

Features

- Available in 30°, 60°, 90° V-Port stainless steel ball
- 316SS 3-piece investment cast body
- Swing-out center section
- RTFE (reinforced Teflon) ball seats
- Triple PTFE/Viton live loaded stem seals, adjustable
- 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

V-port ball valves are used in applications requiring finer flow control than standard ball valves. Modulating control (with EPS) of water, air, oil and other media compatible with the materials of construction. Actuator designed for 70% duty cycle.

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. 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	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



Description

Explosion Proof 3-piece stainless steel V-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. EPS positioner models allow positioning of the ball with a 4-20mA input control signal.

V-port 316 stainless steel ball provides better linearity for enhanced flow control. Solid, machined construction for full pressure rating.

Approvals– Actuators

ANTI EXPLOSION GRADE

The anti-explosion grade of these actuators is

- ♦ Class I, 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

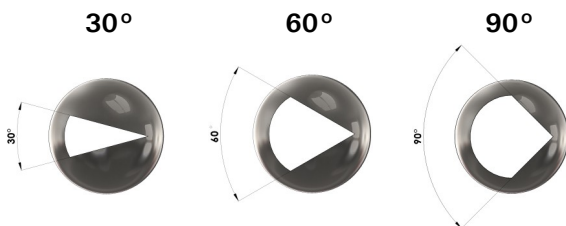
Standards– Valves

- CE: PED 2014/68/UE
- 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

Construction Features



V-Port Images



Pressure Rating

Pressure Rating*: 1000 PSI (69 Bar) CWP non-shock 1/4" to 2" sizes
800 PSI (55 Bar) CWP non-shock 2-1/2" and 3" 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**)**



Visual Valve
Position Indicator

Specifications (English units)

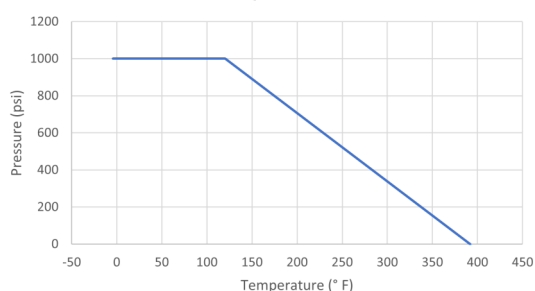
Stock Number	Pipe Size (NPT)	Orifice Diameter (inch)	Max Pressure (PSI) **	Cycle Time/ 90° (seconds)	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
120 VAC ELECTRIC ACTUATED 3-PC STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input								
586802	1/4	0.5	1000	20	110 VAC, 50/60Hz	0.27	70%	E
586803	3/8	0.5	1000	20	110 VAC, 50/60Hz	0.27	70%	E
586804	1/2	0.6	1000	20	110 VAC, 50/60Hz	0.27	70%	E
586806	3/4	0.8	1000	20	110 VAC, 50/60Hz	0.27	70%	E
586808	1	1.0	1000	20	110 VAC, 50/60Hz	0.27	70%	E
586810	1-1/4	1.3	1000	20	110 VAC, 50/60Hz	0.27	70%	E
586812	1-1/2	1.5	1000	20	110 VAC, 50/60Hz	0.27	70%	E
586816	2	2.0	1000	20	110 VAC, 50/60Hz	0.27	70%	E
586820	2-1/2	2.6	800	30	110 VAC, 50/60Hz	0.63	70%	E
586824	3	3.2	800	30	110 VAC, 50/60Hz	0.63	70%	E
24 VDC ELECTRIC ACTUATED 3-PC STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input								
586902	1/4	0.5	1000	20	DC24	1.8	70%	GEY
586903	3/8	0.5	1000	20	DC24	1.8	70%	GEY
586904	1/2	0.6	1000	20	DC24	1.8	70%	GEY
586906	3/4	0.8	1000	20	DC24	1.8	70%	GEY
586908	1	1.0	1000	20	DC24	1.8	70%	GEY
586910	1-1/4	1.3	1000	20	DC24	1.8	70%	GEY
586912	1-1/2	1.5	1000	20	DC24	1.8	70%	GEY
586916	2	2.0	1000	20	DC24	1.8	70%	GEY
586920	2-1/2	2.6	800	30	DC24	2.4	70%	GEY
586924	3	3.2	800	30	DC24	2.4	70%	GEY

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

Pressure/Temp. Chart - 1000 PSI (69 Bar)

P/T Chart (PSI/°F)				
PSI	1000	1000	100	0
°F	-4	50	330	392

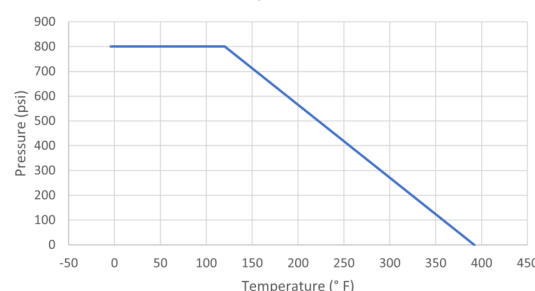
PTFE Pressure vs Temperature- Standard Units



Pressure/Temp. Chart - 800 PSI (55 Bar)

P/T Chart (PSI/°F)				
PSI	800	800	100	0
°F	-4	50	330	392

PTFE Pressure vs Temperature- Standard Units



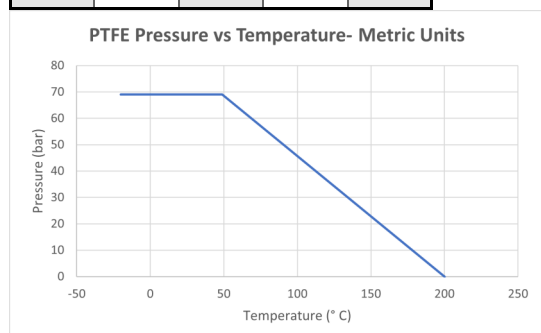
Specifications (Metric units)

Stock Number	Pipe Size (NPT)	Orifice Diameter (mm)	Max Pressure (Bar)**	Cycle Time/90° (seconds)	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
120 VAC ELECTRIC ACTUATED 3-PC STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input								
586802	1/4	11.5	69	20	110 VAC, 50/60Hz	0.27	70%	E
586803	3/8	12.5	69	20	110 VAC, 50/60Hz	0.27	70%	E
586804	1/2	15.0	69	20	110 VAC, 50/60Hz	0.27	70%	E
586806	3/4	20.0	69	20	110 VAC, 50/60Hz	0.27	70%	E
586808	1	25.0	69	20	110 VAC, 50/60Hz	0.27	70%	E
586810	1-1/4	32.0	69	20	110 VAC, 50/60Hz	0.27	70%	E
586812	1-1/2	38.0	69	20	110 VAC, 50/60Hz	0.27	70%	E
586816	2	50.0	69	20	110 VAC, 50/60Hz	0.27	70%	E
586820	2-1/2	65.0	55	30	110 VAC, 50/60Hz	0.63	70%	E
586824	3	80.0	55	30	110 VAC, 50/60Hz	0.63	70%	E
24 VDC ELECTRIC ACTUATED 3-PC STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input								
586902	1/4	11.5	69	20	DC24	1.8	70%	GEY
586903	3/8	12.5	69	20	DC24	1.8	70%	GEY
586904	1/2	15.0	69	20	DC24	1.8	70%	GEY
586906	3/4	20.0	69	20	DC24	1.8	70%	GEY
586908	1	25.0	69	20	DC24	1.8	70%	GEY
586910	1-1/4	32.0	69	20	DC24	1.8	70%	GEY
586912	1-1/2	38.0	69	20	DC24	1.8	70%	GEY
586916	2	50.0	69	20	DC24	1.8	70%	GEY
586920	2-1/2	65.0	55	30	DC24	2.4	70%	GEY
586924	3	80.0	55	30	DC24	2.4	70%	GEY

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

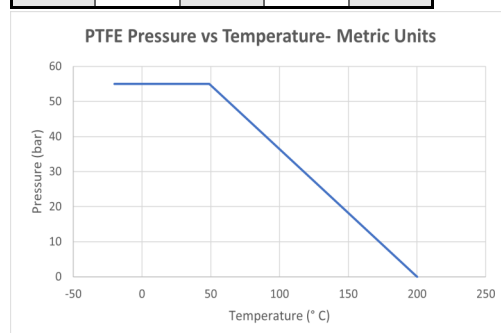
Pressure/Temp. Chart - 1000 PSI (69 Bar)

P/T Chart (BAR/°C)				
Bar	69	69	7	0
°C	-20	10	166	200



Pressure/Temp. Chart - 800 PSI (55 Bar)

P/T Chart (BAR/°C)				
Bar	55	55	7	0
°C	-20	10	166	200

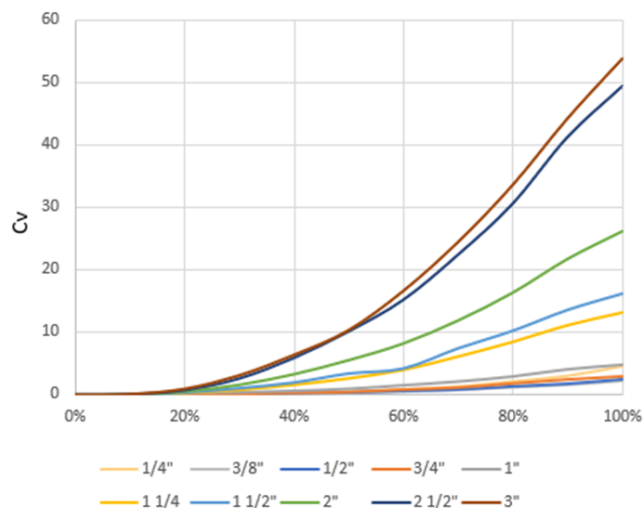


CV vs Valve Position

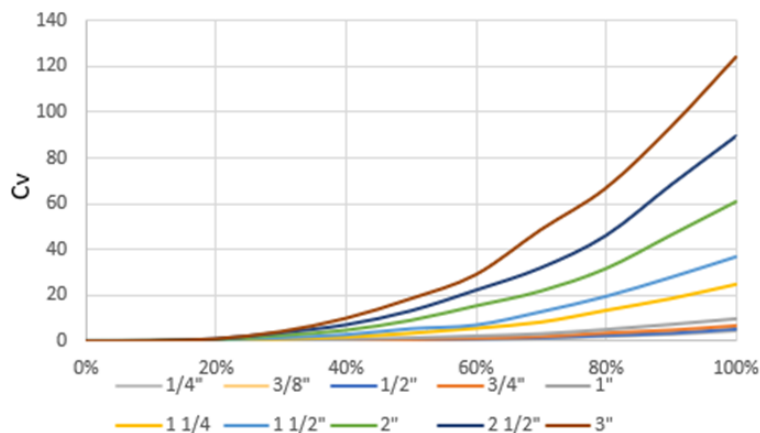
Size	V	0	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/4"	30°	0.000	0.000	0.082	0.141	0.266	0.352	0.533	0.717	1.109	1.437	2.000
	60°	0.000	0.000	0.099	0.194	0.443	0.528	0.888	1.304	2.148	3.010	4.538
	90°	0.000	0.082	0.164	0.329	0.493	0.657	1.232	1.807	3.121	4.436	5.668
3/8"	30°	0.000	0.000	0.089	0.154	0.289	0.383	0.579	0.779	1.205	1.562	2.174
	60°	0.000	0.000	0.107	0.211	0.481	0.574	0.965	1.417	2.335	3.271	4.933
	90°	0.000	0.089	0.179	0.357	0.536	0.714	1.339	1.964	3.393	4.821	6.161
1/2"	30°	0.000	0.000	0.100	0.172	0.324	0.429	0.649	0.873	1.350	1.749	2.435
	60°	0.000	0.000	0.120	0.236	0.539	0.643	1.081	1.587	2.615	3.664	5.525
	90°	0.000	0.100	0.200	0.400	0.600	0.800	1.500	2.200	3.800	5.400	6.900
3/4"	30°	0.000	0.000	0.128	0.159	0.338	0.489	0.850	1.166	1.805	2.408	2.884
	60°	0.000	0.000	0.151	0.238	0.453	0.729	1.275	1.915	3.419	4.630	6.440
	90°	0.000	0.200	0.400	0.800	1.200	2.000	3.100	4.600	8.000	11.300	14.000
1"	30°	0.000	0.030	0.312	0.436	0.659	0.986	1.539	2.129	2.921	4.045	4.761
	60°	0.000	0.030	0.445	0.607	0.790	1.417	2.308	3.318	5.270	7.568	10.108
	90°	0.000	0.200	0.600	1.800	3.400	5.100	8.100	11.400	16.000	21.000	29.000
1-1/4"	30°	0.000	0.050	0.359	0.857	1.661	2.686	4.044	6.186	8.530	11.193	13.230
	60°	0.000	0.060	0.441	1.114	1.845	3.426	5.575	8.215	13.290	18.360	24.499
	90°	0.000	0.300	0.800	2.000	5.000	8.000	14.000	19.000	28.000	39.000	55.000
1-1/2"	30°	0.000	0.050	0.410	1.099	1.995	3.430	4.230	7.432	10.230	13.540	16.126
	60°	0.000	0.060	0.570	1.556	2.849	5.488	7.077	12.908	19.665	28.068	37.099
	90°	0.000	0.400	0.900	3.500	7.000	13.000	20.000	31.000	42.000	63.000	78.000
2"	30°	0.000	0.050	0.549	1.620	3.320	5.574	8.252	11.931	16.397	21.797	26.234
	60°	0.000	0.060	0.698	2.477	4.784	9.094	15.410	21.889	31.707	46.343	60.981
	90°	0.000	0.500	2.000	6.000	12.000	22.000	35.000	45.000	70.000	105.000	135.000
2-1/2"	30°	0.000	0.060	0.750	2.610	5.907	10.153	15.210	22.440	30.620	41.270	49.400
	60°	0.000	0.090	0.955	3.699	7.100	13.199	22.222	31.972	46.028	68.120	89.400
	90°	0.000	0.500	1.700	7.000	14.000	28.000	48.000	70.000	106.000	160.000	218.000
3"	30°	0.000	0.100	0.955	3.115	6.400	10.364	16.661	24.500	33.650	44.300	53.880
	60°	0.000	0.120	1.000	4.156	9.943	18.514	28.984	48.566	66.704	93.350	123.860
	90°	0.000	0.700	3.500	8.000	18.000	35.000	60.000	90.000	135.000	205.000	310.000

Specifications (CV)

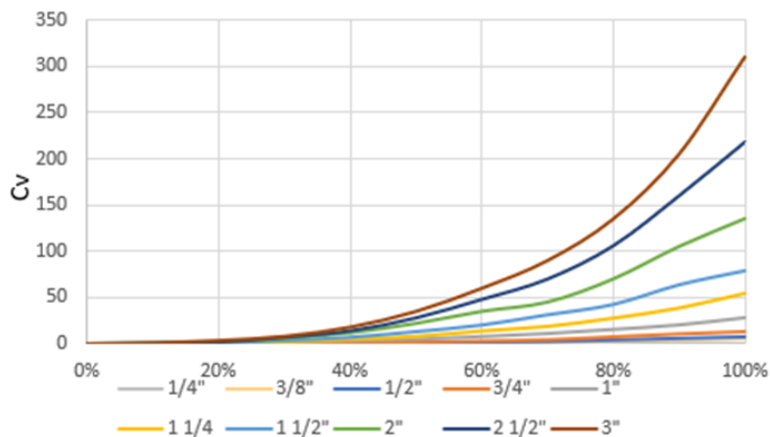
Cv vs % Open, 30° V Port



Cv vs % Open, 60° V Port



Cv vs % Open, 90° V Port



Polynomial Best Fit

$$Cv = Ax^2 + Bx + C$$

where x = % open

30°	A	B	C
1/4	2.5142	-0.6735	0.0601
3/8	2.7329	-0.7323	0.0655
1/2	3.0597	-0.8189	0.0732
3/4	3.7579	-0.8844	0.0566
1	5.5478	-0.8243	0.0903
1 1/4	15.9160	-2.4360	0.0835
1 1/2	19.9630	-3.6943	0.1823
2	31.0550	-4.5772	0.1215
2 1/2	60.1080	-10.0700	0.2174
3	65.6310	-11.3300	0.3235

60°	A	B	C
1/4	6.7175	-2.7591	0.2241
3/8	7.3027	-3.0000	0.2435
1/2	8.1790	-3.3599	0.2728
3/4	9.9126	-4.0308	0.2960
1	14.6730	-5.3902	0.4561
1 1/4	35.8110	-12.8860	0.8933
1 1/2	55.2470	-20.5430	1.4205
2	86.4620	-28.9610	1.8044
2 1/2	127.4300	-43.2490	2.7312
3	174.7300	-56.8050	3.1735

90°	A	B	C
1/4	8.6168	-3.33148	0.2769
3/8	9.3662	-3.6033	0.3010
1/2	10.4900	-4.0350	0.3371
3/4	20.9210	-7.5844	0.6154
1	36.3520	-5.3902	0.4561
1 1/4	76.3400	-25.9400	1.8056
1 1/2	108.1000	-32.3910	1.9378
2	190.7900	-63.7020	4.3916
2 1/2	329.2900	-129.2100	8.7343
3	478.5200	-208.7300	15.5370

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.



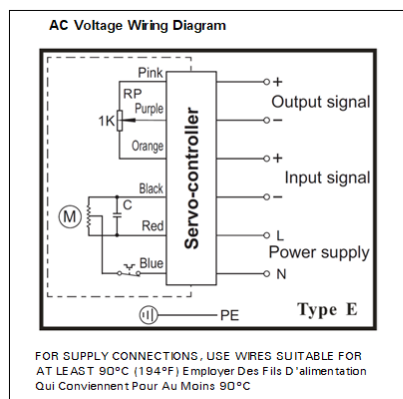
Before connecting power, confirm correct VOLTAGE is being applied. Incorrect voltage may damage actuator and

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

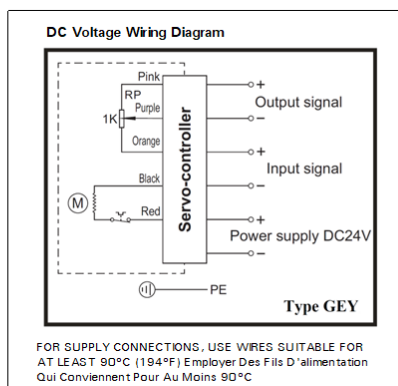


AC Voltage Wiring:

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 (+)

EPS POSITIONER TECHNICAL DATA

Input Signal: 4-20mA
Output Signal: 4-20mA
Deadband: 0.5% to 5.0%



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 (+)

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.

EPS - Electronic Positioning System

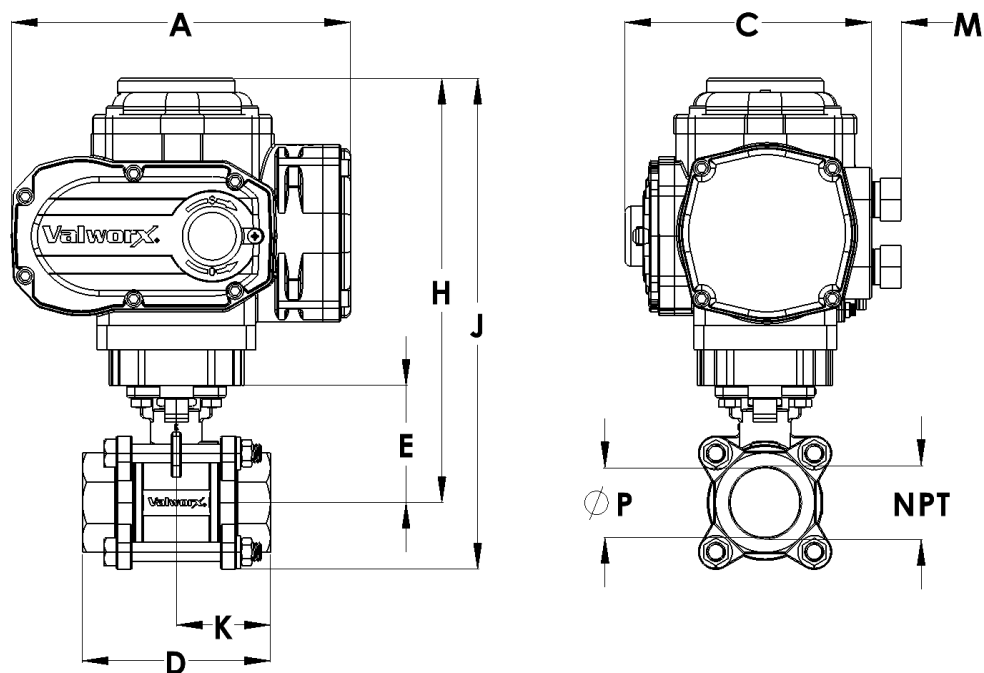
Valworx electric actuators with EPS- Electronic Positioning System provide an accurate valve positioning function whereby the movement of the actuator is controlled by a 4-20mA input control signal. Any change in the control input signal results in a corresponding and proportional change in the position of the actuator (valve). The EPS 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.
- Sensitivity, Zero and Span adjustments
- Selectable fail mode: fail closed, fail open or stop in place (for loss of input command signal).
- Electric manual control with onboard selector switches
- Fault LED lights indicate valve jam or signal loss
- Electronic brake function

Dimensions:



Pipe Size (NPT)		A	C	D	E	H	J	K	M	P	Weight
1/4	inch	6.7	4.7	2.5	1.5	7.6	8.5	1.4	0.6	0.5	8.8 lb
	mm	170.5	120.5	63.5	37.0	192.5	215.3	36.3	15.0	11.5	4.0 kg
3/8	inch	6.7	4.7	2.5	1.5	7.6	8.5	1.3	0.6	0.5	8.8 lb
	mm	170.5	120.5	63.5	37.0	192.5	215.3	31.8	15.0	12.5	4.0 kg
1/2	inch	6.7	4.7	2.5	1.5	7.6	8.5	1.3	0.6	0.6	8.7 lb
	mm	170.5	120.5	63.5	37.0	192.5	215.3	31.8	15.0	15.0	3.9 kg
3/4	inch	6.7	4.7	2.9	1.8	7.9	8.7	1.4	0.6	0.8	9.0 lb
	mm	170.5	120.5	72.5	45.0	200.1	220.4	36.3	15.0	20.0	4.1 kg
1	inch	6.7	4.7	3.2	2.1	8.2	9.3	1.6	0.6	1.0	9.5 lb
	mm	170.5	120.5	81.0	53.5	207.7	235.7	40.5	15.0	25.0	4.3 kg
1-1/4	inch	6.7	4.7	3.7	2.3	8.4	9.7	1.9	0.6	1.3	10.4 lb
	mm	170.5	120.5	94.5	59.0	212.8	245.8	47.3	15.0	32.0	4.7 kg
1-1/2	inch	6.7	4.7	4.3	2.9	9.0	10.5	2.1	0.6	1.5	12.3 lb
	mm	170.5	120.5	108.0	74.8	228.0	266.1	54.0	15.0	38.0	5.6 kg
2	inch	6.7	5.5	4.8	3.3	10.5	12.3	2.4	0.6	2.0	14.9 lb
	mm	170.5	139.0	122.0	83.5	265.7	311.4	61.0	15.0	50.0	6.8 kg
2-1/2	inch	8.6	5.5	6.2	4.3	11.5	13.7	3.1	0.6	2.6	28.8 lb
	mm	217.5	139.0	158.0	109.0	291.1	347.0	79.0	15.0	65.0	13.1 kg
3	inch	8.6	5.5	7.5	4.7	11.9	14.5	3.7	0.6	3.2	36.2 lb
	mm	217.5	139.0	190.0	118.0	301.2	367.3	95.0	15.0	80.0	16.4 kg