connect actuators in parallel.

Power should be maintained either in the open or closed position to activate the internal heater. This heater will help prevent condensation build-up inside the actuator.

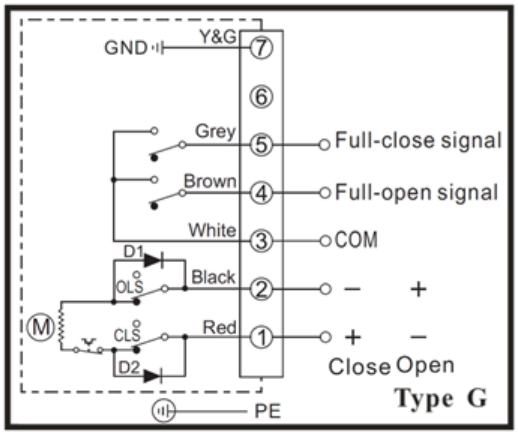
Before connecting power, confirm correct VOLTAGE is being applied. Incorrect voltage may damage actuator and void the warranty.

AC Voltage Wiring Diagram



FOR SUPPLY CONNECTIONS, USE WIRES SUITABLE FOR AT LEAST 90°C (194°F) Employer Des Fils D'alimentation Qui Conviennent Pour Au Moins 90°C

DC Voltage Wiring Diagram



FOR SUPPLY CONNECTIONS, USE WIRES SUITABLE FOR AT LEAST 90°C (194°F) Employer Des Fils D'alimentation Qui Conviennent Pour Au Moins 90°C

AC Voltage Wiring:

[User/Installer to Supply Relay or 3-way Switch (K)]

Terminal 1: Power Neutral (N)

Terminal 2: Power (L) to terminal 2 - Actuator OFF or CLOSED

Terminal 3: Power (L) to terminal 3 - Actuator ON or OPEN

Auxiliary Position Confirmation Limit Switches

Terminal 4: Common

Terminal 5: Open status confirmation signal

Terminal 6: Closed status confirmation signal

Ground PE

Terminal 7: Earth Ground

NOTES: 1. Auxiliary limit switches are rated 3A@125/250VAC, 30VDC resistive load. *2.* Actuator should have its own fused and isolated circuit. Do not wire actuators in parallel.

DC Voltage Wiring:

[User/Installer to Supply Reversing Relay or Switch]

Terminal 1: Power Positive (+) to close, power Negative (-) to open

Terminal 2: Power Negative (-) to close, power Positive (+) to open

Auxiliary Position Confirmation Limit Switches

Terminal 3: Common

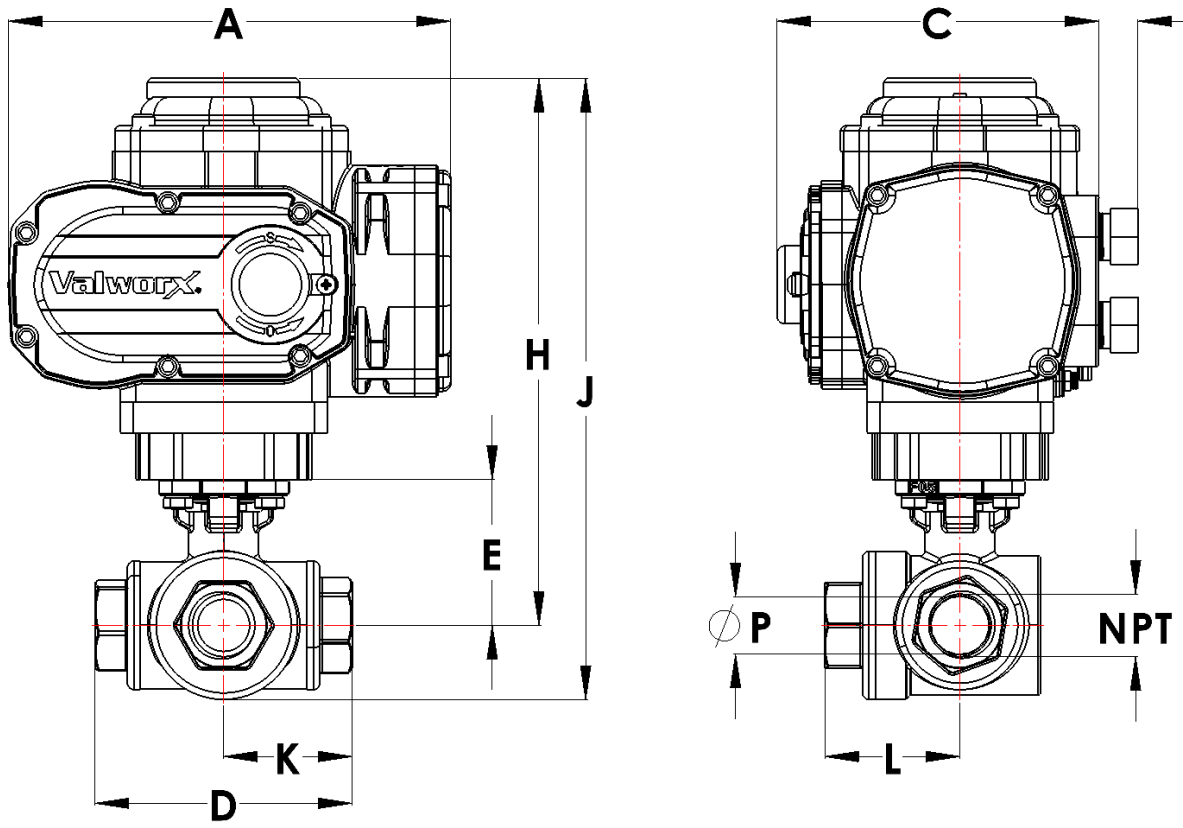
Terminal 4: Open status confirmation signal

Terminal 5: Closed status confirmation signal

Ground PE

Terminal 7: Earth Ground

Dimensions:



Pipe Size (NPT)		A	C	D	E	H	J	K	L	M	P	Weight
1/4	inch	6.7	3.9	2.9	1.5	6.2	6.9	1.5	1.5	0.6	0.4	9.1 lbs
	mm	170.5	99.5	76.0	38.2	157.5	175.3	38.0	38.5	15.0	11.0	4.1 kg
3/8	inch	6.7	3.9	2.9	1.5	6.2	6.9	1.5	1.5	0.6	0.4	9.1 lbs
	mm	170.5	99.5	76.0	38.2	157.5	175.3	38.0	38.5	15.0	11.0	4.1 kg
1/2	inch	6.7	3.9	3.3	1.8	6.5	7.4	1.7	1.8	0.6	0.6	9.8 lbs
	mm	170.5	99.5	85.0	45.2	165.1	188.0	42.5	45.0	15.0	16.0	4.4 kg
3/4	inch	6.7	3.9	3.9	2.2	6.9	8.0	1.9	2.0	0.6	0.8	10.9 lbs
	mm	170.5	99.5	98.0	56.5	175.3	203.2	49.0	51.5	15.0	20.0	4.9 kg
1	inch	6.7	3.9	4.4	2.4	7.1	8.4	2.2	2.3	0.6	1.0	12.5 lbs
	mm	170.5	99.5	112.5	61.9	180.3	213.4	56.3	58.0	15.0	25.0	5.7 kg
1-1/4	inch	6.7	3.9	4.9	3.1	7.8	9.2	2.5	2.5	0.6	1.3	15.1 lbs
	mm	170.5	99.5	125.0	78.3	198.1	233.7	62.5	63.0	15.0	32.0	6.8 kg
1-1/2	inch	6.7	3.9	5.6	3.4	8.1	9.9	2.8	2.9	0.6	1.5	18.5 lbs
	mm	170.5	99.5	141.0	87.4	205.7	251.7	70.5	74.5	15.0	38.0	8.4 kg
2	inch	8.6	4.5	6.7	4.2	10.1	11.7	3.4	3.4	0.6	2.0	30.9 lbs
	mm	217.5	114.0	171.0	105.8	256.5	297.2	85.5	85.5	15.0	50.0	14.0 kg