



## Valves, Fittings and Tubing

Pressures to 150,000 psi (10,000 bar)

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



# Ball Valves

## Subsea Series

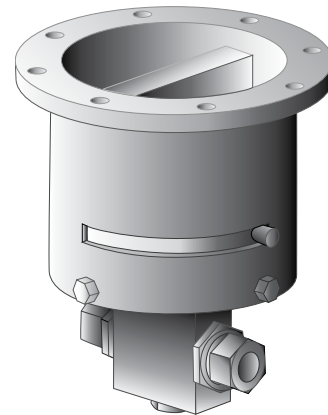
*Internal Pressures to 20,000 psi (1379 bar)  
Water Depths to 12,500 ft (3810 meters)*

Parker Autoclave Engineers subsea ball valves have been designed to fulfill the ever growing demand in the petroleum industry as well as the need for externally pressurized components in other markets. Utilizing the same design technology as the standard ball valve, the subsea design incorporates the necessary design alterations to provide a reliable externally pressurized valve for the subsea industry.

With the availability of fittings, tubing, and related equipment our ball valves can provide all your needs on high-pressure applications above or below the surface.

### **Ball Valve Features:**

- One-piece, trunnion mounted style, stem design eliminates shear failure found in two-piece designs.
- Re-torqueable seat glands for longer seat life.
- PEEK seats which offer excellent resistance to chemicals, heat, and wear/abrasion.
- Full-port flow path minimizes pressure drop.
- 316 cold worked stainless steel construction.
- Buna-N o-ring standard 250°F (121°C) max.
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life.
- Wide selection of tube and pipe end fittings available.
- Available to NACE MR-01-75.
- Optional wetted materials.
- Available in a number of flow configurations and port sizes.



Adaptable for Remote Operated Vehicle (ROV) operation by customer

### **Applications:**

- Subsea hydraulic manifolds
- Subsea control panels
- Subsea trees



[www.autoclave.com](http://www.autoclave.com)

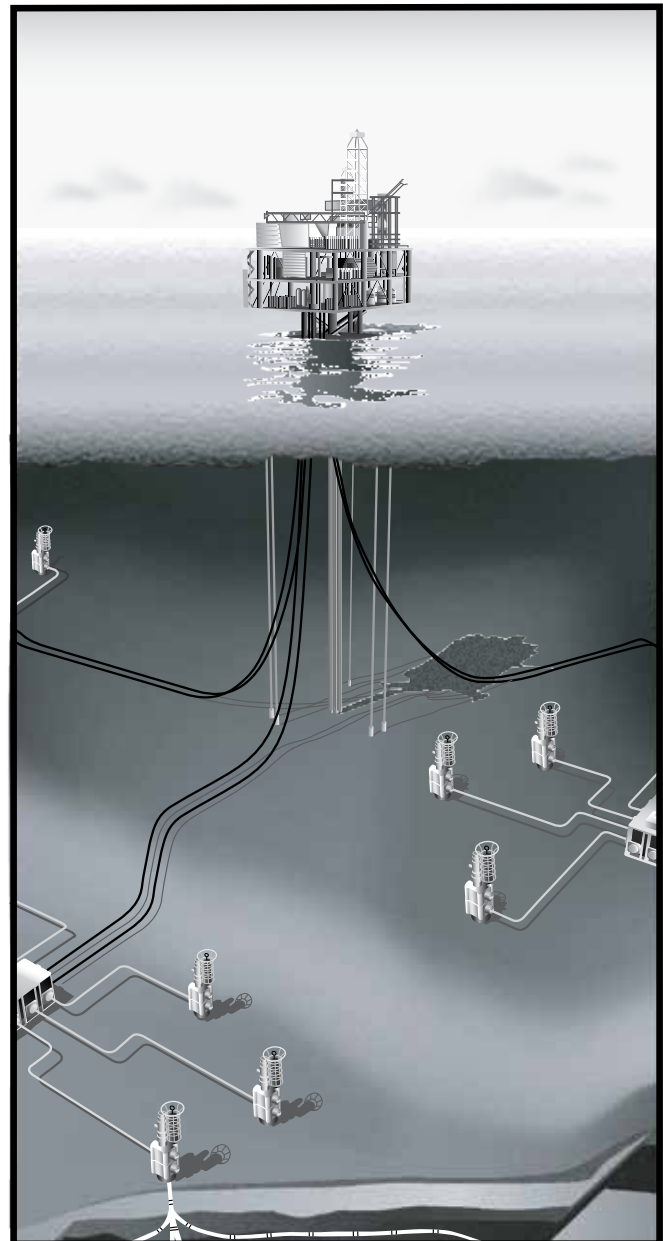
The Parker Autoclave Engineers ball valves can be utilized to switch or isolate flow. The standard material of construction of the valve is 316 cold worked stainless steel with PEEK seats, graphite filled PTFE stem seal, and o-ring material as required by the process fluid.

The subsea ball valve design incorporates additional o-ring seals, which prevent the ingress of seawater into the valve which would adversely affect the operation of the valve as well as contaminate the process fluid. A significant feature of the subsea design is a thrust washer positioned under the stem preventing outside sea water from moving the stem from it's aligned position.



Subsea ball valves are designed to facilitate operation by a Remote Operated vehicle (ROV). ROV operator assemblies are used for valve mounting and to provide positive stopping for precise 90° operation.

Various tube and pipe connections are available throughout a variety of valve configurations with standard port sizes from 3/16" to 1". Contact Parker Autoclave Engineers technical sales support or your local distributor for more information on optional materials of construction, seal materials and ROV operator designs to fit your application requirements.



# Ball Valves - 2-Way Subsea Series (1/4" Orifice)

**Pressures to 20,000 psi (1379 bar) .250" (6.35mm) Orifice**

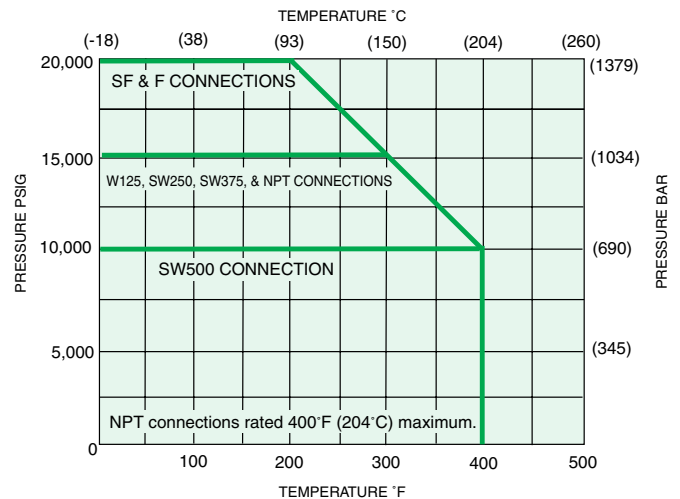
Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
W125	15,000 psi (1034 bar)	.094 (2.39)
SW250	15,000 psi (1034 bar)	.128 (3.25)
SW375	15,000 psi (1034 bar)	.250 (6.35)
SW500	10,000 psi (690 bar)	.250 (6.35)
SF250CX20	20,000 psi (1379 bar)	.109 (2.77)
SF375CX20	20,000 psi (1379 bar)	.203 (5.16)
SF562CX20	20,000 psi (1379 bar)	.250 (6.35)
F250C	20,000 psi (1379 bar)	.094 (2.39)
F375C	20,000 psi (1379 bar)	.125 (3.17)
F562C	20,000 psi (1379 bar)	.188 (4.77)
1/8" NPT	15,000 psi (1034 bar)	.250 (6.35)
1/4" NPT	15,000 psi (1034 bar)	.250 (6.35)
3/8" NPT	15,000 psi (1034 bar)	.250 (6.35)
1/2" NPT	15,000 psi (1034 bar)	.250 (6.35)

Valve C<sub>v</sub>=1.51

MAWP: Maximum Allowable Working Pressure  
C<sub>v</sub> listed is for maximum orifice size of .250 inches only.  
Consult factory for C<sub>v</sub> of valves with reduced orifice sizes.



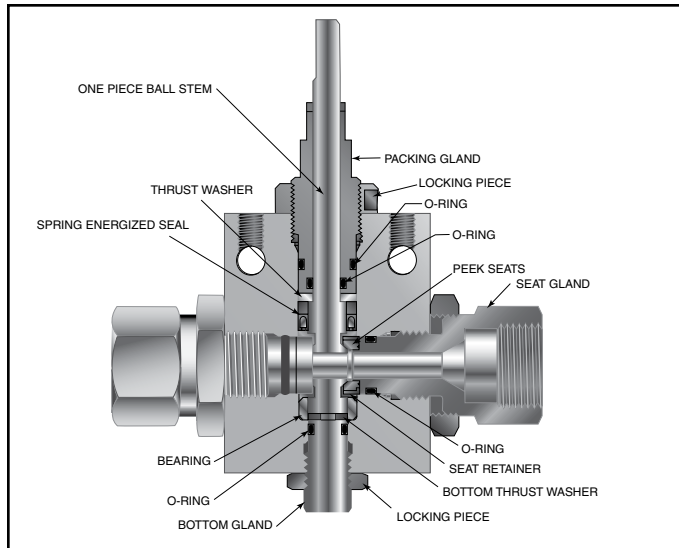
PRESSURE TEMPERATURE RATINGS



Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

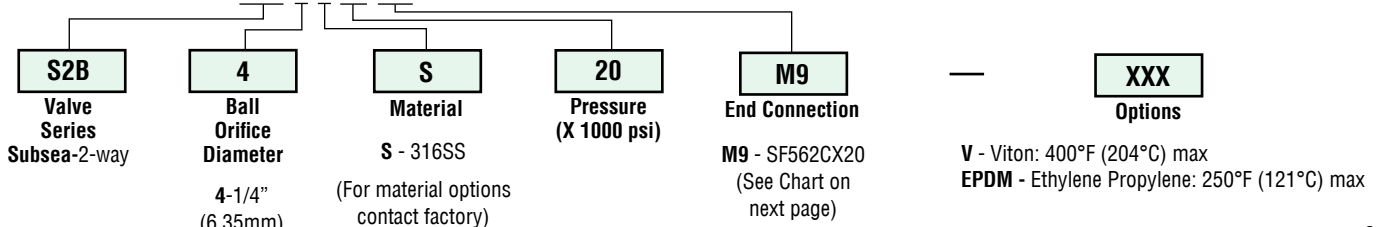


**NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.**

## Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 4 S 20 M9**

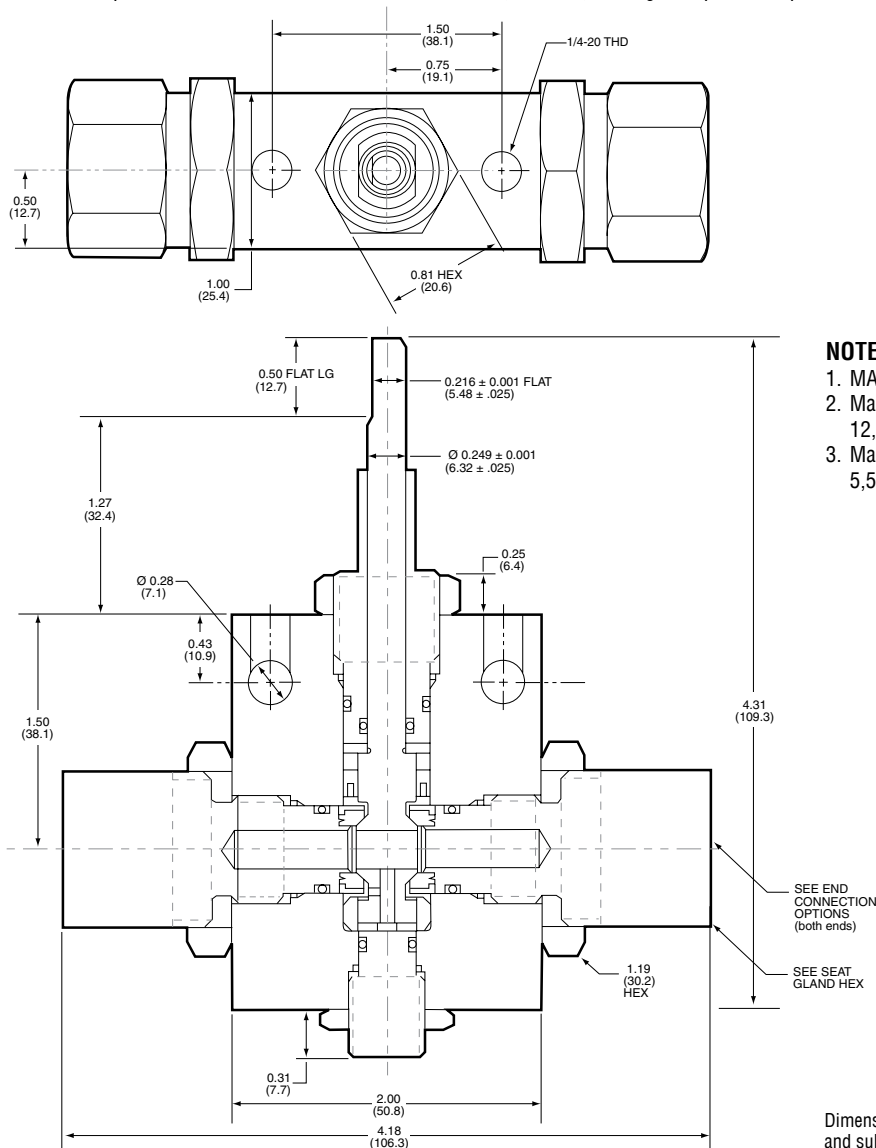


## End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B4S15L2	L2	W125	15,000 psi (1034 bar)	1 (25.40)
S2B4S15L4	L4	SW250	15,000 psi (1034 bar)	1 (25.40)
S2B4S15L6	L6	SW375	15,000 psi (1034 bar)	1 (25.40)
S2B4S10L8	L8	SW500	10,000 psi (690 bar)	1 (25.40)
S2B4S20M4	M4	SF250CX20	20,000 psi (1379 bar)	1 (25.40)
S2B4S20M6	M6	SF375CX20	20,000 psi (1379 bar)	1 (25.40)
S2B4S20M9	M9	SF562CX20	20,000 psi (1379 bar)	1 (25.40)
S2B4S20H4	H4	F250C	20,000 psi (1379 bar)	1 (25.40)
S2B4S20H6	H6	F375C	20,000 psi (1379 bar)	1 (25.40)
S2B4S20H9	H9	F562C	20,000 psi (1379 bar)	1.38 (35.05)
S2B4S15P2	P2	1/8" NPT	15,000 psi (1034 bar)	1 (25.40)
S2B4S15P4	P4	1/4" NPT	15,000 psi (1034 bar)	1 (25.40)
S2B4S15P6	P6	3/8" NPT	15,000 psi (1034 bar)	1 (25.40)
S2B4S15P8	P8	1/2" NPT	15,000 psi (1034 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.



### NOTE:

1. MAWP (See Table)
2. Maximum Sea Depth  
12,500 FT (3811 meters)
3. Maximum External Pressure  
5,500 psi (379 bar)

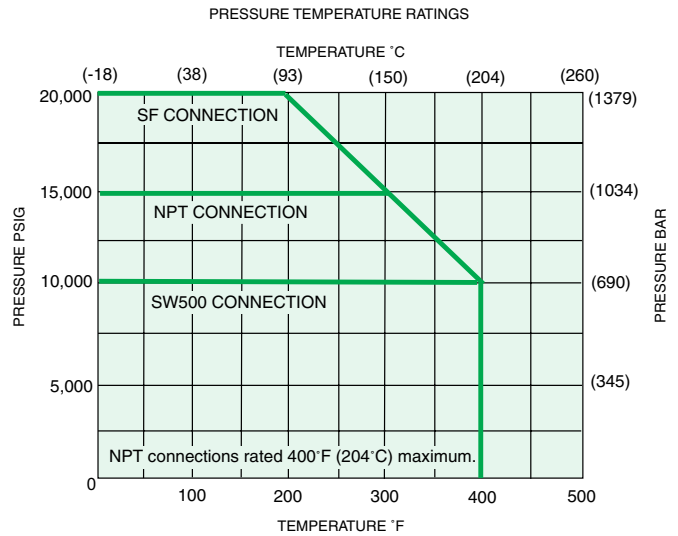
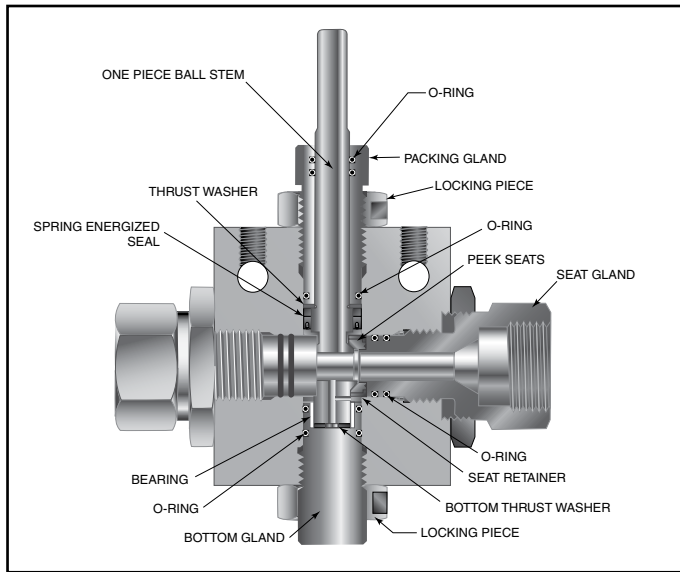
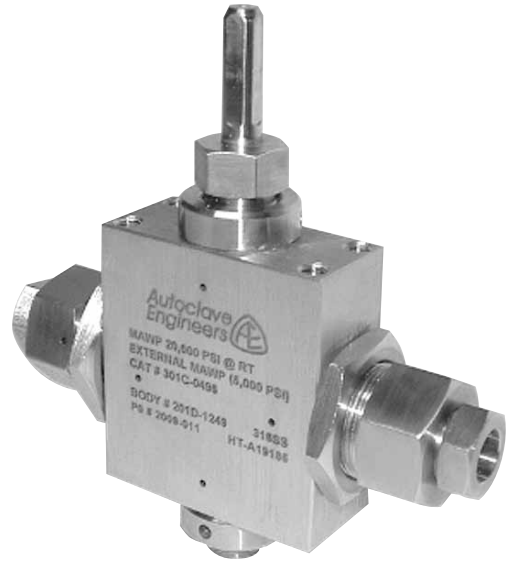
# Ball Valves - 2-Way Subsea Series (3/8" Orifice)

**Pressures to 20,000 psi (1379 bar) .375" (9.52mm) Orifice**

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SW500	10,000 psi (690 bar)	.375 (9.52)
SF375CX20	20,000 psi (1379 bar)	.203 (5.16)
SF562CX20	20,000 psi (1379 bar)	.312 (7.92)
SF750CX20	20,000 psi (1379 bar)	.375 (9.52)
1/4" NPT	15,000 psi (1034 bar)	.375 (9.52)
3/8" NPT	15,000 psi (1034 bar)	.375 (9.52)
1/2" NPT	15,000 psi (1034 bar)	.375 (9.52)

Valve C<sub>v</sub>=3.51

MAWP: Maximum Allowable Working Pressure  
C<sub>v</sub> listed is for maximum orifice size of .375 inches only.  
Consult factory for C<sub>v</sub> of valves with reduced orifice sizes.



Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

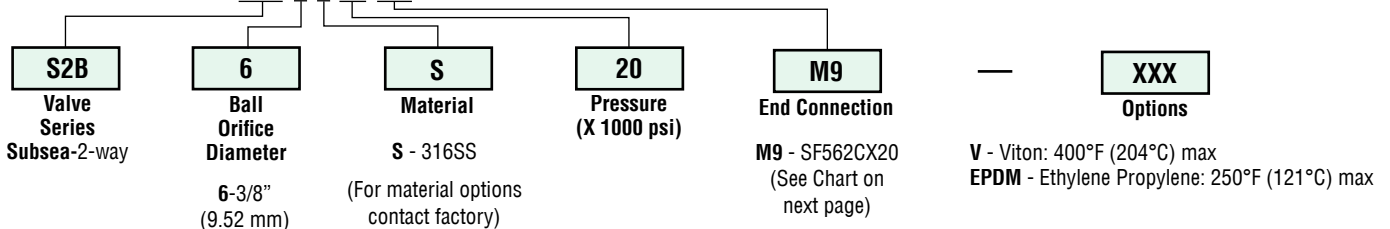
Maximum pressure rating is determined by the end connection (see table above).

**NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.**

## Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 6 S 20 M9**

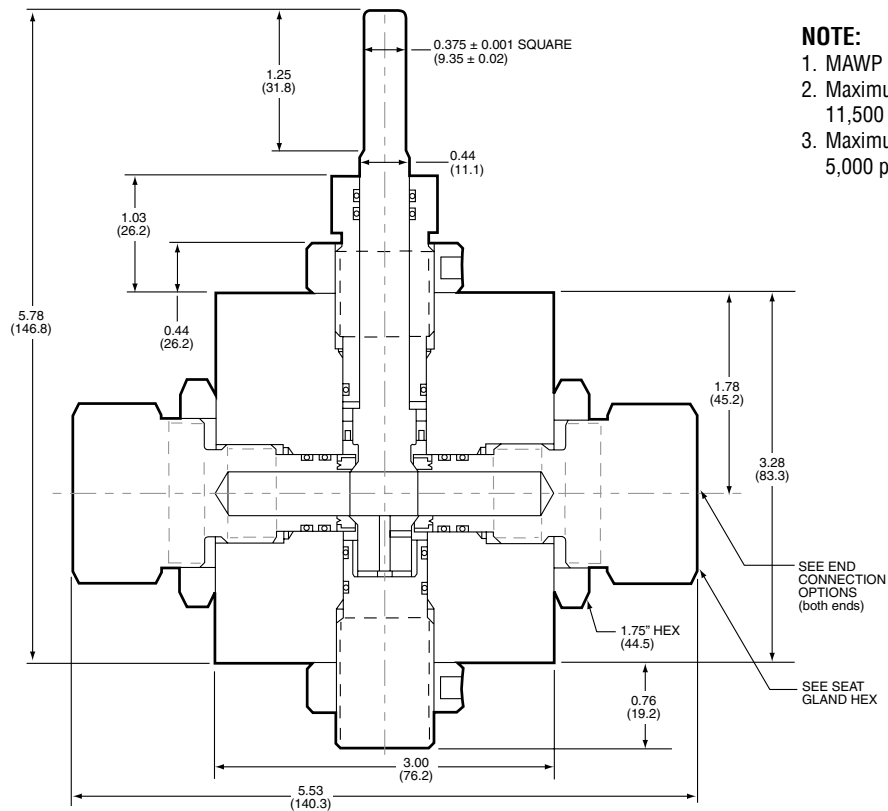
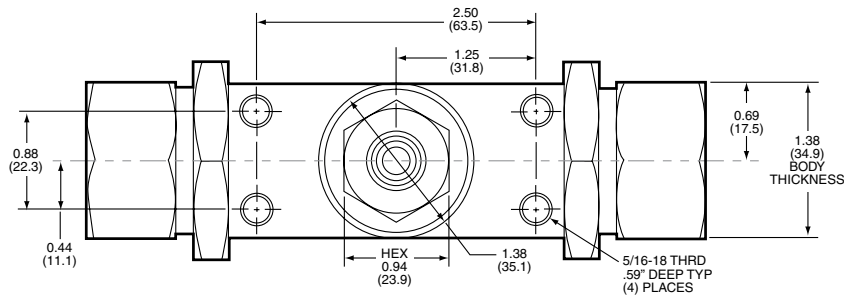


## End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B6S10L8	L8	SW500	10,000 psi (690 bar)	1.38 (35.05)
S2B6S20M6	M6	SF375CX20	20,000 psi (1379 bar)	1.38 (35.05)
S2B6S20M9	M9	SF562CX20	20,000 psi (1379 bar)	1.38 (35.05)
S2B6S20M12	M12	SF750CX20	20,000 psi (1379 bar)	1.38 (35.05)
S2B6S15P4	P4	1/4" NPT	15,000 psi (1034 bar)	1.38 (35.05)
S2B6S15P6	P6	3/8" NPT	15,000 psi (1034 bar)	1.38 (35.05)
S2B6S15P8	P8	1/2" NPT	15,000 psi (1034 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.



### NOTE:

1. MAWP (See Table)
2. Maximum Sea Depth 11,500 FT (3505 meters)
3. Maximum External Pressure 5,000 psi (345 bar)

Dimensions for reference only and subject to change.

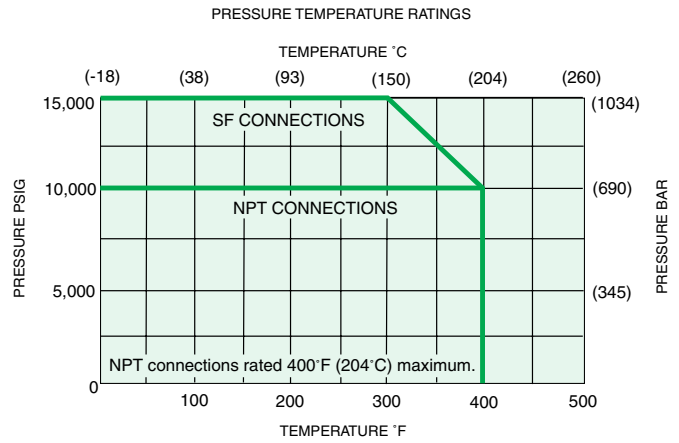
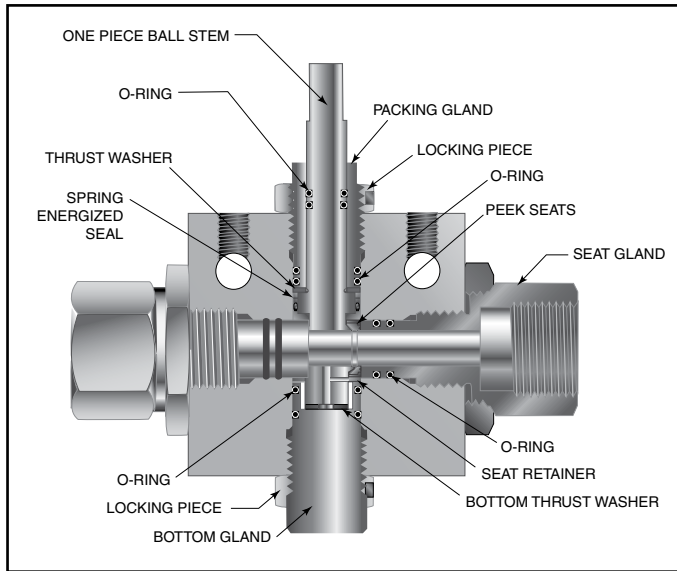
# Ball Valves - 2-Way Subsea Series (1/2" Orifice)

**Pressures to 15,000 psi (1034 bar) .500" (12.7mm) Orifice**

Connection	MAWP @	
	Room Temperature	Minimum Orifice
SF750CX20	15,000 psi (1034 bar)	.500 (12.70)
SF1000CX20	15,000 psi (1034 bar)	.500 (12.70)
3/4" NPT	10,000 psi (690 bar)	.500 (12.70)
1" NPT	10,000 psi (690 bar)	.500 (12.70)

Valve C<sub>v</sub>=10.20

MAWP: Maximum Allowable Working Pressure



Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

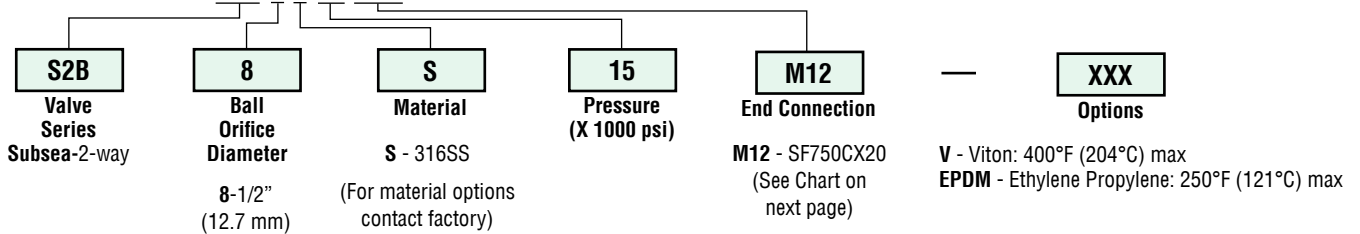
Maximum pressure rating is determined by the end connection (see table above).

**NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.**

## Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 8 S 15 M12**



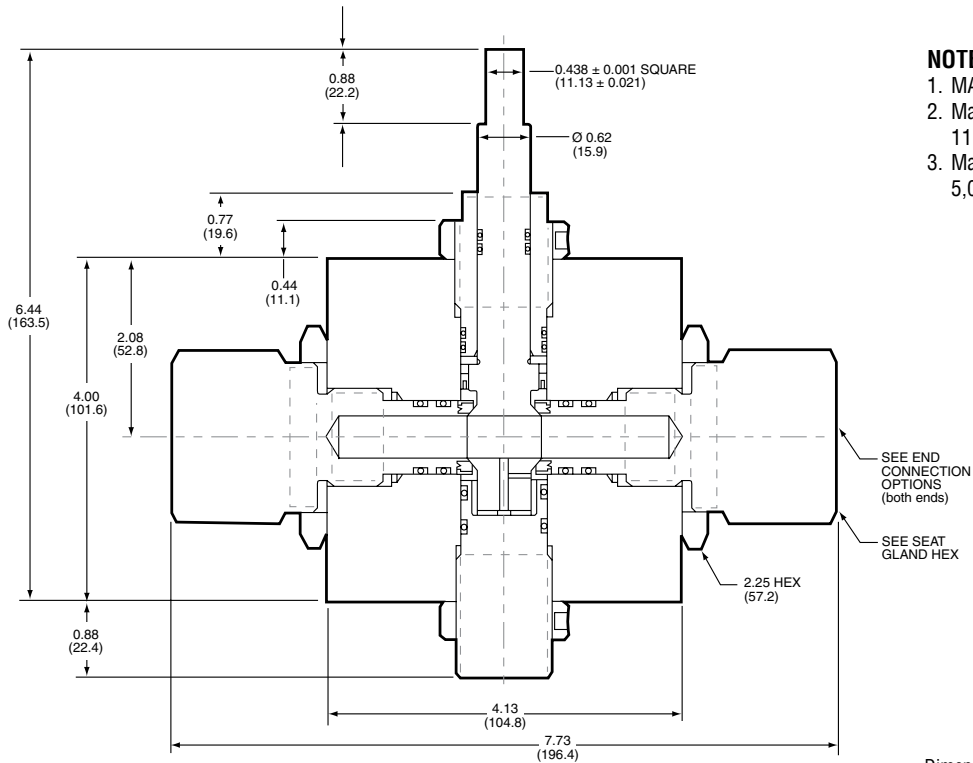
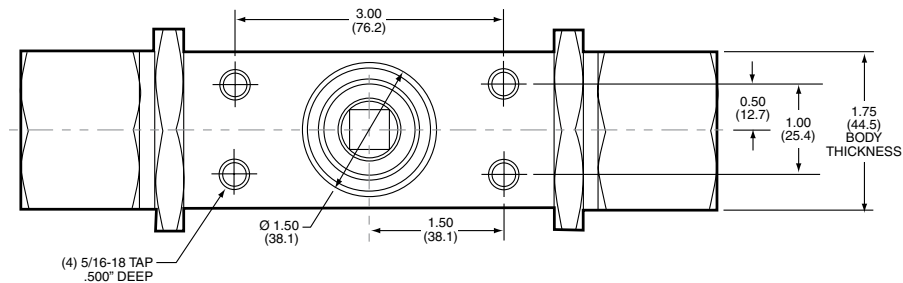


## End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B8S15M12	M12	SF750CX20	15,000 psi (1034 bar)	1.75 (44.5)
S2B8S15M16	M16	SF1000CX20	15,000 psi (1034 bar)	1.75 (44.5)
S2B8S10P12	P12	3/4" NPT	10,000 psi (690 bar)	1.75 (44.5)
S2B8S10P16	P16	1" NPT	10,000 psi (690 bar)	1.75 (44.5)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.



### NOTE:

1. MAWP (See Table)
2. Maximum Sea Depth 11,500 FT (3505 meters)
3. Maximum External Pressure 5,000 psi (345 bar)

Dimensions for reference only and subject to change.

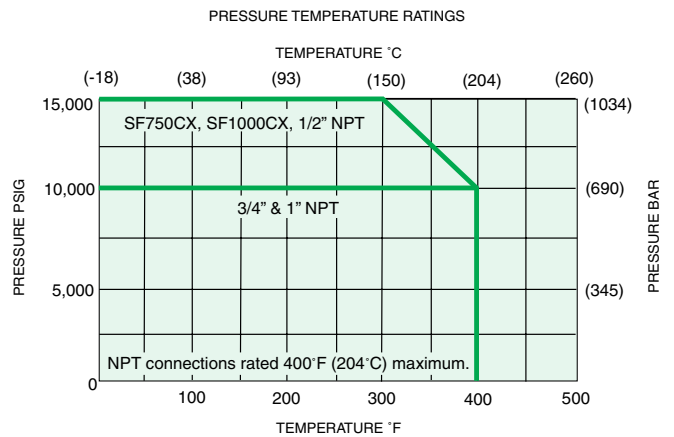
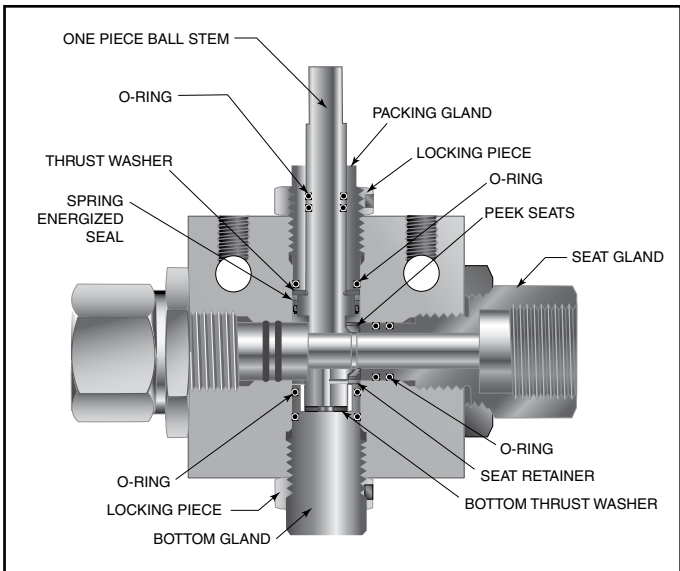
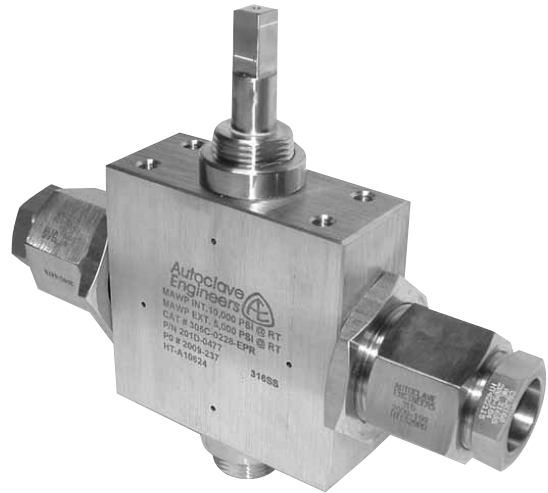
# Ball Valves - 2-Way Subsea Series (3/4" Orifice)

**Pressures to 15,000 psi (1034 bar) .750" (19mm) Orifice**

Connection	MAWP @	
	Room Temperature	Minimum Orifice Inches (mm)
SF750CX10	15,000 psi (1034 bar)	.516 (13.10)
SF1000CX10	15,000 psi (1034 bar)	.688 (17.47)
1/2" NPT	15,000 psi (1034 bar)	.688 (17.47)
3/4" NPT	10,000 psi (690 bar)	.75 (19.05)
1" NPT	10,000 psi (690 bar)	.75 (19.05)

Valve C<sub>V</sub>=21

MAWP: Maximum Allowable Working Pressure  
C<sub>V</sub> listed is for maximum orifice size of .750 inch only.  
Consult factory for C<sub>V</sub> of valves with reduced orifice sizes.



Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

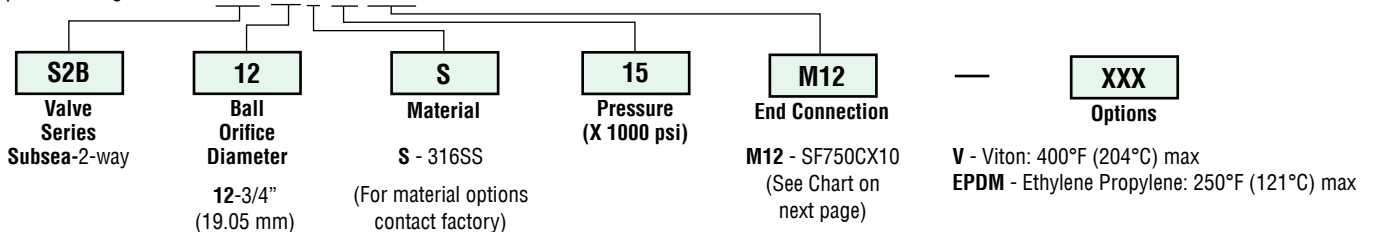
Maximum pressure rating is determined by the end connection (see table above).

**NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.**

## Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 12 S 15 M12**

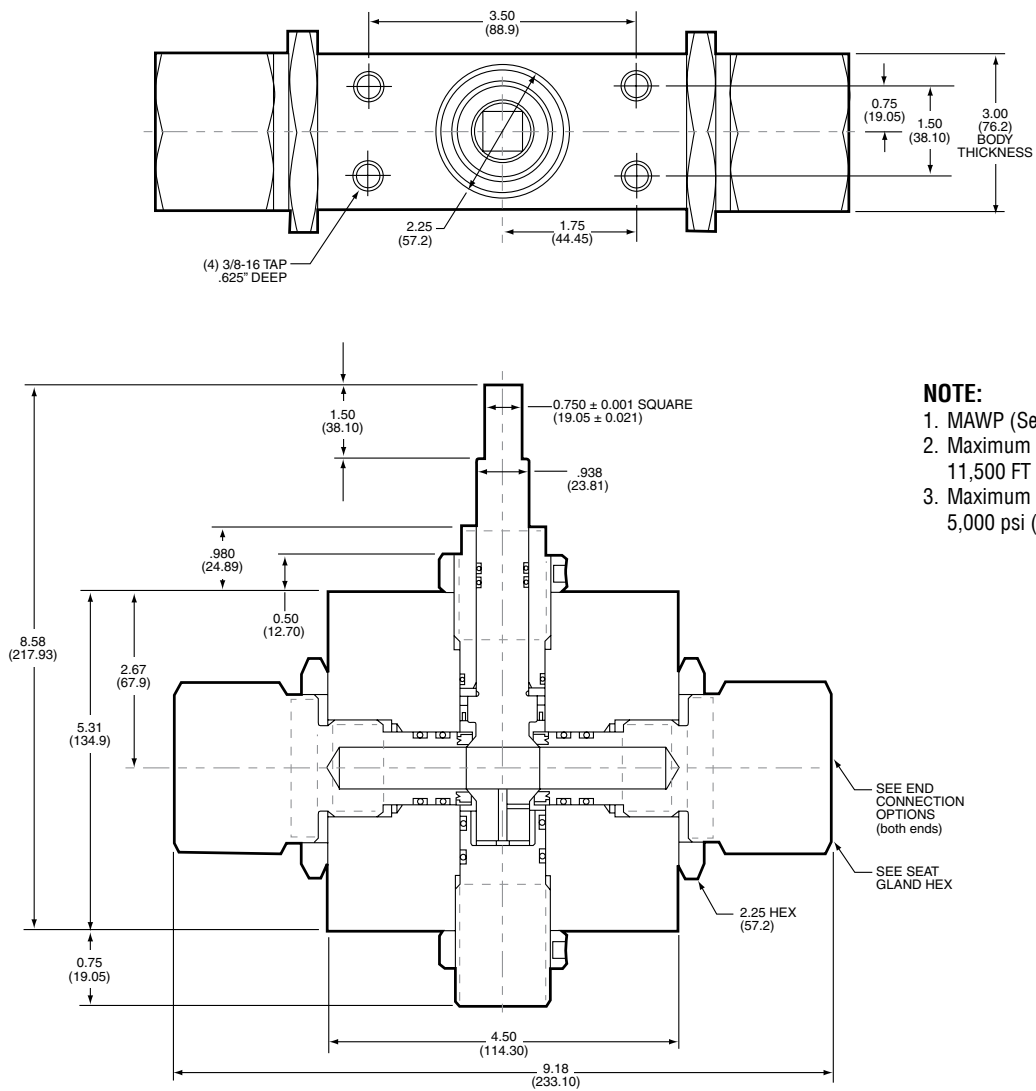


## End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B12S15M12	M12	SF750CX20	15,000 psi (1034 bar)	1.88 (47.8)
S2B12S15M16	M16	SF1000CX20	15,000 psi (1034 bar)	1.88 (47.8)
S2B12S15P8	P8	1/2" NPT	15,000 psi (1034 bar)	1.88 (47.8)
S2B12S10P12	P12	3/4" NPT	10,000 psi (690 bar)	1.88 (47.8)
S2B12S10P16	P16	1" NPT	10,000 psi (690 bar)	1.88 (47.8)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.



**NOTE:**

1. MAWP (See Table)
2. Maximum Sea Depth 11,500 FT (3505 meters)
3. Maximum External Pressure 5,000 psi (345 bar)

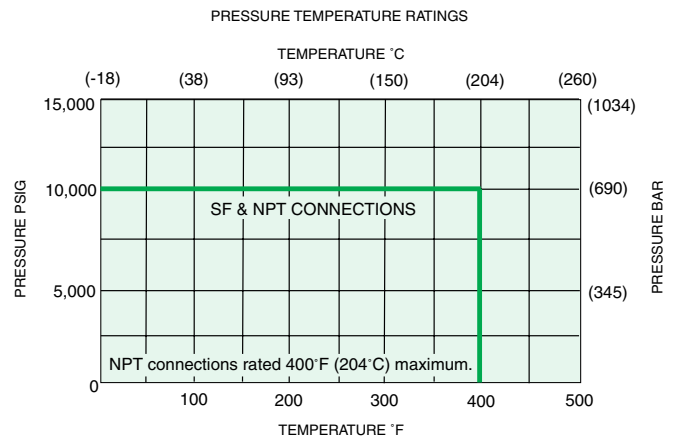
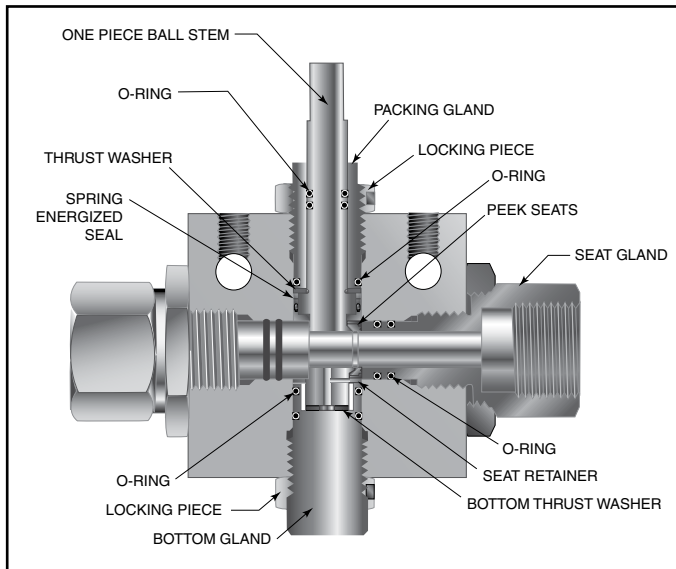
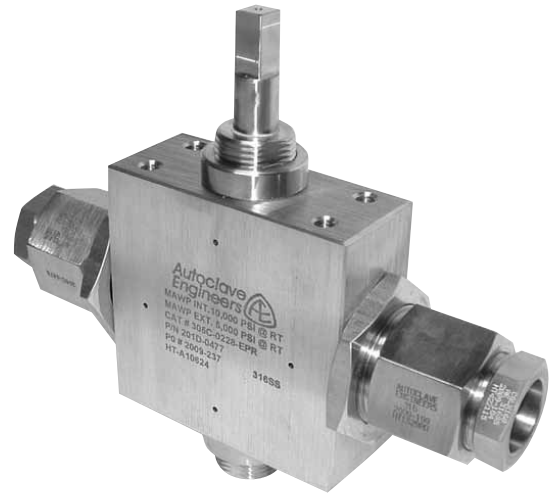
Dimensions for reference only and subject to change.

# Ball Valves - 2-Way Subsea Series (1" Orifice)

**Pressures to 10,000 psi (690 bar) 1.00" (25.4mm) Orifice**

Connection	MAWP @		Valve C <sub>v</sub>
	Room Temperature	Minimum Orifice	
SF1500CX	10,000 psi (690 bar)	.938 (23.83)	30
3/4" NPT	10,000 psi (690 bar)	1.00 (25.40)	34
1" NPT	10,000 psi (690 bar)	1.00 (25.40)	34

MAWP: Maximum Allowable Working Pressure



Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

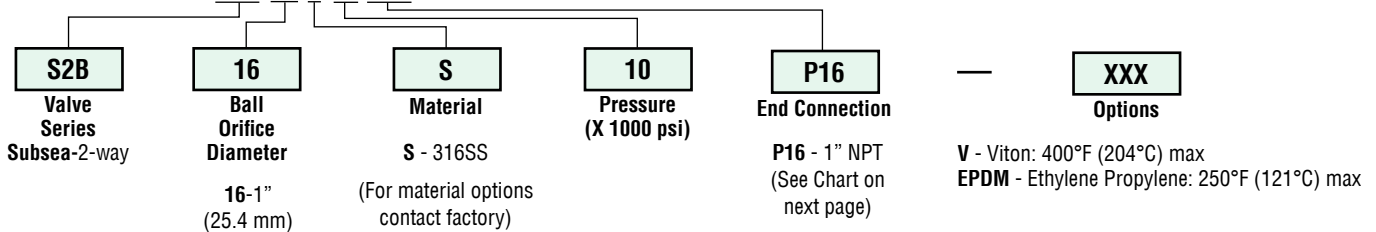
Maximum pressure rating is determined by the end connection (see table above).

**NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.**

## Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 16 S 10 P16**

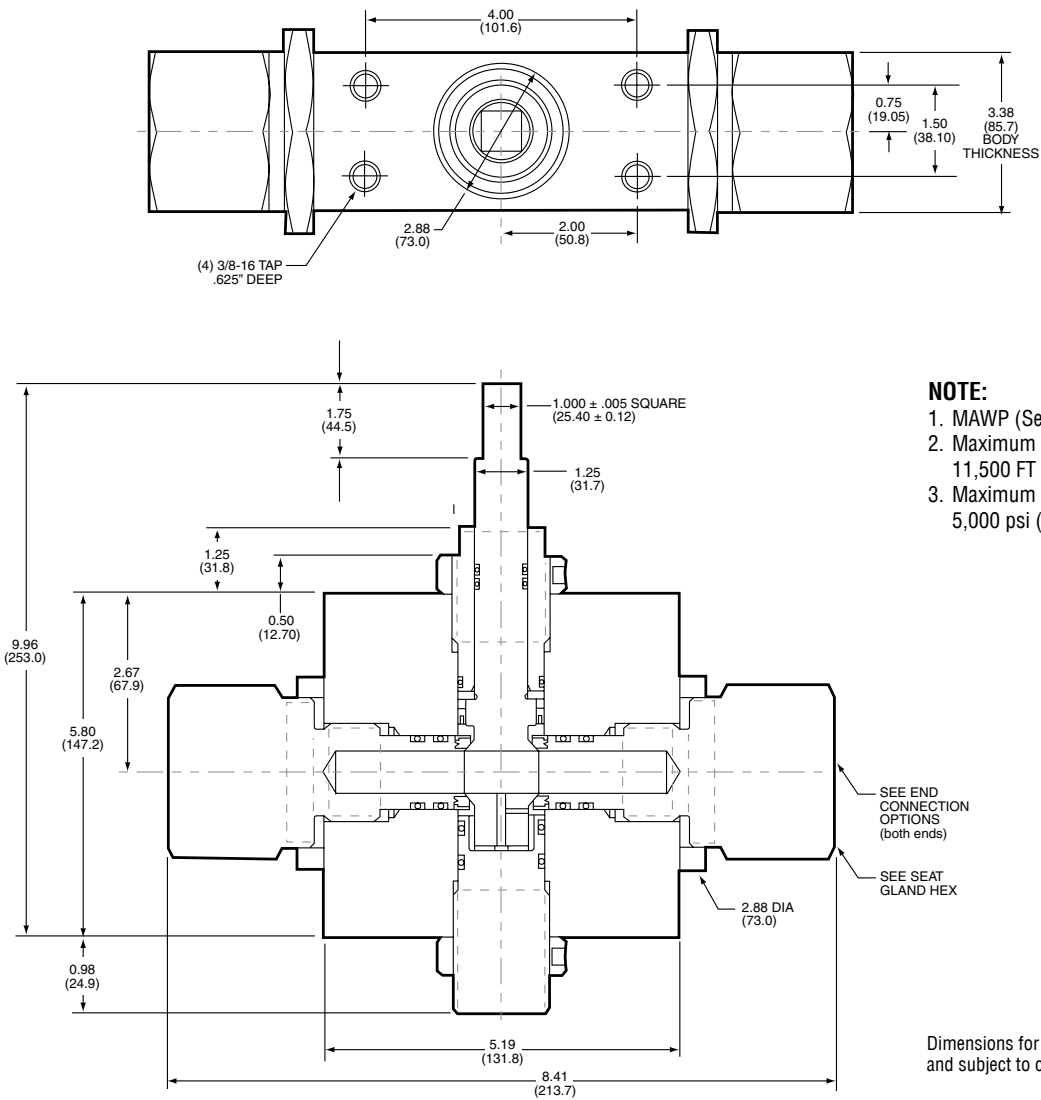


## End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B16S10M24	M24	SF1500CX	10,000 psi (690 bar)	1.88 (47.75)
S2B16S10P12	P12	3/4" NPT	10,000 psi (690 bar)	1.88 (47.75)
S2B16S10P16	P16	1" NPT	10,000 psi (690 bar)	1.88 (47.75)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.



Dimensions for P12 and P16 connections only. Contact factory for M16 dimensions.

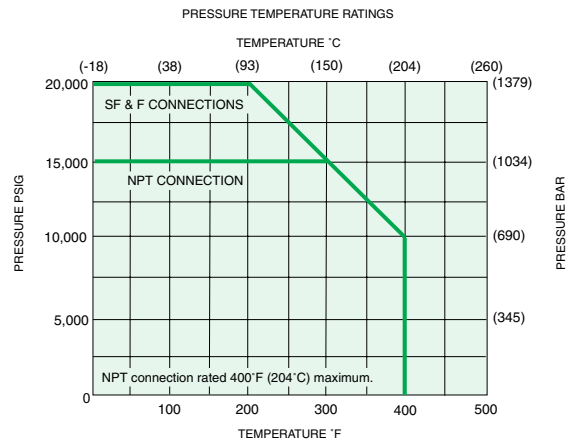
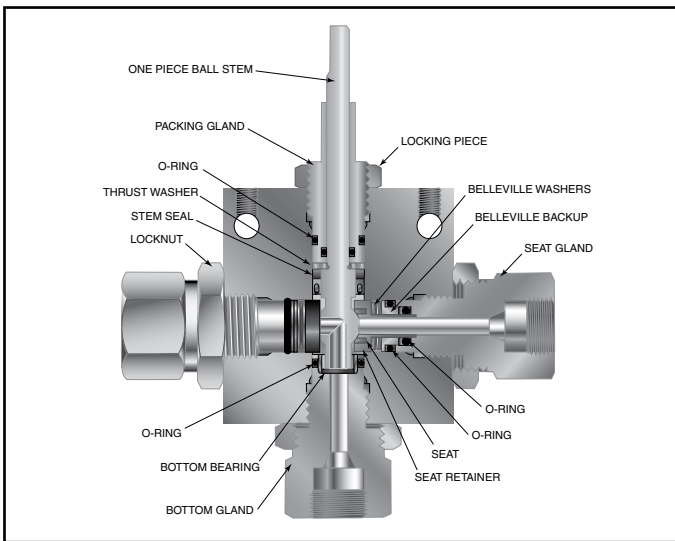
# Ball Valves - 3-Way Subsea Series (3/16" Orifice)

**Pressures to 20,000 psi (1379 bar) .187" (4.77mm) Orifice**

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SF250CX20	20,000 psi (1379 bar)	.109 (2.77)
SF375CX20	20,000 psi (1379 bar)	.188 (4.77)
SF562CX20	20,000 psi (1379 bar)	.188 (4.77)
F250C	20,000 psi (1379 bar)	.094 (2.39)
F375C	20,000 psi (1379 bar)	.125 (3.17)
1/4" NPT	15,000 psi (1034 bar)	.188 (4.77)
3/8" NPT	15,000 psi (1034 bar)	.188 (4.77)

Valve C<sub>v</sub>=.50

MAWP: Maximum Allowable Working Pressure  
C<sub>v</sub> listed is for maximum orifice size of .188 inches only.  
Consult factory for C<sub>v</sub> of valves with reduced orifice sizes.



\*pressure ratings are determined by the end connections chosen, see chart.  
NOTE: Maximum side connection inlet pressure 15,000 psi (1034 bar).  
Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

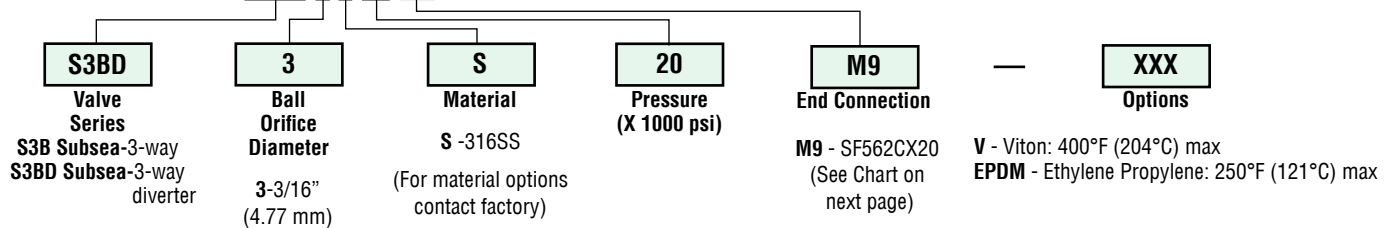
**Note: Side inlet pressure not recommended. Bottom inlet pressure only.**

**NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.**

## Ordering Procedure

For complete information on available end connections, see next page. 3-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S3BD 3 S 20 M9**



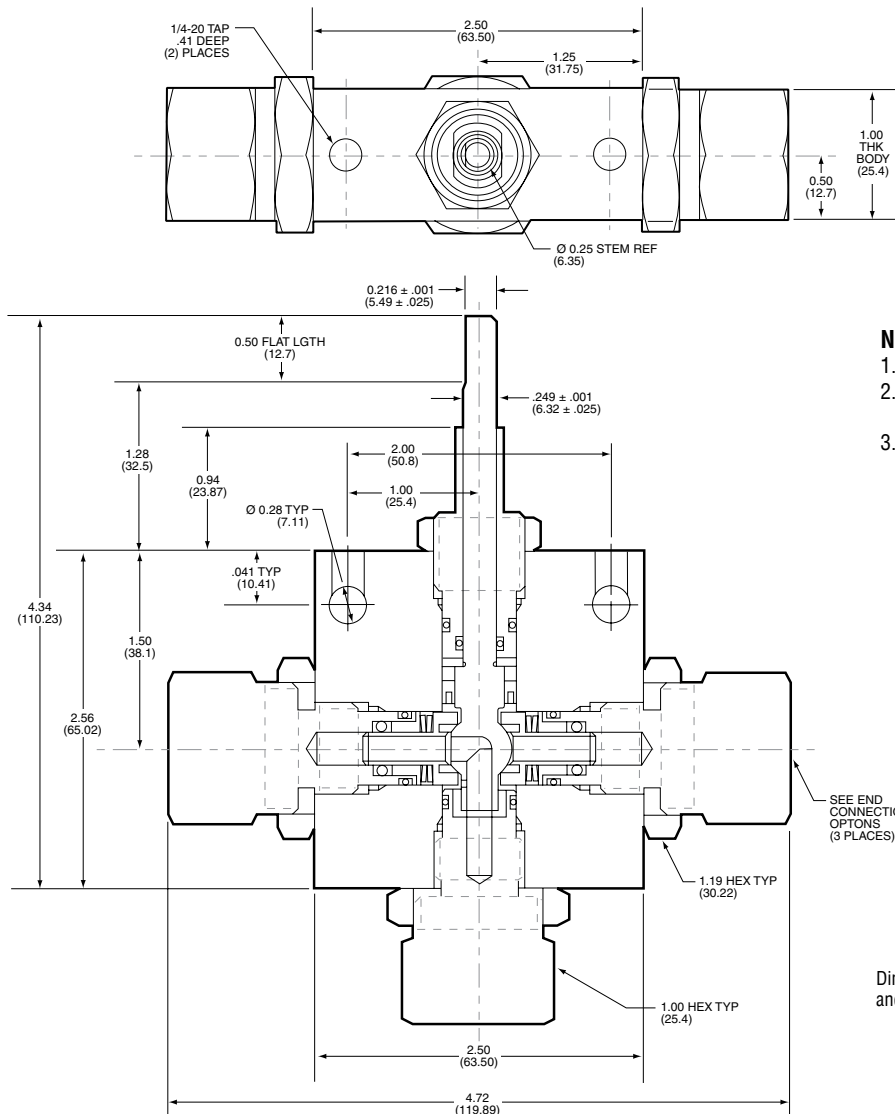
# End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S3B3S15M4 S3BD3S20M4	M4	SF250CX20	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15M6 S3BD3S20M6	M6	SF375CX20	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15M9 S3BD3S20M9	M9	SF562CX20	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15H4 S3BD3S20H4	H4	F250C	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15H6 S3BD3S20H6	H6	F375C	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15P4 S3BD3S15P4	P4	1/4" NPT	15,000 psi (1034 bar)	1 (25.40)
S3B3S15P6 S3BD3S15P6	P6	3/8" NPT	15,000 psi (1034 bar)	1 (25.40)

See ball valve option/detail section for end connection details, material, and high temperature options.



\*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.



- NOTE:**
1. MAWP (See Table)
  2. Maximum Sea Depth 10,300 FT (3140 meters)
  3. Maximum External Pressure 4,500 psi (310 bar)

Dimensions for reference only and subject to change.

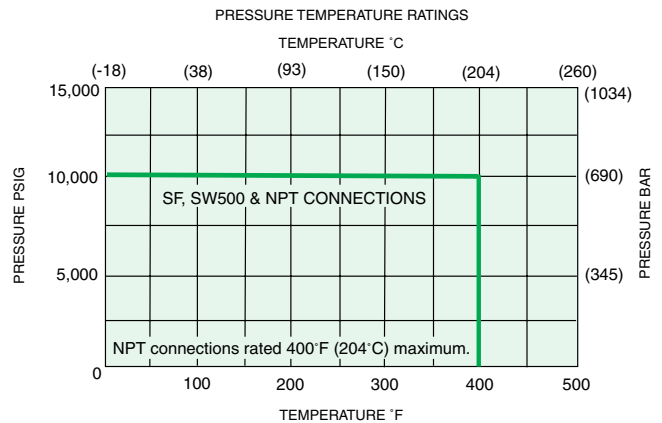
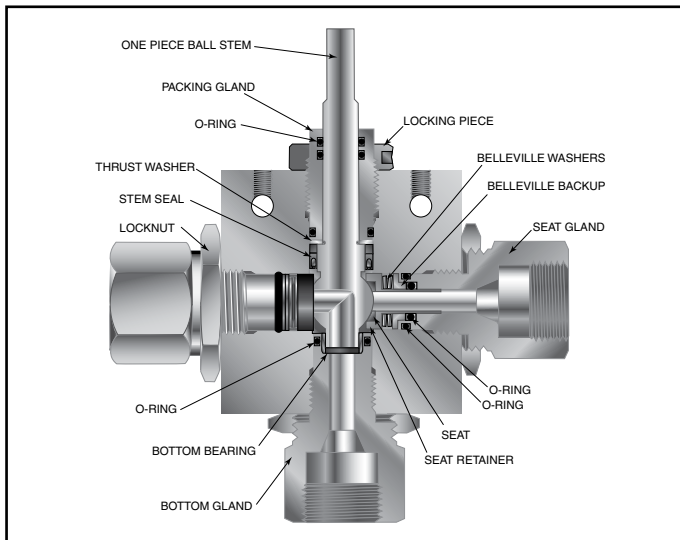
# Ball Valves - 3-Way Subsea Series (3/8" Orifice)

**Pressures to 10,000 psi (689 bar) .328" (8.33mm) Orifice**

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SW500	10,000 psi (690 bar)	.328 (8.33)
SF375CX20	10,000 psi (690 bar)	.203 (5.16)
SF562CX20	10,000 psi (690 bar)	.312 (7.92)
SF750CX20	10,000 psi (690 bar)	.328 (8.33)
1/4" NPT	10,000 psi (690 bar)	.328 (8.33)
3/8" NPT	10,000 psi (690 bar)	.328 (8.33)
1/2" NPT	10,000 psi (690 bar)	.328 (8.33)

Valve  $C_V=2.1$

MAWP: Maximum Allowable Working Pressure  
 $C_V$  listed is for maximum orifice size of .328 inches only.  
 Consult factory for  $C_V$  of valves with reduced orifice sizes.



Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

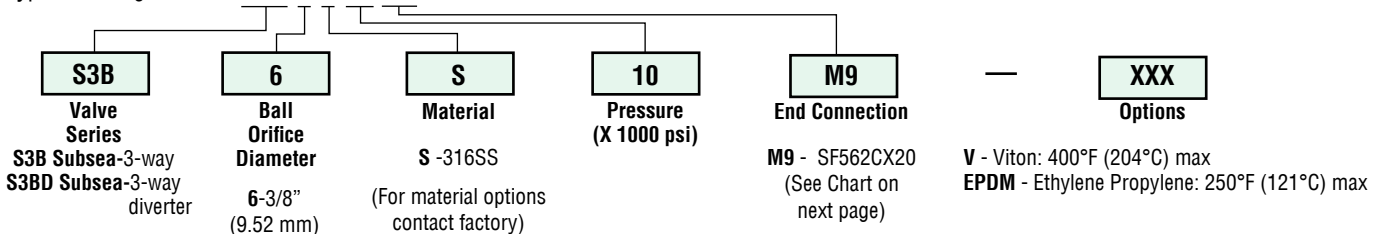
**Note: Side inlet pressure not recommended. Bottom inlet pressure only.**

**NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.**

## Ordering Procedure

For complete information on available end connections, see next page. 3-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S3B 6 S 10 M9**



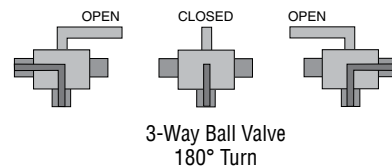
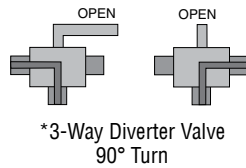


# End Connection Options

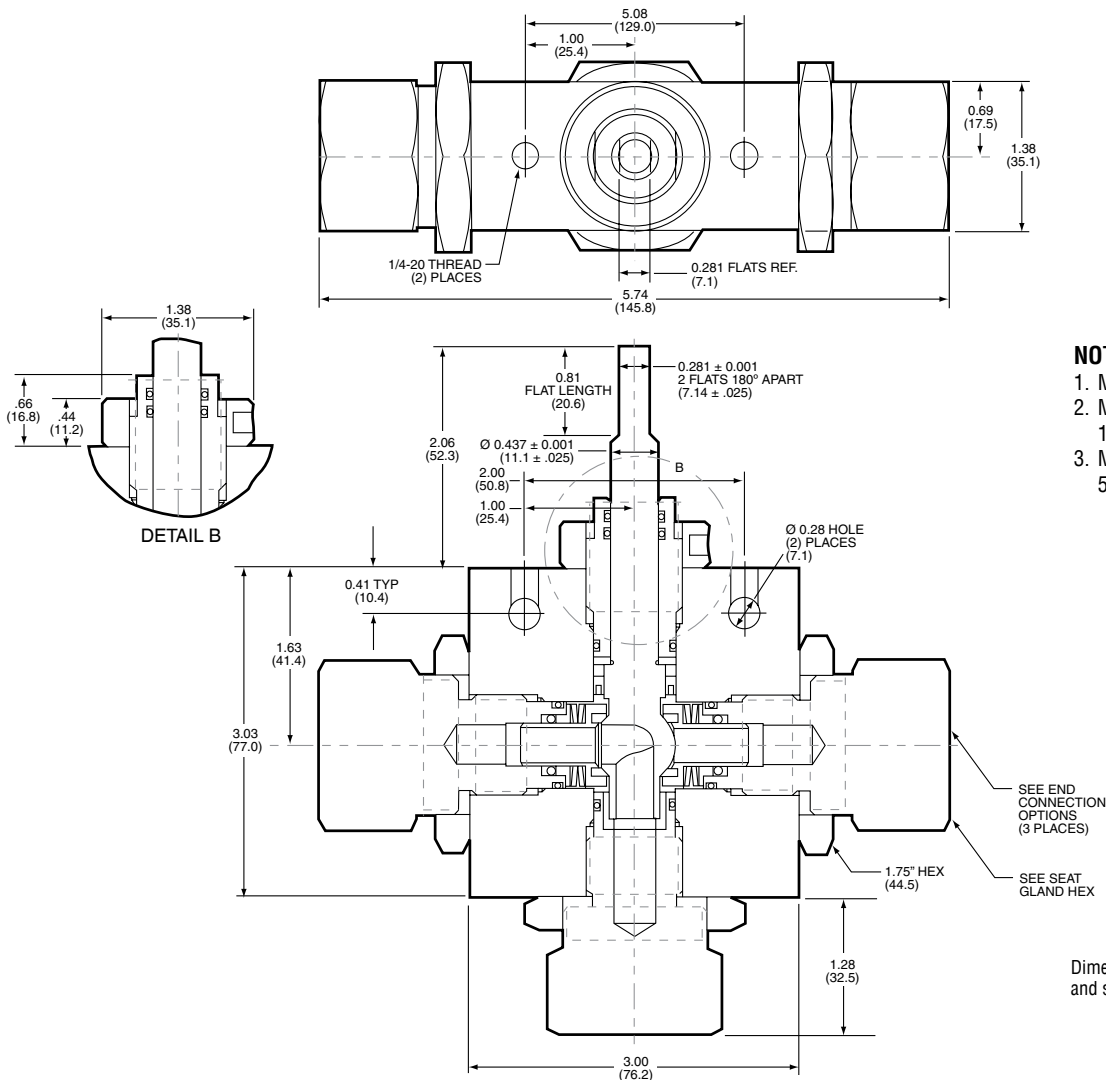
Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S3B6S10L8 S3BD6S10L8	L8	SW500	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10M6 S3BD6S10M6	M6	SF375CX20	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10M9 S3BD6S10M9	M9	SF562CX20	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10M12 S3BD6S10M12	M12	SF750CX20	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10P4 S3BD6S10P4	P4	1/4" NPT	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10P6 S3BD6S10P6	P6	3/8" NPT	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10P8 S3BD6S10P8	P8	1/2" NPT	10,000 psi (690 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.



\*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.



- NOTE:**
1. MAWP (See Table)
  2. Maximum Sea Depth  
11,500 FT (3505 meters)
  3. Maximum External Pressure  
5,000 psi (345 bar)

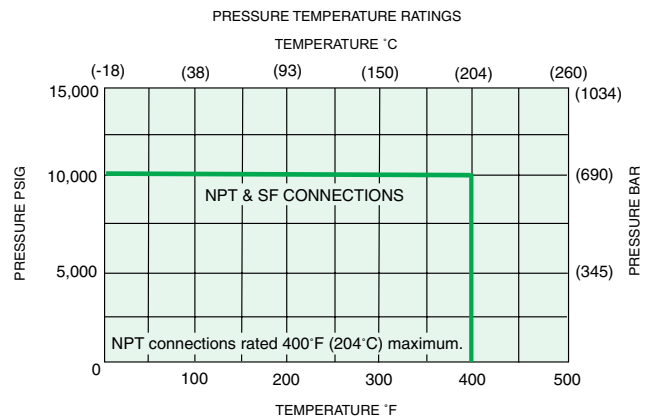
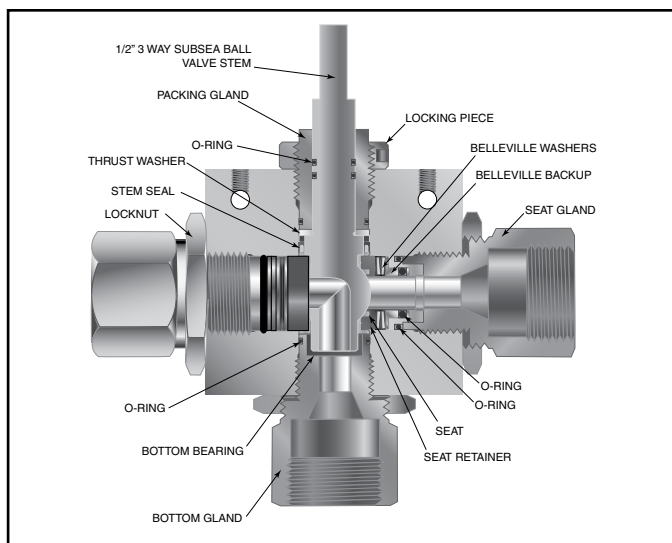
# Ball Valves - 3-Way Subsea Series (1/2" Orifice)

**Pressures to 10,000 psi (690 bar) .500" (12.7mm) Orifice**

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SF750CX20	10,000 psi (690 bar)	.500 (12.70)
SF1000CX20	10,000 psi (690 bar)	.500 (12.70)
3/4" NPT	10,000 psi (690 bar)	.500 (12.70)
1" NPT	10,000 psi (690 bar)	.500 (12.70)

Valve  $C_v=4.4$

MAWP: Maximum Allowable Working Pressure



Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

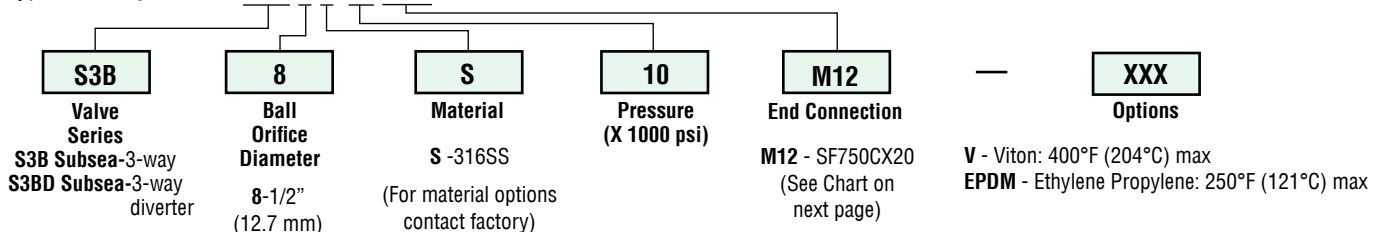
**Note: Side inlet pressure not recommended. Bottom inlet pressure only.**

**NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.**

## Ordering Procedure

For complete information on available end connections, see next page. 3-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S3B 8 S 10 M12**

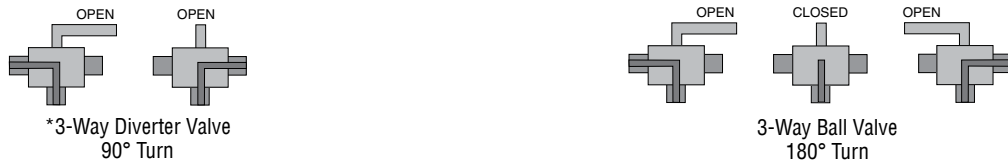


## End Connection Options

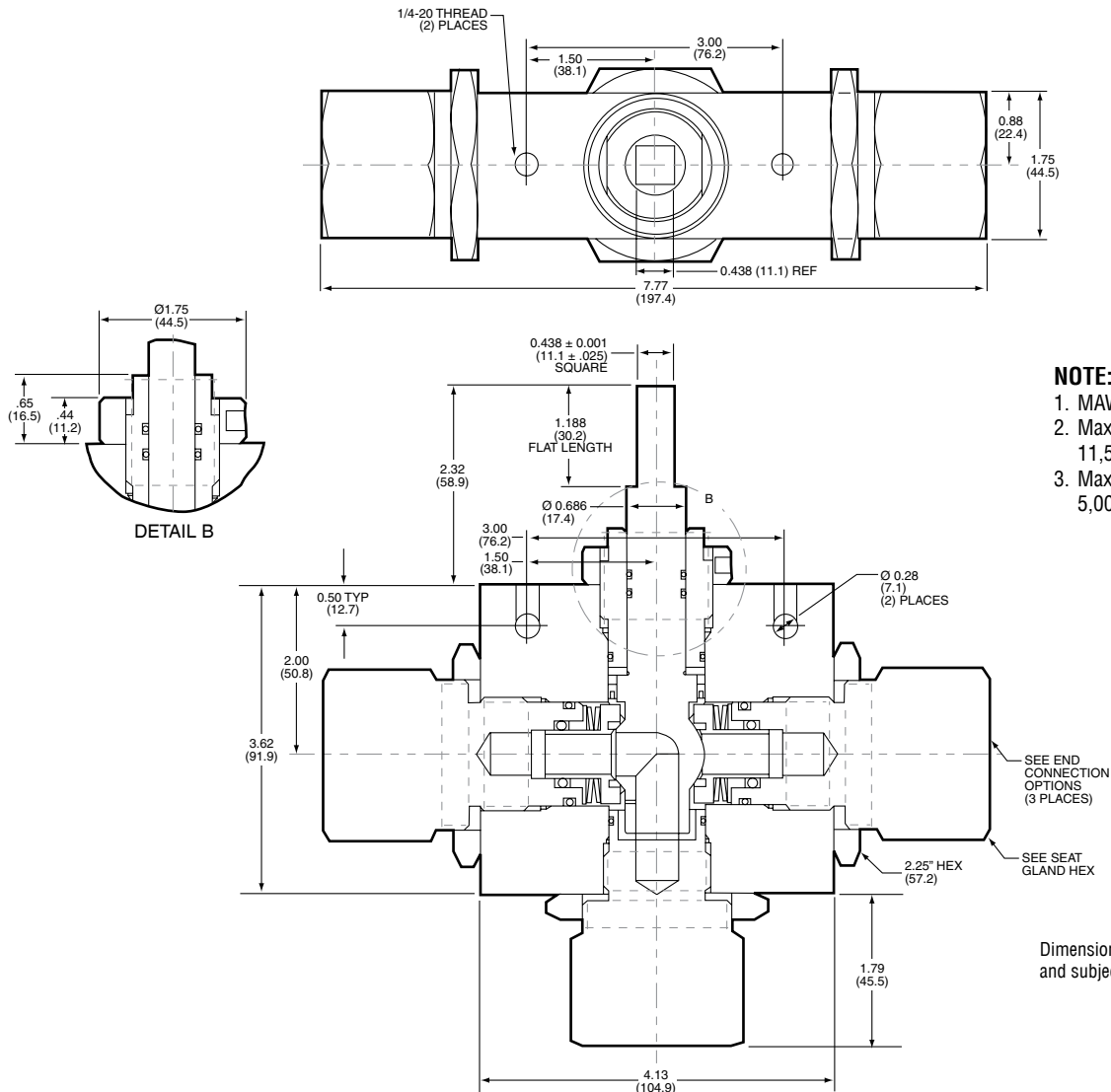
Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S3B8S10M12 S3BD8S10M12	M12	SF750CX20	10,000 psi (690 bar)	1.75 (44.5)
S3B8S10M16 S3BD8S10M16	M16	SF1000CX20	10,000 psi (690 bar)	1.75 (44.5)
S3B8S10P12 S3BD8S10P12	P12	3/4" NPT	10,000 psi (690 bar)	1.75 (44.5)
S3B8S10P16 S3BD8S10P16	P16	1" NPT	10,000 psi (690 bar)	1.75 (44.5)

MAWP: Maximum Allowable Working Pressure

See ball valve options for end connection details, material, and high temperature options.



\*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.



**NOTE:**

1. MAWP (See Table)
2. Maximum Sea Depth 11,500 FT (3505 meters)
3. Maximum External Pressure 5,000 psi (345 bar)

Dimensions for reference only and subject to change.

# Ball Valves

## Actuators

### *Pneumatic Actuators*

### *Electric Actuators*

Parker Autoclave Engineers ball valves can be supplied with either pneumatic or electric operators for automated or remote operation.

Pneumatic and electric operators can be supplied with a variety of features and options. Operators are sized for each valve series to provide reliable and trouble free operation. Listed below are the operator features and available options.

### **Ball Valve Actuator Features/Options:**

#### **Pneumatic Operators**

- Used for remote and automatic operation
- Air-to-open/spring-to-close
- Air-to-close/spring-to-open
- Air-to-open and close (double acting)
- Limit switches or limit switches with visual indicators available
- High temperature option available.
- Stainless steel housing for corrosive applications available.
- Optional solenoid valve available
- Standard anodized aluminum housing
- Optional epoxy coated housing available

#### **Electric Operators**

- Interface with control systems for automated operation and monitoring
- 120 & 220 VAC, 50/60 Hz standard
- 24VDC
- Explosion proof available
- CE mark available



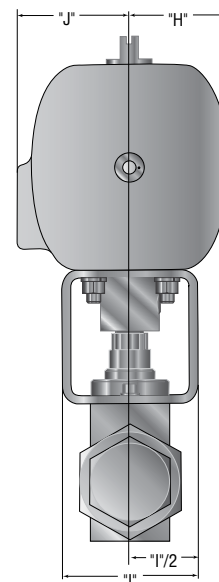
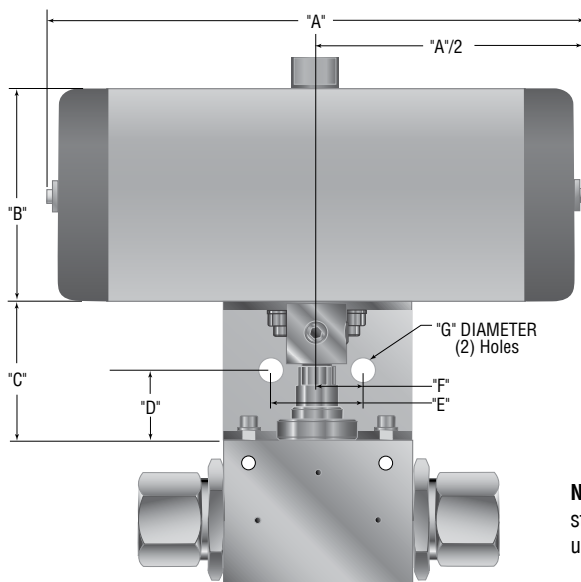
## Pneumatic Operated Ball Valves

Add the suffix **-AO**, **-AC** or **-AOC** to the appropriate valve catalog number for a complete valve assembly

VALVE SERIES	DIMENSION DATA - Inches (mm)										MINIMUM REQUIRED
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	AIR PRESSURE
2B4-AO/AC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
2B6-AO/AC	9.84 (249.93)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	1.50 (25.40)	0.75 (19.05)	0.34 (8.63)	1.87 (47.49)	3.00 (76.20)	2.24 (56.89)	80 psi (5.51 bar)
2B8-AO/AC ★	11.65 (295.91)	4.57 (116.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	2.17 (55.11)	3.00 (76.20)	2.48 (62.99)	80 psi (5.51 bar)
3BD3-AO/AC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
3BD6-AO/AC ★	9.84 (249.93)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	1.50 (25.40)	0.75 (19.05)	0.34 (8.63)	1.87 (47.49)	3.00 (76.20)	2.24 (56.89)	80 psi (5.51 bar)
3BD8-AO/AC	11.65 (295.91)	4.57 (116.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	2.17 (55.11)	3.00 (76.20)	2.48 (62.99)	80 psi (5.51 bar)
2B4-AOC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
2B6-AOC	7.95 (201.93)	3.07 (77.97)	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	1.40 (35.56)	3.00 (76.20)	1.77 (44.95)	80 psi (5.51 bar)
2B8-AOC	9.84 (249.91)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.87 (47.49)	3.00 (76.20)	2.24 (56.89)	80 psi (5.51 bar)
3BD3-AOC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
3BD6-AOC	7.95 (201.93)	3.07 (77.97)	3.00 (76.20)	1.50 (38.10)	1.50 (25.40)	0.75 (19.05)	0.34 (8.63)	1.40 (35.56)	3.00 (76.20)	1.77 (44.95)	80 psi (5.51 bar)
3BD8-AOC	9.84 (249.91)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.87 (47.49)	3.00 (76.20)	2.24 (56.89)	80 psi (5.51 bar)

- NOTE:
- Maximum allowable air pressure is 150 psi (10.34)
  - 1/8" NPT female air connector (\* = 1/4" NPT)
  - AO: Air to open/spring to close
  - AC: Air to close/spring to open
  - AOC: Air to open/air to close (double acting)

- Actuators operating temperature: 0°F to 175°F (-17°C to 79°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.
- Epoxy coated housing available.
- Solenoids available, direct or nipple mount.



NOTE: Operators 90° rotations standard. 180° options available upon request.

# Ball Valves - Actuators

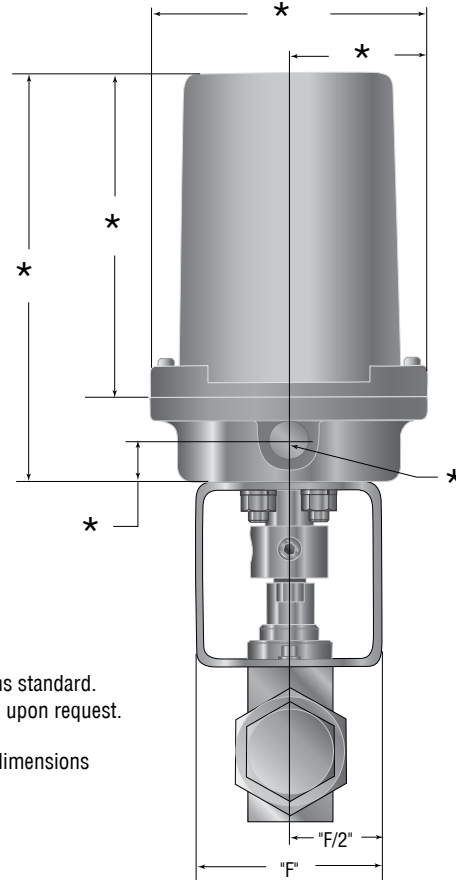
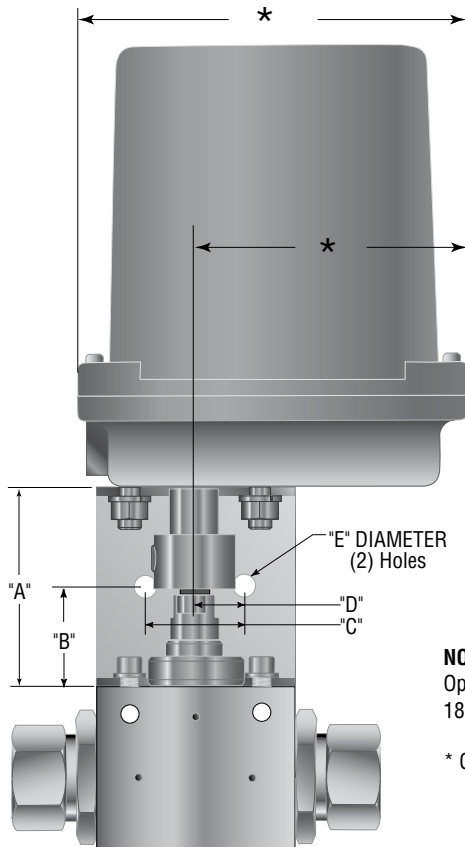
## Electric Operated Ball Valves

Add the suffix **-E01**, **-E02** or **-E03** to the appropriate valve catalog number for a complete valve assembly

VALVE SERIES	DIMENSION DATA - Inches (mm)						VOLTAGE	
	"A"	"B"	"C"	"D"	"E"	"F"		
2B4-E01 2B4-E02	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 240 VAC	50/60 Hz
2B6-E01 2B6-E02	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	120 VAC 240 VAC	50/60 Hz
3BD3-E01 3BD3-E02	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 240 VAC	50/60 Hz
3BD6-E01 3BD6-E02	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	120 VAC 240 VAC	50/60 Hz
2B4-E03	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	24 VDC	
2B6-E03	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	24 VDC	
3BD3-E03	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	24 VDC	
3BD6-E03	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	24 VDC	

- NOTE:
- E01: Electric 120 VAC
  - E02: Electric 220 VAC
  - E03: Electric 24 VDC
  - CSA approved for NEMA 4 & 4X

- For other voltages consult factory
- Actuator operating temperature: 0°F to 160°F (-17°C to 71°C)
- Corrosive resistant Zytel housing
- Consult factory for epoxy option



**NOTE:**  
Operators 90° rotations standard.  
180° options available upon request.

\* Contact factory for dimensions

# Ball Valves - Actuators

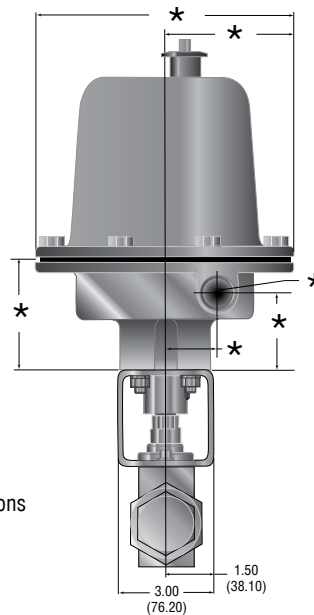
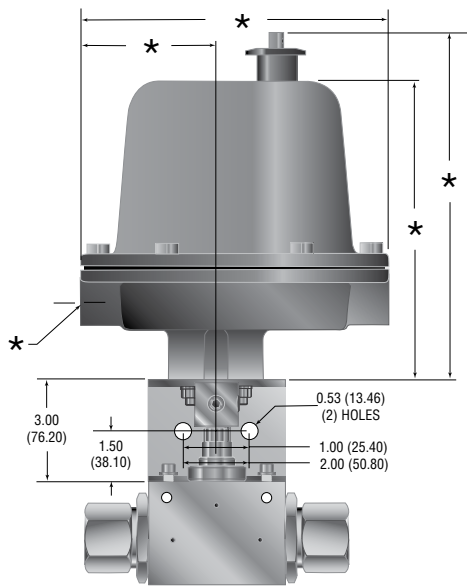
## Electric Operated Ball Valves

Add the suffix -E01, -E02 or -E03 to the appropriate valve catalog number for a complete valve assembly

VALVE SERIES	VOLTAGE	VALVE SERIES	VOLTAGE
	50/60 HZ		
2B8-E01	120 VAC	2B8-E03	24 VDC
3BD8-E01	120 VAC	3BD8-E03	24 VDC
2B8-E02	220 VAC	2B8-E03	24 VDC
3BD8-E02	220 VAC	3BD8-E03	24 VDC

**NOTE:**

- E01: Electric 120 VAC
- E02: Electric 220 VAC
- E03: Electric 24 VDC
- Explosion proof
- Actuator operating temperature: 0°F to 160°F (-17°C to 71°C)
- Powder coated aluminum housing
- CE marked
- UL listed & CSA approved for NEMA 4, 4x, 7 & 9
- For other voltages consult factory



**NOTE:**

\* Contact factory for dimensions

### 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.**

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

**Caution!** Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

**ISO-9001 Certified**

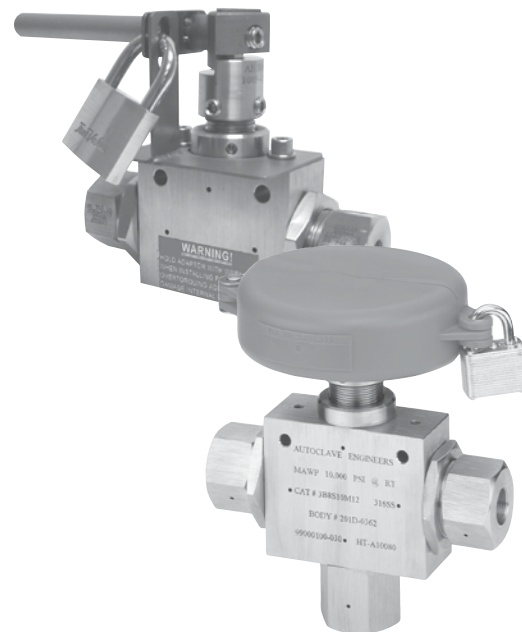
# Ball Valves

## Options / Details

Parker Autoclave Engineers ball valves can be supplied with a number of options to meet your requirements. Options consist of different materials of construction, seal material, high temperature seals, handle colors, handle lockouts, limit switches or limit switches with visual indicators for pneumatic actuators.

Replacement of the old style ball valve with the new style is also addressed with complete ordering information.

The following pages provide details on the available options, as well as tube connection dimensions. For additional information on these options, or technical information not found in this or any other section, consult the factory or local distributor.





# Ball Valves - Options / Details

## High Temperature Option

Ball valves are available with alternate o-rings for high temperature operation. Standard Viton o-rings are replaced with Kalrez o-rings to increase the operating temperature to 500°F (260°C). To specify this option, add “-HT” to the catalog number as shown in the ball valve sections.

High temperature pneumatic valve actuators are also available. Consult factory with your application and for specific information.

## Material Options

Standard ball valves are constructed of 316 stainless steel. Other materials are available for specific applications upon request. NACE (MR0175-2002) approved materials for sour service can be supplied upon request. Consult factory for later NACE revisions and for the materials available as well as the temperature and pressure ratings.

## Limit Switches or Limit Switches with Visual Indicators

Pneumatic actuators are available with limit switches or limit switches with visual indicators. Consult the factory for information on these items or questions concerning your applications.

## Handle Lockouts

Handle lockouts are available to lockout ball valves in the open or closed position preventing unauthorized personnel from actuating valves during shutdowns or emergency situations.

*Note: To purchase ball valves with lockouts add -L to part number.*

Part numbers to purchase lockout separately:

<u>2-Way Ball Valves</u>	<u>3-Way Ball Valves</u>
1/4" 2B4-L	3/16" 3B3-L
3/8" 2B6-L	3/8" 3B6-L
1/2" 2B8-L	1/2" 3B8-L

For 3-way switching ball valves, consult factory.

For 6DB (double block and bleed) valves use two 2B6-L lockouts.

## Obsolete Ball Valves

Ball valves complete with connection adapters are available for direct replacement of our older obsolete ball valve. The ball valve seat glands are designed to permit replacement without having to modify your existing tubing. To order valves for direct replacement add “-OS” to the end of the standard ball valve catalog number.

*Note: This applies only to the 1/4" 2-way ball valve.*

## Connection Detail Dimensions

The following are reference dimensions for the tube connections used in the ball valves. For complete connection information see the Tools, Installation, Operation and Maintenance section in the Parker Autoclave Engineers Fluid Components complete catalog.

## Tube Connection Dimensions - AE SpeedBite SW \*

Tube Outside Diameter inches (mm)	Connection Type	Dimensions - Inches (mm)						
		A	B	C	D	E	F	G
1/4 (6.35)	SW250	29/64 (11.50)	1/2 -20 (12.7) -20	0.34 (8.64)	0.44 (11.20)	0.69 (17.50)	0.35 (8.89)	"F" 0.257 "F" (6.53)
3/8 (19.50)	SW375	37/64 (14.70)	5/8 -18 (15.90) -18	0.38 (9.65)	0.47 (11.90)	0.75 (19.10)	0.48 (12.20)	"W" 0.386 "W" (9.80)
1/2 (12.70)	SW500	3/4 (19.10)	13/16 -16 (20.60) -16	0.41 (10.50)	0.50 (12.70)	0.81 (20.60)	0.60 (15.20)	0.514 (13.100)

## Tube Connection Dimensions - AE SpeedBite W \*

Tube Outside Diameter inches (mm)	Connection Type	Dimensions - Inches (mm)						
		A	B	C	D	E	F	G
1/8 (3.18)	W125	"Q" 0.332 "Q" (8.43)	3/8 -24 (9.53) -24	0.22 (5.59)	0.31 (7.87)	0.47 (11.90)	0.19 (4.83)	#30 0.128 #30 (3.25)
1/4 (6.35)	W250	11/16 (17.50)	3/4 -16 (19.10) -16	0.38 (9.65)	0.44 (11.20)	0.69 (17.50)	0.35 (8.89)	"F" 0.257 "F" (6.53)
3/8 (9.53)	W375	11/16 (17.50)	3/4 -16 (19.10) -16	0.38 (9.65)	0.44 (11.20)	0.69 (17.50)	0.48 (12.20)	"W" 0.386 "W" (9.80)

Note: All dimensions are shown for reference only and should not be considered as actual machine dimensions.

For prompt service, Parker Autoclave Engineers stocks select products. Consult factory

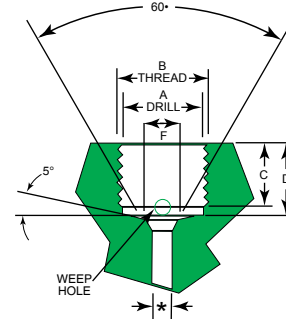
\* For port diameter please see orifice sizes for specific valves and fittings. All threads are manufactured to a class 2A or 2B fit.

## Tube Connection Dimensions - AE Medium Pressure SFCX \*\*

Tube Outside Diameter inches (mm)	Connection Type	Dimensions - Inches (mm)				
		A	B	C	D	F
1/4 (6.35)	SF250CX20	25/64 (9.92)	7/16 -20 (11.10) -20	0.28 (7.11)	0.50 (12.70)	0.19 (4.83)
3/8 (9.53)	SF375CX20	33/64 (13.10)	9/16 -18 (14.30) -18	0.38 (9.65)	0.62 (15.70)	0.31 (7.87)
9/16 (14.30)	SF562CX20	3/4 (19.10)	13/16 -16 (20.60) -16	0.44 (11.20)	0.75 (19.10)	0.50 (12.70)
3/4 (19.10)	SF750CX20	61/64 (24.20)	3/4 -14 <sub>Z</sub> (19.10) -14 <sub>Z</sub>	0.50 (12.70)	0.94 (23.90)	0.62 (15.70)
1 (25.40)	SF100CX20	1 -19/64 (32.90)	1-3/8 -12 (34.90) -12	0.81 (20.60)	1.31 (33.30)	0.88 (22.40)
1-1/2 (38.10)	SF1500CX	1-25/32 (45.24)	1-7/8 -12 (47.63) -12	1.00 (25.40)	1.59 (40.49)	1.38 (34.93)

## Tube Connection Dimensions - AE HighPressure FC \*\*

Tube Outside Diameter inches (mm)	Connection Type	Dimensions - Inches (mm)				
		A	B	C	D	F
1/4 (6.35)	F250C	33/64 (13.10)	9/16 -18 (14.30) -18	0.38 (9.65)	0.44 (11.20)	0.17 (4.32)
3/8 (9.53)	F375C	11/16 (17.50)	3/4 -16 (19.10) -16	0.53 (13.50)	0.62 (15.70)	0.26 (6.60)
9/16 (14.30)	F562C	1-3/64 (26.60)	1-1/8 -12 (28.60) -12	0.62 (15.70)	0.75 (19.10)	0.38 (9.65)



*Note: All dimensions are shown for reference only and should not be considered as actual machine dimensions.*

*\* For port diameter please see orifice sizes for specific valves and fittings.*

*\*\* For male tubing end preparation, please see pages "Tools, Installation" section in main catalog.*

*All threads are manufactured to a class 2A or 2B fit.*

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### WARNING

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