# Electric Actuated Explosion Proof High Performance Butterfly Valves

## Stainless Steel Lug Body ASME 150# 3" to 4" Pipe

**SERIES**
**5895**
**5897**

### 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
- 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
- Two auxiliary position confirmation limit switches
- 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

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** | 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 direct 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 spherically machined 316SS. Flange gaskets required. 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

Auxiliary Limit Switches (2) for confirming valve position, standard in on-off units

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: -40 to 450°F (-40 to 230°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. (inch) | Cv Flow Factor | Pressure Max. (PSI) | Cycle Time/90° (seconds) | Voltage | Current (amps) | Duty Cycle | Electrical Dwg. |
|---|---|---|---|---|---|---|---|---|---|
| **120 VAC ELECTRIC ACTUATED HIGH PERFORMANCE LUG BODY BUTTERFLY VALVE, RPTFE SEALS** | | | | | | | | | |
| **589503A** | 3 | 2.8 | 180 | 285 | 20 | 110 VAC, 50/60Hz | 0.3 | 70% | B |
| **589504A** | 4 | 3.6 | 375 | 285 | 30 | 110 VAC, 50/60Hz | 0.6 | 70% | B |
| **24 VDC ELECTRIC ACTUATED HIGH PERFORMANCE LUG BODY BUTTERFLY VALVE, RPTFE SEALS** | | | | | | | | | |
| **589703A** | 3 | 2.8 | 180 | 285 | 20 | DC24 | 1.8 | 70% | G |
| **589704A** | 4 | 3.6 | 375 | 285 | 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

* 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** | | | | | | | | | |
| **589503A** | 80 | 72.0 | 155.7 | 19.7 | 20 | 110 VAC, 50/60Hz | 0.3 | 70% | B |
| **589504A** | 100 | 91.0 | 324.4 | 19.7 | 30 | 110 VAC, 50/60Hz | 0.6 | 70% | B |
| **24 VDC ELECTRIC ACTUATED HIGH PERFORMANCE LUG BODY BUTTERFLY VALVE, RPTFE SEALS** | | | | | | | | | |
| **589703A** | 80 | 72.0 | 155.7 | 19.7 | 20 | DC24 | 1.8 | 70% | G |
| **589704A** | 100 | 91.0 | 324.4 | 19.7 | 30 | DC24 | 2.4 | 70% | G |

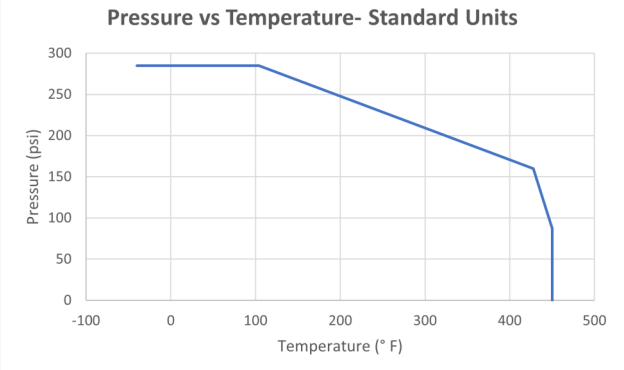
Kv = The number of m³ per hour of 20° C water at 1 bar pressure drop

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

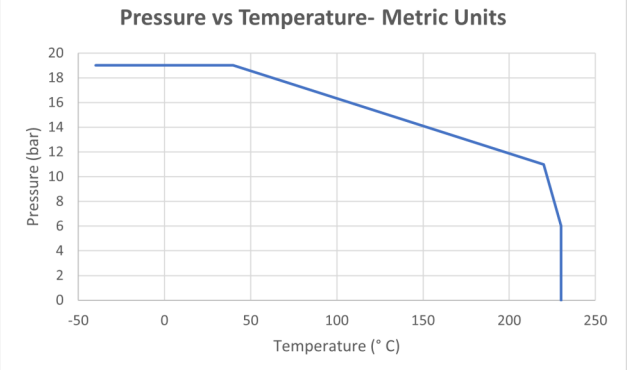
* See P/T Chart

## 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

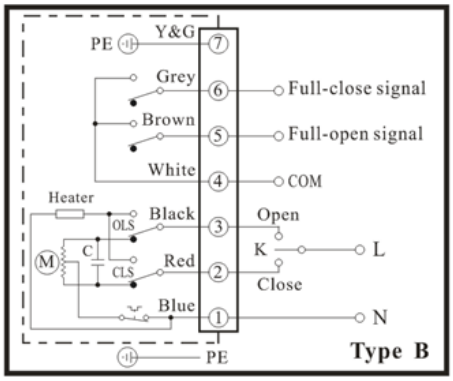
Confirm the actuator VOLTAGE is correct, then remove the terminal box cover and connect wiring to terminal strip according to appropriate wiring diagram.

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 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

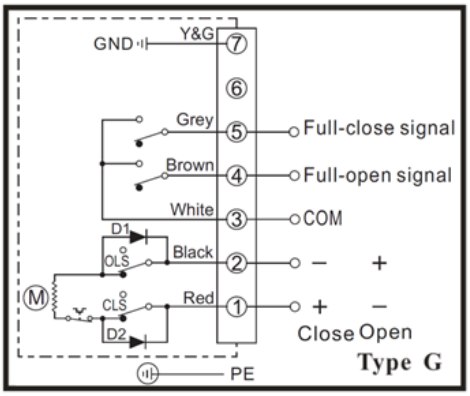
Terminal 6: Closed status confirmation signal

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 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:**

[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

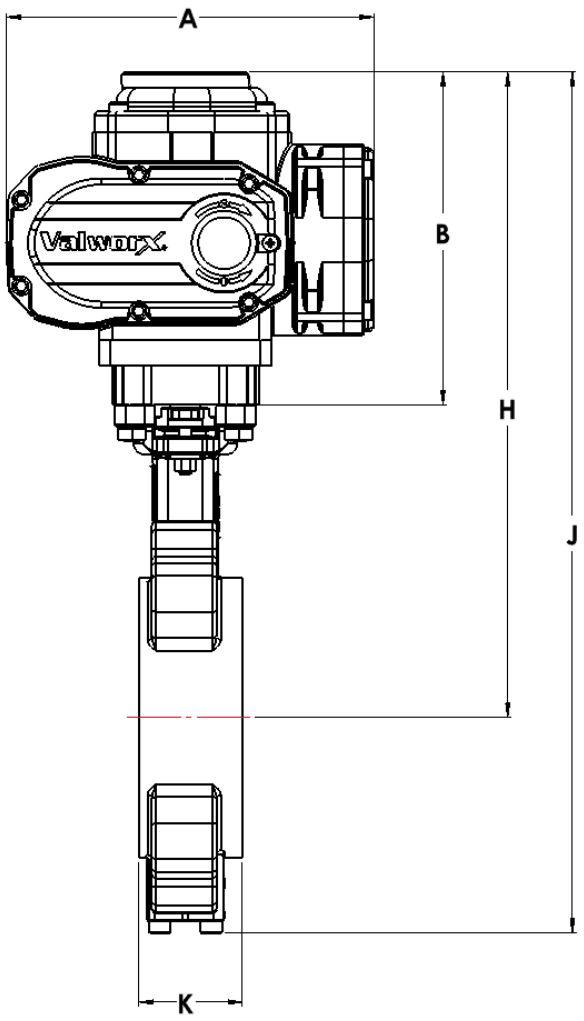
Terminal 4: Open status confirmation signal

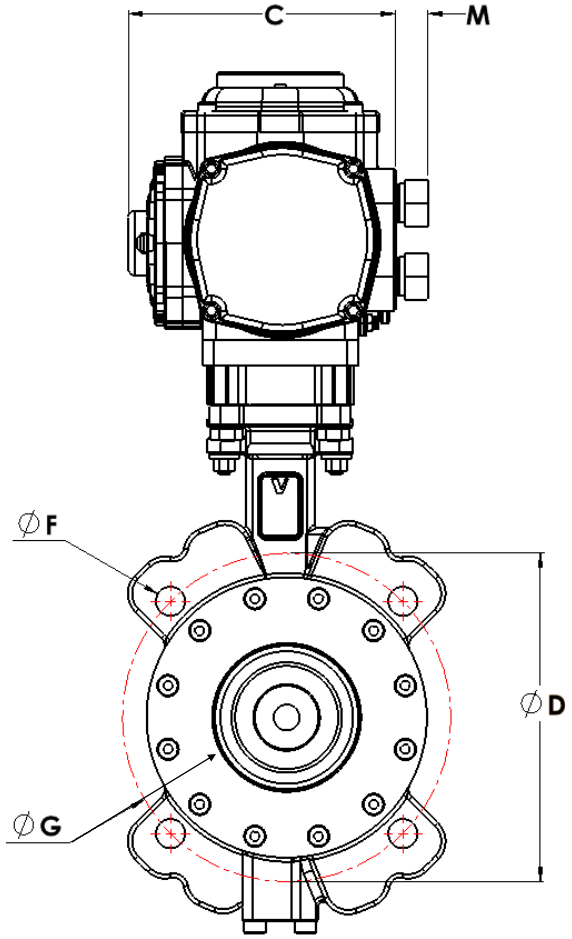
Terminal 5: Closed status confirmation signal

Ground PE

Terminal 7: Earth Ground

## Dimensions:




**Valves suitable between flanges:**

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

| Pipe Size | | A | B | B | 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 |