

Electric Actuated Ball Valves

150# Flanged Stainless Steel, Full Port

1 to 4 inch Pipe– Explosion Proof

SERIES
5860
5861
5862
5863

Features

- Full port design for unrestricted flow
- Fire safe approved (API 607)
- Fugitive Emission approved (API 641)
- Pipeline use approved (API 608)
- Fugitive Emission Stem Seal approved (API 622)
- RTFE (reinforced Teflon) ball seats; Braided graphite stem seals
- Highly visual dome style valve position indicator
- 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 limit switches included with on-off units
- EPS - Electronic Positioning System models available
- 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

Applications

Electric actuated stainless steel ball valve with braided graphite seals typically used for On-Off or modulating (EPS) control of water, air, oil and other media compatible with the materials of construction. Also for use in pipeline, firesafe and low-emission applications. The valve utilizes special high cycle life seals with the lowest operating torques. Suitable for vacuum service up to 29inHg. **For use in applications where explosive gases may be present. Multi-standard alignment holes, suitable for flanges: ANSI/ASME Class 125/150, EN1092 PN10, PN16, BS10 Table D, E and JIS B2239 10K,16K.** Actuators designed for 70% duty cycle.

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

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 90°. 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. Valves with EPS-Electronic Positioning System provide 0-100% control of flow via a 4-20mA input control signal. Power connections via included cable connector or optional 1/2" NPT conduit adapter.

Construction

Valve Body	316SS ASTM A351, CF8M
Ball/Stem	316SS CF8M
Ball Seats	RTFE (reinforced Teflon)
Stem Seals	Braided Graphite (Slade 3300i), 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

Electric actuated Explosion Proof dual certified (low emission/fire safe) investment cast 2-piece Full Port 150# flanged stainless body and ball offers unrestricted flow and minimum pressure loss. Flange dimensions meet ANSI B16.5 and B16.10 (face-to-face) Class150 mounting standards. Adjustable live loaded stem seal packing helps compensate for wear, pressure and/or temperature fluctuations, extending the cycle life of the valve. Rugged corrosion resistant electric actuator includes a manual override, valve position confirmation switches (on-off units), thermostatically controlled anti-condensation heater, and 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

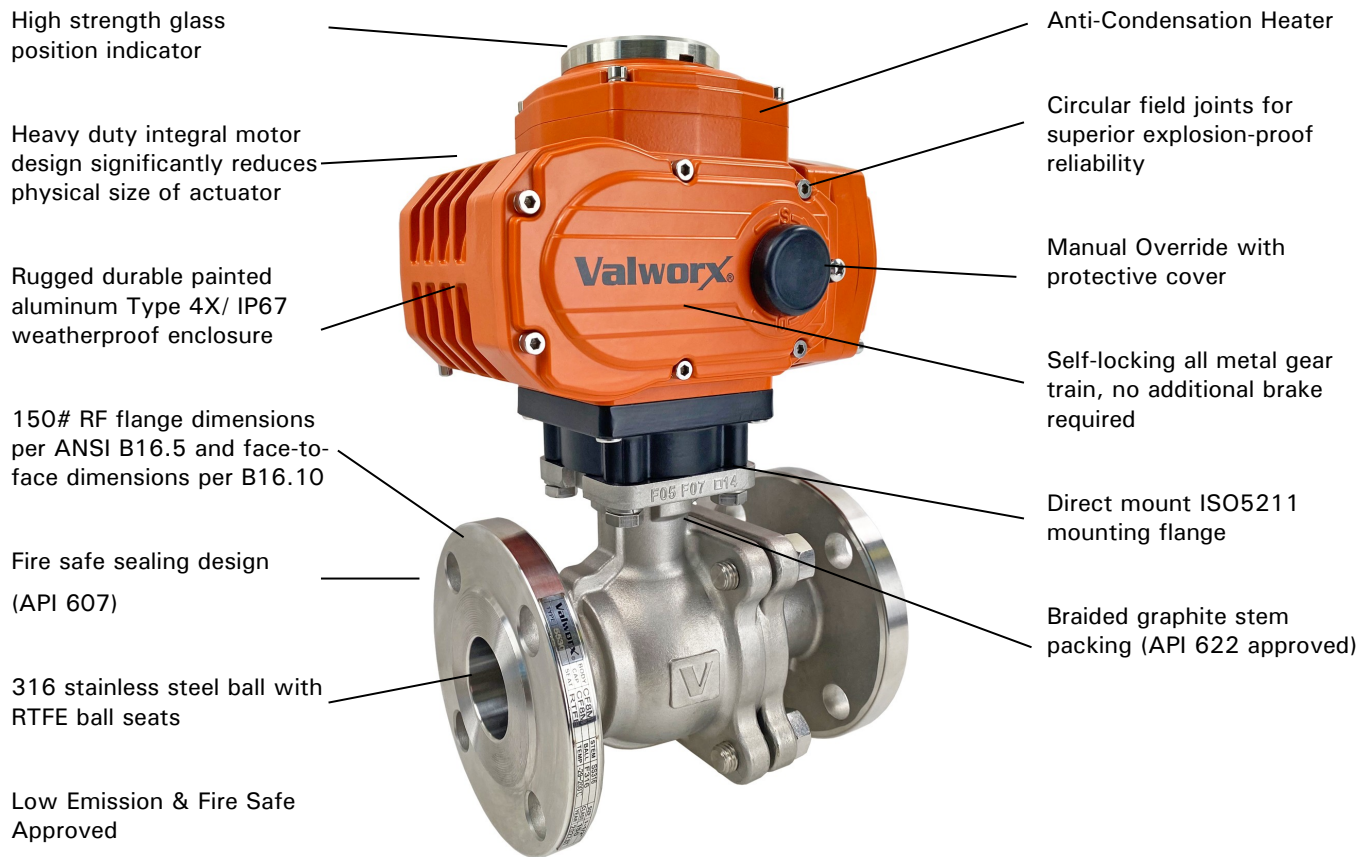
The grades of combustible gas, steam and temperature group are listed in CSA 22.2 No 60079-0-2019, CSA 22.2 No 60079-1-2016, CSA 22.2 No 30-M1986(R2016), CSA 22.2 No 145-11(R2015), ANSI/UL 60079-2:2020, ANSI/UL 1203-2013, ANSI/UL 674 Fifth Edition. It is the user's responsibility to ensure compatibility with the applicable regulations.

CE- EN 60204-1:2006

Valves

- Fire Safe: API 607(VI)/ISO10497(III)
- Fugitive Emission: API 641 (II)
- Pipeline Use: API 608
- Stem Packing: API 622
- Construction: ASME B16.34
- End Connection: ANSI Class 150 Flange RF
- Face to Face: ANSI B16.10 Class 150
- Flange Dimensions: ANSI B16.5 Class 150
- Pressure Testing: API 598, EN12266
- Direct Mounting Pad: ISO5211, square stem
- Marking: MSS SP-25
- CE: PED 2014/68/EU

Construction Features



Installation Requires-Two 1/2" NPT threaded explosion-proof connectors or pipe for electrical interface

(Not included**)**

Pressure-Temperature

Valve Pressure Rating*: 275 PSI (19 Bar) CWP non-shock,
Vacuum 29inHg

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

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

*See P/T chart (Page 3)

Visual Valve
Position Indicator





Electric Actuated Ball Valves

150# Flanged Stainless Steel, Full Port

On-Off Models

SERIES

5860
5861
5862
5863

Stock Number	Pipe Size (inch)	Orifice Size (inch)	Cv Flow Factor	Pressure Max.(PSI)*	Cycle Time/90° (seconds)	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
120 VAC ELECTRIC ACTUATED 150# FLANGED STAINLESS BALL VALVE, ON-OFF version									
586002	1	1.0	60	275	25/21	110 VAC, 50/60Hz	0.27	70%	B
586003	1-1/2	1.5	125	275	25/21	110 VAC, 50/60Hz	0.27	70%	B
586004	2	2.0	240	275	25/21	110 VAC, 50/60Hz	0.27	70%	B
586005	3	3.2	580	275	30/25	110 VAC, 50/60Hz	0.63	70%	B
586006	4	4.0	1020	275	30/25	110 VAC, 50/60Hz	0.63	70%	B
24 VDC ELECTRIC ACTUATED 150# FLANGED STAINLESS BALL VALVE, ON-OFF version									
586102	1	1.0	60	275	20	DC24	1.8	70%	G
586103	1-1/2	1.5	125	275	20	DC24	1.8	70%	G
586104	2	2.0	240	275	20	DC24	1.8	70%	G
586105	3	3.2	580	275	30	DC24	2.4	70%	G
586106	4	4.0	1020	275	30	DC24	2.4	70%	G

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

On-Off Electric Actuated Valves

Valworx electric actuated valves use power-to-open and power-to-close, stays in the last known position with loss of power. The actuator will rotate the output drive 90° to open or close the ball valve. Limit switches automatically stop the motor drive in either the open or closed position as required.

Two auxiliary limit switches are provided as standard with on-off actuators to confirm valve open or closed position.

Rugged primary gear drive system is made of heat treated alloy steel for high strength, excellent wear resistance and high torque. Final stage aluminium bronze worm gear drive is self-locking, no motor brake required.

A manual override is provided for use in setup or power failure situations. The override is operated with a standard hex wrench (included).

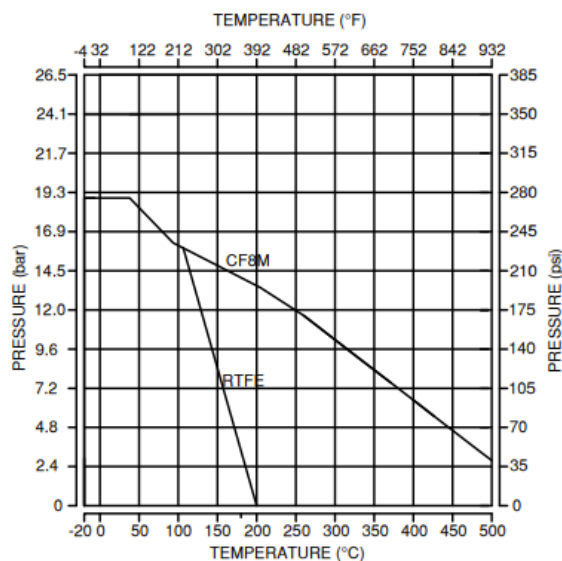
Pressure/Temperature Charts

P/T Chart (PSI/°F)					
PSI	275	275	210	125	0
°F	-4	100	248	302	392
P/T Chart (BAR/°C)					
Bar	19	19	14.5	8.4	0
°C	-20	38	120	150	200

The standard 4 watt thermostatically controlled anti-condensation heater will help prevent failures due to condensation buildup inside the actuator.

Robust aluminium alloy housing is corrosion-resistant, polyester powder coated, and weatherproof. The housing is rated Type 4X (IP67) and certified by CSA. Heavy duty motors are integral to the actuator housing. The actuator has the smallest physical size to power ratio of most actuator on the market.

Electrical wiring is directly to a terminal strip via cable connectors (included) or optional 1/2" NPT conduit adapters.





Electric Actuated Ball Valves

150# Flanged Stainless Steel, Full Port

EPS Positioner Models

SERIES

5860

5861

5862

5863

Specifications: Valves with EPS Positioner (English units)

Stock Number	Pipe Size (inch)	Orifice Size (inch)	Cv Flow Factor	Pressure Max.(PSI) *	Cycle Time/90° (seconds)	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
120 VAC ELECTRIC ACTUATED 150# FLANGED STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input									
586202	1	1.0	60	275	25/21	110 VAC, 50/60Hz	0.27	70%	E
586203	1-1/2	1.5	125	275	25/21	110 VAC, 50/60Hz	0.27	70%	E
586204	2	2.0	240	275	25/21	110 VAC, 50/60Hz	0.27	70%	E
586205	3	3.2	580	275	30/25	110 VAC, 50/60Hz	0.63	70%	E
586206	4	4.0	1020	275	30/25	110 VAC, 50/60Hz	0.63	70%	E
24 VDC ELECTRIC ACTUATED 150# FLANGED STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input									
586302	1	1.0	60	275	30	DC24	1.8	70%	GEY
586303	1-1/2	1.5	125	275	30	DC24	1.8	70%	GEY
586304	2	2.0	240	275	30	DC24	1.8	70%	GEY
586305	3	3.2	580	275	30	DC24	2.4	70%	GEY
586306	4	4.0	1020	275	30	DC24	2.4	70%	GEY

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

EPS - Electronic Positioning System

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



Electric Actuated Ball Valves

150# Flanged Stainless Steel, Full Port

On-Off and EPS Positioner Models

SERIES

5860

5861

5862

5863

Specifications: On-Off and EPS Positioners (Metric units)

Stock Number	Pipe Size (inch)	Orifice Size (mm)	Kv Flow Factor	Pressure Max.(Bar)*	Cycle Time/90° (seconds)	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
120 VAC ELECTRIC ACTUATED 150# FLANGED STAINLESS BALL VALVE, ON-OFF version									
586002	1	25	52	19	25/21	110 VAC, 50/60Hz	0.27	70%	B
586003	1-1/2	38	108	19	25/21	110 VAC, 50/60Hz	0.27	70%	B
586004	2	50	207	19	25/21	110 VAC, 50/60Hz	0.27	70%	B
586005	3	80	501	19	30/25	110 VAC, 50/60Hz	0.63	70%	B
586006	4	98	882	19	30/25	110 VAC, 50/60Hz	0.63	70%	B
24 VDC ELECTRIC ACTUATED 150# FLANGED STAINLESS BALL VALVE, ON-OFF version									
586102	1	25	52	19	20	DC24	1.8	70%	G
586103	1-1/2	38	108	19	20	DC24	1.8	70%	G
586104	2	50	207	19	20	DC24	1.8	70%	G
586105	3	80	501	19	30	DC24	2.4	70%	G
586106	4	98	882	19	30	DC24	2.4	70%	G
120 VAC ELECTRIC ACTUATED 150# FLANGED STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input									
586202	1	25	52	19	25/21	110 VAC, 50/60Hz	0.27	70%	E
586203	1-1/2	38	108	19	25/21	110 VAC, 50/60Hz	0.27	70%	E
586204	2	50	207	19	25/21	110 VAC, 50/60Hz	0.27	70%	E
586205	3	80	501	19	30/25	110 VAC, 50/60Hz	0.63	70%	E
586206	4	98	882	19	30/25	110 VAC, 50/60Hz	0.63	70%	E
24 VDC ELECTRIC ACTUATED 150# FLANGED STAINLESS BALL VALVE with EPS POSITIONER 4-20mA input									
586302	1	25	52	19	30	DC24	1.8	70%	GEY
586303	1-1/2	38	108	19	30	DC24	1.8	70%	GEY
586304	2	50	207	19	30	DC24	1.8	70%	GEY
586305	3	80	501	19	30	DC24	2.4	70%	GEY
586306	4	98	882	19	30	DC24	2.4	70%	GEY

* Pressure @ 70° C (see P/T chart for higher temperatures)

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.

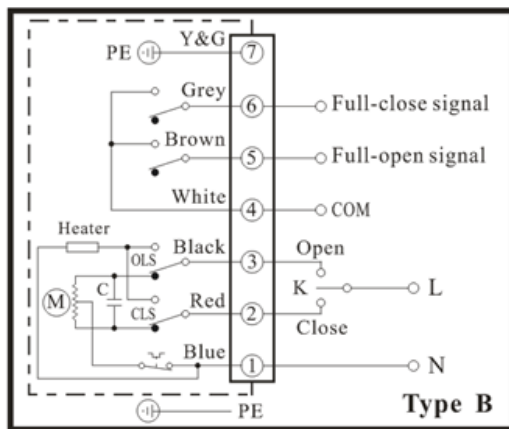
Wiring diagrams for each actuator are attached to the inside of the terminal box cover.

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 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 Convienent 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

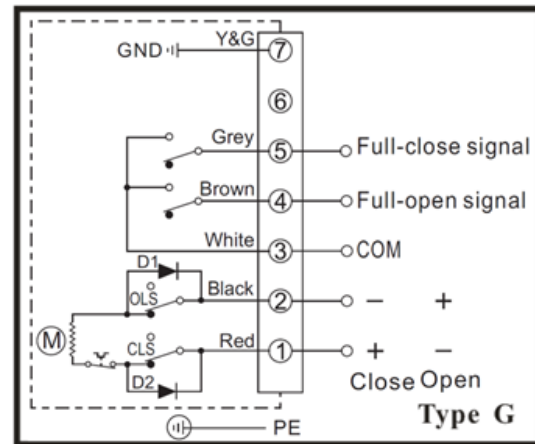
Terminal 6: Closed status confirmation signal

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 Diagram



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

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

Electrical Wiring—EPS Positioner

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.

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

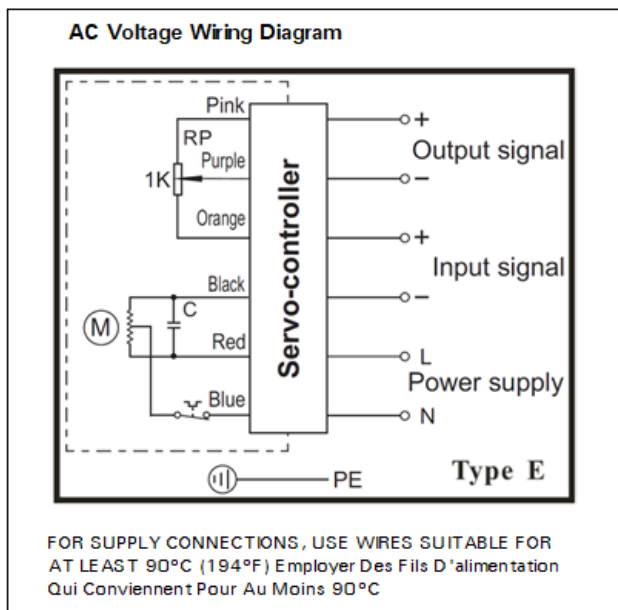
Input control signal type is 4-20mA. Actuator should have its own fused and isolated circuit. Do not connect actuators in parallel. Power to actuator should be maintained to activate the internal heater. This heater will help prevent condensation build-up inside the actuator.



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

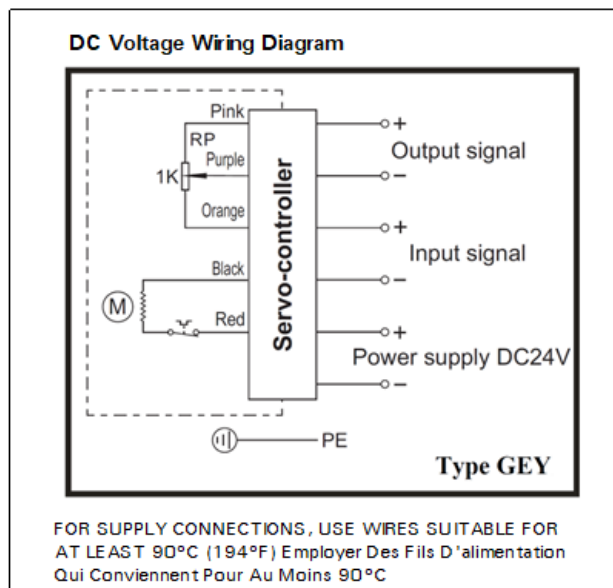
OPERATION (EPS ONLY)

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.



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:

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

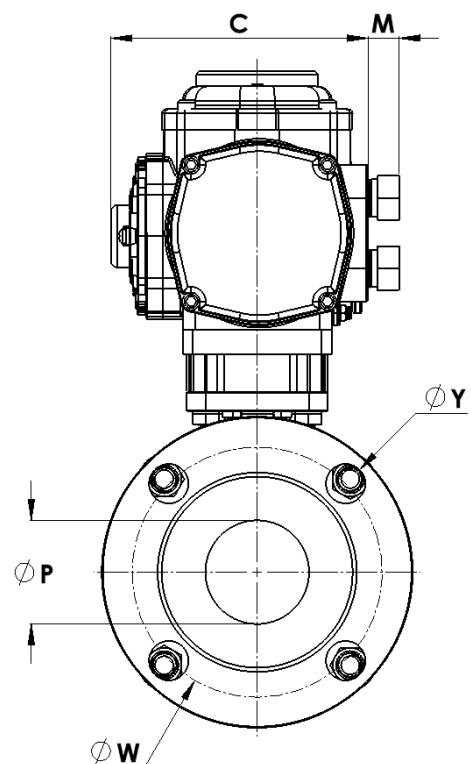
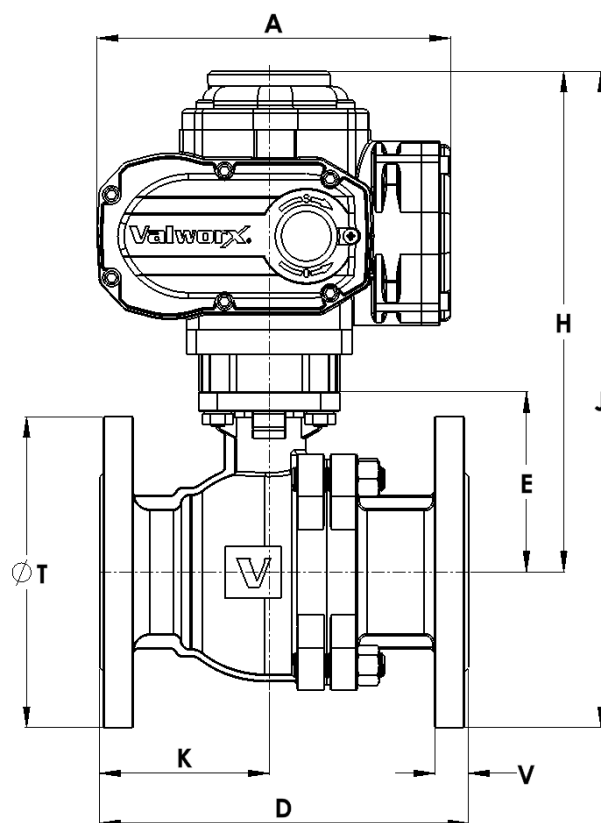
Input Signal: 4-20mA

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:



End Connection: ANSI Class 150 Flange RF
Face to Face: ANSI B16.10 Class 150
Flange Dimensions: ANSI B16.5 Class 150

Pipe Size		A	C	D	E	H	J	K	M	P	T	V	W	Y	Weight (AC/DC)
1	inch	6.7	4.7	5.0	2.4	8.3	10.4	3.0	0.6	1.0	4.3	0.4	3.1	4) 0.6	14.0 lbs
	mm	170.5	120.5	127.0	60.0	210.3	263.6	75.0	15.0	25.0	110.0	9.6	79.4	4) 16.0	6.4 kg
1-1/2	inch	6.7	4.7	6.5	3.1	8.4	10.9	3.6	0.6	1.5	4.9	0.5	3.1	4) 0.6	20.4 lbs
	mm	170.5	120.5	165.0	78.0	212.3	275.8	92.0	15.0	38.0	125.0	12.7	98.4	4) 16.0	9.3 kg
2	inch	6.7	4.7	7.0	3.4	8.9	11.9	3.8	0.6	2.0	5.9	0.6	4.8	4) 0.6	26.8 lbs
	mm	170.5	120.5	178.0	87.0	225.0	301.2	96.2	15.0	50.0	150.0	14.3	120.7	4) 16.0	12.2 kg
3	inch	8.6	5.5	8.0	4.6	10.9	14.7	4.0	0.6	3.0	7.5	0.7	6.0	4) 0.8	51.5 lbs
	mm	217.5	139.0	203.0	116.0	275.8	372.4	101.6	15.0	76.0	190.0	17.5	152.4	4) 19.0	23.6 kg
4	inch	8.6	5.5	9.0	5.5	11.7	16.3	4.5	0.6	3.9	9.1	0.9	7.5	8) 0.8	75.9 lbs
	mm	217.5	139.0	229.0	140.0	296.2	413.0	114.3	15.0	100.0	230.0	22.3	190.5	8) 19.0	34.4 kg