

## 3 Way Quarter/180° Turn Ball Type 3/16" to 1/2" Bore

Pressures to 20,000 psi (1380 bar)

3B3/3BD3, 3B6/3BD6, and 3B8/3BD8 Series



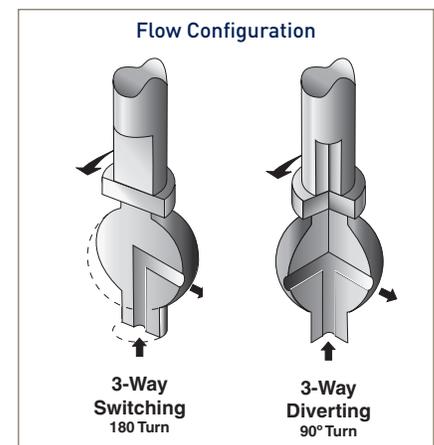
These ball valves can also be modified to incorporate the use of special materials, seals for high temperature applications, subsea models, and valve actuators. When it comes to high-pressure applications, these ball valves with the associated high-pressure components, provide the critical performance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

### 3 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, 316 cold worked Stainless Steel construction
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life and reduces operating torque
- Available in 90° turn diverter and 180° turn switching models
- 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
- Wide selection of tube and pipe end fittings available
- Electric and pneumatic actuator options

### 3 Way Ball Valve Applications:

- Laboratories
- Test Stands
- Control Panels
- Pilot Plants
- Actuator Sequencing
- Oil & Gas Production



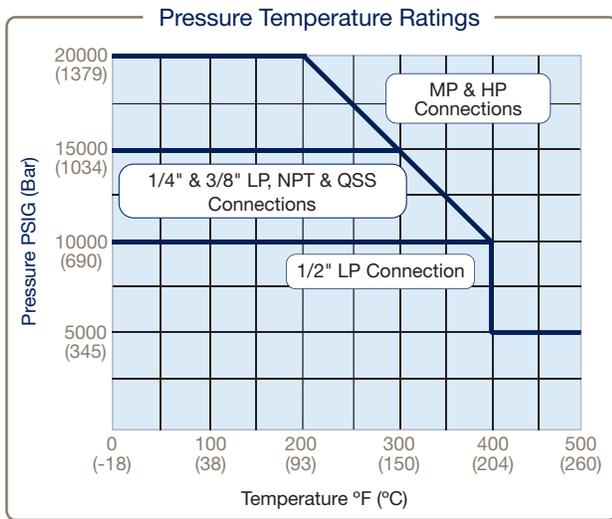
# 3 Way Series: 3/16" (4.77mm) Orifice - Pressures to 20,000 psi (1379 bar)



Connection Type	MAWP** at Room Temperature	Minimum Orifice Inches (mm)	Rated Cv
SW250 (1/4" LP)	15,000 psi (1034 bar)	0.129 (3.28)	0.50
SW375 (3/8" LP)	15,000 psi (1034 bar)	0.188 (4.77)	0.50
SW500 (1/2" LP)	10,000 psi (690 bar)	0.188 (4.77)	0.50
SF250CX20 (1/4" MP)	20,000 psi (1379 bar)	0.109 (2.77)	0.50
SF375CX20 (3/8" MP)	20,000 psi (1379 bar)	0.188 (4.77)	0.50
F250C (1/4" HP)	20,000 psi (1379 bar)	0.094 (2.39)	0.33
F375C (3/8" HP)	20,000 psi (1379 bar)	0.125 (3.17)	0.33
1/4" FNPT	15,000 psi (1034 bar)	0.188 (4.77)	0.50
3/8" FNPT	15,000 psi (1034 bar)	0.188 (4.77)	0.50
QS250 (1/4" QSS)	15,000 psi (1034 bar)	0.157 (3.99)	0.50
QS375 (3/8" QSS)	15,000 psi (1034 bar)	0.188 (4.77)	0.50

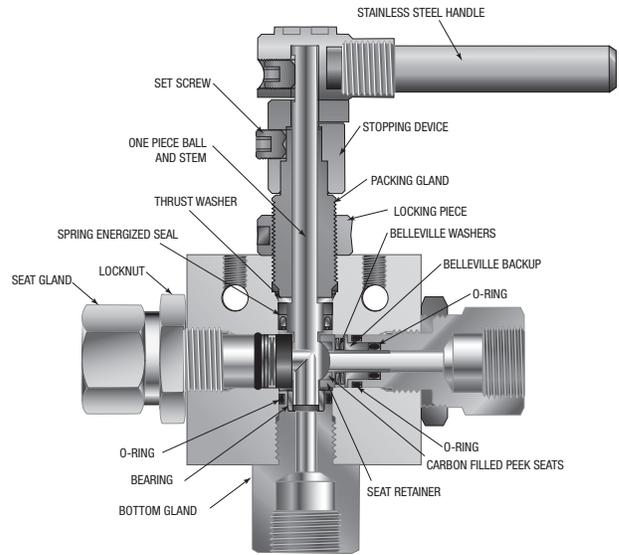
3/16" 3-Way Valve can be used for bi-directional flow, inlet pressure from side ports are limited to 15,000 psi maximum.

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



**3 Way 3/16" Bore Ball Valve**

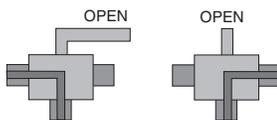
Pressure Ratings are determined by the end connections chosen, see chart. Maximum Temperature rating is determined by the o-ring material (see following description) NPT connections are limited to 400°F max due to PTFE Sealant.



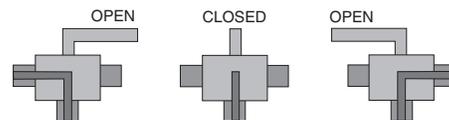
To ensure proper fit use Parker Autoclave tubing

**NOTE: Critical gas applications such as Hydrogen or Helium are not recommended and should be evaluated on a case by case basis. Consult factory.**

## Diverter Flow Control:



**\*3-Way Diverter Valve  
90° Turn (3BD3 Series)**



**3-Way Switching Valve  
180° Turn (3B3 Series)**

\*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port with only a 90° turn.

## Ordering Guide:

3-way ball valves are furnished complete with tube or pipe connections. Standard valve has FKM o-rings [400°F (204°C) maximum].

### Building a Part Number: Example: 3B3S20M6

Example Part Number:	<b>3B</b>	<b>3</b>	<b>S</b>	<b>20</b>	<b>M6</b>	<b>-</b>	<b>XXX</b>
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		F

A - Valve Series	
3B	3 Way Switching (Selector) Valve (180° Turn)
3BD	3 Way Diverter Valve (90° Turn)

B - Ball Orifice Diameter	
3	3/16" (4.77mm)

C - Base Material	
S	316 Cold Worked (non-NACE) Stainless Steel
S	2507 Super Duplex Wetted Material (needs "F" Material Code Suffix)
S	6 Moly (254-SMO) Material (needs "F" Material Code Suffix)
Additional Material Available, please contact factory.	

D - Pressure (x 1000 psi)	
10	10,000 psi (1/2" LP Connection)
15	15,000 psi (LP, NPT, and QS connections)
20	20,000 psi (MP and HP connections)
Maximum MAWP based on connection type or material (whichever is lower)	

#### Basic Repair Kits: (see page 28 for kit contents)

When ordering a basic repair kit add an "R" prefix before product model codes A, B, and C (see above). Example: R3B3S

When ordering with "F-Options" add an "R" prefix before model codes A, B, C and F (see above). Example: R3B3S-EPR Contact your Parker Autoclave Engineers Sales Representative with any questions or refer to the Operation & Maintenance manuals (found online at [www.Autoclave.com](http://www.Autoclave.com)) for proper maintenance procedures.

E - End Connection			
	Connection	MAWP @ RT	Seat Gland Hex
L4	SW250 (1/4" LP)	15,000 psi	1"
L6	SW375 (3/8" LP)	15,000 psi	1"
L8	SW500 (1/2" LP)	10,000 psi	1"
M4	SF250CX20 (1/4" MP)	20,000 psi	1"
M6	SF375CX20 (3/8" MP)	20,000 psi	1"
H4	F250C (1/4" HP)	20,000 psi	1"
H6	F375C (3/8" HP)	20,000 psi	1"
P4	1/4" FNPT	15,000 psi	1"
P6	3/8" FNPT	15,000 psi	1"

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 500°F (260°C)
K	Antivibration Gland Fitting (Cone & Thread Only)
L	Lockout Bracket (see page 43 for detail)
SOG*	ALL Parts NACE material, hardness Check, NACE Certification
2507**	2507 Super Duplex (20,000 psi max.) used with "S" Material Code
25-4MO**	6 Moly (25-4SMO) Material (used with "S" material code)
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			
<b>AO</b> Air to Open / Spring to Close (Diverter Style Only)	<b>EO1</b>	<b>EO1X</b>	120 volt AC 50/60 Hz	<b>Pneumatic</b>	-10°F to 176°F (-23°C to 80°C)
<b>AC</b> Air to Close / Spring to Open (Diverter Style Only)	<b>EO2</b>	<b>EO2X</b>	220 volt AC 50/60 Hz	<b>Electric</b>	0°F to 160°F (-17°C to 71°C)
<b>AOC</b> Air to Open and Close (Double Action)	<b>EO3*</b>	<b>EO3X*</b>	24 VDC		

\* 24VDC Electric Actuator not available in 180° Actuation option (3B3 Series)

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

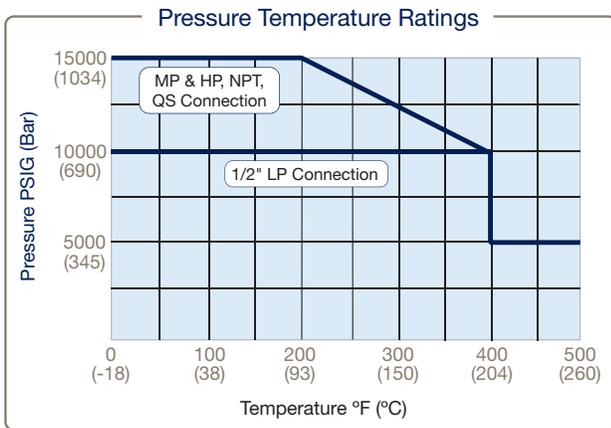
# 3 Way Series: 3/8" (9.52mm) Orifice - Pressures to 15,000 psi (1034 bar)



Connection Type	MAWP** at Room Temperature	Minimum Orifice Inches (mm)	Rated Cv
SW500 (1/2" LP)	10,000 psi (690 bar)	0.326 (8.28)	2.1
SF562CX20 (9/16" MP)	15,000 psi (1034 bar)	0.312 (7.92)	2.1
SF750CX10 (3/4" MP)	15,000 psi (1034 bar)	0.326 (8.28)	2.1
3/8" FNPT	15,000 psi (1034 bar)	0.326 (8.28)	2.1
1/2" FNPT	15,000 psi (1034 bar)	0.326 (8.28)	2.1
F562C (9/16" HP)	15,000 psi (1034 bar)	0.326 (8.28)	2.1
QS562 (9/16" QSS)	15,000 psi (1034 bar)	0.326 (8.28)	2.1

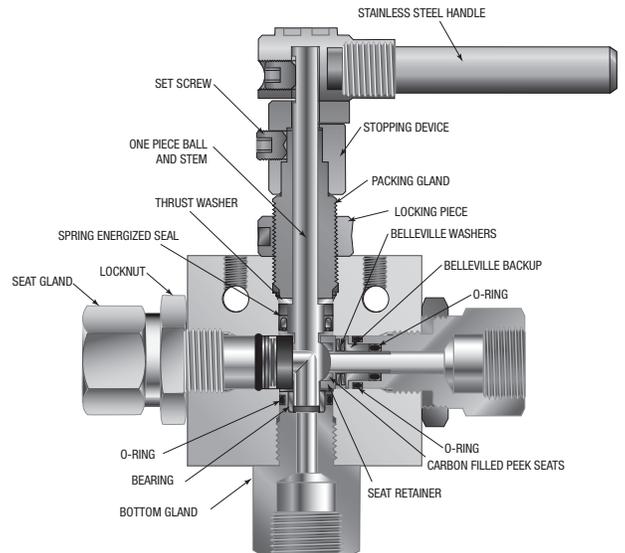
3/8" 3-Way Valve is designed for inlet pressure from bottom inlet position only.

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



3 Way 3/8" Bore Ball Valve

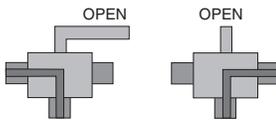
Pressure Ratings are determined by the end connections chosen, see chart. Maximum Temperature rating is determined by the o-ring material (see following description) NPT connections are limited to 400°F max due to PTFE Sealant.



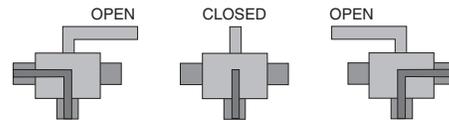
To ensure proper fit use Parker Autoclave tubing

**NOTE: Critical gas applications such as Hydrogen or Helium are not recommended and should be evaluated on a case by case basis. Consult factory.**

## Diverter Flow Control:



\*3-Way Diverter Valve  
90° Turn (3BD6 Series)



3-Way Switching Valve  
180° Turn (3B6 Series)

\*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port with only a 90° turn.

## Ordering Guide:

3-way ball valves are furnished complete with tube or pipe connections. Standard valve has FKM o-rings [400°F (204°C) maximum].

### Building a Part Number: Example: 3B6S15M9

Example Part Number:	<b>3B</b>	<b>6</b>	<b>S</b>	<b>15</b>	<b>M9</b>	-	<b>XXX</b>
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		F

A - Valve Series	
3B	3 Way Switching (Selector) Ball Valve (180° Turn)
3BD	3 Way Diverter Valve (90° Turn)

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

C - Base Material	
S	316 Cold Worked (non-NACE) Stainless Steel
S	2507 Super Duplex Wetted Material (needs "F" Material Code Suffix)
S	6 Moly (254-SMO) Material (needs "F" Material Code Suffix)
Additional Material Available, please contact factory.	

D - Pressure (x 1000 psi)	
10	10,000 psi (1/2" LP Connection)
15	15,000 psi
Maximum MAWP based on connection type or material (whichever is lower)	

**Basic Repair Kits:** (see page 28 for kit contents)

When ordering a basic repair kit add an "R" prefix before product model codes A, B, and C (see above). Example: R3B6S

When ordering with "F-Options" add an "R" prefix before model codes A, B, C and F (see above). Example: R3B6S-EPR Contact your Parker Autoclave Engineers Sales Representative with any questions or refer to the Operation & Maintenance manuals (found online at [www.Autoclave.com](http://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"
M9	SF562CX20 (9/16" MP)	15,000 psi	1-3/8"
M12	SF750CX10 (3/4" MP)	15,000 psi	1-3/8"
P4	1/4" FNPT	15,000 psi	1-3/8"
P6	3/8" FNPT	15,000 psi	1-3/8"
H9	F562C (9/16" HP)	15,000 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 500°F (260°C)
K	Antivibration Gland Fitting (Cone & Thread Only)
L	Lockout Bracket (see page 43 for detail)
SOG*	ALL Parts NACE material, hardness Check, NACE Certification
2507**	2507 Super Duplex (20,000 psi max.) used with "S" Material Code
25-4MO**	6 Moly (25-4SMO) Material (used with "S" material code)
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	-10°F to 176°F (-23°C to 80°C)
AC	Air to Close / Spring to Open (Diverter Style Only)	EO2	EO2X	220 volt AC 50/60 Hz	Electric	0°F to 160°F (-17°C to 71°C)
AOC	Air to Open and Close (Double Action)	EO3*	EO3X*	24 VDC		

\* 24VDC Electric Actuator not available in 180° Actuation option (3B6 Series)

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

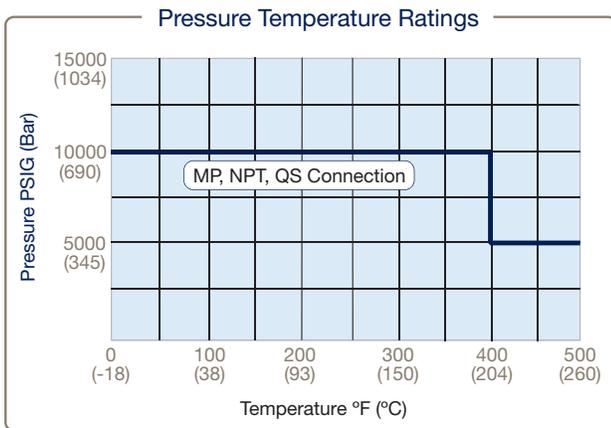
# 3 Way Series: 1/2" (12.7mm) Orifice - Pressures to 10,000 psi (690 bar)



Connection Type	MAWP** at Room Temperature	Minimum Orifice Inches (mm)	Rated Cv
SF750CX20 (3/4" MP)	10,000 psi (690 bar)	0.500 (12.70)	4.4
SF1000CX20 (1" MP)	10,000 psi (690 bar)	0.500 (12.70)	4.4
3/4" FNPT	10,000 psi (690 bar)	0.500 (12.70)	4.4
1" FNPT	10,000 psi (690 bar)	0.500 (12.70)	4.4
QS750 (3/4" QSS)	10,000 psi (690 bar)	0.500 (12.70)	4.4
QS1000 (1" QSS)	10,000 psi (690 bar)	0.500 (12.70)	4.4

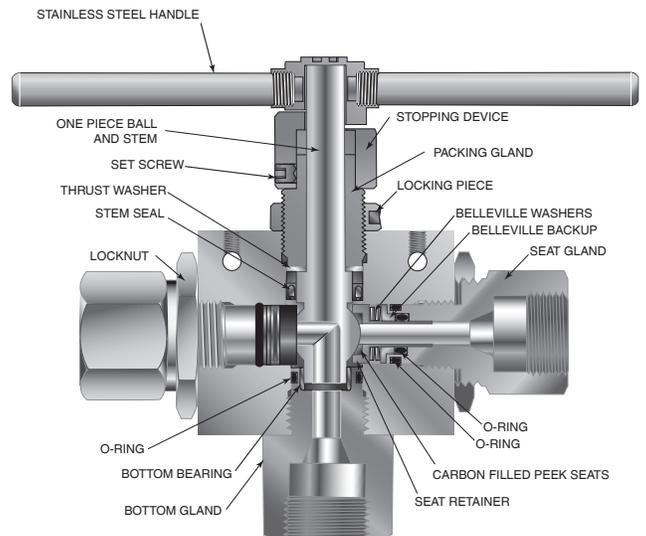
1/2" 3-Way Valve can be used for bi-directional flow, inlet pressure from side ports can be up to 10,000 psi maximum.

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



**3 Way 1/2" Bore Ball Valve**

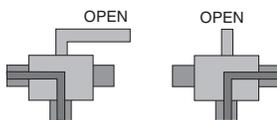
Pressure Ratings are determined by the end connections chosen, see chart.  
Maximum Temperature rating is determined by the o-ring material (see following description)  
NPT connections are limited to 400°F max due to PTFE Sealant.



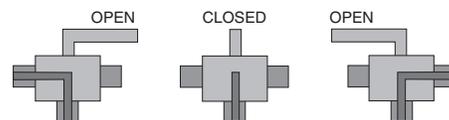
To ensure proper fit use Parker Autoclave tubing

**NOTE:** Critical gas applications such as Hydrogen or Helium are not recommended and should be evaluated on a case by case basis. Consult factory.

## Diverter Flow Control:



**\*3-Way Diverter Valve**  
90° Turn (3BD8 Series)



**3-Way Switching Valve**  
180° Turn (3B8 Series)

\*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port with only a 90° turn.

## Ordering Guide:

3-way ball valves are furnished complete with tube or pipe connections. Standard valve has FKM o-rings [400°F (204°C) maximum].

### Building a Part Number: Example: 3B8S10M12

Example Part Number:	3B	8	S	10	M12	-	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		F

A - Valve Series	
3B	3 Way Switching (Selector) Valve, 180° Turn
3BD	3 Way Diverter Valve (90° Turn)

B - Ball Orifice Diameter	
8	1/2" (12.7mm)

C - Base Material	
S	316 Cold Worked (non-NACE) Stainless Steel
S	2507 Super Duplex Wetted Material (needs "F" Material Code Suffix)
S	6 Moly (254-SMO) Material (needs "F" Material Code Suffix)
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 28 for kit contents)

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When ordering with "F-Options" add an "R" prefix before model codes A, B, C and F (see above). Example: R3B8S-EPR Contact your Parker Autoclave Engineers Sales Representative with any questions or refer to the Operation & Maintenance manuals (found online at [www.Autoclave.com](http://www.Autoclave.com)) for proper maintenance procedures.

E - End Connection			
	Connection	MAWP @ RT	Seat Gland Hex
M12	SF750CX10 (3/4" MP)	10,000 psi	1-3/4"
M16	SF1000CX10 (1" MP)	10,000 psi	1-3/4"
P12	3/4" FNPT	10,000 psi	1-3/4"
P16	1" FNPT	10,000 psi	1-3/4"

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 500°F (260°C)
K	Antivibration Gland Fitting (Cone & Thread Only)
L	Lockout Bracket (see page 43 for detail)
SOG*	ALL Parts NACE material, hardness Check, NACE Certification
2507**	2507 Super Duplex (20,000 psi max.) used with "S" Material Code
25-4MO**	6 Moly (25-4SMO) Material (used with "S" material code)
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.

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\*\* 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	-10°F to 176°F (-23°C to 80°C)
AC	Air to Close / Spring to Open (Diverter Style Only)	EO2	EO2X	220 volt AC 50/60 Hz	Electric	0°F to 160°F (-17°C to 71°C)
AOC	Air to Open and Close (Double Action)	EO3*	EO3X*	24 VDC		

\* 24VDC Electric Actuator not available in 180° Actuation option (3B8 Series)

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

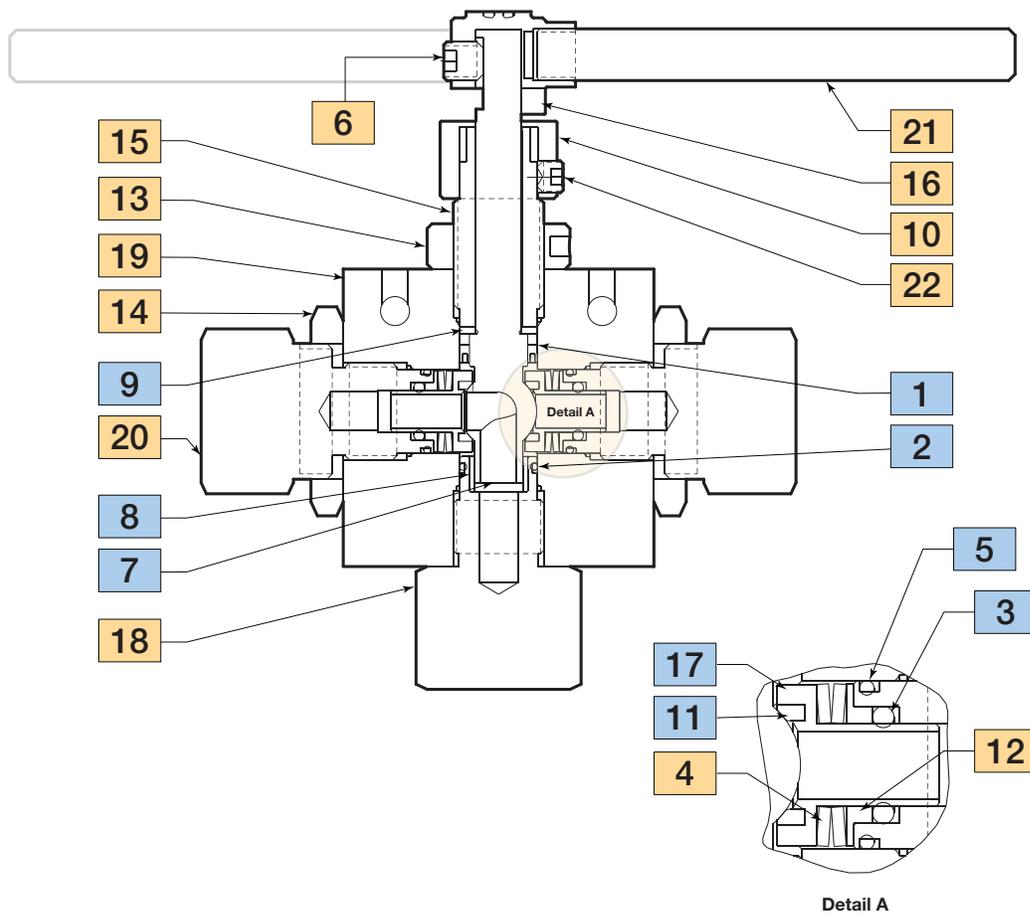
### 3 Way Ball Valve Dimensions:

3 Way Ball Valve		VALVE MODELS - inches (mm)		
		3B3S / 3BD3S	3B6S / 3BD6S	3B8S / 3BD8S
	A	5.66 (143.76)	6.55 (166.37)	7.82 (198.63)
	B	4.72 (119.94)	5.74 (145.79)	7.77 (197.36)
	C	2.50 (63.50)	3.00 (76.20)	4.13 (104.78)
	D	3.37 (85.55)	4.99 (126.82)	5.09 (129.29)
	E	3.90 (99.02)	5.52 (140.32)	10.18* (258.57)
	F	1.13 (28.58)	1.38 (34.92)	1.66 (42.16)
	G	1.50 (38.10)	2.00 (50.80)	3.00 (76.20)
	H	0.75 (19.05)	1.00 (25.40)	1.50 (38.10)
	J	0.43 (10.92)	0.41 (10.31)	0.50 (12.70)
	K	0.28 (7.11)	0.28 (7.11)	0.28 (7.11)
	L	2.26 (57.40)	2.88 (73.03)	3.34 (84.94)
	M	0.97 (24.64)	1.19 (30.22)	1.69 (42.93)
	Block Thickness		1.00 (25.40)	1.38 (35.05)

### Panel Mounting Dimensions:

3 Way Ball Valve Panel Mounting		VALVE MODELS - inches (mm)		
		3B3S / 3BD3S	3B6S / 3BD6S	3B8S / 3BD8S
<p>All dimensions are for reference only and are subject to change without notice.</p>	A	1.50 (38.10)	2.00 (50.80)	3.00 (76.20)
	B	0.75 (19.05)	1.00 (25.40)	1.50 (38.10)
	C	1.06 (26.92)	1.50 (38.10)	1.88 (47.63)
	D	0.28 (7.11)	0.28 (7.11)	0.28 (7.11)
<b>Note:</b> Body Mounting 1/4" - 20 threads				

## Parts Listing and Material: Typical 3 Way Ball Valve Series



### Material of Construction:

Item #	Description	Material
1	Stem Seal w/ Spring	PTFE w/ Graphite
2	O-Ring	FKM
3	O-Ring	FKM
4	Belleville Washer	17-7PH
5	O-Ring	90 Duro FKM
6	Set Screw, 3/8-16	316 CW SS
7	Stem	316 CW SS
8	Bottom Bearing	AMPCO 45
9	Thrust Washer	AMPCO 45
10	Stopping Device	316 SS
11	Seat Retainer	15-5 PH

Item #	Description	Material
12	Belleville Washer Backup	316 CW SS
13	Locking Piece	316 SS
14	Locknut	316 SS
15	Packing Gland	316 CW SS
16	Handle Hub	316 SS
17	Seat	PEEK
18	Bottom Gland	316 CW SS
19	Body	316 CW SS
20	Seat Gland	316 CW SS
21	Handle	304 SS
22	Set Screw, 5/16-24	Stainless

Typical spare parts found in Repair Kits