Ball Valves & Actuators

2 Way, 3 Way, 4 Way Series Ball Valves
Pneumatic & Electric Actuators

Pressures to 20,000 psi (1379 bar)

Principle of Operation:

Parker Autoclave Engineers high-pressure ball valves have been designed to provide superior quality for maximum performance within a variety of valve styles, sizes, and process connections. Some of the more unique design innovations include an integral one-piece trunnion mounted style ball and stem that eliminates the shear failure common in two piece designs, re-torqueable seat glands that result in longer seat life, and a low friction stem seal that reduces actuation torque and enhances cycle life.

These ball valves can also be modified to incorporate the use of special materials, seals for high temperature applications, subsea models as well as pneumatic and electric valve actuators. When it comes to high-pressure applications, these ball valves with the associated high-pressure components, provide the critical performance demanded by the high pressure market.

Universal Ball Valve Features:

- One-piece, trunnion style ball-stem design eliminates shear failure and reduces side loading found in two-piece designs
- Re-torqueable seat glands for longer seat life
- PEEK™ seats offer excellent resistance to chemicals, heat, and wear/abrasion
- Full-port flow path minimizes pressure drop
- UNS S31600/S31603, high tensile strength cold worked 316/316L Stainless Steel construction
- Optional materials available such as 2507 Super Duplex, Inconel 625, Hastelloy C-276, and others. Contact Factory
- Low friction, pressure assisted, graphite filled PTFE stem seal increases cycle life and reduces operating torque
- Temperature Rated 0° to 400°F (-18° to 204°C) with standard FKM (Viton®) o-rings
- Optional seals available for temperatures to 500°F (260°C) maximum
- Special material versions meeting NACE/ISO 15156 requirements are available
- Wide selection of tube or pipe end fittings available
- Electric and pneumatic actuator options are offered

Table of Contents:

Many types of Ball Valves are sized primarily by connection size. Parker Autoclave Engineers offer multiple connection sizes within various bore sizes listed below, providing enhanced flow options. **It is necessary when ordering to state both bore and connection sizes.**

2 Way Ball Valve: 1/4" (6.35 mm) maximum bore 3

2 Way Ball Valve: 3/8" (9.52 mm) maximum bore 6

2 Way Ball Valve: 1/2" (12.70 mm) maximum bore 8

2 Way Ball Valve: 3/4" (19.05 mm) maximum bore 12

2 Way Ball Valve: 1" (25.40 mm) maximum bore 16

3 Way Ball Valve: 3/16" (4.77 mm) maximum bore 20

3 Way Ball Valve: 3/8" (9.52 mm) maximum bore 23

3 Way Ball Valve: 1/2" (12.70 mm) maximum bore 25

4 Way Ball Valve: 3/8" (9.52 mm) maximum bore 29

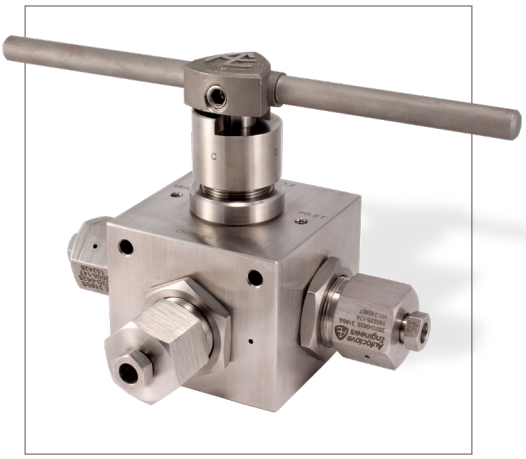
Ball Valve Actuators: Pneumatic and Electric 34

Ball Valve Lockout Options 43

4 Way Quarter/180º Turn Ball Type 3/8" Bore

Pressures to 10,000 psi (690 bar)

4B6 and 4BS6 Series



These ball valves can also be modified to incorporate the use of special materials, seals for high temperature applications, subsea models, and valve actuators. When it comes to high-pressure applications, these ball valves with the associated high-pressure components, provide the critical performance demanded by the high pressure market.

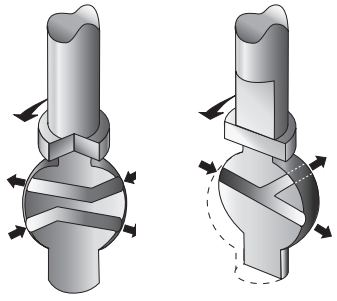
4 Way Ball Valve Features:

- One-piece, trunnion mounted style, stem design eliminates shear failure and reduces the effects of side loading found in two piece designs
- Re-torqueable seat glands for longer seat life
- Carbon filled PEEK seats offer excellent resistance to chemicals, heat, and wear/abrasion
- UNS S31600/S31603, 316/316L cold worked Stainless Steel construction
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life and reduces operating torque
- Quarter turn crossover, and 180° turn four way switching models available
- FKM (Viton®) o-rings are standard for operation from 0° to 400°F (-18° to 204°C)
- Optional o-rings available for high-temperature applications to 500°F (260°C)
- Optional wetted materials
- Electric and pneumatic actuator options

4 Way Ball Valve Applications:

- Laboratories
- Test Stands
- Control Panels
- Pilot Plants
- Chemical/Petrochemical
- Oil & Gas Production

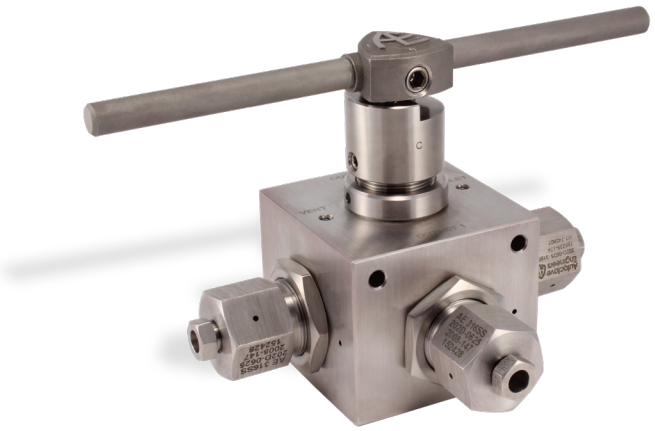
Flow Configuration



4-Way Crossover 90° Turn

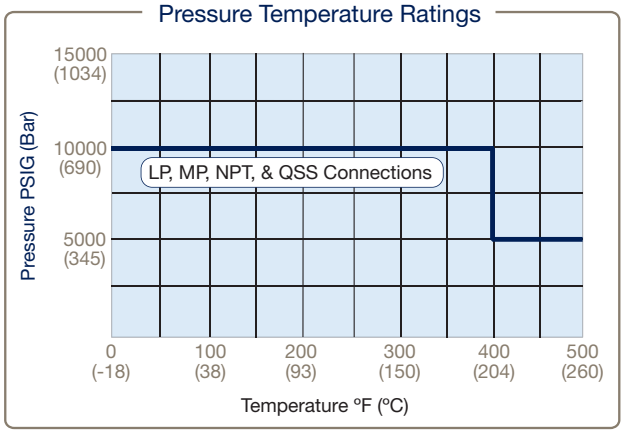
4-Way Switching 180° Turn

4 Way Series: 3/8" (9.52mm) Orifice - Pressures to 10,000 psi (690 bar)



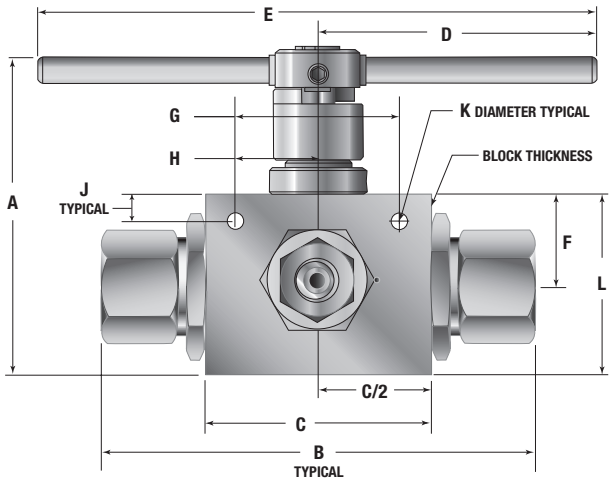
Connection Type	MAWP** at Room Temperature	Minimum Orifice Inches (mm)	Rated Cv*
SW500 (1/2" LP)	10,000 psi (690 bar)	0.375 (9.52)	2.5
SF375CX20 (3/8" MP)	10,000 psi (690 bar)	0.203 (5.16)	1.6
SF562CX20 (9/16" MP)	10,000 psi (690 bar)	0.312 (7.92)	2.4
SF750CX10 (3/4" MP)	10,000 psi (690 bar)	0.375 (9.52)	2.5
3/8 FNPT	10,000 psi (690 bar)	0.375 (9.52)	2.5
1/2 FNPT	10,000 psi (690 bar)	0.375 (9.52)	2.5
QS562 (9/16" QSS)	10,000 psi (690 bar)	0.359 (9.12)	2.5

** Special materials often have reduced MAWP ratings, see Technical brochure for assistance



4 Way 3/8" Bore Ball Valve

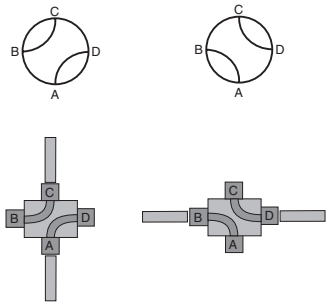
Pressure Ratings are determined by the end connections chosen, see chart.
Maximum Temperature rating is determined by the o-ring material (see following description)
NPT connections are limited to 400°F max due to PTFE Sealant.



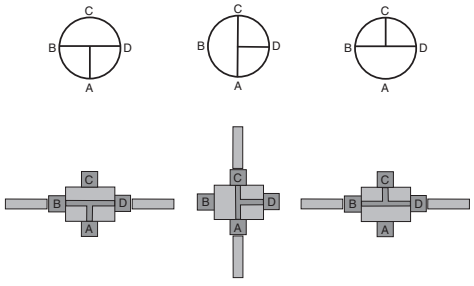
To ensure proper fit use Parker Autoclave tubing

NOTE: Critical gas applications such as Hydrogen or Helium should be evaluated on a case by case basis. Consult factory.

Diverter Flow Control:



4 Way Crossover
90° Turn (4B6 Series)



4-Way Switching
180° Turn (4BS6 Series)
(supplied with "D" port plugged)

Ordering Guide:

4-way ball valves are furnished complete with tube or pipe connections. Standard valve has FKM o-rings [400ºF (204ºC) maximum].

Building a Part Number: ***Example: 4B6S10M9***

Example Part Number:	4B	6	S	10	M9	–	XXX
Ordering Parameters/Options:	Valve Series	Ball Orifice Diameter	Material	Pressure (x 1000 psi)	End Connection		Options
Table Reference: (see below)	A	B	C	D	E		E

A - Valve Series	
4B	4 Way Ball Valve Crossover (90° Turn)
4BS	4 Way Ball Valve Switching (1800° Turn)

B - Ball Orifice Diameter	
6	3/8" (9.52mm)

C - Base Material	
S	316/316L Cold Worked (non-NACE) Stainless Steel
Additional Material Available, please contact factory.	

D - Pressure (x 1000 psi)	
10	10,000 psi
Maximum MAWP based on connection type or material (whichever is lower)	

Basic Repair Kits: (see page 33 for kit contents)
When ordering a basic repair kit add an "**R**" prefix before product model codes A, B, and C (see above). Example: R4B6S

When ordering with "**F-Options**" add an "**R**" prefix before model codes A, B, C and F (see above). Example: R4BS6S-EPR Contact your Parker Autoclave Engineers Sales Representative with any questions or refer to the Operation & Maintenance manuals (found online at www.Autoclave.com) for proper maintenance procedures.

E - End Connection			
	Connection	MAWP @ RT	Seat Gland Hex
L8	SW500 (1/2" LP)	10,000 psi	1-3/8"
M6	SF375CX20 (3/8" MP)	10,000 psi	1-3/8"
M9	SF562CX20 (9/16"MP)	10,000 psi	1-3/8"
M12	SF750CX10 (3/4"MP)	10,000 psi	1-3/8"
P6	3/8" FNPT	10,000 psi	1-3/8"
P8	1/2" FNPT	10,000 psi	1-3/8"
Q9	QS562 (9/16" QSS)	10,000 psi	1-3/8"

F - Options (Suffix addition)	
BO	O-ring, Buna-N 40° to 250°F (121°C)
EPR	O-ring, Ethylene Propylene Rubber, 0° to 250°F (121°C)
HT	O-ring, Perfluoroelastomer (Parofluor®) FFKM 30° to 500ºF (260ºC)
K	Antivibration Gland Fitting (Cone & Thread Only)
L	Lockout Bracket (see page 43 for detail)
SOG*	ALL Parts NACE material, hardness Check, NACE Certification
PM	Panel Mount Hardware
For Ball Valve Actuator Options see chart below	

Notes:
316 SS Valve bodies are cold worked and not suitable for use in NACE/ISO 15156 applications. If required, contact factory for options.

* SOG suffix also changes CW 316 SS body material to Annealed 316 SS suitable for NACE service. Contact factory for pressure reduction.

** Special materials often have reduced MAWP ratings, see Technical brochure for assistance.

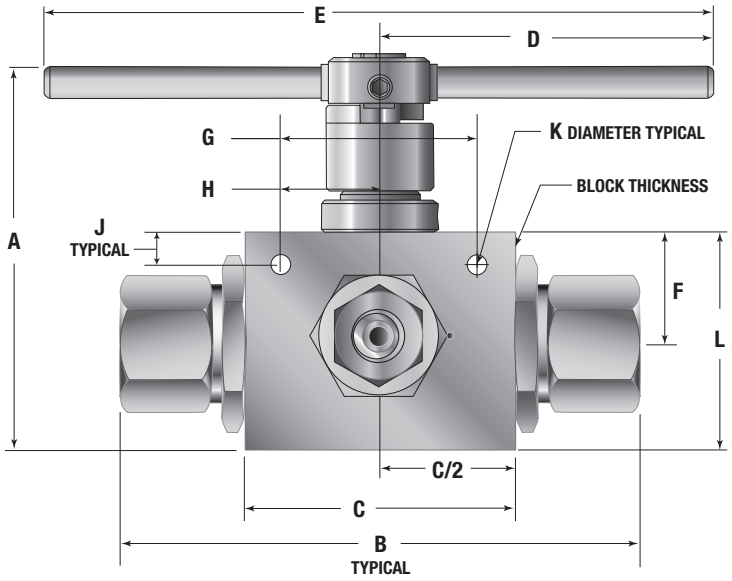
Ball Valve Actuator Suffix options: For Detailed Actuator Information please see pages 34-42

Pneumatic Actuator		Electric Actuator			Actuator Operating Temperature	
		WP	**XP**			
AO	Air to Open / Spring to Close (Diverter Style Only)	**EO1**	**EO1X**	120 volt AC 50/60 Hz	**Pneumatic**	-10ºF to 176ºF (-23ºC to 80ºC)
AC	Air to Close / Spring to Open (Diverter Style Only)	**EO2**	**EO2X**	220 volt AC 50/60 Hz	**Electric**	0ºF to 160ºF (-17ºC to 71ºC)
AOC	Air to Open and Close (Double Action)	**EO3***	**EO3X***	24 VDC		
* 24VDC Electric Actuator not available in 180° Actuation option (4B8 Series)						

See ball valve actuator section for full description, additional information, and options.

4 Way Ball Valve Dimensions:

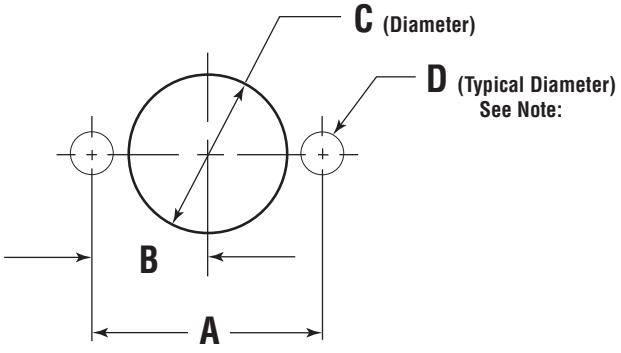
4 Way Ball Valve



	VALVE MODELS inches (mm)
	4B6S / 4BS6S
A	5.81 (147.57)
B	6.79 (172.47)
C	3.50 (88.90)
D	5.12 (130.05)
E	10.24 (260.10)
F	1.63 (41.23)
G	2.63 (66.68)
H	1.31 (33.27)
J	0.41 (10.32)
K	0.28 (7.11)
L	2.97 (75.39)
Block Thickness	3.50 (88.90)

Panel Mounting Dimensions:

4 Way Ball Valve Panel Mounting

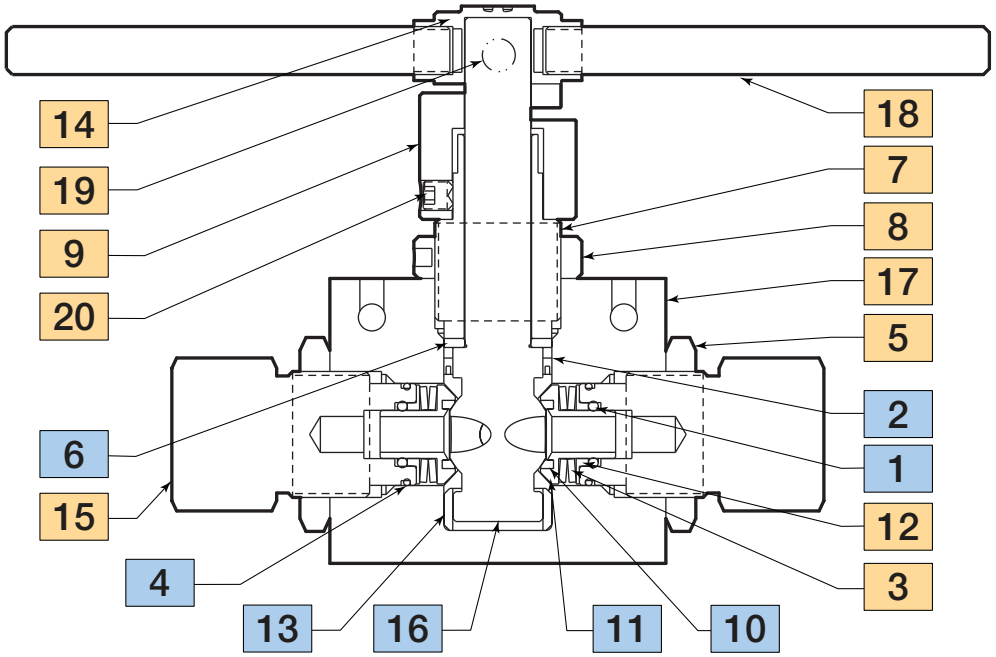


All dimensions are for reference only and are subject to change without notice.

	VALVE MODELS inches (mm)
	4B6S / 4BS6S
A	2.63 (66.68)
B	1.31 (33.34)
C	1.88 (47.63)
D	0.28 (7.11)

Note: Body Mounting 1/4" - 20 threads

Parts Listing and Material: Typical 4 Way Ball Valve Series



Material of Construction:

Item #	Description	Material
1	O-Ring	FKM
2	Stem Seal w/ Spring	PTFE with Graphite
3	Belleville Washer	17-7PH
4	O-Ring	FKM
5	Locknut	316 SS
6	Thrust Washer	AMPCO 45
7	Packing Gland	316 CW SS
8	Locking Piece	316 SS
9	Stopping Device	316 SS
10	Seat	ARLON 1260

Item #	Description	Material
11	Seat Retainer	Nitronic 50 HC
12	Belleville Washer Backup	316 CW SS
13	Bottom Bearing	AMPCO 45
14	Handle Hub	316 SS
15	Seat Gland	316 CW SS
16	Stem	316 CW SS
17	Body	316 CW SS
18	Handle	304 SS
19	Hex Set Screw, 1/2-13	Stainless
20	Set Screw, 5/16-18	Stainless

Typical spare parts found in Repair Kits

Ball Valve Actuators

Pneumatic and Electric

Single and Double Acting Pneumatic
24VDC, 120 and 220 VAC Electric

Principle of Operation:

Pneumatic and Electric Actuators

Pneumatic ball valve actuators found on pages 35-42 and are available for every bore/size option we offer (90° or 180° as needed). Our standard weather-proof housing is corrosion resistant anodized aluminum, Stainless Steel materials are available. CE Marked and SIL3 rated.

Parker Autoclave Engineers offers an ISO 5211 compliant pneumatic actuator with mounting configuration for NAMUR solenoid valves, limit switches or positioner as standard. Electric actuators (pages 37-42) are available in Weather-proof or Explosion-proof styles depending on location. Both varieties come standard with two (15 amp SPDT) position switches (SPDT). Explosionproof version includes an external handwheel for manual operation.

Ball Valve Actuators Features:

Pneumatic

- Temperature Range of 0° to 176°F (-18° to 80°C)with Buna-N Nitrile Seals
- Air-to-open/spring-to-close
- Air-to-close/spring-to-open
- Air-to-open and close (double acting)
- Visual Postion Indication as Standard, Limit switches
- Anodized Aluminum Weather-proof housing as standard
- Stainless steel housing for corrosive atmoshperes can be ordered
- NAMUR type Solenoid Valve (3-way or 4-way) Dual Coil, Side Mounted option available
- Extended Temperature operation with Silicone Seals from 0° to 300°F (-18° to 150°C)
- CE Marked, SIL_3 Rated

Electric

- Interface with control systems for automated operation and monitoring
- Weather-Proof NEMA 4X Polyester Housing Standard, 0° to 160°F (-18° to 70°C)
- 120 & 220 VAC, 50/60 Hz standard
- 24VDC
- Explosion-Proof, NEMA 7X Enclosure available
- CE mark available

Actuators: Pneumatic Operated Ball Valves (AO and AC)

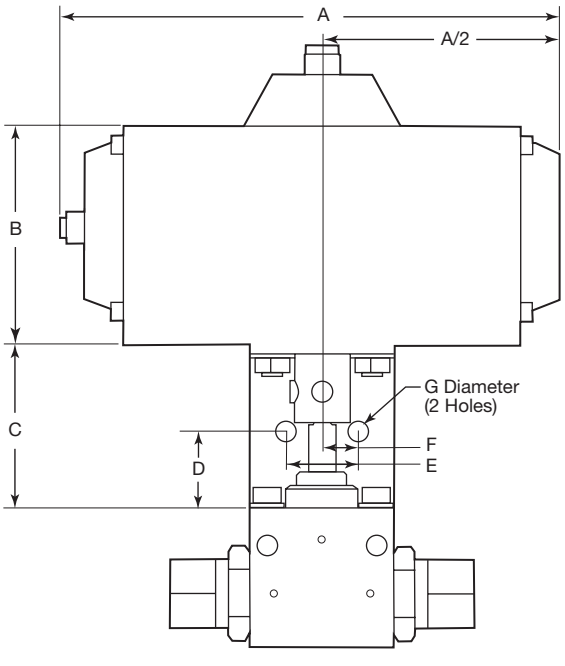
90° Actuation/Spring Return

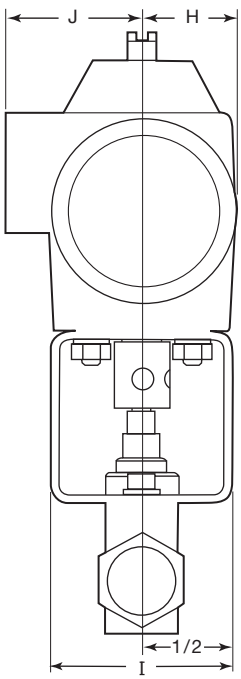
Valve Series*	Dimension Data - Inches (mm)										Actuator Weight .lbs	Air Usage
	A	B	C	D	E	F	G	H	I	J		Turn Time/90°
2B4-AO/AC	6.85 (173.99)	3.20 (81.28)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.30 (33.02)	2.50 (63.50)	1.88 (47.75)	3.94	11.2 in³ / 0.5 sec
2B6-AO/AC	7.28 (184.91)	3.86 (98.04)	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	1.59 (40.39)	3.00 (76.20)	2.10 (53.54)	6.0	18.1 in³ / 1.0 sec
2B8-AO/AC	9.38 (238.25)	4.62 (117.35)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	2.00 (50.80)	3.00 (76.20)	2.48 (62.99)	10.7	40.6 in³ / 1.0 sec
2B12-AO/AC	17.30 (439.42)	8.00 (203.20)	5.00 (127.00)	2.50 (63.50)	3.25 (82.55)	1.63 (41.40)	0.53 (13.46)	3.54 (89.92)	5.00 (127.00)	3.57 (90.68)	53.8	256.3 in³ / 3.0 sec
2B16-AO/AC	17.30 (439.42)	8.00 (203.20)	5.00 (127.00)	2.50 (63.50)	3.25 (82.55)	1.63 (41.40)	0.53 (13.46)	3.54 (89.92)	5.00 (127.00)	3.57 (90.68)	53.8	11.2 in³ / 3.0 sec
3BD3-AO/AC	6.85 (173.99)	3.20 (81.28)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.30 (33.02)	2.50 (63.50)	1.88 (47.75)	3.94	18.1 in³ / 0.5 sec
3BD6-AO/AC	7.28 (184.91)	3.86 (98.04)	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	1.59 (40.39)	3.00 (76.20)	2.10 (53.54)	6.0	18.1 in³ / 1.0 sec
3BD8-AO/AC	9.38 (238.25)	4.62 (117.35)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	2.00 (50.80)	3.00 (76.20)	2.48 (62.99)	10.7	40.6 in³ / 1.5 sec
4B6-AO/AC	9.38 (238.25)	4.62 (117.35)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	2.00 (50.80)	3.00 (76.20)	2.48 (62.99)	10.7	40.6 in³ / 1.5 sec

* Add the suffix **-AO** or **-AC** to the appropriate valve catalog number for a complete valve assembly.
Actuators do not have repair kits and must be returned to factory for repair.

SPECIFICATIONS:

- Control Air Pressure: 80 to 150 psi (6 to 10 bar)
- 1/4" NPT female air connector
- **AO**: Air to open/spring to close
- **AC**: Air to close/spring to open
- Actuators operating temperature: -10°F to 176°F (-23°C to 80°C)
- High temperature actuator option available, consult factory
- Stainless steel housing actuator models available, consult factory
- Actuators available with limit switches and visual indicators.
- Corrosion resistant anodized aluminum housing.
- Meets ISO 5211 Solenoid Mounting dimensions
- Solenoids availabe, direct or nipple mount.
- CE Marked, SIL3 Rated





Actuators: Pneumatic Operated Ball Valves (AOC - Double Acting)

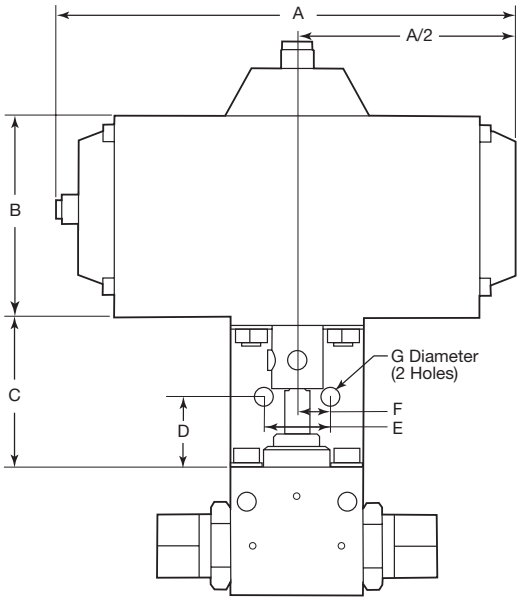
90° and 180° Actuation - No Spring

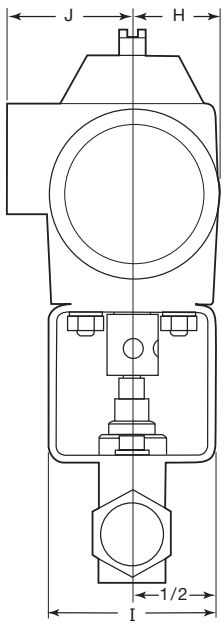
Valve Series*	Dimension Data - Inches (mm)										Actuator Weight .lbs	Air Usage
	A	B	C	D	E	F	G	H	I	J		Turn Time/90°
2B4-AOC	6.85 (173.99)	3.20 (81.28)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.30 (33.02)	2.50 (63.50)	1.88 (47.75)	3.52	25.6 in³ / 0.5 sec
2B6-AOC	6.85 (173.99	3.20 (81.28)	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	1.30 (33.02)	2.50 (63.50)	1.88 (47.75)	5.17	44.4 in³ / 05. sec
2B8-AOC	7.28 (184.91)	3.86 (98.04)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.59 (40.39)	3.00 (76.20)	2.10 (53.34)	9.13	88.9 in³ / 1.0 sec
2B12-AOC	11.82 (300.23)	6.10 (154.94)	5.00 (127.00)	2.50 (63.50)	3.25 (82.55)	1.63 (41.40)	0.53 (13.46)	2.55 (64.77)	5.00 (127.00)	2.55 (64.77)	44.1	565.5 in³ / 2.5 sec
2B16-AOC	13.98 (355.09)	6.56 (166.62)	5.00 (127.00)	2.50 (63.50)	3.25 (82.55)	1.63 (41.40)	0.53 (13.46)	2.86 (72.64)	5.00 (127.00)	2.95 (74.93)	44.1	565.5 in³ / 2.5 sec
3B3-AOC	9.50 (241.30)	3.59 (91.19)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.37 (34.80)	2.50 (63.50)	1.98 (50.29)	3.52	42.5 in³ / 1.0 sec
3B6-AOC	9.50 (241.30)	3.59 (90.19)	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	1.36 (34.54)	3.00 (76.20)	1.99 (50.55)	5.17	77.3 in³ / 1.0 sec
3B8-AOC	10.21 (259.33)	4.47 (113.54)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.67 (42.42)	3.00 (76.20)	2.10 (53.34)	9.13	150.0 in³ / 2.0 sec
3BD3-AOC	6.85 (173.99)	3.20 (81.28)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.30 (33.02)	2.50 (63.50)	1.88 (47.75)	3.53	25.6 in³ / 0.5 sec
3BD6-AOC	6.85 (173.99)	3.20 (81.28)	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	1.30 (33.02)	3.00 (76.20)	1.88 (47.75)	5.17	44.4 in³ / 0.5 sec
3BD8-AOC	7.28 (184.91)	3.86 (98.04)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.59 (40.39)	3.00 (76.20)	2.10 (53.34)	9.13	88.9 in³ / 1.0 sec
4B6-AOC	7.28 (184.91)	3.86 (98.04)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.59 (40.39)	3.00 (76.20)	2.10 (53.34)	9.13	88.9 in³ / 1.0 sec

* Add the suffix **-AOC** to the appropriate valve catalog number for a complete valve assembly
Actuators do not have repair kits and must be returned to factory for repair.

SPECIFICATIONS:

- Control Air Pressure: 80 to 150 psi (6 to 10 bar)
- 1/4" NPT female air connector
- **AOC**: Air to open/Air to close (double acting)
- Actuators operating temperature: -10°F to 176°F (-23°C to 80°C)
- Corrosion resistant anodized aluminum housing
- Stainless steel housing actuator models available, consult factory
- Actuators available with limit switches and visual indicators.
- Solenoids availabe, direct or nipple mount.
- High temperature actuator option available, consult factory
- CE Marked, SIL3 Rated





Actuators: Electric Operated Ball Valves (EO1, EO2, EO3)

Weather-proof, NEMA 4, 4X Watertight Enclosure

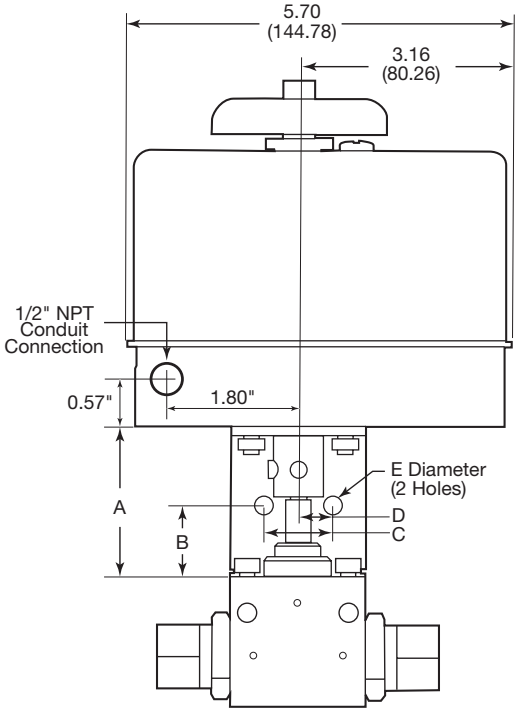
90° and 180° Actuation (No Spring Return)

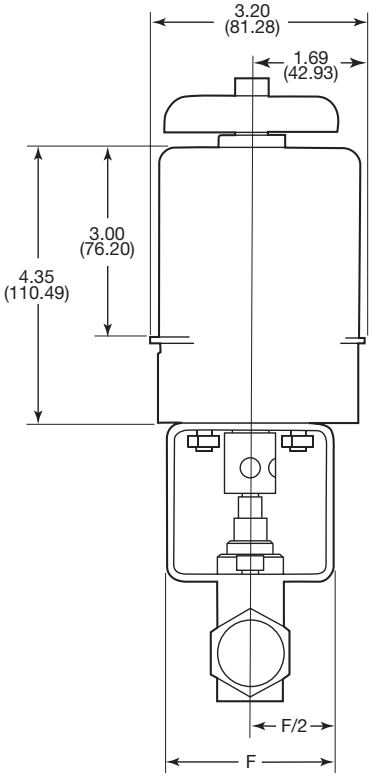
Valve Series*	Dimension Data - Inches (mm)						Voltage	Time to Turn 90° Seconds
	A	B	C	D	E	F		
2B4-EO1	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	120 VAC	3
2B4-EO2							240 VAC	3
2B4-EO3							24 VDC	3
2B6-EO1	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	034 (8.64)	3.00 (76.20)	120 VAC	7
2B6-EO2							240 VAC	7
2B6-EO3							24 VDC	5
3B3-EO1	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	120 VAC	3
3B3-EO2							240 VAC	3
3B6-EO1	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.64)	3.00 (76.20)	120 VAC	7
3B6-EO2							240 VAC	7
3BD3-EO1	2.50 (63.50)	1.25 (31.75	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	120 VAC	3
3BD3-EO2							240 VAC	3
3BD3-EO32							24 VDC	3
3BD6-EO1	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	034 (8.64)	3.00 (76.20)	120 VAC	7
3BD6-EO2							240 VAC	7
3BD6-EO3							24 VDC	5

* Add the suffix **-EO1**, **-EO2** or **-EO3** to the appropriate valve catalog number for a complete valve assembly
Actuators do not have repair kits and must be returned to factory for repair.

SPECIFICATIONS:

- 1/2" NPT female conduit connection
- Manual Override
- Powder coated aluminum housing
- CE & CSA approved
- Weight (all models): 5 lbs.
- 120 & 240 Volt are 50/60 Hz, for other voltages consult factory
- Actuator operating temperature: 0°F to 160°F (-17°C to 71°C)
- 15 amp SPDT Limit Switches (standard)
- For other options consult factory





Actuators: Electric Operated Ball Valves (E01, E02, E03)

Weather-proof, NEMA 4, 4X Watertight Enclosure

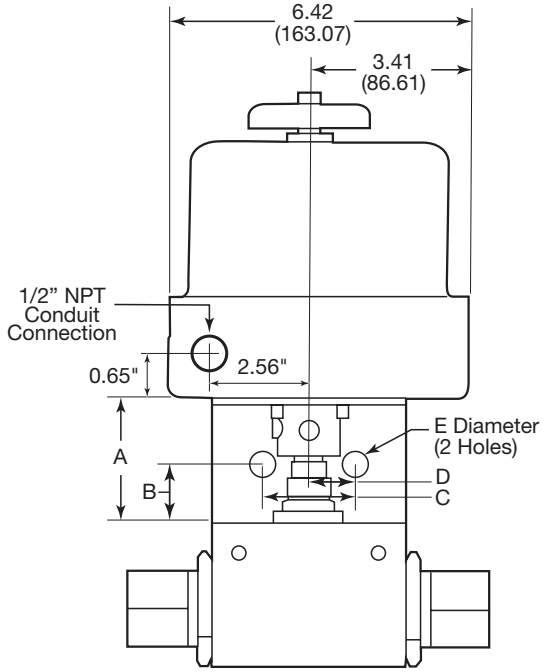
90° and 180° Actuation

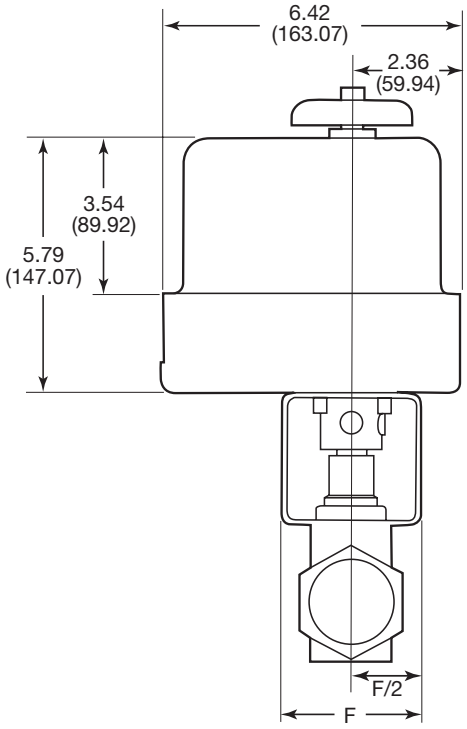
Valve Series*	Dimension Data - Inches (mm)						Voltage	Time to Turn 90° Seconds
	A	B	C	D	E	F		
2B8-EO1	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	3.00 (76.20)	120 VAC	5
2B8-EO2							240 VAC	5
2B8-EO3							24 VDC	5
3B8-EO1	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	3.00 (76.20)	120 VAC	5
3B8-EO2							240 VAC	5
3BD8-EO1	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	3.00 (76.20)	120 VAC	5
3BD8-EO2							240 VAC	5
3BD8-EO3							24 VDC	5
4B6-EO1	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.64)	3.00 (76.20)	120 VAC	5
4B6-EO2							240 VAC	5
4B6-EO3							24 VDC	5
4BS6-EO1	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	034 (8.64)	3.00 (76.20)	120 VAC	5
4BS6-EO2							240 VAC	5
4BS6-EO3							24 VDC	5

* Add the suffix **-EO1**, **-EO2** or **-EO3** to the appropriate valve catalog number for a complete valve assembly
Actuators do not have repair kits and must be returned to factory for repair.

SPECIFICATIONS:

- **EO1**: Electric 120 VAC
- **EO2**: Electric 240 VAC
- **EO3**: Electric 24 VDC
- Actuator operating temperature: 0°F to 160°F (-18°C to 71°C)
- Weight (all models): 9 lbs.
- For other options consult factory
- Powder coated aluminum housing
- CE & CSA approved for NEMA 4 & 4X
- Manual Override (wrench required)
- 1/2" NPT female conduit connection
- 15 amp SPDT Limit Switches (standard)





Actuators: Electric Operated Ball Valves (EO1, EO2)

Weather-proof, NEMA 4, 4X Watertight Enclosure

90° Actuation only

Valve Series*	Dimension Data - Inches (mm)						Voltage	Time to Turn 90° Seconds	Weight lbs.	Figure
	A	B	C	D	E	F				
2B12-EO1	5.00 (127.00)	2.50 (63.50)	3.25 (82.55)	1.63 (41.400)	0.53 (13.46)	5.00 (127.00)	120 VAC	10	50.5	1
2B12-EO2							240 VAC	10		
2B16-EO1	6.00 (152.40)	3.00 (76.20)	3.25 (82.55)	1.63 (41.40)	0.53 (13.46)	6.00 (152.40	120 VAC	10	64.0	2
2B16-EO2							240 VAC	10		

* Add the suffix **-EO1**, **-EO2** or **-EO3** to the appropriate valve catalog number for a complete valve assembly
Actuators do not have repair kits and must be returned to factory for repair.

SPECIFICATIONS:

- **EO1**: Electric 120 VAC
- **EO2**: Electric 240 VAC
- Manual Override (wrench required)
- Weatherproof enclosure, IP67, Type 4, 4X,
- For other options consult factory
- 3/4" NPT female conduit connection
- CE & CSA approved for NEMA 4 and 4X
- Actuator operating temperature: -4°F to 158°F (20°C to 70°C)
- Powder coated aluminum housing

Figure 1

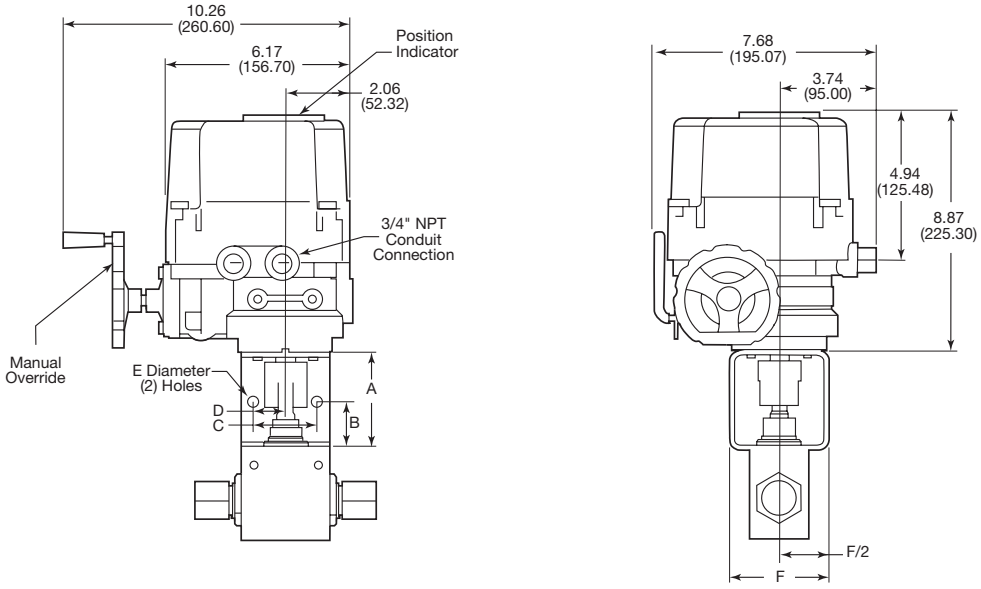
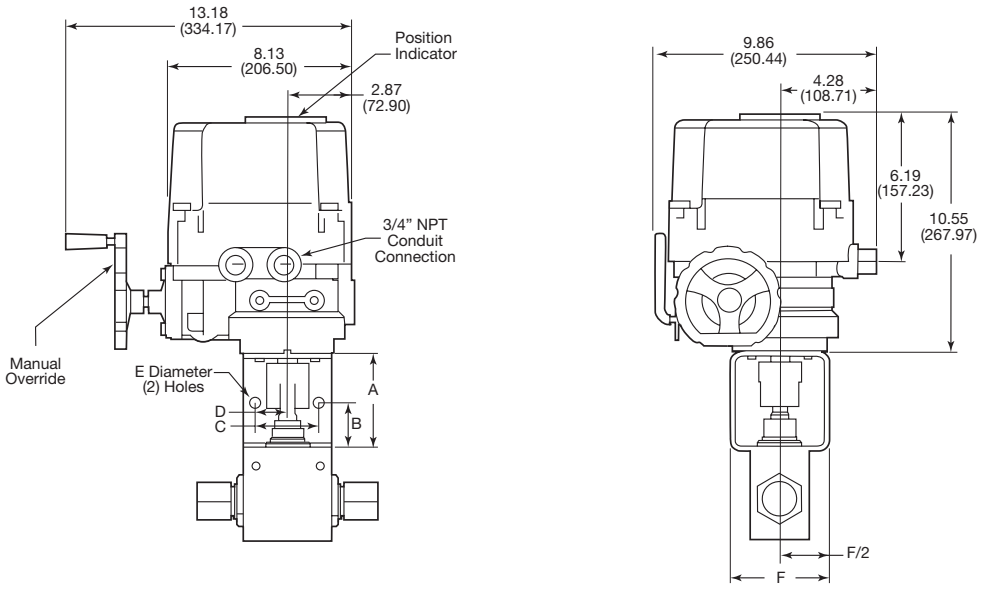


Figure 2



Actuators: Electric Explosion Proof Operated Ball Valves (E01X, E02X, E03X)

Explosion-proof, NEMA 7 Enclosure, ATEX Ex d IIb T4, IP67

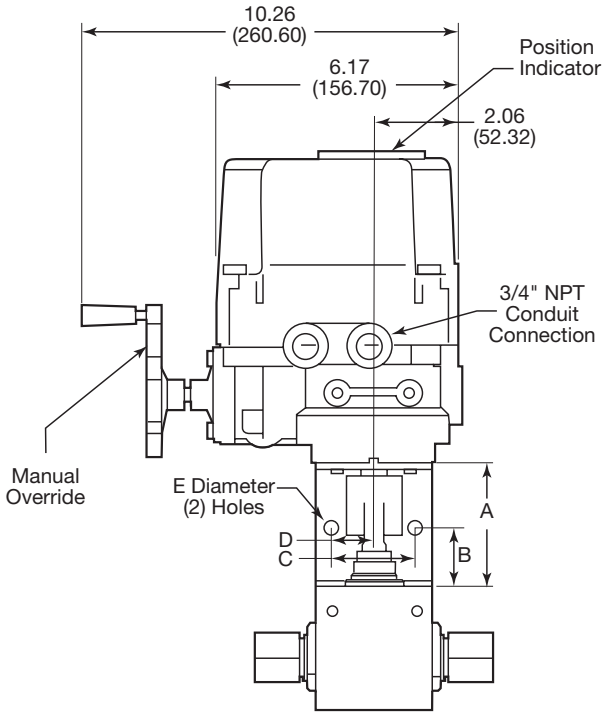
90° Actuation only

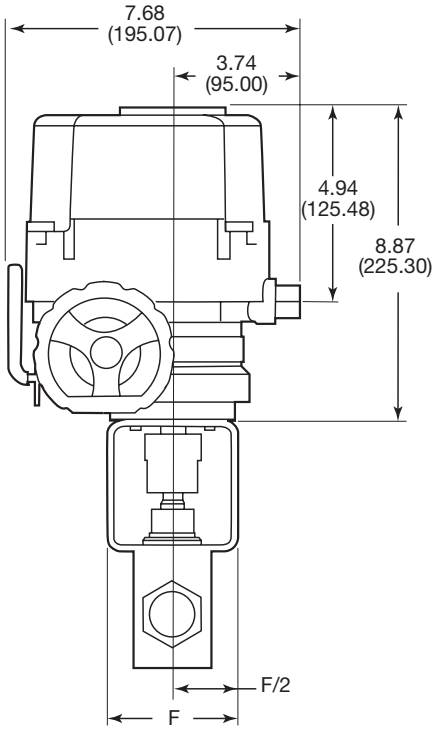
Valve Series*	Dimension Data - Inches (mm)						Voltage	Time to Turn 90° Seconds
	A	B	C	D	E	F		
2B4-EO1X	3.00 (76.20)	1.50 (38.10)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	3.00 (76.20)	120 VAC	7
2B4-EO2X							240 VAC	
2B4-EO3X							24 VDC	
2B6-EO1X	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.64)	3.00 (76.20)	120 VAC	7
2B6-EO2X							240 VAC	
2B6-EO3X							24 VDC	
3BD3-EO1X	3.00 (76.20)	1.50 (38.10)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	3.00 (76.20)	120 VAC	7
3BD3-EO2X							240 VAC	
3BD3-EO3X							24 VDC	
3BD6-EO1X	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.64)	3.00 (76.20)	120 VAC	7
3BD6-EO2X							240 VAC	
3BD6-EO3X							24 VDC	

* Add the suffix **-EO1X**, **-EO2X** or **-EO3X** to the appropriate valve catalog number for a complete valve assembly
Actuators do not have repair kits and must be returned to factory for repair.

SPECIFICATIONS:

- 3/4" NPT female conduit connection
- Manual Override
- Powder coated aluminum housing
- CE & CSA approved
- ATEX Explosion-Proof enclosure II 2 G, E Ex d IIB T4, IP67
- Limit switches (SPDT) as standard
- 120 & 240 Volt are 50/60 Hz, for other voltages consult factory
- Actuator operating temperature: -4°F to 158°F (-20°C to 70°C)
- Weight (all models): 16.4 lbs.
- Designed to comply with NEMA 7 Explosion Proof
- Watertight enclosure (IP68 10M 72HR)
- For other options consult factory





Actuators: Electric Explosion Proof Operated Ball Valves (E01X, E02X, E03X)

Explosion-proof, NEMA 7 Enclosure, ATEX Ex d IIb T4, IP67

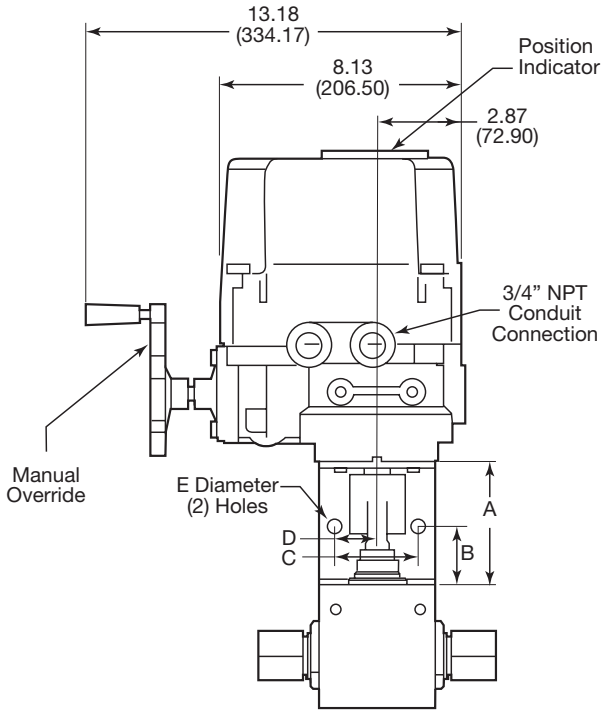
90° Actuation only

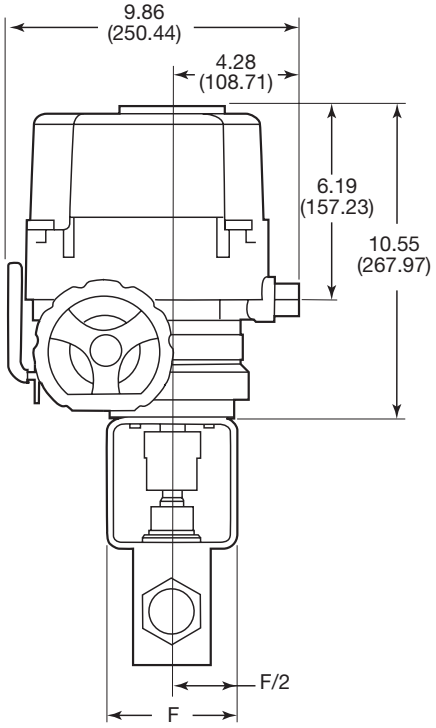
Valve Series*	Dimension Data - Inches (mm)						Voltage	Time to Turn 90° Seconds
	A	B	C	D	E	F		
2B8-EO1X	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.56 (14.22)	3.00 (76.20)	120 VAC	7
2B8-EO2X							240 VAC	
2B8-EO3X							24 VDC	
3BD8-EO1X	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.56 (14.22)	3.00 (76.20)	120 VAC	7
3BD8-EO2X							240 VAC	
3BD8-EO3X							24 VDC	
4B6-EO1X	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.56 (14.22)	3.00 (76.20)	120 VAC	7
4B6-EO2X							240 VAC	
4B6-EO3X							24 VDC	

* Add the suffix **-EO1X**, **-EO2X** or **-EO3X** to the appropriate valve catalog number for a complete valve assembly
Actuators do not have repair kits and must be returned to factory for repair.

SPECIFICATIONS:

- 3/4" NPT female conduit connection
- Manual Override
- Powder coated aluminum housing
- CE & CSA approved
- ATEX Explosion-Proof enclosure II 2 G, E Ex d IIB T4, IP67
- Limit switches (SPDT) as standard
- 120 & 240 Volt are 50/60 Hz, for other voltages consult factory
- Actuator operating temperature: -4°F to 158°F (-20°C to 70°C)
- Weight (all models): 36.7 lbs.
- Designed to comply with NEMA 7 Explosion Proof
- Watertight enclosure (IP68 10M 72HR)
- For other options consult factory





Actuators: Electric Explosion Proof Operated Ball Valves (E01X, E02X)

Explosion-proof, NEMA 7 Enclosure, ATEX Ex d IIb T4, IP67

90° Actuation only

Valve Series*	Dimension Data - Inches (mm)						Voltage	Time to Turn 90° Seconds	Weight lbs.	Figure
	A	B	C	D	E	F				
2B12-EO1X	5.00 (127.00)	2.50 (63.50)	3.25 (82.55)	1.63 (41.400)	0.53 (13.46)	5.00 (127.00)	120 VAC	8.5	50.8	1
2B12-EO2X							240 VAC			
2B16-EO1X	6.00 (152.40)	3.00 (76.20)	3.25 (82.55)	1.63 (41.40)	0.53 (13.46)	6.00 (152.40	120 VAC	10.5	64.0	2
2B16-EO2X							240 VAC			

* Add the suffix **-EO1X**, or **-EO2X** to the appropriate valve catalog number for a complete valve assembly
Actuators do not have repair kits and must be returned to factory for repair.

SPECIFICATIONS:

- **EO1**: Electric 120 VAC
- **EO2**: Electric 240 VAC
- Manual Override
- Designed to comply with NEMA 7 Explosion Proof
- Watertight enclosure (IP68 10M 72HR)
- Limit switches (SPDT) as standard
- 3/4" NPT female conduit connection
- CE & CSA approved for NEMA 4 and 4X
- Actuator operating temperature: -4°F to 158°F (20°C to 70°C)
- Powder coated aluminum housing
- ATEX Explosion-Proof enclosure II 2 G, E Ex d IIB, T4, IP67
- For other options consult factory

Figure 1

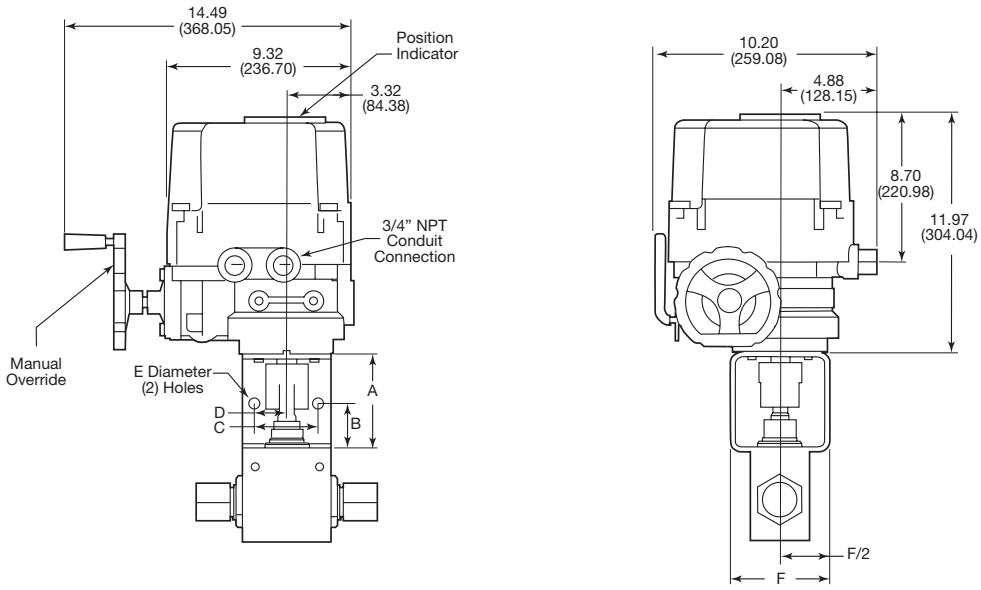
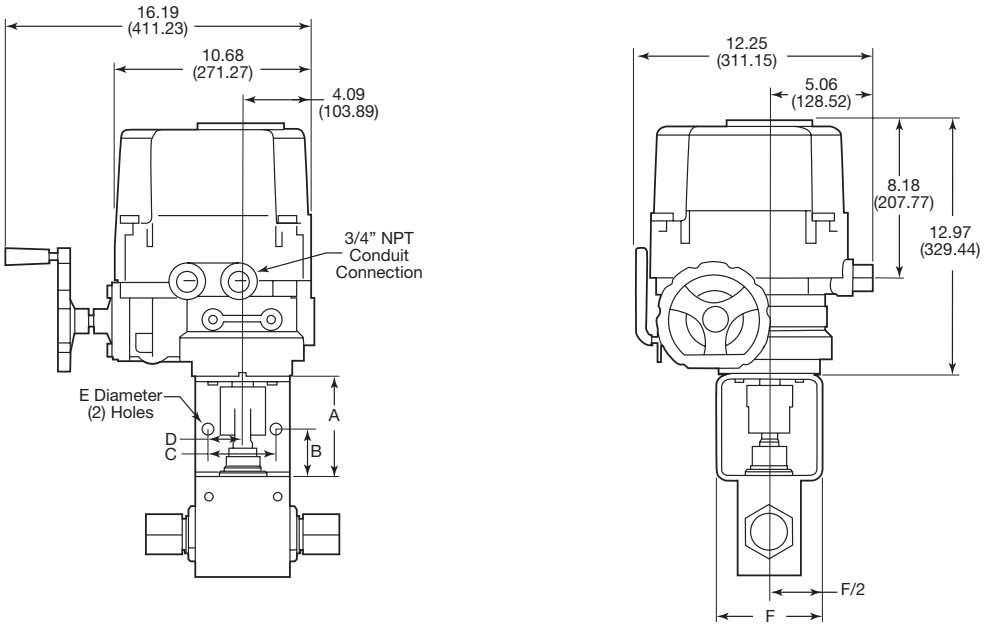
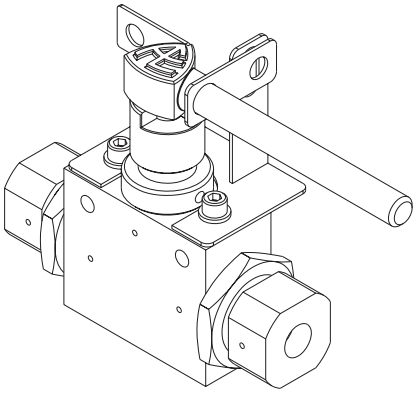


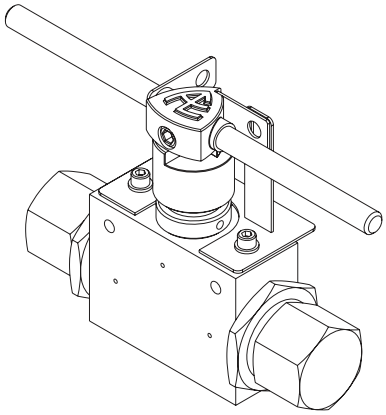
Figure 2



Lock-out Options: Ball Valves (2B4, 2B6, 2B8, 2B12, 2B16, 3BD3, 3DB6, 3DB8)



Versions: 2B4, 2B6, 3BD3, 3BD6



Versions: 2B8, 2B12, 2B16, 3BD8

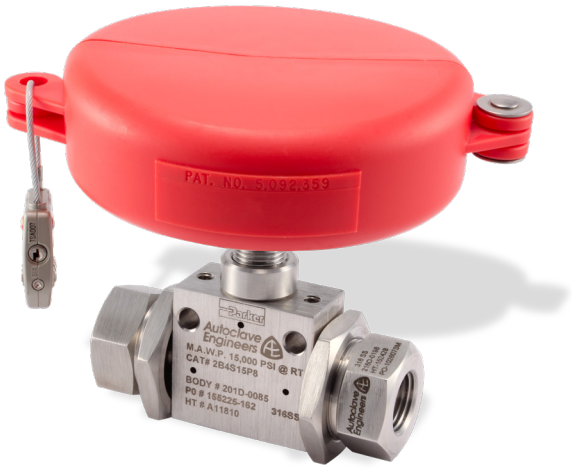
-L Suffix option

Using the "**-L**" suffix option delivers the bolt-on Stainless Steel locking bracket shown above for the following Ball Valve Sizes:

All 2-Way Ball Valves
All 3BD (90° rotation) Series Ball Valves

We do not offer a metal lockout bracket for the 3-way 180° handle rotation ball valves (3B3, 3B6, 3B8). Nor do we offer any metal lockout bracket for the 4-way ball valve. To upgrade valves already in operation, order mounting kits using these part numbers: (includes bolting hardware, and modified handle, but does not include lock)

2B4-L For all 2B4 valves
2B6-L For all 2B6 valves
2B8-L For all 2B8 valves
2B12-L For all 2B12 valves
2B16-L For all 2B16 valves
3BD3-L For all 3BD3 valves
3BD6-L For all 3BD6 valves
3BD8-L For all 3BD8 valves



Ball Valve Clam Shell Handle Lock-Out:

(ordered separately, lock not included)

Clam Shell Design covers ball valve handle to prevent unauthorized access during any Lock-Out, Tag-Out maintenance or emergency situation. This clamshell design is available in four (4) sizes dependent on handle length:

P/N AE004855 - 1" to 2.5" handle length
P/N 90088 – 2.5" to 5.0" handle length
P/N 90194 – 6.5" to 10" handle length
P/N AE004350 - 8" to 13" handle length

This product is optional for all ball valve sizes but necessary for all 3-way (3B series) Ball Valves that have a 180° handle turn and both 4-way (4B and 4BS Series) Ball Valves. We do not offer a metal bracket lock-out option for these valves at this time.

Parker Worldwide

North America

USA – Corporate, Cleveland, OH
Tel: +1 256 896 3000

USA – IPD, Huntsville, AL
Tel: +1 256 881 2040
ipdcct@parker.com

USA – IPD, (Autoclave), Erie, PA
Tel: +1 814 860 5700
ipdaecct@parker.com

CA – Canada, Grimsby, Ontario
Tel +1 905-945-2274
ipd_canada@parker.com

South America

AR – Argentina, Buenos Aires
Tel: +54 3327 44 4129
falecom@parker.com

BR – Brazil, Diadema, SP
Diadema, SP
Tel: +55 11 4360 6700
falecom@parker.com

CL – Chile, Santiago
Tel: +56 (0) 2 2303 9640
falecom@parker.com

MX – Mexico, Toluca
Tel: +52 722 275 4200
contacto@parker.com

Asia Pacific

AU – Australia, Dandenong
Tel: +61 (0)2 9842 5150
customer.service.au@parker.com

CN – China, Shanghai
Tel: +86 21 2899 5000
INGtechnical.china@parker.com

HK – Hong Kong
Tel: +852 2428 8008

IN – India, Mumbai
Tel: +91 22 6513 7081-85

ID – Indonesia, Tangerang
Tel: +62 2977 7900
parker.id@parker.com

JP – Japan, Tokyo
Tel: +(81) 3 6365 4020
infophj@parker.com

KR – South Korea, Seoul
Tel: +82 2 559 0400
parkerkr@parker.com

MY – Malaysia, Selangor
Tel: +603 784 90 800
parkermy@parker.com

SG – Singapore,
Tel: +65 6887 6300
parkersg@parker.com

TH – Thailand, Bangkok
Tel: +66 2 186 7000
phthailand@parker.com

TW – Taiwan, Taipei
Tel: +886 2 2298 8987
enquiry.taiwan@parker.com

VN – Vietnam, Hochi Minh City
Tel: +848 382 508 56
parker_viet@parker.com

Europe, Middle East, Africa

AE – UAE, Dubai
Tel: +971 4 812 7100
parker.me@parker.com

AT – Austria, Wiener Neustadt
Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe, Wiener Neustadt
Tel: +43 (0)2622 23501 900
parker.easteurope@parker.com

AZ – Azerbaijan, Baku
Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LU – Belgium, Nivelles
Tel: +32 (0)67 280 900
parker.belgium@parker.com

BG – Bulgaria, Sofia
Tel: +359 2 980 1344
parker.bulgaria@parker.com

BY – Belarus, Minsk
Tel: +48 (0)22 573 24 00
parker.belarus@parker.com

CH – Switzerland, Etoy
Tel: +41 (0) 21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany
Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst
Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup
Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid
Tel: +34 902 33 00 01
parker.spain@parker.com

FI – Finland, Vantaa
Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve
Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Athens
Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budapest
Tel: +36 223 885 470
parker.hungary@parker.com

IE – Ireland, Dublin
Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IT – Italy, Corsico (MI)
Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty
Tel: +7 7273 561 000
parker.easteurope@parker.com

NL – The Netherlands, Oldenzaal
Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Stavanger
Tel: +47 66 75 34 00
parker.norway@parker.com

PL – Poland, Warsaw
Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal, Leca da Palmeira
Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest
Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow
Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga
Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SK – Slovakia, Banská Bystrica
Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto
Tel: +386 7 337 6650
parker.slovenia@parker.com

TR – Turkey, Istanbul
Tel: +90 216 4997081
parker.turkey@parker.com

UA – Ukraine, Kiev
Tel: +48 (0)22 573 24 00
parker.ukraine@parker.com

UK – United Kingdom, Warwick
Tel: +44 (0)1926 317 878
parker.uk@parker.com

ZA – South Africa, Kempton Park
Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

! CAUTION !

Do not mix or interchange component parts or tubing with those of other manufacturers. Doing so is unsafe and will void warranty.

Parker Autoclave Engineers Valves, Fittings, and Tools are not designed to interface with common commercial instrument tubing and are designed to only connect with tubing manufactured to Parker Autoclave Engineers AES specifications. Failure to do so is unsafe and will void warranty.

WARNING

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met. The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are available for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. Any sale contract entered by Parker will be governed by the provisions stated in Parker's standard terms and conditions of sale (copy available upon request).

©2019 Parker Hannifin Corporation | Autoclave Engineers is a registered trademark of the Parker Hannifin Corporation

Literature #: 02-9344BE March 2019

Instrumentation Products Division
Autoclave Engineers Operation
8325 Hessinger Drive
Erie, PA 16509-4679
Tel: 814 860 5700
Fax: 814 860 5811
www.autoclave.com
www.parker.com/ipd

Instrumentation Products Division
Division Headquarters
1005 A Cleaner Way
Huntsville, AL 35805 USA
Tel: 256 881 2040
Fax: 256 881 5072

Parker Hannifin Manufacturing Ltd.
Instrumentation Products Division, Europe
Riverside Road
Pottington Business Park
Barnstaple, UK, EX31 1NP, UK
Tel: 44 1271 313131
Fax: 44 1271 373636

ISO-9001 Certified