Electric Actuated Explosion Proof High Performance Butterfly Valves

Stainless Steel Lug Body ASME 150#
3" to 4" Pipe– EPS Positioner Explosion Proof

SERIES
5896
5898

Features

- Double offset design reduces torque and seal wear
- High quality, passivated 316SS (CF8M) construction for superior corrosion protection
- Multiple RPTFE V-type rings for superior shaft sealing
- Bolted seat retainer keeps seat stable and allows easy changeout
- Belleville washers for consistent, self-adjusting stem seal pressure
- One piece, reinforced Teflon (RPTFE) seal
- Bi-directional seal design ensures increased sealing force in either flow direction
- Quarter turn (90°) operation with mechanical travel stops
- EPS– Electronic Positioning System with 4-20mA input and output confirmation signal
- Visual dial style valve position indicator
- Rugged aluminum Type 4X/IP67 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

Applications

For use in applications where explosive gases may be present. High performance lug butterfly valves are used to control the flow of waters, oils, air, certain caustics, and other media compatible with the materials of construction for general service and where an expanded temperature range or higher pressure is required. Actuators designed for 70% duty cycle.

Also suitable for end of line 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 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 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 CF8M
Disc	316 stainless steel CF8M
Disc Seat/ Stem Packing	RPTFE
Stem	17-4PH SS
Gear Drive	Heavy duty alloy steel/aluminum 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 mount high performance butterfly valves with 316 stainless steel lug body are designed for commercial and industrial applications. Valve mounts between two standard ANSI/ASME Class 125/ 150 flanges. Disc is precision machined 316SS. Double offset design to reduce seal wear. Rugged corrosion resistant electric actuator includes a manual override, auto calibration positioner module, thermostatically controlled anticondensation 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 Conformance– EN 60204-1:2006

Valves– Standards

- Pressure- ANSI/ASME B16.5 CLASS150
- JIS B 2239 10K, 16K
- Top Flange– ISO 5211
- Face– API 609 Class B
- Leakage- ISO 5208 Category 3, API 598 Table 5
- CE Conformance– PED 2014/68/EU Annex III Module B

Construction Features

Heavy duty integral motor design significantly reduces physical size of actuator

Rugged polyester powder coated aluminum corrosion resistant Type 4X weather-proof enclosure

Stem packing adjustment below ISO mount is accessible with actuator installed

Bi-directional, one piece self-energized RTPFE Seat

Spherically machined disc edge reduces wear & torque

Washer seals between stem and body brush away particles

Thrust ring for anti-blowout, anti-static

Manual Override with protective cover

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

316 Stainless Steel (CF8M) construction

Bolted faceplate ensures consistent seat position

Integrally-cast heavy duty mounting stop

Visual Valve Position Indicator

Pressure Rating

Pressure Rating: 285 PSI (19.7 Bar)

Vacuum Rating: Full Vacuum

Temperature Rating

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

Valve Temperature Rating: RPTFE seals: -20 to 500° F (-29 to 260°C)

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

(Not included**)**

Specifications (English units)

Stock Number	Pipe Size (inch)	Orifice Diam.	Cv Flow Factor	Pressure Max. (PSI)	Cycle Time/90°	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
120 VAC ELECTRIC ACTUATED HIGH PERFORMANCE LUG BODY BUTTERFLY VALVE, RPTFE SEALS, EPS POSITIONER 4-20mA INPUT									
589603	3	2.8	180	285	20	110 VAC, 50/60Hz	0.3	70%	E
589604	4	3.6	375	285	30	110 VAC, 50/60Hz	0.6	70%	E
24 VDC ELECTRIC ACTUATED HIGH PERFORMANCE LUG BODY BUTTERFLY VALVE, RPTFE SEALS, EPS POSITIONER 4-20mA INPUT									
589803	3	2.8	180	285	20	DC24	1.8	70%	GEY
589804	4	3.6	375	285	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

* Consult compatibility chart for other fluid media. Suitable for vacuum up to 29 inHg

* See P/T Chart

Specifications (Metric units)

Stock Number	Pipe Size (DN)	Orifice Diam.	Kv Flow Factor	Pressure Max. (Bar)	Cycle Time/90°	Voltage	Current (amps)	Duty Cycle	Electrical Dwg.
120 VAC ELECTRIC ACTUATED HIGH PERFORMANCE LUG BODY BUTTERFLY VALVE, RPTFE SEALS, EPS POSITIONER 4-20mA INPUT									
589603	80	72.0	155.7	19.7	20	110 VAC, 50/60Hz	0.3	70%	E
589604	100	91.0	324.4	19.7	30	110 VAC, 50/60Hz	0.6	70%	E
24 VDC ELECTRIC ACTUATED HIGH PERFORMANCE LUG BODY BUTTERFLY VALVE, RPTFE SEALS, EPS POSITIONER 4-20mA INPUT									
589803	80	72.0	155.7	19.7	20	DC24	1.8	70%	GEY
589804	100	91.0	324.4	19.7	30	DC24	2.4	70%	GEY

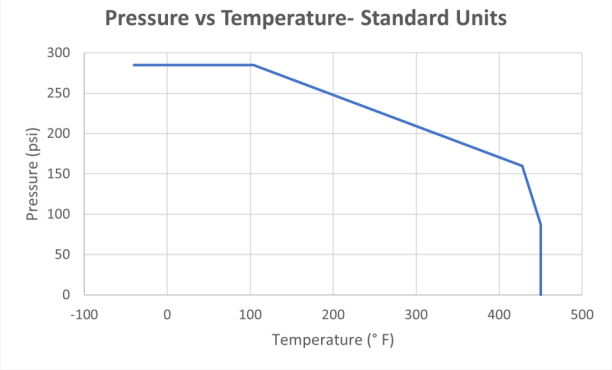
Kv = The number of m³ per hour of 20° C water at 1 bar pressure drop

* Consult compatibility chart for other fluid media. Suitable for vacuum up to 29 inHg

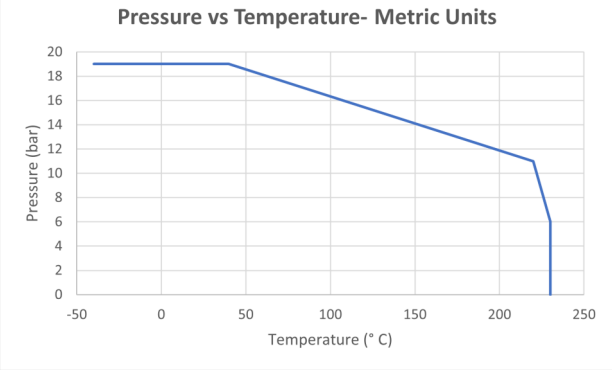
* See P/T Chart

PT Chart

Pressure vs Temperature					
Temp °F	-40	104	428	450	450
Pressure– PSI	285	285	160	87	0



Pressure vs Temperature					
Temp °C	-40	40	220	230	230
Pressure– Bar	19	19	11	6	0



Electrical Wiring– EPS Spitioner

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.

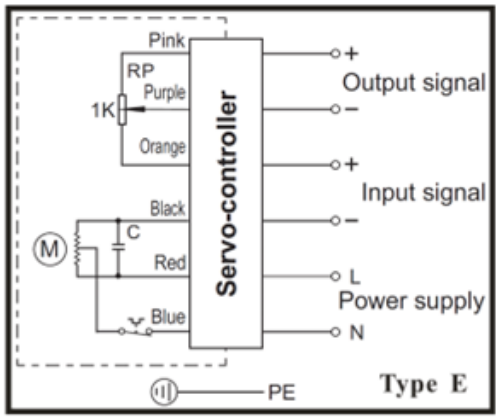
OPERATION (EPS ONLY)

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.

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

AC Voltage Wiring Diagram

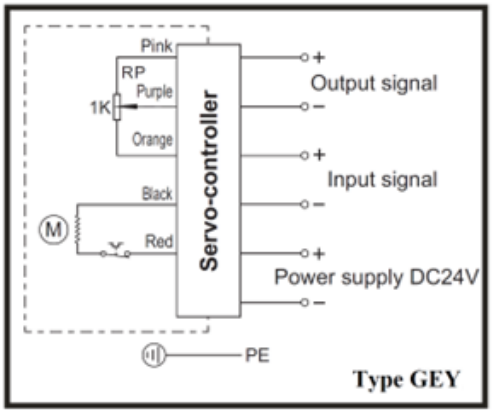


FOR SUPPLY CONNECTIONS, USE WIRES SUITABLE FOR AT LEAST 90°C (194°F) Employer Des Fils D.'alimentation Qui Conviennent Pour Au Moins 90°C

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

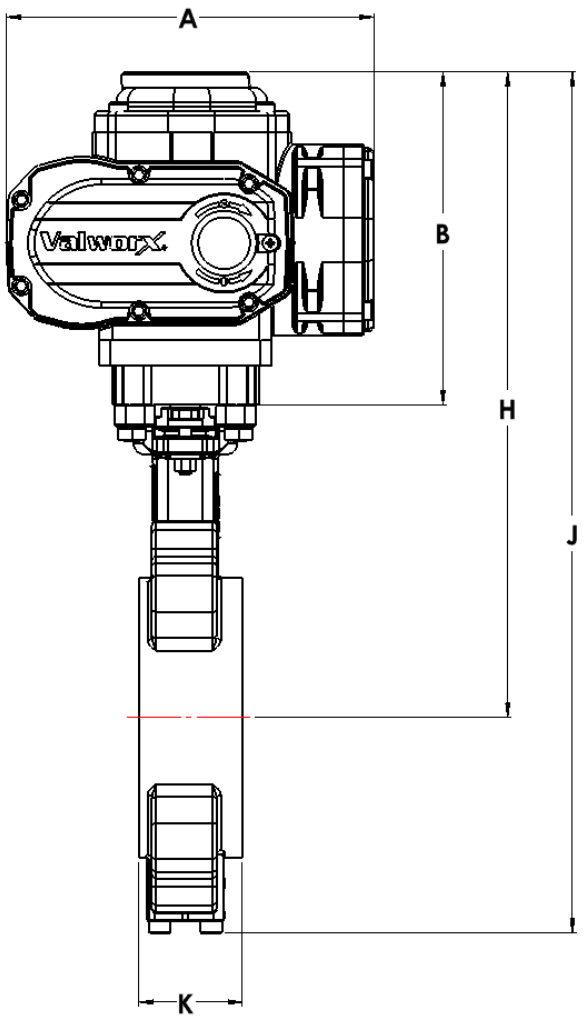
Input Signal: 4-20m A

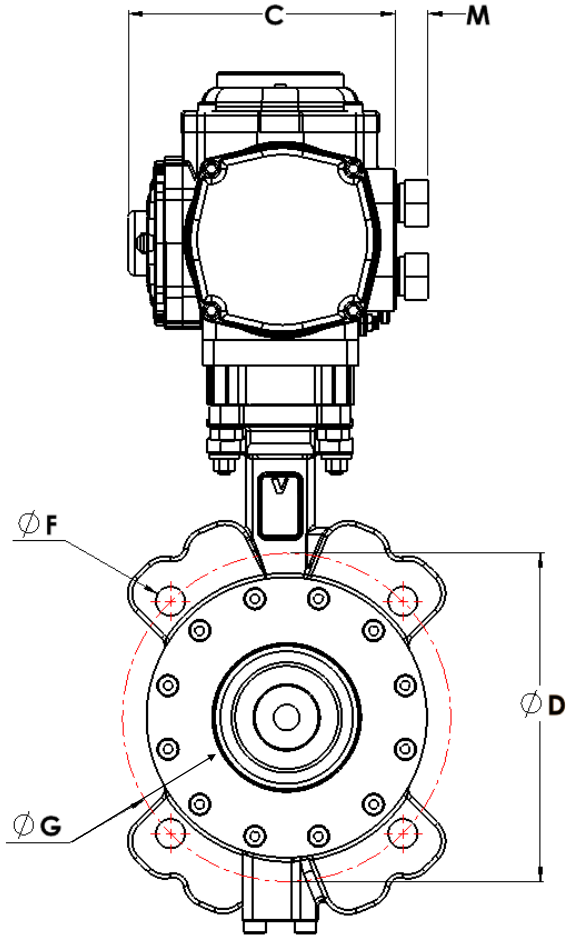
Output Signal: 4-20m A

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 4-20m A. Use of the output is optional.

Dimensions:





Valves suitable between flanges:

- ANSI/ASME B16.5 CLASS 150
- ANSI/ASME B16.1 CLASS 125

Pipe Size		A	B	C	D	F	G	H	J	K	M	Weight
3	inch	6.7	4.7	3.9	6.0	4) 5/8-11	2.8	10.4	14.3	1.2	0.6	19.4 lb
DN80	mm	170.5	120.0	99.5	152.4	-	72.0	264.2	363.2	48.0	81.0	8.8 kg
4	inch	8.6	5.9	5.5	7.5	8) 5/8-11	3.6	12.6	17.5	2.1	0.6	32.3 lb
DN100	mm	217.5	150.0	139.0	190.5	-	91.0	320.0	444.5	54.0	81.0	14.7 kg