Electric Actuated High Pressure Ball Valve

3-piece Stainless Steel, Full Port, 2000 PSI
1/4" to 2" NPT-Explosion Proof, EPS 4-20mA

SERIES
5884
5885

Features

- High pressure (2000 CWP)
- Fire Safe approved (API 607 6th Edition)
- 316 Stainless Steel 3-piece investment cast body
- Swing-out center section
- RTFE (reinforced Teflon) ball seats
- Braided graphite/Viton live loaded and adjustment stem seals
- Valves tested accordance with API 598
- Rugged aluminum Type 4X weatherproof enclosure
- Heavy duty motor with overload protection
- Manual override with end of travel mechanical stops
- Actuators CSA Listed per UL429 and CSA C22.2 and Explosion ratings per Approvals section
- 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

Electric actuated stainless steel high pressure ball valves with braided graphite/ viton seals are typically used for positioning control of water, air, oil and other media compatible with the materials of construction. Actuator designed for 70% duty cycle.

Not suitable for potable water, oxygen or high purity fluid applications.

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 ball). 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	Braided Graphite
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
Position Feedback	4-20mA analog output signal

Description

Explosion Proof 3-piece high pressure stainless steel full 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, over-torque protection. EPS positioner models allow positioning of the ball with a 4-20mA input control signal.

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- EN 60204-1:2006

Standards– Valves

- Fire Safe: API 607 6th Edition
- Testing: API 598
- Threaded Connection: ASME B1.20.1 (NPT)/ ISO 228-1/ BS21
- Pressure/Temperature Rating: ASME B16.34
- Marking: MSS SP-25

Construction Features

Position feedback– 4-20mA analog output signal

Heavy duty integral motor design significantly reduces physical size of actuator

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

Braided Graphite stem seals

RTFE 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

3-piece design for easy removal & dis-assembly

Machined 316SS ball

Investment casting 316 stainless steel valve body and end caps

Visual Valve
Position Indicator

Pressure Rating

Pressure Rating*: 2000 PSI (138 Bar) CWP non-shock

* 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 HIGH PRESSURE STAINLESS BALL VALVE									
588402	1/4	0.45	14.2	2000	20	110 VAC, 50/60Hz	0.27	70%	E
588403	3/8	0.49	16.7	2000	20	110 VAC, 50/60Hz	0.27	70%	E
588404	1/2	0.59	24.1	2000	20	110 VAC, 50/60Hz	0.27	70%	E
588406	3/4	0.79	44.6	2000	20	110 VAC, 50/60Hz	0.27	70%	E
588408	1	1.00	72.7	2000	20	110 VAC, 50/60Hz	0.27	70%	E
588410	1-1/4	1.25	122.0	2000	20	110 VAC, 50/60Hz	0.27	70%	E
588412	1-1/2	1.50	176.3	2000	20	110 VAC, 50/60Hz	0.63	70%	E
588416	2	2.00	313.1	2000	30	110 VAC, 50/60Hz	0.63	70%	E
24 VDC ELECTRIC ACTUATED HIGH PRESURE STAINLESS BALL VALVE									
588502	1/4	0.45	14.2	2000	20	DC24	1.8	70%	GEY
588503	3/8	0.49	16.7	2000	20	DC24	1.8	70%	GEY
588504	1/2	0.59	24.1	2000	20	DC24	1.8	70%	GEY
588506	3/4	0.79	44.6	2000	20	DC24	1.8	70%	GEY
588508	1	1.00	72.7	2000	20	DC24	1.8	70%	GEY
588510	1-1/4	1.25	122.0	2000	20	DC24	1.8	70%	GEY
588512	1-1/2	1.50	176.3	2000	20	DC24	2.4	70%	GEY
588516	2	2.00	313.1	2000	30	DC24	2.4	70%	GEY

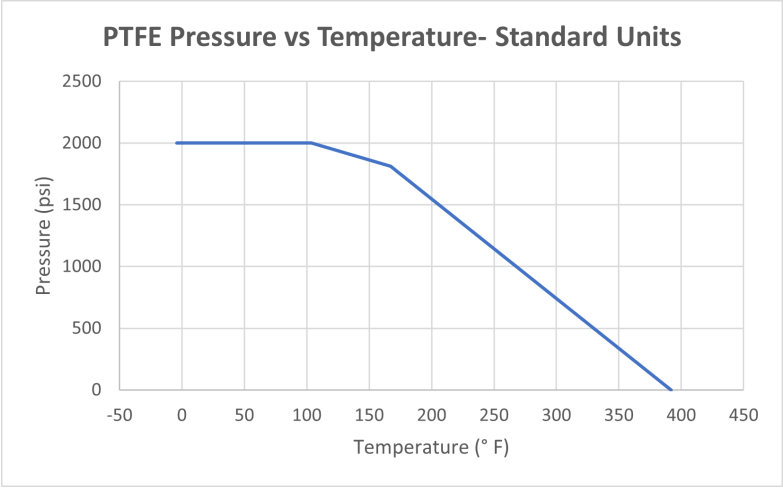
Cv = The GPM of water at 60° F that will pass through the valve with 1 PSI pressure drop

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

• Torque at 0 PSI and 75°F

Pressure/Temperature Chart 2000 PSI (138 Bar)

P/T Chart (PSI/°F)				
°F	-4	104	167	392
PSI	2000	2000	1812	0



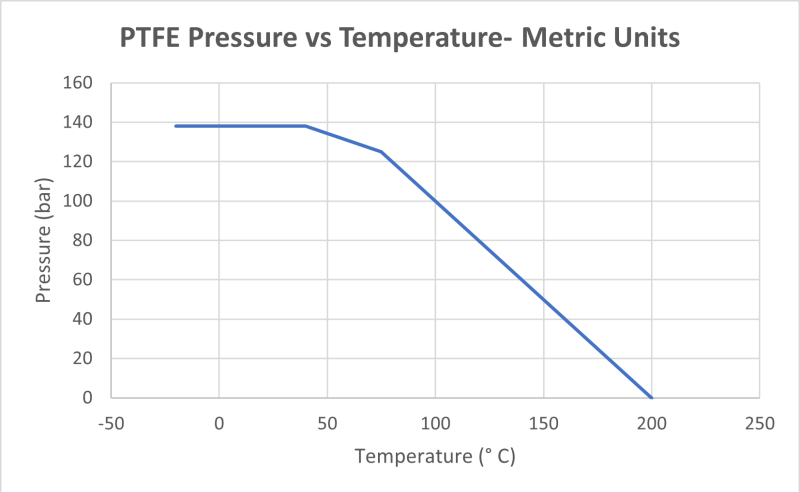
Specifications (Metric units)

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 HIGH PRESSURE STAINLESS BALL VALVES									
588402	1/4	11.5	12.3	138	20	110 VAC, 50/60Hz	0.27	70%	E
588403	3/8	12.5	14.4	138	20	110 VAC, 50/60Hz	0.27	70%	E
588404	1/2	15.0	20.8	138	20	110 VAC, 50/60Hz	0.27	70%	E
588406	3/4	20.0	38.6	138	20	110 VAC, 50/60Hz	0.27	70%	E
588408	1	25.0	62.9	138	20	110 VAC, 50/60Hz	0.27	70%	E
588410	1-1/4	32.0	105.5	138	20	110 VAC, 50/60Hz	0.27	70%	E
588412	1-1/2	38.0	152.5	138	30	110 VAC, 50/60Hz	0.63	70%	E
588416	2	50.0	270.8	138	30	110 VAC, 50/60Hz	0.63	70%	E
24 VDC ELECTRIC ACTUATED HIGH PRESURE STAINLESS BALL VALVE									
588502	1/4	11.5	12.3	138	20	DC24	1.8	70%	GEY
588503	3/8	12.5	14.4	138	20	DC24	1.8	70%	GEY
588504	1/2	15.0	20.8	138	20	DC24	1.8	70%	GEY
588506	3/4	20.0	38.6	138	20	DC24	1.8	70%	GEY
588508	1	25.0	62.9	138	20	DC24	1.8	70%	GEY
588510	1-1/4	32.0	105.5	138	20	DC24	1.8	70%	GEY
588512	1-1/2	38.0	152.5	138	30	DC24	2.4	70%	GEY
588516	2	50.0	270.8	138	30	DC24	2.4	70%	GEY

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

Pressure/Temperature Chart 2000 PSI (138 Bar)

P/T Chart (BAR/°C)				
°C	-20	40	75	200
Bar	138	138	125	0



Electrical Wiring– EPS Positioner

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

Wiring diagrams for each actuator are attached to the inside of the terminal box cover.

Input control signal type is 4-20mA. Actuator should have its own fused and isolated circuit. Do not connect actuators in parallel. Power to actuator should be maintained 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

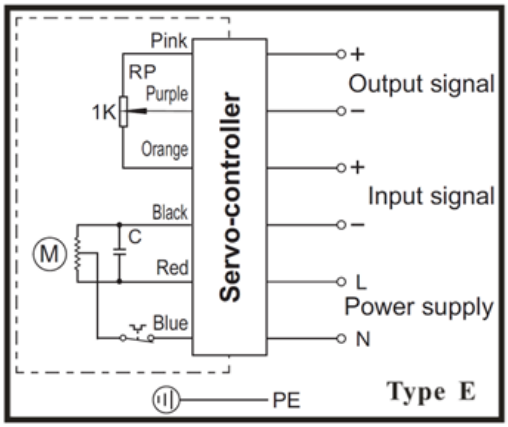
OPERATION (EPS ONLY)

Valworx 5818 series 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 drive output..

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.

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 drive output as required to balance the signals

AC Voltage Wiring Diagram

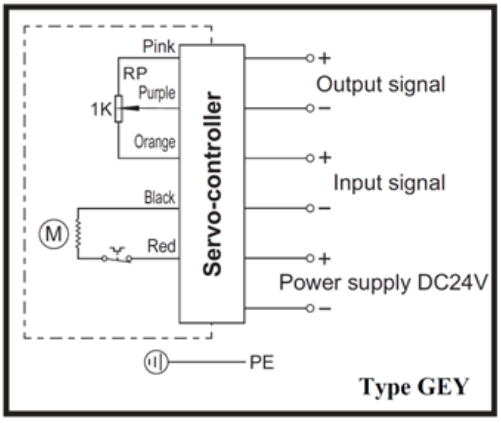


FOR SUPPLY CONNECTIONS, USE WIRES SUITABLE FOR AT LEAST 90°C (194°F) Employer Des Fils D'alimentation Qui Conviennent Pour Au Moins 90°C

AC Voltage Wiring:

1. AC power - Neutral
2. AC power - Line/Hot
3. Input control signal - Negative (-)
4. Input control signal - Positive (+)
5. Output monitoring signal - Negative (-)
6. Output monitoring signal - Positive (+)

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

DC Voltage Wiring:

1. DC power - Negative (-)
2. DC power - Positive (+)
3. Input control signal - Negative (-)
4. Input control signal - Positive (+)
5. Output monitoring signal - Negative (-)
6. Output monitoring signal - Positive (+)

EPS POSITIONER TECHNICAL DATA

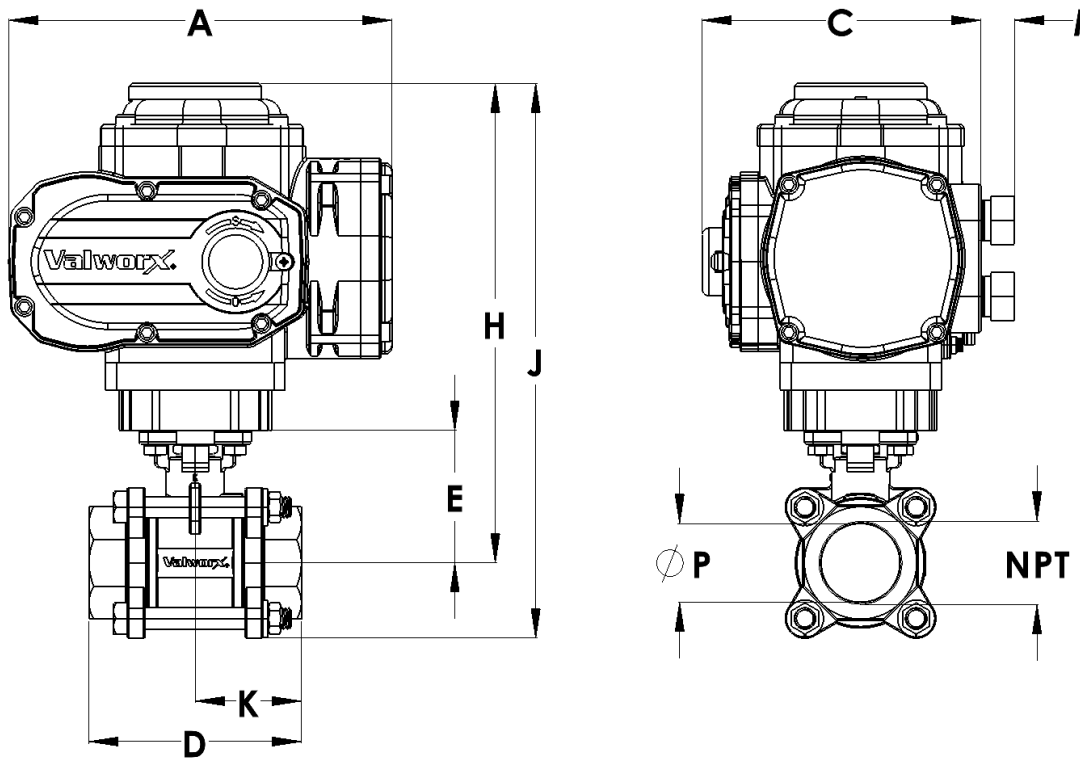
Input Signal: 4-20mA

Output Signal: 4-20mA

Deadband: 0.5% to 5.0%

NOTES: 1. Actuator should have its own fused and isolated circuit. 2. Do not wire actuators in parallel. 3. Output signal is 4-20mA. Use of the output is optional.

Dimensions:



Pipe Size (NPT)		A	C	D	E	H	J	K	M	P	Weight
1/4	inch	6.7	4.7	2.6	1.5	7.6	8.9	1.3	0.6	0.5	9.7 lb
	mm	170.5	120.5	65.0	37.5	192.5	225.5	32.5	15.0	11.5	4.4 kg
3/8	inch	6.7	4.7	2.6	1.5	7.6	8.9	1.3	0.6	0.5	9.6 lb
	mm	170.5	120.5	65.0	37.5	192.5	225.5	32.5	15.0	12.5	4.3 kg
1/2	inch	6.7	4.7	3.0	1.5	7.6	8.9	1.5	0.6	0.6	9.7 lb
	mm	170.5	120.5	75.0	37.5	192.5	225.5	37.5	15.0	15.0	4.4 kg
3/4	inch	6.7	4.7	3.1	2.0	7.7	9.3	1.6	0.6	0.8	10.6 lb
	mm	170.5	120.5	80.0	50.0	195.0	235.7	40.0	15.0	20.0	4.8 kg
1	inch	6.7	4.7	3.5	2.4	7.9	9.8	1.8	0.6	1.0	11.8 lb
	mm	170.5	120.5	90.0	60.0	200.1	248.4	45.0	15.0	25.0	5.4 kg
1-1/4	inch	6.7	4.7	4.3	3.0	8.3	10.6	2.2	0.6	1.3	14.2 lb
	mm	170.5	120.5	110.0	75.3	210.3	268.7	55.0	15.0	32.0	6.5 kg
1-1/2	inch	8.6	5.5	4.7	3.1	9.7	12.3	2.4	0.6	1.5	22.5 lb
	mm	2175	139.0	120.0	79.3	245.8	311.9	60.0	15.0	38.0	10.2 kg
2	inch	8.6	5.5	5.5	3.8	10.0	13.3	2.8	0.6	2.0	28.3 lb
	mm	2175	139.0	140.0	96.0	253.0	336.8	70.0	15.0	50.0	12.9 kg