



BALL VALVE

A ball valve is a quarter-turn rotational motion valve that uses a ball-shaped disc to stop or start flow. If the valve is opened, the ball rotates to a point where the hole through the ball is in line with the valve body inlet and outlet. If the valve is closed, the ball is rotated so that the hole is perpendicular to the flow openings of the valve body and the flow is stopped.

Types of ball valve

Ball valves are basically available in three versions: full port, venturi port and reduced port. The full-port valve has an internal diameter equal to the inner diameter of the pipe. Venturi and reduced-port versions generally are one pipe size smaller than the line size.

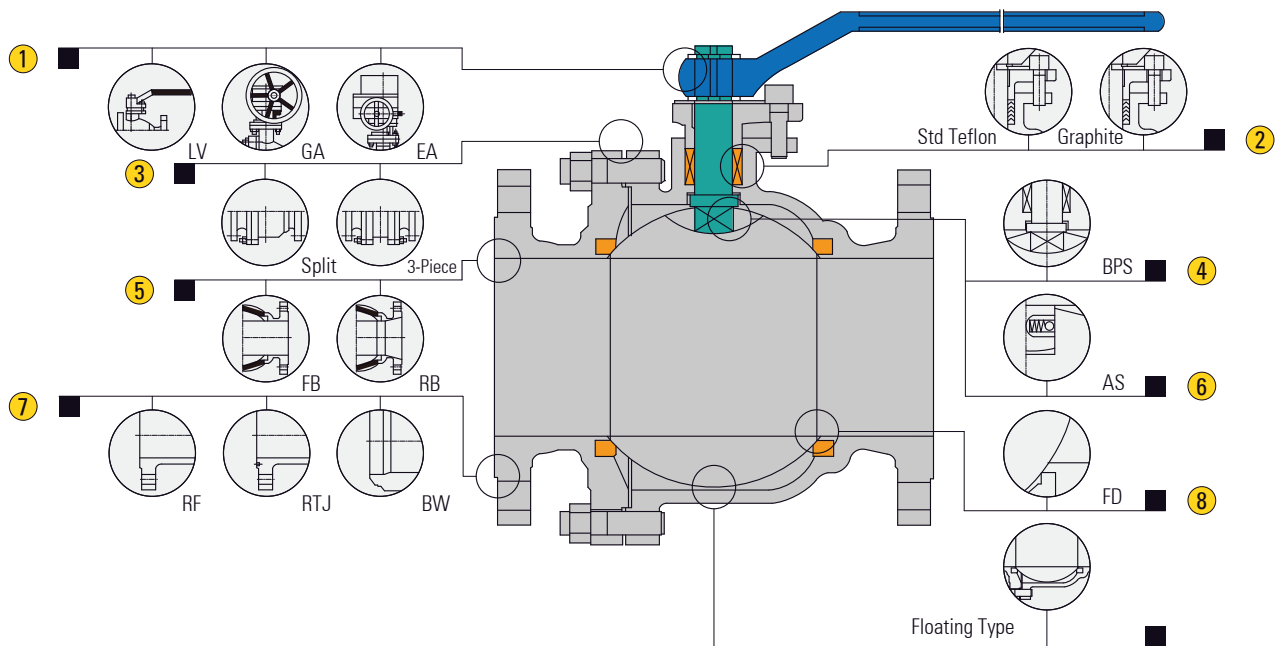
Ball valves are manufactured in different body configurations and the most common are:

- Top entry ball valve allows access to valve internals for maintenance by removal of the valve bonnet-cover. It is not required to removed the valve from the pipe system.
- Split body ball valve consists of a two or three parts, where one part is smaller than the other. The ball is inserted in the larger body part, and the smaller body part is assembled by a bolted connection.

The valve ends are available as butt welding, socket welding, flanged, threaded and others.

Available modifications for cast steel and stainless steel valves

- Trim changes
- End connection modifications
- Packing and gasket changes
- Operator mounting
- Handwheel extensions
- Pressure equalizing
- AS od FD
- Customer specified coatings
- Weld end bore changes
- Oxygen & chlorine cleaning & packing



1. Operating

Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.

5. Bore

Full bore or reduced bore. Full bore design provides exceptional flow control.

2. Packing

STD Packing multiple V-TEFLON packing, combined with live loading, maintains packing compression under high cycle and severe service applications. Graphite packing use situation for high-temperature.

6. AS

Anti static. A metallic contact is always granted between ball and stem/body to discharge eventual statics build-up during service.

3. Body & Bonnet

Split or 3-piece, split body & bonnet for 12" & smaller. Disassembles easy for repair or replacement of internal components.

7. End Connections

A choice of flange, RTJ flanged or butt welding end for piping flexibility.

4. BPS

Blow-out proof stem. A pressure-safe stem shoulder design that protects against failure under excess pressure.

8. FD

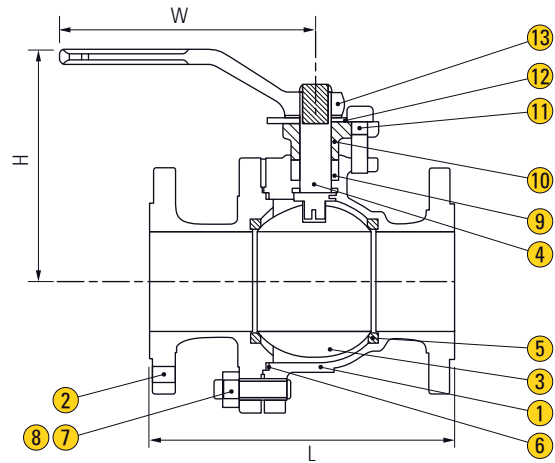
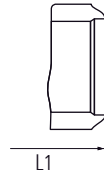
Fire durable. Design to API 607 or BS 6755 to grant their operation suitability in case of fire. Second metal-to-metal seal acts as backup if primary seal is destroyed by fire. Valves ordered for compliance with API 607 will be provided with graphite packing and gaskets.

*Specification given are subject to changed without further notice.

BALL VALVE API 6D (FLOATING)

FIRE SAFE & ANTI-STATIC

CAST STEEL / STAINLESS STEEL



APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media
(Refer to corrosion resistance table for valve materials selection).

SPECIFICATION

Steel Ball Valves	API 608 / API 6D
Steel Ball Valves	ISO 14313
Fire Durable	API 607
Anti Static	API 608
Steel Valves	ASME B16.43
Face to Face	ASME B16.10
End Flanges	ASME B16.25
Inspection and Test	API 598 / API 6D

MATERIAL

Parts	ASTM Specification		
	Carbon Steel	Stainless Steel	Low Temperature Service
1 Body	A216-WCB	A351-CF8M	A352-LCB
2 Bonnet	A216-WCB	A351-CF8M	A352-LCB
3 Ball	A182-F304*1	A182-F316	A182-F304*1
4 Stem	A276-304	A276-316	A276-304
5 Seat Ring	R.PTFE		
6 Bonnet Gasket	Graphite+304*1	PTFE	Graphite+304*1
7 Bonnet Stud	A193-B7	A193-B8	A320-L7
8 Bonnet Stud Nut	A194-2H	A194-8	A194-4
9 Packing	PTFE		
10 Gland Flange	A216-WCB	A351-CF8M	A352-LCB
11 Gland Bolt	A193-B7	A193-B8	A193-B7
12 Stop Plate	Carbon Steel	Carbon Steel+Zn	Carbon Steel
13 Handle	Carbon Steel		

*Note : (1) A 105+ENP optional, (2) Spiral wound construction

CLASS 150 - 300 - 600

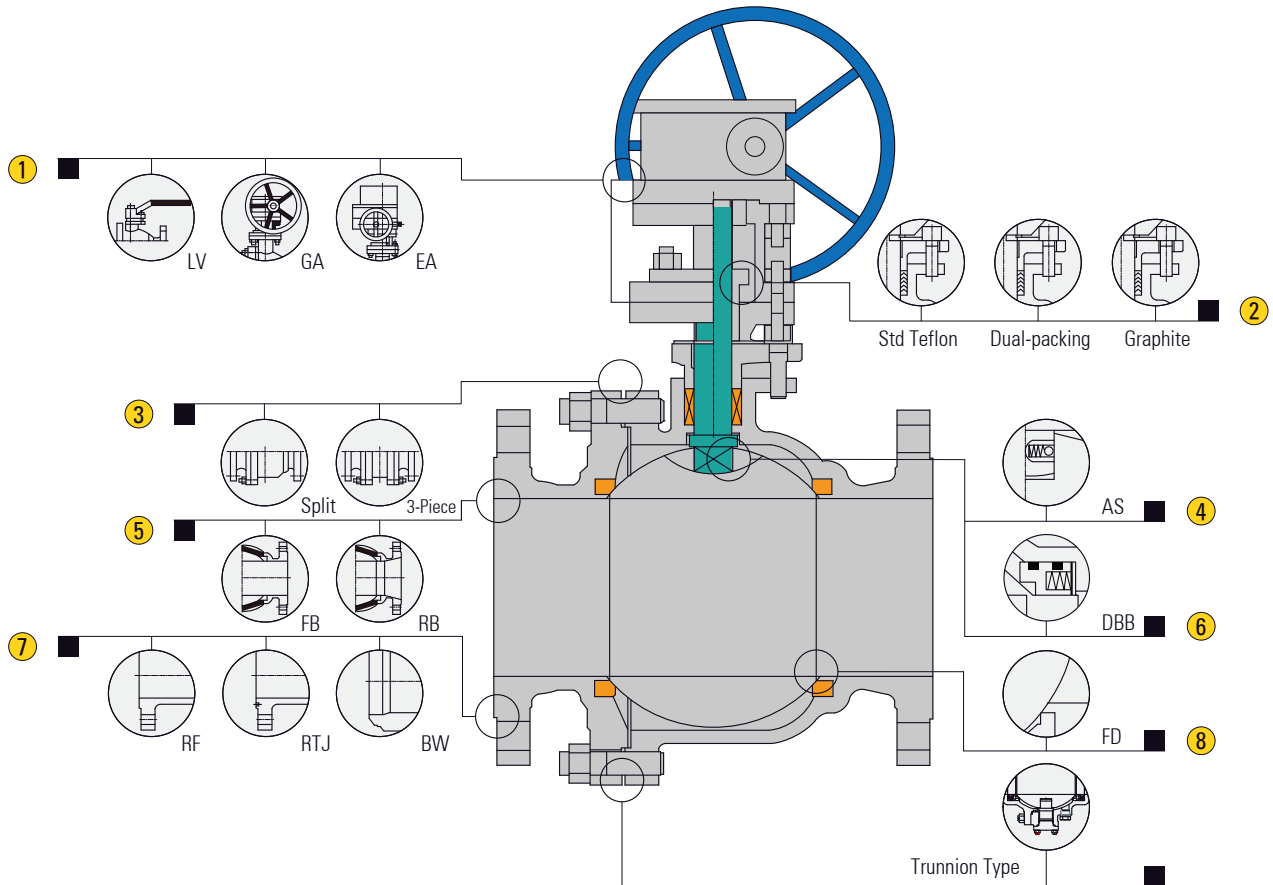
Unit : mm

Class	Size (mm)	15	20	25	40	50	65	80	100	150	200	250	300
150	L (RF)	108	117	127	165	178	190	203	229	394	457	533	610
	L1 (BW)	140	152	165	190	216	241	283	305	457	521	559	635
	H	55	55	70	90	105	155	185	205	255	280	345	420
	W	130	130	160	200	350	400	500	500	600	800	800	800
	Weight (Kg)	1.8	2.8	3.7	6.2	8.5	14	21	35	98	170	225	295
300	L (RF)	140	152	165	190	216	241	283	305	403	502	568	648
	L1 (BW)	140	152	165	190	216	241	283	305	457	521	559	635
	H	55	55	70	90	105	153	187	206	255	280	345	420
	W	130	130	160	200	350	400	500	500	600	800	800	800
	Weight (Kg)	1.8	2	3.2	5.5	8.7	15	18	36	85	152	182	232
600	L (RF)	165	190	216	241	292	330	356	432	559	-	-	-
	L1 (BW)	-	-	-	-	295	333	359	435	562	-	-	-
	H	61.5	61.5	78	101	120	174	212	234	289	-	-	-
	W	130	160	200	350	400	500	600	600	800	-	-	-
	Weight (Kg)	2.6	3.1	4.8	8	13	22	27	53	120	-	-	-

*Specification given are subject to changed without further notice.

Available modifications for cast steel and stainless steel valves

- Trim changes
- End connection modifications
- Packing and gasket changes
- Operator mounting
- Handwheel extensions
- Pressure equalizing
- AS od FD
- Customer specified coatings
- Weld end bore changes
- Oxygen & chlorine cleaning & packing



1. Operating

Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.

5. Bore

Full bore or reduced bore. Full bore design provides exceptional flow control.

2. Packing

STD Packing multiple V-Teflon packing, combined with live loading, maintains packing compression under high cycle and severe service applications. Graphite packing use situation for high-temperature.

6. DBB

Double block & bleed. The body cavity is isolated when the ball is in either fully closed or fully opened position, the medium entrapped in it can easily be bled to avoid over pressure.

3. Body & Bonnet

Split or 3-piece, split body & bonnet for 12" & smaller. Disassembles easy for repair or replacement of internal components.

7. End Connections

A choice of flange, RTJ flanged or butt welding end for piping flexibility.

4. AS

Anti static. A metallic contact is always granted between ball and stem/body to discharge eventual statics build-up during service.

8. FD

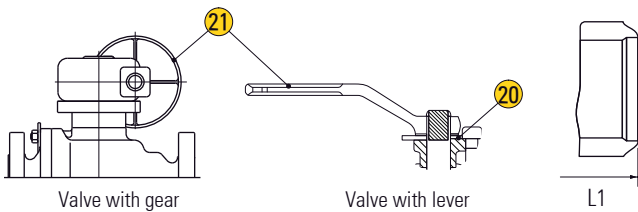
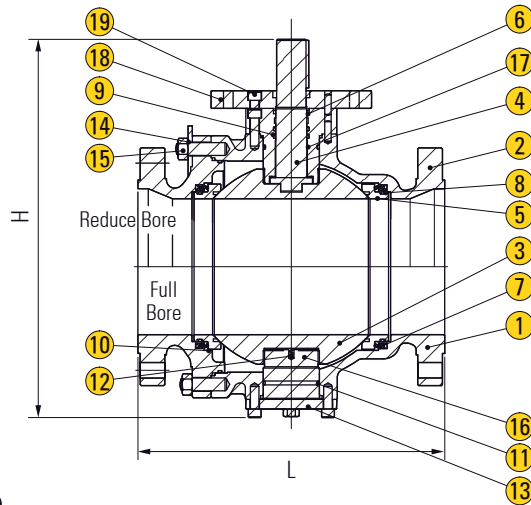
Fire durable. Design to API 607 or BS 6755 to grant their operation suitability in case of fire. Second metal-to-metal seal acts as backup if primary seal is destroyed by fire. Valves ordered for compliance with API 607 will be provided with graphite packing and gaskets.

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BALL VALVE API 6D (TRUNNION)

FIRE SAFE & ANTI-STATIC

CAST STEEL / STAINLESS STEEL



SPECIFICATION

Steel Ball Valves	API 608 / API 6D
Steel Ball Valves	ISO 14313
Fire Durable	API 607
Anti Static	API 608
Steel Valves	ASME B16.43
Face to Face	ASME B16.10
End Flanges	ASME B16.5
Butt Welding Ends	ASME B16.25
Inspection and Test	API 598 / API 6D

APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media
(Refer to corrosion resistance table for valve materials selection).

MATERIAL

Parts	ASTM Specification		
	Carbon Steel	Stainless Steel	Low Temperature Service
1 Body	A216-WCB	A351-CF8M	A352-LCB
2 Bonnet	A216-WCB	A351-CF8M	A352-LCB
3 Ball	A182-F304*1	A182-F316	A182-F304*1
4 Stem	A276-304	A276-316	A276-304
5 Seat	A105+ENP	A182-F316	A350-LF2+ENP
6 Stem Insert	Class Filled PTFE		
7 Seat Spring	A313-304	Inconel X-750	A313-304
8 Seat O-ring	NBR	Viton	Viton
9 Stem O-ring	NBR	Viton	Viton
10 Bonnet Gasket	Graphite+304*2	Graphite+316*2	Graphite+304*2
11 Bonnet O-ring	NBR	Viton	Viton
12 Antistatic Spring	A313-304	A313-316	A313-304
13 Grounding Plunger	A216-WCB	A182-F316	A182-F304
14 Bonnet Stud	A193-B7	A193-B8	A320-L7
15 Bonnet Stud Nut	A194-2H	A194-8	A194-4
16 Trunnion	A276-304	A276-316	A276-304
17 Trunnion Bearing	304+PTFE	316+PTFE	A304+PTFE
18 Gland Flange	A216-WCB	A351-CF8M	A352-LCB
19 Gland Bolt	A193-B7	A193-B8	A193-B7
20 Stop Plate	Carbon Steel	Carbon Steel+Zn	Carbon Steel
21 Handle	Carbon Steel		

*Note : (1) A 105+ENP optional, (2) Spiral wound construction

*Specification given are subject to changed without further notice.

CLASS 150

Unit : mm

Size (mm)	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L (RF)	178	190	203	229	394	457	533	610	686	762	864	914	1067	1143	1245	1295	1372	1524
L1 (BW)	216	241	283	305	457	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	1727
H	177	190	210	235	530	625	650	780	790	920	970	1100	1150	1290	1400	1630	1840	2050
W	350	400	500	500	600	600	600	600	800	800	800	800	800	800	800	800	800	800
Weight (Kg)	13.5	15.5	24.5	32.5	76	132	147	182	241	370	495	726	1125	1250	1640	1930	2390	2760

CLASS 300

Unit : mm

Size (mm)	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L (RF)	216	241	283	305	403	502	568	648	762	838	914	991	1143	1245	1346	1397	1524	-
L1 (BW)	216	241	283	305	403	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	-
H	177	190	210	235	530	625	650	780	790	920	970	1100	1150	1290	1400	1630	1800	-
W	350	400	500	500	600	600	600	600	800	800	800	800	800	800	800	800	800	-
Weight (Kg)	14	16	25	34	82	145	155	185	238	375	516	782	1280	1375	1825	2180	2260	-

CLASS 600

Unit : mm

Size (mm)	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700
L (RF) / L1 (BW)	292	330	356	432	559	660	787	838	889	991	1092	1194	1397	1448	1549
L2 (RTJ)	295	333	359	435	562	664	791	841	892	994	1095	1200	1407	1461	1562
H	180	193	215	241	540	635	665	790	810	925	985	1130	1185	1335	1450
W	350	400	500	500	600	600	600	600	800	800	800	800	800	800	800
Weight (Kg)	19	25	42	51	82	200	395	610	805	1010	1350	1656	2775	3125	3790

CLASS 900

Unit : mm

Size (mm)	50	65	80	100	150	200	250	300	350	400	450	500	600
L (RF) / L1 (BW)	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
L2 (RTJ)	371	422	384	460	613	740	841	968	1038	1140	1232	1334	1568
H	219	235	260	390	655	770	805	965	980	1145	1195	1360	1425
W	500	500	500	600	600	600	600	800	800	800	800	800	800
Weight (Kg)	23	31	51	61	102	240	480	735	965	1215	1625	1995	3335

CLASS 1500

Unit : mm

Size (mm)	50	65	80	100	150	200	250	300	350	400
L (RF) / L1 (BW)	368	419	470	546	705	832	991	1130	1257	1384
L2 (RTJ)	371	422	473	549	711	841	1000	1146	1276	1407
H	285	306	338	506	852	1000	1045	1255	1270	1485
W	500	500	600	600	600	800	800	800	800	800
Weight (Kg)	33	44	73	87	145	345	685	1050	1385	1735

CLASS 2500

Unit : mm

Size (mm)	50	65	80	100	150	200	250	300	350	400
L (RF) / L1 (BW)	451	508	578	673	914	1022	1270	1422	-	-
L2 (RTJ)	454	540	584	683	927	1038	1292	1445	-	-
H	304	327	362	540	911	1070	1120	1345	-	-
W	500	600	600	600	800	800	800	800	-	-
Weight (Kg)	41	55	91	110	182	430	855	1315	-	-

*Specification given are subject to changed without further notice.

1-PC REDUCED PORT BALL VALVE SCREW END

CARBON STEEL / STAINLESS STEEL

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MALAYSIA

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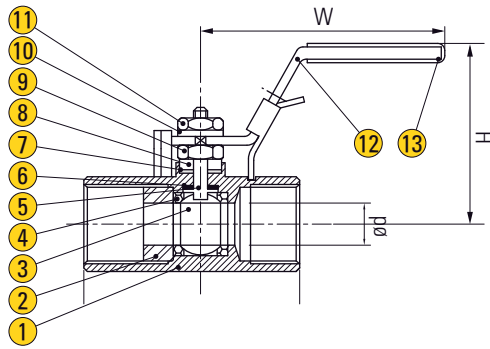
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SERIES 10



APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media
(Refer to corrosion resistance table for valve materials selection).

SPECIFICATION

- Pipe thread in accordance with ANSI B2.1, BS21 1973, DIN259 / 2999, ISO228
- Blow-out proof stem / reduce bore
- Investment casting body and inscrewed
- 2000 PSI W.O.G
- Mounting pad

Option: Locking device
Drilling and tapped mounting pad

MATERIAL

Parts	Material	
1 Body	ASTM-A216-WCB	ASTM-A351-CF8M
2 Insert	ASTM-A216-WCB	ASTM-A351-CF8M
3 Ball	ASTM-A315-CF8	ASTM-A351-CF8M
4 Seat	R-PTFE	R-PTFE
5 Thrust Washer	PTFE	PTFE
6 Stem	AISI 304	AISI 304
7 Stem Seal	PTFE	PTFE
8 Gland Washer	AISI 304	AISI 304
9 Conical Spring Washer	AISI 304	AISI 304
10 Spring Washer	AISI 304	AISI 304
11 Nut	AISI 304	AISI 304
12 Lever Handle	AISI 304	AISI 304
13 Handle Sleeve	Plastic	Plastic

DIMENSIONS

Unit : mm

Size	d	L	H	W
1/4"-3/8"	9.2	58.5	46.9	109
1/2"	9.2	66	57.9	98
3/4"	12.5	70	60.9	98
1"	15	80	63.8	104.7
1-1/4"	20	95	70.3	101.9
1-1/2"	25	101	72.3	156.1
2"	32	114	78.3	155.1
2-1/2"	38	112	130.5	215
3"	50	134	142.5	215
4"	64	192	173.5	325

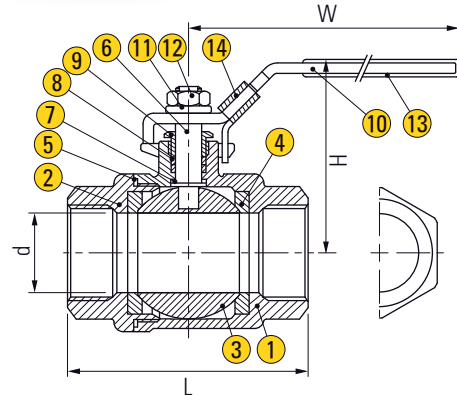
*Specification given are subject to changed without further notice.

2-PC FULL PORT BALL VALVE SCREW END

CARBON STEEL / STAINLESS STEEL



SERIES 20



APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media
(Refer to corrosion resistance table for valve materials selection).

SPECIFICATION

- Pipe thread in accordance with ANSI B2.1, BS21 1973, DIN259 / 2999, ISO228
- With mounting pad
- Blow-out proof stem / full port
- Investment casting body and cap
- 1000 PSI (69 Bar) W.O.G
- Lug body

Option: Locking device
Drilling and tapped mounting pad

MATERIAL

Parts	Material	
1 Body	ASTM-A216-WCB	ASTM-A351-CF8M
2 Cap	ASTM-A216-WCB	ASTM-A351-CF8M
3 Ball	ASTM-A315-CF8	ASTM-A351-CF8M
4 Ball Seat	R-PTFE	R-PTFE
5 Joint Gasket	PTFE	PTFE
6 Stem	ASIS 304	ASIS 316
7 Thrust Washer	PTFE	PTFE
8 Stem Packing	PTFE	PTFE
9 Gland Nut	AISI 304	AISI 304
10 Handle	AISI 304	AISI 304
11 Spring Washer	AISI 304	AISI 304
12 Stem Nut	AISI 304	AISI 304
13 Plastic Cover	Plastic	Plastic
14 Lock Device	AISI 304	AISI 304

DIMENSIONS

Unit : mm

Size	d	L	H	W
1/4"	11.6	44.5	51	95
3/8"	12.7	44.5	51	95
1/2"	15	57	53	95
3/4"	20	65	59.5	110
1"	25	76	73	135
1-1/4"	32	87.5	79	135
1-1/2"	38	102	90.5	165
2"	50	123	98.5	165
2-1/2"	65	156	130.5	215
3"	80	184	142.5	215
4"	100	250	173.5	325

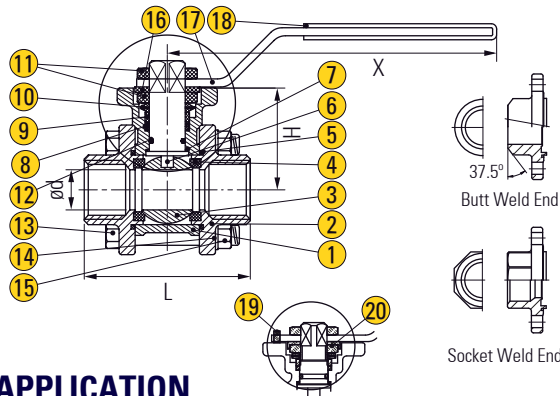
3-PC PORT BALL VALVE

SCREW END / BUTT WELD END /
SOCKET WELD END

CARBON STEEL / STAINLESS STEEL



SERIES 90



APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media (Refer to corrosion resistance table for valve materials selection).

SPECIFICATION

- Pipe thread in accordance with ANSI B2.1, BS21 1973, DIN259 / 2999, ISO228
- Lug body
- Blow-out proof stem / full port
- Investment casting body and cap
- 1000 PSI (69 Bar) W.O.G
- Direct mounting pad for ISO standard 5211
- Screw end, butt weld end, socket weld end

Option: Similar design but with C style clip
DIN standard M3 length

MATERIAL

Parts	Material	
1 Body	ASTM-A351-CF8M	ASTM-A216-WCB
2 Cap	ASTM-A351-CF8M	ASTM-A216-WCB
3 Ball	ASTM-A351-CF8M	ASTM-A351-CF8
4 Ball Seat	PTFE	PTFE
5 Joint Gasket	PTFE	PTFE
6 Stem	ASIS 316	AISI 304
7 Thrust Washer	PTFE	PTFE
8 Stem Packing	PTFE	PTFE
9 High Washer	AISI 304	AISI 304
10 Belleville Washer	AISI 304	AISI 304
11 Stem Nut	AISI 304	AISI 304
12 O-Ring	Viton	Viton
13 Bolt	AISI 304	AISI 304
14 Spring Washer	AISI 304	AISI 304
15 Hex Nut	AISI 304	AISI 304
16 Stopper	AISI 304	AISI 304
17 Handle	AISI 304	AISI 304
18 Plastic Cover	Plastic	Plastic
19 Stopper Pin	AISI 304	AISI 304
20 Lock Washer	AISI 304	AISI 304

DIMENSIONS

Unit : mm

Size	Ød	L	H	X
1/4"	11.6	58	36	112
3/8"	12.8	58	36	112
1/2"	15	62	38	112
3/4"	20	77	41.7	138
1"	25	83	44.4	138
1-1/4"	32	94	52.8	205
1-1/2"	38	107	58.5	205
2"	50	120	66	205
2-1/2"	65	157	101.5	330
3"	80	182	112.5	330
4"	100	213.6	127.0	330
5"	120	283	158.5	500
6"	150	342	175	500

*Note : 8"/10"/12" also available on request

*Specification given are subject to changed without further notice.

VALVES.
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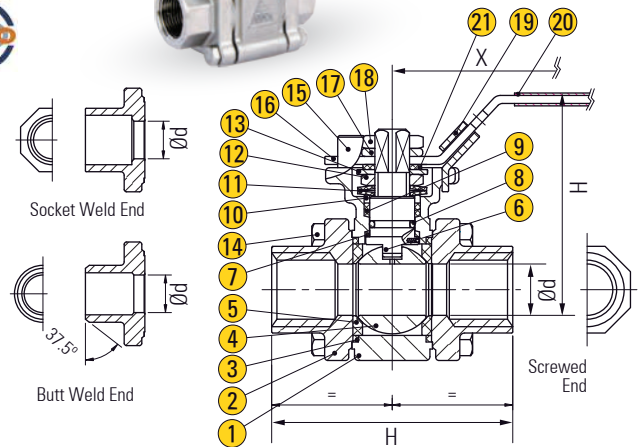
3-PC FULL PORT HIGH PERFORMANCE BALL VALVE

SCREW END / BUTT WELD END /
SOCKET WELD END

CARBON STEEL / STAINLESS STEEL



SERIES 110



APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media (Refer to corrosion resistance table for valve materials selection).

SPECIFICATION

- Pipe thread in accordance with ANSI B2.1, BS21 1973, DIN259 / 2999, ISO228
- Blow-out proof stem
- Investment casting body and cap
- 2000 PSI or 3000 PSI W.O.G
- Lug body
- Screwed end, butt weld & socket weld end
- Direct mounting pad ISO 5211

Option: Locking device / Standard port
Similar design but with C style clip
DIN standard M3 length
Fire-safe design

MATERIAL

Parts	Material	
1 Body	ASTM-A351-CF8M	ASTM-A216-WCB
2 End Cap	ASTM-A351-CF8M	ASTM-A216-WCB
3 Joint Gasket	PTFE	PTFE
4 Solid Ball	ASTM-A351-CF8M	ASTM-A351-CFB
5 Ball Seat	PTFE	PTFE
6 Stem	ASIS 316	AISI 304
7 Thrust Washer	PTFE	PTFE
8 O-Ring	Viton	Viton
9 Stem Packing	PTFE	PTFE
10 Stem Ring	AISI 304	AISI 304
11 Belleville Washer	AISI 301	AISI 301
12 Stem Nut	AISI 304	AISI 304
13 Saddle Washer	AISI 304	AISI 304
14 Hex Bolt	AISI 304	AISI 304
15 Stop Pin	AISI 304	AISI 304
16 Handle	AISI 304	AISI 304
17 Spring Washer	AISI 304	AISI 304
18 Handle Nut	AISI 304	AISI 304
19 Locking Device	AISI 304	AISI 304
20 Cover	Plastic	Plastic
21 Square Washer	AISI 304	AISI 304

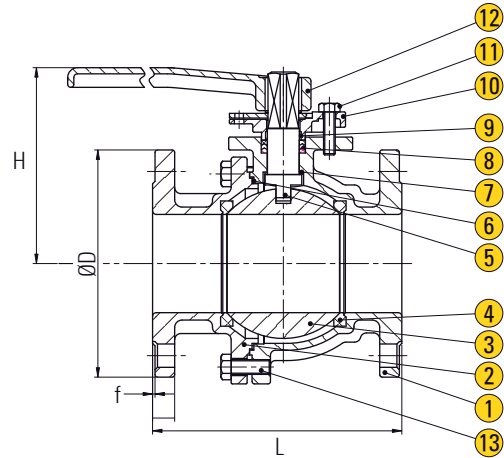
DIMENSIONS

Unit : mm

Size	Dim	Ød	L			H	X
			SD	SW	BW		
1/4"		11	65	65	70	58	112
3/8"		12.5	65	65	70	58	112
1/2"		16	75	75	75	62	112
3/4"		20	80	80	80	66	125
1"		25	90	90	100	75	138
1-1/4"		32	110	110	110	80	138
1-1/2"		38	120	120	125	95	170
2"		50	140	140	150	104	170

2-PC FULL PORT BALL VALVE FLANGE END

CAST IRON / CARBON STEEL / STAINLESS STEEL



APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media
(Refer to corrosion resistance table for valve materials selection).

SPECIFICATION

ANSI 150

- Flange: ANSI B16.5 Class 150
- Face to face : ANSI B16.10
- Mounting pad for ISO 5211
- Anti-static device, fire safe design
- Blow-out proof stem, lever operated
- Full port

Option: Solid ball / Hollow ball
Wrench handle
Locking device
Gear operated

JIS10K

- Flange: JIS B2239 - JIS10K
- Face to face : JIS B2002
- Mounting pad for ISO 5211
- Anti-static device, fire safe design
- Blow-out proof stem, lever operated
- Full port, solid ball / hollow ball

Option: Solid ball / Hollow ball
Wrench handle
Locking device
Gear operated

PN16, PN40

- Flange: DIN 2633 PN16
DIN 2633 PN40
- Face to face : DIN 3202 F1/F4/F5
- Mounting pad for ISO 5211
- Anti-static device, fire safe design
- Blow-out proof stem, lever operated
- Full port, solid ball / hollow ball

Option: Solid ball / Hollow ball
Wrench handle
Locking device
Gear operated

MATERIAL

Parts	Material			
1 Body	FC20	WCB	CF8	CF8M
2 Cap	FC20	WCB	CF8	CF8M
3 Ball	CF8	SCS13	CF8	CF8M
4 Seat	15% GF+PTFE / 25% CF+PTFE / 50% CF+PTFE / Others on request			
5 Stem	SS304	SS304	SS316	SS304
6 Gasket	PTFE			
7 Thrust Washer	PTFE			
8 Packing	PTFE			
9 Stem Packing	PTFE			
10 Gland	SCS13			
11 Gland Bolt	ASTM 194-B8			
12 Handle	FC / WCB / SS304			
13 Bolt	ASTM 194-B8			

DIMENSIONS

Unit : mm (inch)

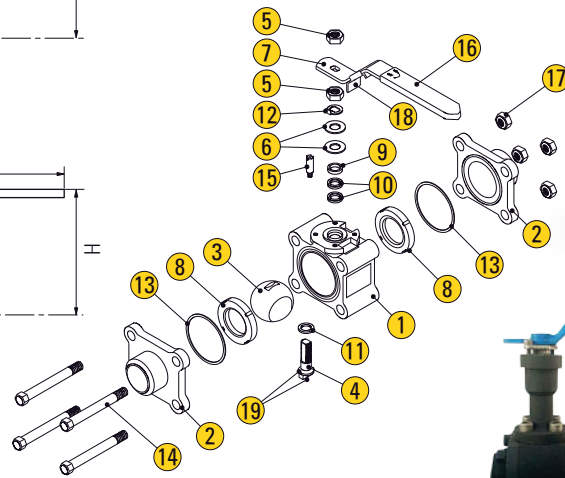
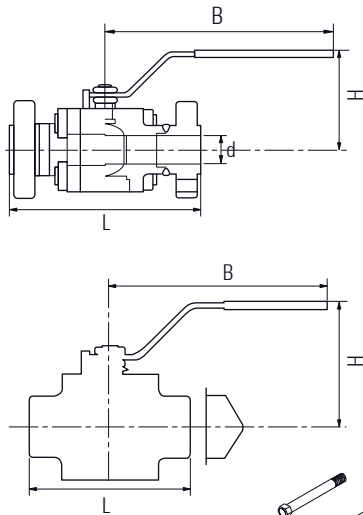
Size	D				f	L				H	ISO 5211
	ANSI 150	JIS10K	PN16	PN40		ANSI 150	JIS10K	PN16	PN40		
1/2"	89	95	95	95	1.6	108	110	130	85	F04	
3/4"	98	100	105	105	1.6	117	120	150	90	F04	
1"	108	125	115	115	1.6	127	130	160	100	F04	
1-1/4"	117	135	140	140	1.6	140	140	180	105	F05	
1-1/2"	127	140	150	150	1.6	165	165	200	110	F07	
2"	152	155	165	165	1.6	178	180	230	120	F07	
2-1/2"	178	175	185	185	1.6	190	190	290	160	F07	
3"	190	185	200	200	1.6	203	200	310	170	F10	
4"	229	210	220	235	1.6	229	230	350	185	F10	
5"	254	250	250	270	1.6	356	300	400	260	F12	
6"	279	280	285	300	1.6	394	340	480	280	F12	
8"	343	330	340	375	1.6	457	450	600	340	F12	
10"	406	400	405	450	1.6	533	533	730	400	F14	
12"	483	445	460	515	1.6	610	610	850	Gear	F14	

*Specification given are subject to changed without further notice.

3-PC FULL / RED. PORT HIGH PERFORMANCE BALL VALVE

SCREW END / BUTTWELD END / SOCKET END / FLANGE END

FORGED CARBON STEEL / STAINLESS STEEL



Option : Extended Bonnet

Option : Extended End

APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media
 (Refer to corrosion resistance table for valve materials selection).

SPECIFICATION

- 3 Pieces body design
- Blow-Out-Proof stem design
- Forged steel components
- Four point ISO 5211 mounting pad bold circle
- End connection : Threaded, Socket weld, Butt weld, Flange end

Full bore	1/4" - 2" (DN8 - DN50)
Reduce bore	1/2" - 2" (DN15 - DN50)
Body	ASTM A105 / F316
Ball / Stem	CF8M / SS316
Seat	RPTFE + (15% Glass fiber filled)
Working Pressure	Class 600, 800, 900, 1500 and 2500
Temperature Range	-4 to 356°F (-20 to 180°C)

MATERIAL

Parts	Material	Parts	Material
1 Body	F316 A105N	11 Stem Seal	RPTFE
2 End Cap	F316 □ A105N	12 Lock Saddle	SUS304
3 Ball	SUS316	13 Joint Gasket	PTFE
4 Stem	SUS316	14 Bolt	SUS304 *
5 Stem nut	SUS304	15 Stop Pin	SUS304
6 Belleville Washer	SUS301	16 Handle Sleeve	Vinyl
7 Handle	SUS304	17 Bolt Nut	SUS304 f
8 Seat	RPTFE	18 Locking Device	SUS304
9 Gland	SUS304	19 Anti-Static Device	SUS304
10 V-Shape Packing	MG-1241		

Note : □ Socket weld and butt weld uses CF3M material | * For 1/4" to 1-1/2"- 4pcs ; 2" to 2-1/2"- 6pcs | **f** For 1/4" to 1-1/2"- 4pcs ; 2" to 2-1/2"- 6pcs

DIMENSIONS - THREADED, SOCKET WELD, BUTT WELD

Unit : mm

Class	Size (in)	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
600/ 800	L 1	92	92	92	111	127	140	152	152
	B	108	108	108	146	178	178	200	200
	H	51	51	51	51	81	85	105	105
	d	6	9	13	18	23	28	35	49
900/ 1500	L 1	92	92	92	111	127	140	152	152
	B	108	108	108	146	178	178	200	200
	H	51	51	51	108	81	85	105	105
	d	6	9	13	19	25	32	38	49

DIMENSIONS - FLANGE END

Unit : mm

Class	Size (in)	1/2	3/4	1	1-1/4	1-1/2	2
900/ 1500	L	216	229	256	279	305	368
	B	230	230	350	400	400	400
	H	75	85	85	105	110	130
	d	13	19	25	32	38	49
2500	L	264	273	308	349	400	451
	B	280	280	95	350	110	400
	H	75	85	95	105	38	130
	d	13	19	25	30	11.5	42

*Specification given are subject to changed without further notice.

TWO WAY BALL VALVE

CARBON STEEL / STAINLESS STEEL

DESIGN FEATURE

- Jacket design
- Full bore
- 1/2" - 6" (DN15 - DN150)
- Blow-Out-Proof stem design
- Anti-static device
- ISO 5211 mounting flange
- ANSI B16.5 Class 150 RF, EN1092-1 PN10/16, JIS 2010 10K



Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	50% PTFE + 50% S.S
Temperature Range	-4 to 356°F (-20 to 180°C)

DESIGN FEATURE

- 1 Piece body design
- Wafer type
- Full bore
- 1/2" - 4" (DN15 - DN100)
- Blow-Out-Proof stem design
- Anti-static device
- ISO 5211 direct mounting flange
- Face to face : MFG. Standard
- EN1092-1 PN16 RF



Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE (15% Glass fiber filled)
Temperature Range	-4 to 365°F (-20 to 180°C)

TRUNNION MOUNTED CASTING / FORGED

CARBON STEEL / STAINLESS STEEL

DESIGN FEATURE

- Full bore
- 2" - 36" (DN400 - DN900)
- API 6FA Fire safe design
- Blow-Out-Proof stem design
- Anti-static device
- ANSI B16.10 Class 150 / 300 / 600
- ANSI B16.5 Class 150 / 300 / 600 RF, ASME B16.47 for 26" & up



Body	ASTM A216 Gr.WCB / CF8M
Ball / Stem	CF8M / SS316
Seat	PTFE / NYLON
Temperature Range	-4 to 356°F (-20 to 180°C)

DESIGN FEATURE

- Full bore
- 2" - 36" (DN50 - DN400)
- 3 pieces body design
- API 6FA Fire safe design
- Blow-Out-Proof stem design
- Anti-static device
- ANSI B16.10 Class 150-2500
- ANSI B16.5 Class 150-2500, ASME B16.47 for 26" & up



Body	ASTM A105 / F316
Ball / Stem	F316 / F316
Seat	PTFE / NYLON
Temperature Range	-4 to 365°F (-20 to 180°C)

METAL SEATED BALL VALVE

CARBON STEEL / STAINLESS STEEL

DESIGN FEATURE

- Full bore
- 1/2" - 12" (DN15 - DN300)
- Blow-Out-Proof stem design
- Anti-static device
- ANSI B16.10 Class 150 / 300
- ANSI B16.5 Class 150 / 300 RF



Body	ASTM A351 Gr.CF8M
Ball / Stem	CF8M + Hard Cr. / SS316
Seat	SS316 + Stellite #6
Tightness Rate	Δ P : ASME / FCI 70-2 Class IV

DESIGN FEATURE

- Full bore
- 1/2" - 6" (DN15 - DN150)
- Blow-Out-Proof stem design
- Anti-static device
- Handle with locking device
- ISO 5211 mounting flange
- End connection : Threaded, Socket weld, Butt weld end



DESIGN SPECIFICATION : ANSI B16.34 Class 600

- Working pressure (CWP) : 1/2" - 1' 2000 PSI (DN25 PN140)
1-1/4" - 2' 1500 PSI (DN31 PN110)

Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M + Hard Cr. / SS316
Seat	SS316 + Stellite #6
Tightness Rate	Δ P : ASME / FCI 70-2 Class IV

MULTI WAY BALL VALVE FLANGE (SIDE ENTRY) CARBON STEEL / STAINLESS STEEL

DESIGN FEATURE

- Full bore
- 1/2" - 6" (DN15 - DN150)
- Split body, Floating type
- Blow-Out-Proof stem design
- Anti-static device
- ISO 5211 direct mounting for 1/2" - 3"
- ISO 5211 mounting flange for 4" - 6"
- Face to face : MFG. Standard
- ANSI B16.5 Class 150 RF,
- EN1092-1 PN10/16/25/40 RF, JIS 2010 10K



DESIGN FEATURE

- Full bore, Solid ball
- 1/2" - 6" (DN15 - DN150)
- Split body, Floating type
- Blow-Out-Proof stem design
- Anti-static device
- ISO 5211 direct mounting for 1/2" - 3"
- ISO 5211 mounting flange for 4" - 6"
- Face to face : MFG. Standard
- ANSI B16.5 Class 150 RF,
- EN1092-1 PN10/16/25/40 RF, JIS 2010 10K



Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE + (15% Glass fiber filled)
Temperature Range	-4 to 356°F (-20 to 180°C)

Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE (15% Glass fiber filled)
Temperature Range	-4 to 365°F (-20 to 180°C)

THREE PIECE BALL VALVE CARBON STEEL / STAINLESS STEEL

DESIGN FEATURE

- Full bore
- 1/2" - 4" (DN15 - DN100)
- Blow-Out-Proof stem design
- End connection : Flange end
- Face to face : EN558-1 F1
- Flange Dim : EN1092-1
PN16/40 RF



DESIGN FEATURE

- Full bore
- 1/2" - 4" (DN15 - DN100)
- Blow-Out-Proof stem design
- End connection : Extended butt weld



Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	PTFE
Temperature Range	-4 to 356°F (-20 to 180°C)

Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	PTFE
Working Pressure	1/2" - 2" 1000 PSI (PN63) 2-1/2" - 4" 800 PSI (PN40)
Temperature Range	-4 to 365°F (-20 to 180°C)

DESIGN FEATURE

- Full bore
- 1/4" - 2" (DN8 - DN50)
- Blow-Out-Proof stem design
- Anti-static device
- ISO 5211 direct mounting flange
- Handle with locking device
- End connection :
Threaded, Socket weld end



DESIGN FEATURE

- 3 Pieces body design
- Blow-Out-Proof stem design
- Forged steel components
- Four point ISO 5211 mounting pad bold circle
- End connection :
Threaded, Socket weld, Butt weld end



Full bore - 1/4" - 2" (DN8 - DN50)
 Reduce bore - 1/2" - 2" (DN15 - DN50)

Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE + (15% Glass fiber filled)
Working Pressure	1/4" - 2" 2000 PSI (PN140)

Body	ASTM A105 / F316
Ball / Stem	CF8M / SS316
Seat	RTFE + (15% Glass fiber filled)
Working Pressure	1500 PSI (PN100)
Temperature Range	-4 to 356°F (-20 to 180°C)

*Specification given are subject to changed without further notice.

HIGH PRESSURE BALL VALVE

CARBON STEEL / STAINLESS STEEL

VALVES.
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MULTI WAY BALL VALVE

CARBON STEEL / STAINLESS STEEL

DESIGN FEATURE

- 2 Pieces body design
- Blow-Out-Proof stem design
- ISO 5211 mounting flange
- Handle with locking device
- End connection : Threaded end
- Seal welding body design for 6000 PSI



3000PSI - Full bore - 1/4" - 2" (DN8-DN50)
Reduced bore - 2" (DN50)
6000PSI - Full bore - 1/4" - 2" (DN8 - DN50)

Body	ASTM A351 Gr.CF8M
Ball / Stem	CF8M / SS316
Seat	Delrin / Peek
Working Pressure	3000 / 6000 PSI (PN210/420)
Temperature Range	-4 to 176°F (-20 to 80°C) for Delrin -4 to 500°F (-20 to 260°C) for Peek

DESIGN FEATURE

- 1/4" - 2" (DN8 - DN50)
- Blow-Out-Proof stem design
- 3 Seat design
- ISO 5211 direct mounting flange
- End connection : Threaded end



Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE
Working Pressure	1/4" - 2" 1000 PSI (PN63)
Temperature Range	-4 to 365°F (-20 to 180°C)

DESIGN FEATURE

- 3 Pieces body design
- ISO 5211 mounting flange
- Blow-Out-Proof stem design
- Anti-static device
- Bar material body
- End connection : Threaded, Socket weld, Butt weld end



3000PSI - Full bore - 1/4" - 2" (DN8 - DN50)
6000PSI - Full bore - 1/4" - 2" (DN8 - DN50)
3000PSI - Reduce bore - 1/4" - 2" (DN8 - DN50)
6000PSI - Reduce bore - 1/4" - 2" (DN8 - DN50)

Body	AISI 1045 / AISI 316 (bar material)
Ball / Stem	CF8M / 17-4 PH
Seat	Delrin / Peek
Working Pressure	HPV-40 3000 PSI (PN210) HPV-41 6000 PSI (PN420)
Temperature Range	-4 to 176°F (-20 to 80°C) for Delrin -4 to 500°F (-20 to 260°C) for Peek

DESIGN FEATURE

- 1/4" - 2" (DN8 - DN50)
- Blow-Out-Proof stem design
- 4 Seats design
- ISO 5211 direct mounting flange
- End connection : Threaded, Socket weld, Butt weld end



Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE (15% Glass fiber filled)
Working Pressure	1/4" - 2" 1000 PSI (PN63)
Temperature Range	-4 to 365°F (-20 to 180°C)

DESIGN FEATURE

- 1/2" - 2"
- Design as per ANSI B16.34 Class 1500 / 2500
- ISO 5211 mounting flange
- Blow-Out-Proof stem design
- Anti-static device
- ANSI B16.10 Class 1500 / 2500
- ANSI B16.5 Class 1500 / 2500 RTJ



Body	AISI 1045 / AISI 316 (bar material)
Ball / Stem	CF8M / 17-4 PH
Seat	Delrin / Peek
Temperature Range	-4 to 176°F (-20 to 80°C) for Delrin -4 to 500°F (-20 to 260°C) for Peek

DESIGN FEATURE

- 1/4" - 4" (DN8 - DN100)
- Blow-Out-Proof stem design
- 5 Seats design
- ISO 5211 direct mounting flange
- End connection : Threaded, Socket weld, Butt weld end



Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE (15% Glass fiber filled)
Working Pressure	1/4" - 2" 800 PSI (PN40) 2-1/2" - 3" 600 PSI (PN40) 4" 400 PSI (PN25)
Temperature Range	-4 to 365°F (-20 to 180°C)

CAST BALL VALVE

CF3M

STAINLESS STEEL

VALVES.
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SANITARY BALL VALVE

STAINLESS STEEL

DESIGN FEATURE

- Tube bore
- 1/2" - 4" (DN15 - DN100)
- Design as per ANSI B16.34 / BPE
- Blow-Out-Proof stem design
- ISO 5211 direct mounting flange
- End connection :
Tri-Clamp, BPE / ISO /
DIN Ext. tube end
- Option : Cavity filled seat,
Extended stem, Purge port,
Anti-static device



Body	ASTM A351 Gr.CF3M
Ball / Stem	ASTM A351 Gr.CF3M / SS316L
Seat	TFM1600
Working Pressure	1/2" - 2" 1000 PSI (PN63) 2-1/2" - 4" 720 PSI (PN40)
Temperature Range	-40 to 356°F (-40 to 180°C)

DESIGN FEATURE

- Tube bore
- 1/2" - 4" (DN15 - DN100)
- Blow-Out-Proof stem design
- End connection :
Tri-Clamp, 3A tube end,
DIN 11850 tube end



Option : Cavity filled seat



Option : Locking device, Cavity filled seat



Option : Cavity filled seat

Body	ASTM A351 Gr.CF8M
Ball / Stem	CF8M / SS316
Seat	TFM1600
Working Pressure	1/2" - 2" 1000 PSI (PN63) 2-1/2" - 4" 800 PSI (PN40)
Temperature Range	-4 to 356°F (-20 to 180°C)

CASTING BALL VALVE

SUPER ALLOY



PNEUMATIC ACTUATED VALVE

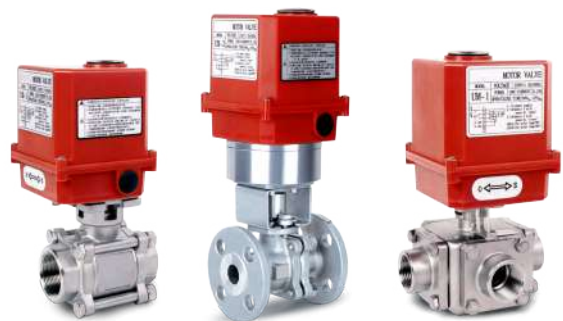


AVAILABLE RANGE	Screwed ball valve	1/4" - 8"
	Flanged ball valve	1/2" - 12"
	Multi-way ball valve	1/2" - 8"
	Butterfly valve	1 1/2" - 24"

Limit Switch Box	Weather proof Explosion proof Special material housibg
Air Filter	AFC Series BFC Series
Positioner	PPL / PPP Pneumatic-Pneumatic EPL / EER Electro-Pneumatic
Solenoid Valve	5/2 Way for spring return 3/2 Way for double acting
Actuator	Double acting Spring return

*Specification given are subject to changed without further notice.

ELECTRIC ACTUATED VALVE



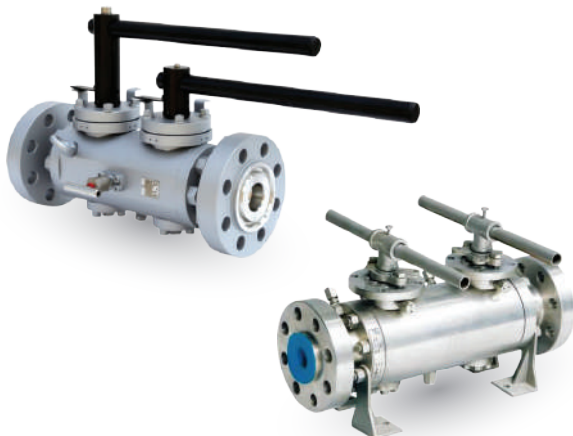
AVAILABLE RANGE	Screwed ball valve	1/4" - 4"
	Flanged ball valve	1/2" - 12"
	Multi-way ball valve	1/2" - 8"
	Butterfly valve	1-1/2" - 24"

DOUBLE BLOCK & BLEED VALVE



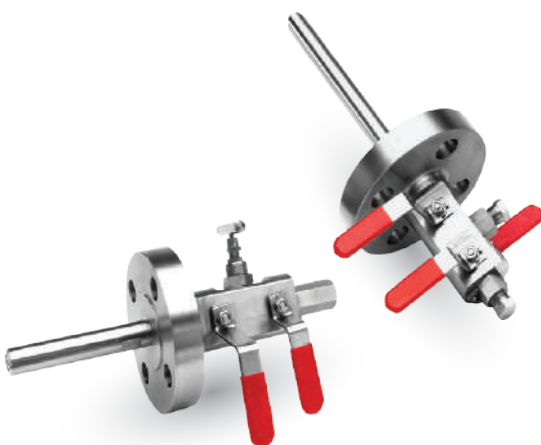
FLOATING PATTERN - DBB

- Standard configuration body with interchangeable process connections
- Bore sizes from 10mm up to 250mm
- Pressure rated up to ASME B16.5 class 2500 and API 6A 10,000 psi
- Double block and bleed configuration
- Lockable and Anti-tamper devices available
- Choice of venting valve design
- Materials available includes:
ASTM A182 F316 Stainless steel, ASTM A182 F51/55 Duplex & Super Duplex and ASTM B564 UNS N06625 Inconel
- Fire safe design



TRUNNION PATTERN - DBB

- 1/2" - 14 NPT Outlet size - Standard
- 1/2" - 14 NPT Vent size - Standard
- Other Outlet/Vent sizes and thread types are available
- Sample Probes/Injection Quills can be fitted to flanged side
- Isolation ball valves and venting needle valve as standard
- Materials available include:
ASTM A182 F316 Stainless steel, ASTM A182 F51/55 Duplex & Super Duplex and ASTM B564 UNS N06625 Inconel 625 amongst others
- Various trim materials available
- Standard design are fire safe
- Lockable and anti-tamper devices available
- Screwed check valve option available



SAMPLING & INJECTION - DBB

- Bubble tight metal to metal seat for positive shut off
- Two piece non-rotating hardened tip for first time seal and long service life
- Pressure responsive multi-ring / piston packing for compression and pressure dynamic sealing
- PEEK body bonnet seal for high pressure and high temperature
- Separate shut off for vent to prevent unwanted loss of process medium
- OS&Y valves available alongside standard needle valves to cater for all customer needs
- Any combination of Vent/Outlet sizes and types available on request
- Raised Face and Ring Type Joint connection options available
- Pressure rated up to ASME B16.5 class 2500