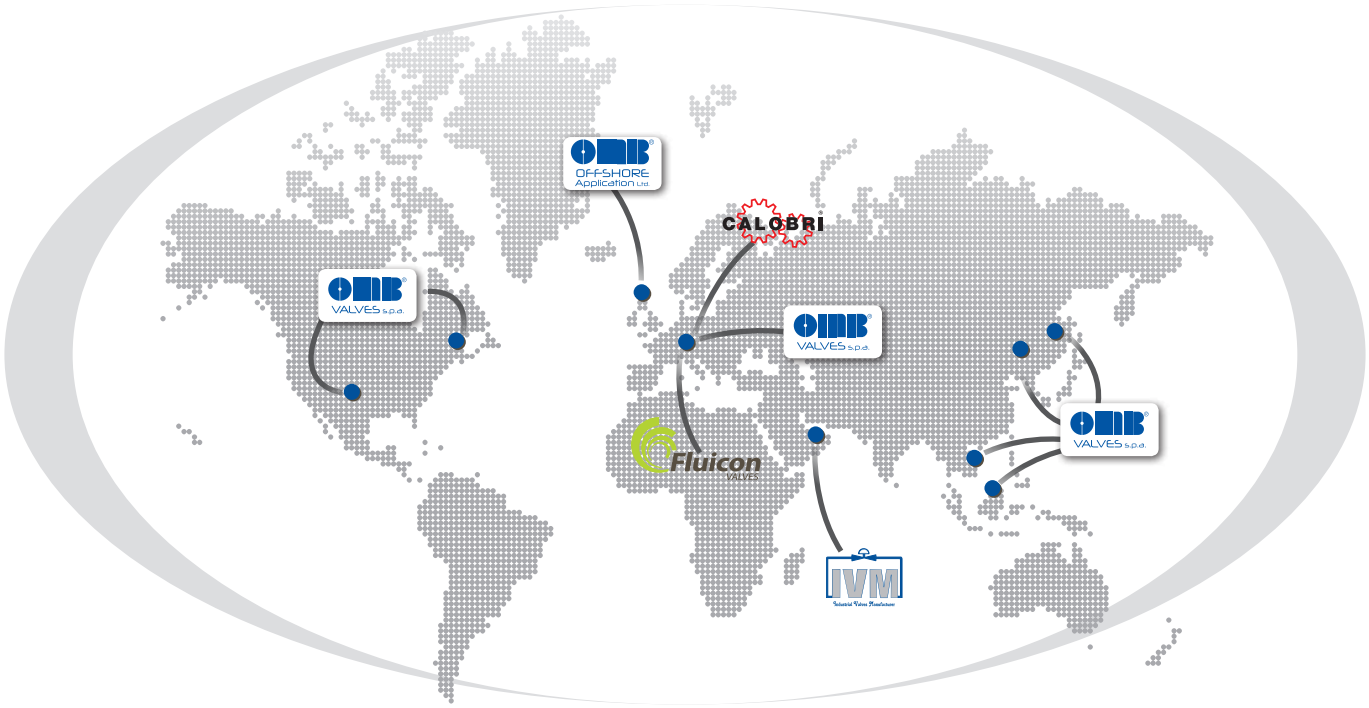
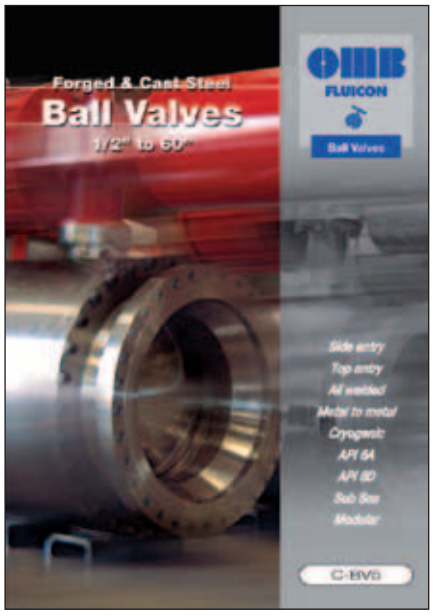
C-BV6

Ball Valves

30 Years of Innovation

OMB is a family owned and managed business founded by Mr. Roberto Brevi in 1973. His goal was to build a company that would specialize in the manufacturing of forged steel valves. Since its founding, OMB's capabilities have grown to cover small diameter gate/globe/check valves, small and large diameter floaters and trunnion mounted ball valves, through conduit gate valves, and triple offset butterfly valves. Today OMB operates 5 plants in 3 countries with a worldwide network of agents, distributors, and sales offices.





C-BV5 the previous version

NEW in this version

We revised the layout and included tables and P-T charts for seat and seal materials. We add new product lines options and reference to the newest standards.

The Group

At OMB we have developed a comprehensive range of engineered valve products installed globally across a wide range of industries:

- Offshore
- Subsea
- Refining
- Petrochemical
- Chemical
- Desalination

In these past 40 years OMB has supplied millions of valves to major oil and gas companies worldwide. During this time OMB's name has become synonymous with absolute reliability, superior quality, and competitive pricing.

In the early 80's OMB was the first to introduce robotics in the valve manufacturing process. This included specialized equipment designed to reduce machining time, and increase the quality of the machined components.

Today OMB's commitment to innovation and continuous improvement is higher than ever. With this in mind, OMB is focused on expanding our capacity at home, opening new plants abroad, and extending our distribution network to better serve our customers.

We invite you to visit any of our facilities to meet our experienced workers and see the state of the art equipment they are using to produce the best valve money can buy.

This is our promise!

Roberto, Simone and Fabio Brevi

The Brevi family is active in the management of the operations.
Roberto Brevi, founder and chairman with Simone and Fabio managing directors.

OMB is based in Bergamo, a town 45 Km from Milan with easy access to airports, highways and seaport. Bergamo is the world center for the forged steel valves production with a large valve parts subcontracting base.

TECHNOLOGY & QUALITY

PRODUCTS

OMB manufacture since the early '90 a wide range of engineered trunnion mounted ball valves for the oil & gas industry.

We offer side entry, top entry and fully welded ball valves either manually operated or automated for on-off service.

All our products are made from forgings sources from the most qualified suppliers in Italy.

RANGE

We offer trunnion mounted ball valves from 1/2" to 60"

We complete our offer with floating ball valves from 1/4" to 6".

All available in ASME class 150, 300, 600, 900, 1500 and 2500.

MATERIALS

We offer a wide range of forged material for the body and the trim components. Please see available material in table at page 36.

All materials **MADE IN ITALY**

QUALITY ASSURANCE
Our activities are organized in accordance to procedure qualified to ISO 9001 since July 1991
ISO 9001-2008 TUV-Sud cert no. 50 100 6209 Rev.02

COMPANY ACCREDITATIONS
OMB is qualified to various international bodies
ACHILLES FPAL
ACHILLES JQS
ACHILLES RePro

PRODUCT CERTIFICATIONS

- **API monogram**
  OMB is authorized by API to use the monogram or its products
  API6D API cert no. 6D-0286
  API6A API cert no. 6A-0778
  API6DSS API cert no. 6DSS-0036
- **CE marking**
  OMB is qualified to supply valves meeting the EC Pressure Equipment Directive 97/23/EC which allow us to use the CE marking on all our products
  PED cert no. CE 0036
- **ATEX**
  ATEX 95 equipment directive 94/9/EC, Equipment and protective systems intended for use in potentially explosive atmospheres
  ATEX cert no. TUV IT 11 ATEX 038 AR
- **ISO 15848**
  OMB has qualified and certified its valves to the fugitive emission standard set by ISO 15848 part1
- **SIL certification**
  OMB products are certified in accordance to International Electrotechnical Commission's (IEC) standard IEC 61508, now IEC EN 61508 and IEC EN 61511
- **Fire Safe**
  OMB has qualified its valves to numerous certifications for fire safe according to: API 607 API 6FA ISO 10497

PRODUCT LINE

	SIDE ENTRY						TOP ENTRY						FULL WELDED					FLOATING					
	FORGED						FORGED - CAST						FORGED - CAST					FORGED					
	RB-FB						RB-FB						FB					RB					
	#150	#300	#600	#900	#1500	#2500	#150	#300	#600	#900	#1500	#2500	#150	#300	#600	#900	#1500	#150	#300	#600	#900	#1500	#2500
1/2”																		■	■	■	■	■	■
3/4”																		■	■	■	■	■	■
1”																		■	■	■	■	■	
1.1/2”																		■	■	■	■	■	
2”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
3”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
4”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
6”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
8”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
10”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
12”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
14”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
16”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
18”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
20”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
22”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
24”	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
26”	■	■	■	■	■		■	■	■	■	■		■	■	■	■	■						
28”	■	■	■	■	■		■	■	■	■	■		■	■	■	■							
30”	■	■	■	■	■		■	■	■	■	■		■	■	■	■							
32”	■	■	■	■	■		■	■	■	■	■		■	■	■	■							
34”	■	■	■	■	■		■	■	■	■	■		■	■	■	■							
36”	■	■	■	■	■		■	■	■	■	■		■	■	■	■							
40”	■	■	■	■	■		■	■	■	■	■												
42”	■	■	■	■	■		■	■	■	■	■												
48”	■	■	■	■			■	■	■	■													
56”-60”	■	■	■	■			■	■	■	■													

	SIDE ENTRY	TOP ENTRY	FULL WELDED	FLOATING	API 6A
Body design	Ring Forgings	Ring Forgings / Castings	Ring Forgings / Castings	Closed Dye Forging Forged bar	Ring Forgings
Valve construction	3 Pieces	1 piece body with separate cover	2 or 3 Pieces	2 or 3 Pieces	2 or 3 Pieces
Size range	size 1” to 60””	size 1” to 60””	size 1” to 60””	size 1/2” to 6”	size $1^{13/16”}$ to 13”
ASME classes	150, 300, 600, 1500, 2500	150, 300, 600, 1500, 2500	150, 300, 600, 900, 1500	150, 300, 600, 800, 1500	3000, 5000, 10000 and 15000
Specification reference	API6D - ISO 14313	API6D - ISO 14313	API6D - ISO 14313	API608 - BS 5351 ISO17292	API6A
Seat Design	Soft and Metal Seated	Soft and Metal Seated	Soft Seated	Soft and Metal Seated	Soft and Metal Seated
Fire Safe	Certified	Certified	Certified	Certified	Certified
Bore dimension	Full and Standard Bore	Full and Standard Bore	Full and Standard Bore	Full and Standard Bore	Full and Special Bore

See OMB API6A product range
in Catalogue C-OV2

SIDE ENTRY

- 3 pieces
- Size 1” to 60’”
- Soft and Metal Seated
- Class 150, 300, 600, 1500, 2500
- Full and Standard Bore
- Fire safe certified
- Reference API6D ISO 14313

TOP ENTRY

- 1 piece body with separate cover
- Size 1” to 60’”
- Soft and Metal Seated
- Class 150, 300, 600, 1500, 2500
- Full and Standard Bore
- Fire safe certified
- Reference API6D - ISO 14313

FULL WELDED

- 2 or 3 pieces
- Size 1” to 60’”
- Soft Seated
- Class 150, 300, 600, 900, 1500
- Full and Standard Bore
- Fire safe certified
- Reference API6D - ISO 14313

FLOATING

- 2 or 3 pieces
- Size 1/2” to 6’”
- Soft and Metal Seated
- Class 150, 300, 600, 800, 1500
- Full and Standard Bore
- Fire safe certified
- Reference API608 - BS 5351 ISO 17292

TRUNNION SIDE ENTRY BALL VALVES

Design	Trunnion Mounted with external trunnion	std on small/medium OD
	Trunnion Mounted with bearing plates	std on large OD
	In line maintenance	yes
	API6D	standard
	API6A	on request
	Separate Ball and Stem	standard
	Double Block and Bleed	standard
	Wetted area overlay	on request
	Internal lining	on request
	Forged construction	standard
	Cast construction	no
	Gear	from 2"

Seat	Full, Reduced or Venturi Ports	on request
	Self Relieving seats	standard
	Single Piston Effect	standard
	Double Piston Effect	on request
	Soft insert seat	standard
	Metal seat	standard
	Elastomer, lipseal or Graphite seat seals	on request
	Seat pocket overlay	on request
	Emergency Seat injection	on request

Seal	Primary seal (body/closure): Soft	standard
	Secondary seal (Fire seal): Metal	standard
	Seal pocket overlay	on request

Ends	Flanged	standard
	Welded Ends	on request
	Welded ends with pups pieces	on request
	Hub Connection	on request
	Compact Flanges	on request
	RJ Wled Overlay	on request

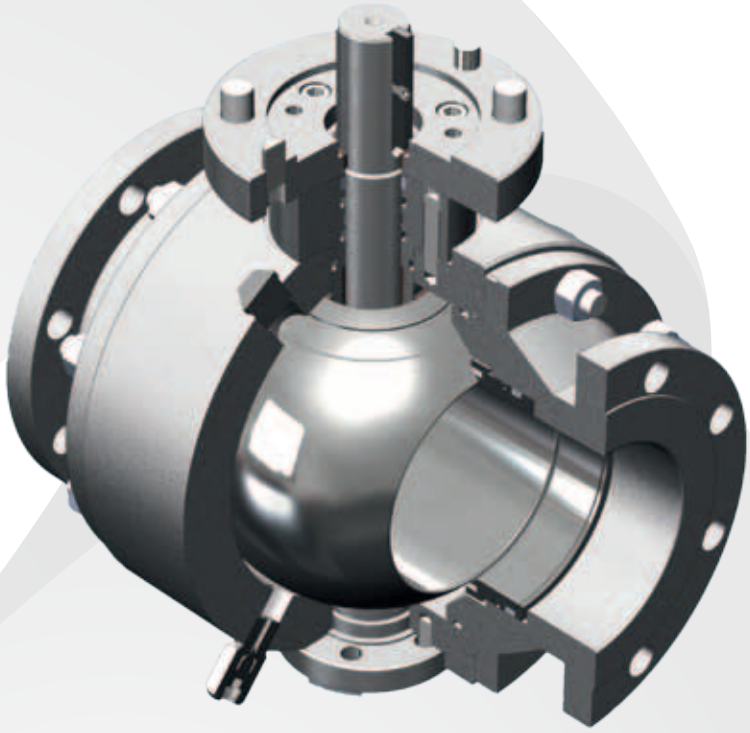
End-to-End	ASME B16.10	standard
	Special Lenght	on request

Fire Safe	API6FA	standard
	API607	on request
	BS6755	on request

Stem	Anti Blowout design	standard
	Antistatic	standard
	Triple stem seal	standard
	Emergency Stem sealant injection	on request
	Extended bonnet for underground use	on request

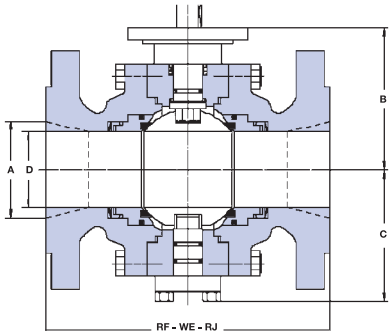
Features	Drain plugs	standard
	Drain valve	on request
	Vent valve	std from 8"
	Lifting Lugs	on request
	Supporting Legs	on request
	Cavity pressure balance hole in ball	standard

Oparation	Lever	standard on small size
	Gear, lockable	standard
	Motor Operated	on request
	Hydro/Pneu Operated	on request



COMPONENT	A105/316	LF2/316	F316/316
NAMEPLATE	Stainless steel	STAINLESS STEEL	Stainless steel
TOP FLANGE	A105N	A350 LF2	A182 F316
VENT	A105N	A350 LF2	A182 F316
BOLT	A193 B7	A320 L7	A193 B8
NUT	2H	4H	GR.8
STEM	st/st 316	st/st 316	st/st 316
STEM SEAL	FKM*	FKM*	FKM*
STEM PACKING	Graphite	Graphite	Graphite
TRUNNION	st/st 316	st/st 316	st/st 316
BALL	st/st 316	st/st 316	st/st 316
SEAT	st/st 316	st/st 316	st/st 316
SEAT INSERT	PTFE+15% Glass	PTFE+15% Glass	PTFE+15% Glass
SEAT ORING	FKM*	FKM*	FKM*
CLOSURE	A105N	A350 LF2	A182 F316
BODY	A105N	A350 LF2	A182 F316
BODY PRIMARY SEAL	FKM*	FKM*	FKM*
BODY FIRE SEAL	Graphite	Graphite	Graphite

FKM = Viton® or equivalent. Viton is registrated trademark of DuPont Performance Elastomers*



CLASS 150

FULL BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	WE	B	C	E
2	in.	2.00	7.00	8.50	5.51	3.54	5.90
50	mm	51	178	216	140	90	150
3	in.	3.00	8.00	11.13	7.48	4.13	7.48
80	mm	76	203	283	190	105	190
4	in.	4.00	9.00	12.00	9.72	5.55	9.00
100	mm	102	229	305	247	141	230
6	in.	6.00	15.50	18.00	11.61	6.88	12.20
150	mm	152	394	457	295	175	310
8	in.	8.00	18.00	20.50	12.99	8.26	15.35
200	mm	203	457	521	330	210	390
10	in.	10.00	21.00	22.00	15.74	9.84	18.11
250	mm	254	533	559	400	250	460
12	in.	12.00	24.00	25.00	18.11	12.20	21.45
300	mm	305	610	635	460	310	545
14	in.	14.00	27.00	30.00	18.89	13.38	24.00
350	mm	356	686	762	480	340	610
16	in.	16.00	30.00	33.00	21.25	15.15	26.37
400	mm	406	762	838	540	385	670
18	in.	18.00	34.00	36.00	22.83	16.85	24.80
450	mm	457	864	914	580	428	630
20	in.	20.00	36.00	39.00	23.00	21.45	33.43
500	mm	508	914	991	584	545	849
22	in.	22.00	40.00	43.00	24.00	23.00	36.81
550	mm	559	991	1092	610	584	935
24	in.	24.00	42.00	45.00	24.10	25.87	39.57
600	mm	610	1067	1143	612	655	1005
26	in.	26.00	45.00	49.00	24.69	22.20	41.73
650	mm	660	1143	1245	627	564	1060
28	in.	28.00	49.00	53.00	25.35	25.91	44.88
700	mm	711	1245	1346	644	658	1140
30	in.	30.00	51.00	55.00	27.20	27.70	47.24
750	mm	762	1295	1397	691	705	1200
32	in.	32.00	54.00	60.00	29.21	29.37	51.18
800	mm	813	1372	1524	742	746	1300
34	in.	34.00	58.00	64.00	29.88	30.51	53.94
850	mm	864	1473	1626	759	775	1370
36	in.	36.00	60.00	68.00	31.97	31.77	56.30
900	mm	914	1524	1727	812	807	1430
40	in.	40.00	69.00	77.00	35.43	35.35	63.00
1000	mm	1016	1753	1956	900	898	1600
42	in.	42.00	72.00	82.00	37.13	37.00	64.96
1050	mm	1067	1855	2083	943	940	1656
48	in.	48.00	80.00	94.00	43.19	41.73	75.59
1200	mm	1219	2134	2388	1097	1060	1920
56	in.	53.54	98.00	98.00	52.00	50.00	89.00
1400	mm	1360	2490	2490	13.21	1270	2260

CLASS 150

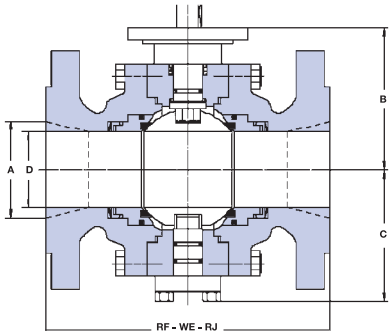
REDUCED BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	7.00	8.50	4.00	3.00	5.90
50 x 40	mm	51	38	178	216	101	76	150
3 x 2	in.	3.00	2.00	8.00	11.13	5.51	3.54	7.48
80 x 50	mm	76	51	203	283	140	90	190
4 x 3	in.	4.00	3.00	9.00	12.00	7.48	4.13	9.00
100 x 80	mm	102	76	229	305	190	105	230
6 x 4	in.	6.00	4.00	15.50	18.00	11.02	6.53	12.20
150 x 100	mm	152	102	394	457	280	166	310
8 x 6	in.	8.00	6.00	18.00	20.50	11.61	6.88	15.35
200 x 150	mm	203	152	457	521	295	175	395
10 x 8	in.	10.00	8.00	21.00	22.00	12.99	8.26	15.98
250 x 200	mm	254	203	533	559	330	210	406
12 x 10	in.	12.00	10.00	24.00	25.00	15.74	9.84	19.02
300 x 250	mm	305	254	610	635	400	250	483
14 x 10	in.	14.00	10.00	27.00	30.00	18.11	12.30	21.06
350 x 250	mm	356	254	686	762	460	310	535
14 x 12	in.	14.00	12.00	27.00	30.00	18.11	12.20	21.06
350 x 300	mm	356	305	686	762	460	310	535
16 x 12	in.	16.00	12.00	30.00	33.00	18.89	13.38	23.43
400 x 300	mm	406	305	762	838	480	340	595
16 x 14	in.	16.00	14.00	30.00	33.00	18.89	13.38	23.43
400 x 350	mm	406	356	762	838	480	340	595
18 x 16	in.	18.00	16.00	34.00	36.00	21.25	15.15	24.80
450 x 400	mm	457	406	864	914	540	385	630
20 x 16	in.	20.00	16.00	36.00	39.00	22.83	16.85	27.56
500 x 400	mm	508	406	914	991	580	428	700
20 x 18	in.	20.00	18.00	36.00	39.00	22.83	16.85	27.56
500 x 450	mm	508	457	914	991	580	428	700
24 x 20	in.	24.00	20.00	42.00	45.00	23.00	18.00	32.28
600 x 500	mm	610	508	1067	1143	584	457	820
28 x 24	in.	28.00	24.00	49.00	53.00	24.50	19.49	37.40
700 x 600	mm	711	610	1245	1346	622	495	950
30 x 24	in.	30.00	24.00	51.00	55.00	25.15	20.28	38.78
750 x 600	mm	762	610	1295	1397	638	515	985
36 x 30	in.	36.00	30.00	60.00	68.00	27.17	27.56	46.06
900 x 750	mm	914	762	1524	1727	690	700	1170

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 300

FULL BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	WE	B	C	E
2	in.	2.00	8.50	8.50	7.87	4.72	6.50
50	mm	51	216	216	200	120	165
3	in.	3.00	11.10	11.10	9.44	5.11	8.50
80	mm	76	283	283	240	130	218
4	in.	4.00	12.00	12.00	9.72	5.55	10.00
100	mm	102	305	305	247	141	254
6	in.	6.00	15.90	18.00	11.61	6.88	12.20
150	mm	152	457	457	295	175	310
8	in.	8.00	19.80	20.50	12.99	8.26	15.40
200	mm	203	502	521	330	210	390
10	in.	10.00	22.40	22.00	16.53	10.62	18.50
250	mm	254	568	559	420	270	470
12	in.	12.00	25.50	25.00	18.30	12.79	21.30
300	mm	305	648	635	465	325	545
14	in.	14.00	30.00	30.00	21.45	16.92	24.80
350	mm	356	762	762	545	430	630
16	in.	16.00	33.00	33.00	23.62	18.50	27.20
400	mm	406	838	838	600	470	690
18	in.	18.00	36.00	36.00	23.10	20.07	30.30
450	mm	457	914	914	586	510	770
20	in.	20.00	39.00	39.00	23.90	19.68	33.50
500	mm	508	991	991	607	500	850
22	in.	22.00	43.00	43.00	24.10	21.00	37.00
550	mm	559	1092	1092	612	533	940
24	in.	24.00	45.00	45.00	24.50	23.62	39.70
600	mm	610	1143	1143	622	600	1010
26	in.	26.00	49.00	49.00	24.80	22.80	42.50
650	mm	660	1245	1245	630	580	1080
28	in.	28.00	53.00	53.00	25.20	26.60	45.30
700	mm	711	1346	1346	640	675	1150
30	in.	30.00	55.00	55.00	27.60	28.70	48.40
750	mm	762	1397	1397	700	730	1230
32	in.	32.00	60.00	60.00	29.30	29.90	52.00
800	mm	813	1524	1524	745	760	1320
34	in.	34.00	64.00	64.00	29.90	31.50	54.50
850	mm	864	1626	1626	760	800	1380
36	in.	36.00	68.00	68.00	31.70	32.5	56.9
900	mm	914	1727	1727	805	825	1445
40	in.	40.00	77.00	77.00	35.40	36.2	64.10
1000	mm	1016	1956	1956	900	920	1630
42	in.	42.00	82.00	82.00	38.10	38.40	66.90
1050	mm	1067	2083	2083	968	980	1700
48	in.	48.00	85.40	85.40	43.30	45.60	74.80
1200	mm	1219	2170	2170	1100	1160	1960
56	in.	53.54	108.00	108.00	50.00	50.00	89.00
1400	mm	1360	2743	2743	1270	1270	2260

CLASS 300

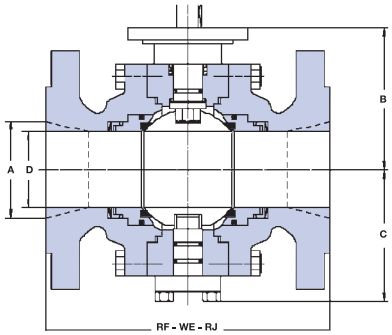
REDUCED BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	8.50	8.50	6.88	3.14	6.50
50 x 40	mm	51	38	216	216	175	80	165
3 x 2	in.	3.00	2.00	11.10	11.10	7.87	4.72	8.50
80 x 50	mm	76	51	283	283	200	120	218
4 x 3	in.	4.00	3.00	12.00	12.00	9.44	5.11	10.00
100 x 80	mm	102	76	305	305	240	130	254
6 x 4	in.	6.00	4.00	15.90	18.00	11.02	5.90	12.20
150 x 100	mm	152	102	457	457	280	150	310
8 x 6	in.	8.00	6.00	19.80	20.50	11.61	6.88	15.40
200 x 150	mm	203	152	502	521	295	175	390
10 x 8	in.	10.00	8.00	22.40	22.00	12.99	8.26	17.50
250 x 200	mm	254	203	568	559	330	210	445
12 x 10	in.	12.00	10.00	25.50	25.00	16.53	10.62	20.50
300 x 250	mm	305	254	648	635	420	270	520
14 x 10	in.	14.00	10.00	30.00	30.00	18.30	12.79	23.00
350 x 250	mm	356	254	762	762	465	325	585
14 x 12	in.	14.00	12.00	30.00	30.00	18.30	12.79	23.00
350 x 250	mm	356	305	762	762	465	325	585
16 x 12	in.	16.00	12.00	33.00	33.00	21.45	16.92	25.60
400 x 300	mm	406	305	838	838	545	430	650
16 x 14	in.	16.00	14.00	33.00	33.00	21.45	16.92	25.60
400 x 350	mm	406	356	838	838	545	430	650
18 x 16	in.	18.00	16.00	36.00	36.00	23.62	18.50	28.00
450 x 400	mm	457	406	914	914	600	470	710
20 x 16	in.	20.00	16.00	39.00	39.00	24.40	20.07	30.70
500 x 400	mm	508	406	991	991	620	510	780
20 x 18	in.	20.00	18.00	39.00	39.00	24.40	20.07	30.40
500 x 450	mm	508	457	991	991	620	510	780
24 x 20	in.	24.00	20.00	45.00	45.00	25.10	19.68	36.00
600 x 500	mm	610	508	1143	1143	637	500	915
30 x 24	in.	30.00	24.00	55.00	55.00	25.80	21.20	42.90
750 x 600	mm	762	610	1397	1397	655	540	1090
36 x 30	in.	36.00	30.00	68.00	68.00	27.60	28.70	50.00
900 x 750	mm	914	762	1727	1727	700	730	1270

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 600

FULL BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	RJ	WE	B	C	E
2	in.	2.00	11.50	11.63	11.50	7.67	4.33	6.50
50	mm	51	292	295	292	195	110	165
3	in.	3.00	14.00	14.13	14.00	9.44	4.33	8.50
80	mm	76	356	359	356	240	110	218
4	in.	4.00	17.00	17.13	17.00	11.02	6.88	10.70
100	mm	102	432	435	432	280	175	273
6	in.	6.00	22.00	22.13	22.00	12.00	7.67	14.10
150	mm	152	559	562	559	305	195	360
8	in.	8.00	26.00	26.13	26.00	15.74	11.02	16.50
200	mm	203	660	664	660	400	280	419
10	in.	10.00	31.00	31.13	31.00	17.12	11.22	20.40
250	mm	254	787	791	787	435	285	520
12	in.	12.00	33.00	33.13	33.00	17.32	12.59	22.60
300	mm	305	838	841	838	440	320	575
14	in.	14.00	35.00	35.13	35.00	19.88	13.38	24.70
350	mm	356	889	892	889	505	340	628
16	in.	16.00	39.00	39.13	39.00	23.22	16.14	27.60
400	mm	406	991	994	991	590	410	700
18	in.	18.00	43.00	43.13	43.00	23.55	17.51	30.50
450	mm	457	1092	1095	1092	589	445	775
20	in.	20.00	47.00	47.25	47.00	23.80	20.07	34.10
500	mm	508	1194	1200	1194	604	510	865
22	in.	22.00	51.00	51.38	51.00	24.00	20.35	37.40
550	mm	559	1295	1305	1295	609	571	950
24	in.	24.00	55.00	55.38	55.00	24.50	25.19	40.50
600	mm	610	1397	1407	1397	622	640	1028
26	in.	26.00	57.00	57.50	57.00	24.80	24.30	40.10
650	mm	660	1448	1461	1448	630	618	1020
28	in.	28.00	61.00	61.50	61.00	26.20	27.20	46.10
700	mm	711	1549	1562	1549	665	692	1172
30	in.	30.00	66.30	65.50	66.30	29.20	31.50	50.80
750	mm	762	1651	1664	1651	741	800	1290
32	in.	32.00	70.00	70.72	70.00	29.80	31.70	52.40
800	mm	813	1778	1794	1778	756	804	1330
34	in.	34.00	76.00	76.52	76.00	30.80	32.20	57.10
850	mm	864	1930	1946	1930	782	817	1450
36	in.	36.00	82.00	82.63	82.00	34.20	37.20	60.90
900	mm	914	2083	2099	2083	869	945	1546
40	in.	40.00	85.40	85.43	85.40	36.10	38.60	64.80
1000	mm	1016	2170	2170	2170	916	980	1645
42	in.	42.00	85.60	85.63	85.60	39.20	43.70	70.80
1050	mm	1067	2175	2175	2175	995	1110	1800
48	in.	48.00	95.90	95.87	95.90	44.60	49.80	81.50
1200	mm	1219	2435	2435	2435	1132	1265	2070
56	in.	53.54	106.70	106.70	106.70	51.00	57.50	94.00
1400	mm	1360	2710	2710	2710	1295	1460	2390

CLASS 600

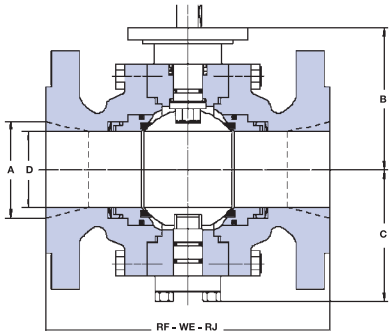
REDUCED BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	RJ	WE	B	C	E
2 x 1½	in.	2.00	1.50	11.50	11.63	11.50	7.48	3.54	6.50
50 x 40	mm	51	38	292	295	292	190	90	165
3 x 2	in.	3.00	2.00	14.00	14.13	14.00	14.01	4.33	8.30
80 x 50	mm	76	51	356	359	356	356	110	210
4 x 3	in.	4.00	3.00	17.00	17.13	17.00	9.44	4.33	14.70
100 x 80	mm	102	76	432	435	432	240	110	373
6 x 4	in.	6.00	4.00	22.00	22.13	22.00	11.02	6.88	14.00
150 x 100	mm	152	102	559	562	559	280	175	356
8 x 6	in.	8.00	6.00	26.00	26.13	26.00	12.00	7.67	16.50
200 x 150	mm	203	152	660	664	660	305	195	419
10 x 8	in.	10.00	8.00	31.00	31.13	31.00	15.74	11.02	20.10
250 x 200	mm	254	203	787	791	787	400	280	510
12 x 10	in.	12.00	10.00	33.00	33.13	33.00	17.12	11.22	22.00
300 x 250	mm	305	254	838	841	838	435	285	560
14 x 10	in.	14.00	10.00	35.00	35.13	35.00	17.32	12.59	23.80
350 x 250	mm	356	254	889	892	889	440	320	605
14 x 12	in.	14.00	12.00	35.00	35.13	35.00	17.32	12.59	23.80
350 x 250	mm	356	305	889	892	889	440	320	605
16 x 12	in.	16.00	12.00	39.00	39.13	39.00	19.88	13.38	27.00
400 x 300	mm	406	305	991	994	991	505	340	685
16 x 14	in.	16.00	14.00	39.00	39.13	39.00	19.88	13.38	24.70
400 x 350	mm	406	356	991	994	991	505	340	628
18 x 16	in.	18.00	16.00	43.00	43.13	43.00	23.22	16.10	29.30
450 x 400	mm	457	406	1092	1095	1092	590	410	745
20 x 16	in.	20.00	16.00	47.00	47.25	47.00	23.80	17.51	32.10
500 x 400	mm	508	406	1194	1200	1194	604	445	815
20 x 18	in.	20.00	18.00	47.00	47.25	47.00	24.00	17.51	32.10
500 x 450	mm	508	457	1194	1200	1194	609	445	815
24 x 20	in.	24.00	20.00	55.00	55.38	55.00	24.50	20.07	37.00
600 x 500	mm	610	508	1397	1407	1397	622	510	940
30 x 24	in.	30.00	24.00	66.30	65.50	66.30	24.80	22.40	44.50
750 x 600	mm	762	610	1651	1664	1651	629	570	1130
36 x 30	in.	36.00	30.00	82.00	82.63	82.00	27.90	29.90	51.80
900 x 750	mm	914	762	2083	2099	2083	708	760	1315

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 900

FULL BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	RJ	WE	B	C	E
2	in.	2.00	14.49	14.61	14.49	7.87	4.72	8.50
50	mm	51	368	371	368	200	120	220
3	in.	3.00	15.00	15.12	15.00	9.44	5.11	9.49
80	mm	76	381	384	381	240	130	241
4	in.	4.00	17.99	18.11	17.99	11.02	6.88	11.50
100	mm	102	457	460	457	280	175	290
6	in.	6.00	24.02	24.13	24.02	13.77	8.66	15.00
150	mm	152	610	613	610	350	220	381
8	in.	8.00	29.02	29.13	29.02	15.35	10.23	18.50
200	mm	203	737	740	737	390	260	470
10	in.	10.00	32.99	33.11	32.99	18.89	14.20	21.46
250	mm	254	838	841	838	480	310	545
12	in.	12.00	37.99	38.11	37.99	17.24	16.14	24.02
300	mm	305	965	968	965	438	410	610
14	in.	14.00	40.51	40.87	40.51	21.45	14.56	25.50
350	mm	356	1029	1038	1029	545	370	650
16	in.	16.00	44.49	44.88	44.49	24.59	16.53	27.95
400	mm	406	1130	1140	1130	624	420	710
18	in.	18.00	47.99	48.50	47.99	24.80	24.29	31.50
450	mm	457	1219	1232	1219	630	617	800
20	in.	20.00	52.01	52.48	52.01	25.00	28.54	35.04
500	mm	508	1321	1334	1321	635	725	890
24	in.	24.00	60.98	61.73	60.98	26.00	32.71	41.69
600	mm	610	1549	1568	1549	660	831	1059
28	in.	28.00	69.02	69.88	69.02	26.54	27.80	48.58
700	mm	711	1753	1775	1753	674	706	1234
30	in.	30.00	74.02	74.88	74.02	28.50	30.59	51.18
750	mm	762	1880	1902	1880	725	777	1300
32	in.	32.00	80.00	80.87	80.00	30.87	31.90	53.43
800	mm	813	2032	2054	2032	784	810	1357
34	in.	34.00	85.00	86.14	85.00	31.77	33.54	57.80
850	mm	864	2159	2188	2159	807	852	1468
36	in.	36.00	90.00	91.14	90.00	33.39	35.35	60.31
900	mm	914	2286	2315	2286	848	898	1532

Other dimension on request

CLASS 900

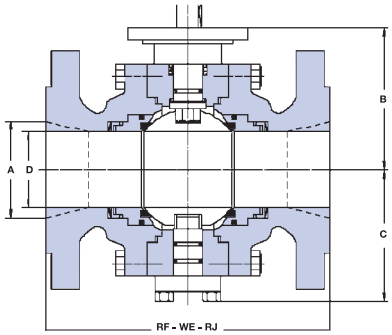
REDUCED BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIDE ENTRY									
SIZE		A	D	RF	RJ	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	14.49	14.61	14.49	6.10	4.25	8.60
50 x 40	mm	51	38	368	371	368	155	108	220
3 x 2	in.	3.00	2.00	15.00	15.12	15.00	7.87	4.72	9.49
80 x 50	mm	76	51	381	384	381	200	120	241
4 x 3	in.	4.00	3.00	17.99	18.11	17.99	9.44	5.11	11.50
100 x 80	mm	102	76	457	460	457	240	130	290
6 x 4	in.	6.00	4.00	24.02	24.13	24.02	11.02	6.88	14.90
150 x 100	mm	152	102	610	613	610	280	175	380
8 x 6	in.	8.00	6.00	29.02	29.13	29.02	13.77	8.66	18.50
200 x 150	mm	203	152	737	740	737	350	220	470
10 x 8	in.	10.00	8.00	32.99	33.11	32.99	15.35	10.23	21.46
250 x 200	mm	254	203	838	841	838	390	260	545
12 x 10	in.	12.00	10.00	37.99	38.11	37.99	18.89	12.20	24.02
300 x 250	mm	305	254	965	968	965	480	310	610
14 x 10	in.	14.00	10.00	40.51	40.87	40.51	17.24	16.14	25.50
350 x 250	mm	356	254	1029	1038	1029	438	410	650
14 x 12	in.	14.00	12.00	40.51	40.87	40.51	17.24	16.14	27.90
350 x 300	mm	356	305	1029	1038	1029	438	410	710
16 x 12	in.	16.00	12.00	44.49	44.88	44.49	21.45	14.56	29.50
400 x 300	mm	406	305	1130	1140	1130	545	370	750
16 x 14	in.	16.00	14.00	44.49	44.88	44.49	21.45	14.56	31.10
400 x 350	mm	406	356	1130	1140	1130	545	370	790
18 x 16	in.	18.00	16.00	47.99	48.50	47.99	24.59	16.53	31.50
450 x 400	mm	457	406	1219	1232	1219	624	420	800
20 x 16	in.	20.00	16.00	52.01	52.48	52.01	25.00	24.29	31.10
500 x 400	mm	508	406	1321	1334	1321	630	617	790
20 x 18	in.	20.00	18.00	52.01	52.48	52.01	25.57	24.29	35.04
500 x 450	mm	508	457	1321	1334	1321	649	617	890
24 x 20	in.	24.00	20.00	60.98	61.73	60.98	25.70	28.54	40.94
600 x 500	mm	610	508	1549	1568	1549	652	725	1040
30 x 24	in.	30.00	24.00	74.02	74.88	74.02	28.00	24.88	48.43
750 x 600	mm	762	610	1880	1902	1880	711	632	1230
36 x 30	in.	36.00	30.00	90.00	91.14	90.00	31.70	30.87	57.48
900 x 750	mm	914	762	2286	2315	2286	807	784	1460

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 1500

FULL BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	RJ	WE	B	C	E
2	in.	2.00	14.49	14.61	14.49	8.07	4.72	8.60
50	mm	51	368	371	368	205	120	220
3	in.	3.00	18.50	18.62	18.50	8.26	4.92	10.51
80	mm	76	470	473	470	210	125	267
4	in.	4.00	21.50	21.61	21.50	9.64	6.29	12.20
100	mm	102	546	549	546	245	160	310
6	in.	6.00	27.76	27.99	27.76	13.18	10.03	15.51
150	mm	152	705	711	705	335	255	394
8	in.	8.00	32.76	33.11	32.76	17.20	13.38	19.09
200	mm	203	832	841	832	437	340	485
10	in.	10.00	39.02	39.37	39.02	19.76	15.00	23.03
250	mm	254	991	1000	991	502	381	585
12	in.	12.00	44.49	44.61	44.49	20.98	17.24	27.95
300	mm	305	1130	1146	1130	533	438	710
14	in.	14.00	49.49	50.24	49.49	24.64	19.60	30.12
350	mm	356	1257	1276	1257	626	498	765
16	in.	16.00	54.49	55.35	54.49	28.54	18.11	33.39
400	mm	406	1384	1407	1384	725	460	848
18	in.	18.00	60.51	61.38	60.51	29.00	23.90	38.58
450	mm	457	1537	1559	1537	736	607	980
20	in.	20.00	65.51	66.38	66.51	30.00	25.40	39.96
500	mm	508	1664	1686	1664	762	644	1015
24	in.	24.00	80.43	81,54	80.43	32.00	28.50	50.91
600	mm	610	2043	1972	2043	813	725	1295

Other dimension on request

CLASS 1500

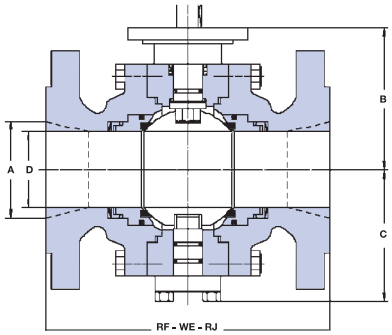
REDUCED BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	RJ	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	14.49	14.61	14.49	7.48	4.33	8.66
50 x 40	mm	51	38	368	371	368	190	110	220
3 x 2	in.	3.00	2.00	18.50	18.62	18.50	8.07	4.72	10.51
80 x 50	mm	76	51	470	473	470	205	120	2.67
4 x 3	in.	4.00	3.00	21.50	21.61	21.50	8.26	4.92	12.20
100 x 80	mm	102	76	546	549	546	210	125	310
6 x 4	in.	6.00	4.00	27.76	27.99	27.76	9.64	6.29	15.51
150 x 100	mm	152	102	705	711	705	245	160	394
8 x 6	in.	8.00	6.00	32.76	33.11	32.76	13.18	10.03	19.09
200 x 150	mm	203	152	832	841	832	335	255	485
10 x 8	in.	10.00	8.00	39.02	39.37	39.02	16.14	11.41	23.03
250 x 200	mm	254	203	991	1000	991	410	290	585
12 x 10	in.	12.00	10.00	44.49	44.61	44.49	18.30	13.18	26.57
300 x 250	mm	305	254	1130	1146	1130	465	335	675
14 x 10	in.	14.00	10.00	49.49	50.24	49.49	21.77	17.24	27.95
350 x 250	mm	356	254	1257	1276	1257	553	439	710
14 x 12	in.	14.00	12.00	49.49	50.24	49.49	21.77	17.24	29.92
350 x 300	mm	356	305	1257	1276	1257	553	438	760
16 x 12	in.	16.00	12.00	54.49	55.35	54.49	24.64	19.60	32.48
400 x 300	mm	406	305	1384	1407	1384	626	498	825
16 x 14	in.	16.00	14.00	54.49	55.35	54.49	24.64	19.60	32.48
400 x 350	mm	406	356	1384	1407	1384	626	498	825
18 x 16	in.	18.00	16.00	60.51	61.38	60.51	25.00	20.00	36.22
450 x 400	mm	457	406	1537	1559	1537	630	508	920
20 x 16	in.	20.00	16.00	65.51	66.38	66.51	26.00	20.00	38.97
500 x 400	mm	508	406	1664	1686	1664	660	508	990
20 x 18	in.	20.00	18.00	65.51	66.38	66.51	28.00	23.00	38.97
500 x 450	mm	508	457	1664	1686	1664	711	542	990
24 x 20	in.	24.00	20.00	80.43	81,54	80.43	30.00	25.00	46.06
600 x 500	mm	610	508	2043	1972	2043	762	635	1170

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 2500

FULL BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	RJ	WE	B	C	E
2	in.	2.00	17.76	17.87	17.76	8.46	5.11	9.05
50	mm	51	451	454	451	215	130	230
3	in.	3.00	22.76	22.99	22.76	8.66	5.31	11.08
80	mm	76	578	584	578	220	135	300
4	in.	4.00	26.50	26.89	26.50	10.03	6.96	14.02
100	mm	102	673	683	673	255	170	356
6	in.	6.00	35.98	36.50	35.98	16.92	10.43	19.09
150	mm	152	914	927	914	430	265	485
8	in.	8.00	40.24	40.87	40.24	16.92	13.30	24.41
200	mm	203	1022	1038	1022	430	340	620
10	in.	10.00	50.00	50.87	50.00	17.50	16.60	29.33
250	mm	254	1270	1292	1270	444	421	745
12	in.	12.00	55.98	56.89	55.98	18.00	18.90	34.44
300	mm	305	1422	1445	1422	457	480	875

Other dimension on request

CLASS 2500

REDUCED BORE, SIDE ENTRY, 2 PIECES, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	RJ	WE	B	C	E
2 x 1$^{1/2}$	in.	2.00	1.50	17.76	17.87	17.76	7.78	4.72	9.25
50 x 40	mm	51	38	451	454	451	200	120	230
3 x 2	in.	3.00	2.00	22.76	22.99	22.76	8.46	5.11	11.01
80 x 50	mm	76	51	578	584	578	215	130	300
4 x 3	in.	4.00	3.00	26.50	26.89	26.50	8.66	5.31	14.02
100 x 80	mm	102	76	673	683	673	220	135	356
6 x 4	in.	6.00	4.00	35.98	36.50	35.98	10.03	6.96	19.09
150 x 100	mm	152	102	914	927	914	255	170	485
8 x 6	in.	8.00	6.00	40.24	40.87	40.24	12.00	9.00	22.05
200 x 150	mm	203	152	1022	1038	1022	348	228	560
10 x 8	in.	10.00	8.00	50.00	50.87	50.00	14.00	13.00	26.57
250 x 200	mm	254	203	1270	1292	1270	355	330	670
12 x 10	in.	12.00	10.00	55.98	56.89	55.98	16.00	18.00	30.70
300 x 250	mm	305	254	1422	1445	1422	406	475	780

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.

TRUNNION TOP ENTRY BALL VALVES

Design	Trunnion Mounted with external trunnio	std on small/medium OD
	Trunnion Mounted with bearing plates	std on large OD
	In line maintenance	yes
	API6D	standard
	API6A	on request
	Separate Ball and Stem	standard
	Double Block and Bleed	standard
	Wetted area overlay	on request
	Internal lining	on request
	Forged construction	standard
	Cast construction	no
	Gear	from 2"

Seat	Full, Reduced or Venturi Ports	on request
	Self Relieving seats	standard
	Single Piston Effect	standard
	Double Piston Effect	on request
	Soft insert seat	standard
	Metal seat	standard
	Elastomer, lipseal or Graphite seat seals	on request
	Seat pocket overlay	on request
	Emergency Seat injection	on request

Seal	Primary seal (body/closure): Soft	standard
	Secondary seal (Fire seal): Metal	standard
	Seal pocket overlay	on request

Ends	Flanged	standard
	Welded Ends	on request
	Welded ends with pups pieces	on request
	Hub Connection	on request
	Compact Flanges	on request
	RJ Wled Overlay	on request

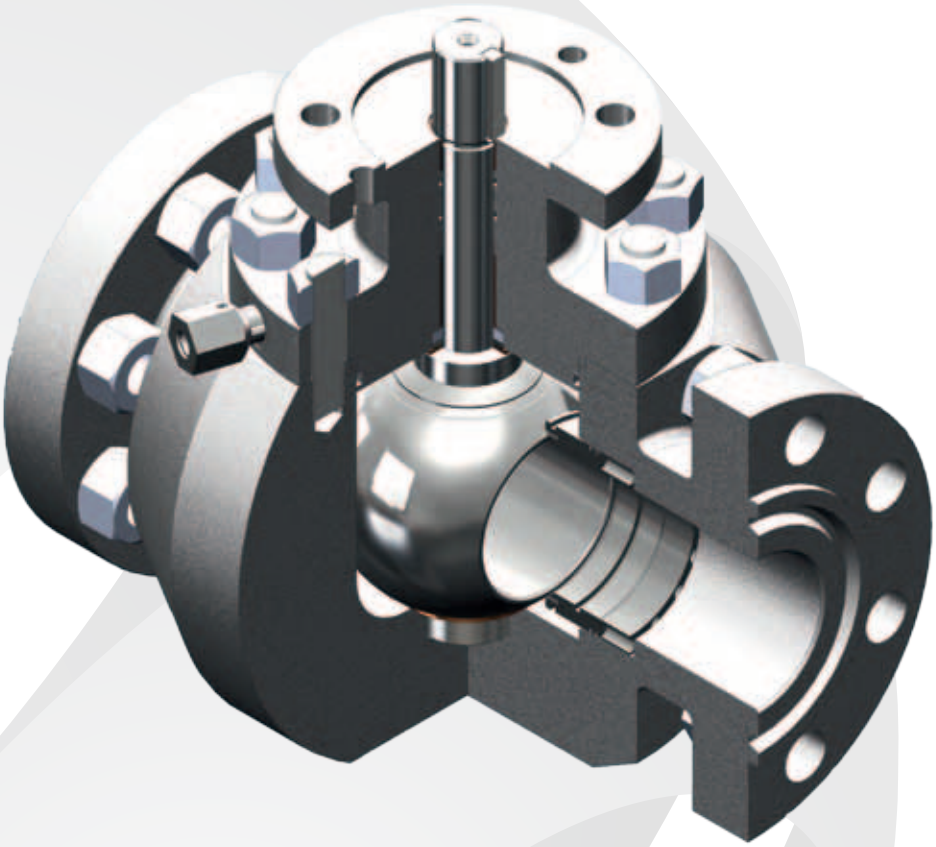
End-to-End	ASME B16.10	standard
	Special Lenght	on request

Fire Safe	API6FA	standard
	API607	on request
	BS6755	on request

Stem	Anti Blowout design	standard
	Antistatic	standard
	Triple stem seal	standard
	Emergency Stem sealant injection	on request
	Extended bonnet for underground use	on request

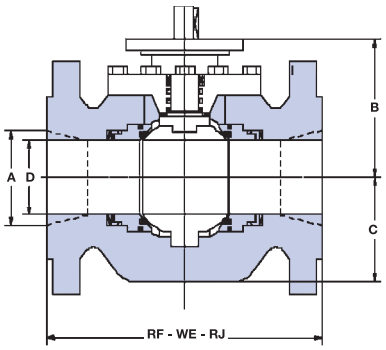
Features	Drain plugs	standard
	Drain valve	on request
	Vent valve	std from 8"
	Lifting Lugs	on request
	Supporting Legs	on request
	Cavity pressure balance hole in ball	standard

Oparation	Lever	standard on small size
	Gear, lockable	standard
	Motor Operated	on request
	Hydro/Pneu Operated	on request



COMPONENT	A105/316	LF2/316	F316/316
NAMEPLATE	Stainless steel	Stainless steel	Stainless steel
TOP FLANGE	A105N	A350 LF2	A182 F316
VENT	A105N	A350 LF2	A182 F316
BOLT	A193 B7	A320 L7	A193 B8
NUT	2H	4H	GR.8
STEM	st/st 316	st/st 316	st/st 316
STEM SEAL	FKM*	FKM*	FKM*
STEM PACKING	Graphite	Graphite	Graphite
TRUNNION	st/st 316	st/st 316	st/st 316
BALL	st/st 316	st/st 316	st/st 316
SEAT	st/st 316	st/st 316	st/st 316
SEAT INSERT	PTFE+15% Glass	PTFE+15% Glass	PTFE+15% Glass
SEAT ORING	FKM*	FKM*	FKM*
TOP COVER	A105N	A350 LF2	A182 F316
BODY	A105N	A350 LF2	A182 F316
BODY PRIMARY SEAL	FKM*	FKM*	FKM*
BODY FIRE SEAL	Graphite	Graphite	Graphite

FKM = Viton® or equivalent. Viton is registrated trademark of DuPont Performance Elastomers*



CLASS 150

FULL BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	WE	B	C	E
2	in.	2.00	7.00	8.50	5.51	3.54	5.00
50	mm	51	178	216	140	90	150
3	in.	3.00	8.00	11.13	7.48	4.13	7.48
80	mm	76	203	283	190	105	190
4	in.	4.00	9.00	12.00	11.02	6.53	9.00
100	mm	102	229	305	280	166	230
6	in.	6.00	15.50	18.00	11.61	6.88	12.20
150	mm	152	394	457	295	175	310
8	in.	8.00	18.00	20.50	12.99	8.26	15.35
200	mm	203	457	521	330	210	390
10	in.	10.00	21.00	22.00	15.74	9.84	18.11
250	mm	254	533	559	400	250	460
12	in.	12.00	24.00	25.00	18.11	12.20	21.45
300	mm	305	610	635	460	310	545
14	in.	14.00	27.00	30.00	18.89	13.38	24.00
350	mm	356	686	762	480	340	610
16	in.	16.00	30.00	33.00	21.25	15.15	26.37
400	mm	406	762	838	540	385	670
18	in.	18.00	34.00	36.00	23.00	16.85	24.80
450	mm	457	864	914	584	428	630
20	in.	20.00	36.00	39.00	24.00	21.45	33.43
500	mm	508	914	991	610	545	849
22	in.	22.00	40.00	43.00	24.10	23.00	36.81
550	mm	559	991	1092	612	584	935
24	in.	24.00	42.00	45.00	30.70	25.78	39.57
600	mm	610	1067	1143	780	655	1005
26	in.	26.00	45.00	49.00	24.69	22.20	41.73
650	mm	660	1143	1245	627	564	1060
28	in.	28.00	49.00	53.00	25.35	25.91	44.88
700	mm	711	1245	1346	644	658	1140
30	in.	30.00	51.00	55.00	27.20	27.70	47.24
750	mm	762	1295	1397	691	705	1200
32	in.	32.00	54.00	60.00	29.21	29.37	51.18
800	mm	813	1372	1524	742	746	1300
34	in.	34.00	58.00	64.00	29.88	30.51	53.94
850	mm	864	1473	1626	759	775	1370
36	in.	36.00	60.00	68.00	31.97	31.77	56.30
900	mm	914	1524	1727	812	807	1430
40	in.	40.00	69.00	77.00	35.43	35.35	63.00
1000	mm	1016	1753	1956	900	898	1600
42	in.	42.00	72.00	82.00	37.13	37.00	64.96
1050	mm	1067	1855	2083	943	940	1656
48	in.	48.00	80.00	94.00	43.19	41.73	75.59
1200	mm	1219	2134	2388	1097	1060	1920

CLASS 150

REDUCED BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	7.00	8.50	4.00	3.00	5.90
50 x 40	mm	51	38	178	216	101	76	150
3 x 2	in.	3.00	2.00	8.00	11.13	5.51	3.54	7.48
80 x 50	mm	76	51	203	283	140	90	190
4 x 3	in.	4.00	3.00	9.00	12.00	7.48	4.13	9.00
100 x 80	mm	102	76	229	305	190	105	230
6 x 4	in.	6.00	4.00	15.50	18.00	11.02	6.53	12.20
150 x 100	mm	152	102	394	457	280	166	310
8 x 6	in.	8.00	6.00	18.00	20.50	11.61	6.88	15.35
200 x 150	mm	203	152	457	521	295	175	395
10 x 8	in.	10.00	8.00	21.00	22.00	12.99	8.26	15.98
250 x 200	mm	254	203	533	559	330	210	406
12 x 10	in.	12.00	10.00	24.00	25.00	15.74	9.84	19.02
300 x 250	mm	305	254	610	635	400	250	483
14 x 10	in.	14.00	10.00	27.00	30.00	18.11	12.30	21.06
350 x 250	mm	356	254	686	762	460	310	535
14 x 12	in.	14.00	12.00	27.00	30.00	18.11	12.20	21.06
350 x 250	mm	356	305	686	762	460	310	535
16 x 12	in.	16.00	12.00	30.00	33.00	18.89	13.38	23.43
400 x 300	mm	406	305	762	838	480	340	595
16 x 14	in.	16.00	14.00	30.00	33.00	18.89	13.38	23.43
400 x 350	mm	406	356	762	838	480	340	595
18 x 16	in.	18.00	16.00	34.00	36.00	21.25	15.15	24.80
450 x 400	mm	457	406	864	914	540	385	630
20 x 16	in.	20.00	16.00	36.00	39.00	22.83	16.85	27.56
500 x 400	mm	508	406	914	991	580	428	700
20 x 18	in.	20.00	18.00	36.00	39.00	22.84	16.85	27.56
500 x 450	mm	508	457	914	991	580	428	700
24 x 20	in.	24.00	20.00	42.00	45.00	23 .00	18.00	32.28
600 x 500	mm	610	508	1067	1143	584	457	820
30 x 24	in.	30.00	24.00	51.00	55.00	25.15	19.49	38.78
750 x 600	mm	762	610	1295	1397	638	495	985
36 x 30	in.	36.00	30.00	60.00	68.00	27.17	27.56	46.06
900 x 750	mm	914	762	1524	1727	690	700	1170

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
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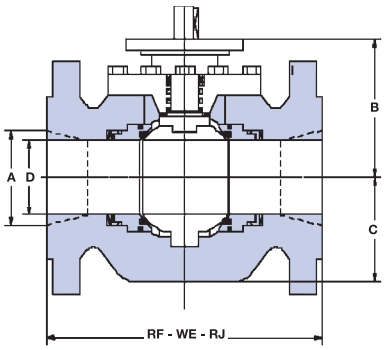


CLASS 300

FULL BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	WE	B	C	E
2	in.	2.00	8.50	8.50	7.87	4.72	6.50
50	mm	51	216	216	200	120	165
3	in.	3.00	11.10	11.10	9.44	5.11	8.50
80	mm	76	283	283	240	130	218
4	in.	4.00	12.00	12.00	11.02	5.90	10.00
100	mm	102	305	305	280	150	254
6	in.	6.00	15.90	18.00	11.61	6.88	12.20
150	mm	152	457	457	295	175	310
8	in.	8.00	19.80	20.50	12.99	8.26	15.40
200	mm	203	502	521	330	210	390
10	in.	10.00	22.40	22.00	16.53	10.62	18.50
250	mm	254	568	559	420	270	470
12	in.	12.00	25.50	25.00	18.30	12.79	21.30
300	mm	305	648	635	465	325	545
14	in.	14.00	30.00	30.00	21.45	16.92	24.80
350	mm	356	762	762	545	430	630
16	in.	16.00	33.00	33.00	23.62	18.50	27.20
400	mm	406	838	838	600	470	690
18	in.	18.00	36.00	36.00	23.10	20.07	30.30
450	mm	457	914	914	586	510	770
20	in.	20.00	39.00	39.00	23.90	19.68	33.50
500	mm	508	991	991	607	500	850
22	in.	22.00	43.00	43.00	24.01	21.00	37.00
550	mm	559	1092	1092	612	533	940
24	in.	24.00	45.00	45.00	24.50	23.62	39.70
600	mm	610	1143	1143	622	600	1010
26	in.	26.00	49.00	49.00	24.80	22.80	42.50
650	mm	660	1245	1245	630	580	1080
28	in.	28.00	53.00	53.00	25.20	26.60	45.30
700	mm	711	1346	1346	640	675	1150
30	in.	30.00	55.00	55.00	27.60	28.70	48.40
750	mm	762	1397	1397	700	730	1230
32	in.	32.00	60.00	60.00	29.30	29.90	52.00
800	mm	813	1524	1524	745	760	1320
34	in.	34.00	64.00	64.00	29.90	31.50	54.50
850	mm	864	1626	1626	760	800	1380
36	in.	36.00	68.00	68.00	31.70	32.5	56.9
900	mm	914	1727	1727	805	825	1445
40	in.	40.00	77.00	77.00	35.40	36.2	64.10
1000	mm	1016	1956	1956	900	920	1630
42	in.	42.00	82.00	82.00	38.10	38.40	66.90
1050	mm	1067	2083	2083	968	980	1700
48	in.	48.00	85.40	85.40	43.30	45.60	74.80
1200	mm	1219	2170	2170	1100	1160	1960

CLASS 300

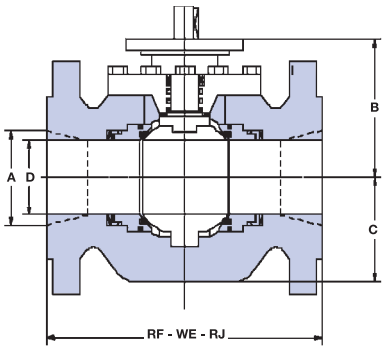
REDUCED BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	8.50	8.50	8.22	2.75	6.50
50 x 40	mm	51	38	216	216	209	70	165
3 x 2	in.	3.00	2.00	11.10	11.10	7.87	4.72	8.50
80 x 50	mm	76	51	283	283	200	120	218
4 x 3	in.	4.00	3.00	12.00	12.00	9.44	5.11	10.00
100 x 80	mm	102	76	305	305	240	130	254
6 x 4	in.	6.00	4.00	15.90	18.00	11.02	5.90	12.20
150 x 100	mm	152	102	457	457	280	150	310
8 x 6	in.	8.00	6.00	19.80	20.50	11.61	6.88	15.40
200 x 150	mm	203	152	502	521	295	175	390
10 x 8	in.	10.00	8.00	22.40	22.00	12.99	8.26	17.50
250 x 200	mm	254	203	568	559	330	210	445
12 x 10	in.	12.00	10.00	25.50	25.00	16.53	10.62	20.50
300 x 250	mm	305	254	648	635	420	270	520
14 x 10	in.	14.00	10.00	30.00	30.00	–	–	23.00
350 x 250	mm	356	254	762	762	–	–	585
14 x 12	in.	14.00	12.00	30.00	30.00	18.30	12.79	23.00
350 x 250	mm	356	305	762	762	465	325	585
16 x 12	in.	16.00	12.00	33.00	33.00	–	–	25.60
400 x 300	mm	406	305	838	838	–	–	650
16 x 14	in.	16.00	14.00	33.00	33.00	21.45	16.92	25.60
400 x 350	mm	406	356	838	838	545	430	650
18 x 16	in.	18.00	16.00	36.00	36.00	23.62	18.50	28.00
450 x 400	mm	457	406	914	914	600	470	710
20 x 16	in.	20.00	16.00	39.00	39.00	–	–	30.70
500 x 400	mm	508	406	991	991	–	–	780
20 x 18	in.	20.00	18.00	39.00	39.00	24.40	20.07	30.40
500 x 450	mm	508	457	991	991	620	510	780
24 x 20	in.	24.00	20.00	45.00	45.00	28.89	19.68	36.00
600 x 500	mm	610	508	1143	1143	734	500	915
30 x 24	in.	30.00	24.00	55.00	55.00	–	–	42.90
750 x 600	mm	762	610	1397	1397	–	–	1090
36 x 30	in.	36.00	30.00	68.00	68.00	–	–	50.00
900 x 750	mm	914	762	1727	1727	–	–	1270

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 600

FULL BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	RJ	WE	B	C	E
2	in.	2.00	11.50	11.63	11.50	7.67	4.33	6.50
50	mm	51	292	295	292	195	110	165
3	in.	3.00	14.00	14.13	14.00	9.44	4.33	8.50
80	mm	76	356	359	356	240	110	218
4	in.	4.00	17.00	17.13	17.00	11.02	6.88	10.70
100	mm	102	432	435	432	280	175	273
6	in.	6.00	22.00	22.13	22.00	12.00	7.67	14.10
150	mm	152	559	562	559	305	195	360
8	in.	8.00	26.00	26.13	26.00	15.74	11.02	16.50
200	mm	203	660	664	660	400	280	419
10	in.	10.00	31.00	31.13	31.00	17.12	11.22	20.40
250	mm	254	787	791	787	435	285	520
12	in.	12.00	33.00	33.13	33.00	17.32	12.59	22.60
300	mm	305	838	841	838	440	320	575
14	in.	14.00	35.00	35.13	35.00	19.88	13.38	24.70
350	mm	356	889	892	889	505	340	628
16	in.	16.00	39.00	39.13	39.00	23.22	16.14	27.60
400	mm	406	991	994	991	590	410	700
18	in.	18.00	43.00	43.13	43.00	23.55	17.51	30.50
450	mm	457	1092	1095	1092	589	445	775
20	in.	20.00	47.00	47.25	47.00	23.80	20.07	34.10
500	mm	508	1194	1200	1194	604	510	865
22	in.	22.00	51.00	51.38	51.00	24.00	20.35	37.40
550	mm	559	1295	1305	1295	609	571	950
24	in.	24.00	55.00	55.38	55.00	24.50	25.19	40.50
600	mm	610	1397	1407	1397	622	640	1028
26	in.	26.00	57.00	57.50	57.00	24.80	24.30	40.10
650	mm	660	1448	1461	1448	630	618	1020
28	in.	28.00	61.00	61.50	61.00	26.20	27.20	46.10
700	mm	711	1549	1562	1549	665	692	1172
30	in.	30.00	66.30	65.50	66.30	29.20	31.50	50.80
750	mm	762	1651	1664	1651	741	800	1290
32	in.	32.00	70.00	70.72	70.00	29.80	31.70	52.40
800	mm	813	1778	1794	1778	756	804	1330
34	in.	34.00	76.00	76.52	76.00	30.80	32.20	57.10
850	mm	864	1930	1946	1930	782	817	1450
36	in.	36.00	82.00	82.63	82.00	34.20	37.20	60.90
900	mm	914	2083	2099	2083	869	945	1546
40	in.	40.00	85.40	85.43	85.40	36.10	38.60	64.80
1000	mm	1016	2170	2170	2170	916	980	1645
42	in.	42.00	85.60	85.63	85.60	39.20	43.70	70.80
1050	mm	1067	2175	2175	2175	995	1110	1800
48	in.	48.00	95.90	95.87	95.90	44.60	49.80	81.50
1200	mm	1219	2435	2435	2435	1132	1265	2070

CLASS 600

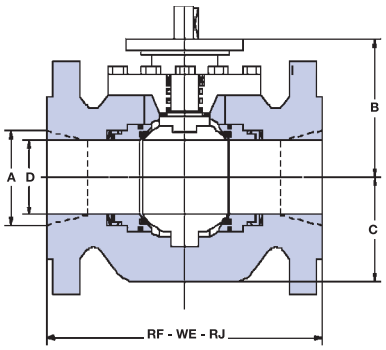
REDUCED BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	RJ	WE	B	C	E
2 x 1½	in.	2.00	1.50	11.50	11.63	11.50	8.22	2.75	6.50
50 x 40	mm	51	38	292	295	292	209	70	165
3 x 2	in.	3.00	2.00	14.00	14.13	14.00	7.67	4.33	8.30
80 x 50	mm	76	51	356	359	356	195	110	210
4 x 3	in.	4.00	3.00	17.00	17.13	17.00	9.44	4.33	14.70
100 x 80	mm	102	76	432	435	432	240	110	373
6 x 4	in.	6.00	4.00	22.00	22.13	22.00	11.02	6.88	14.00
150 x 100	mm	152	102	559	562	559	280	175	356
8 x 6	in.	8.00	6.00	26.00	26.13	26.00	12.00	7.67	16.50
200 x 150	mm	203	152	660	664	660	305	195	419
10 x 8	in.	10.00	8.00	31.00	31.13	31.00	15.74	11.02	20.10
250 x 200	mm	254	203	787	791	787	400	280	510
12 x 10	in.	12.00	10.00	33.00	33.13	33.00	17.12	11.22	22.00
300 x 250	mm	305	254	838	841	838	435	285	560
14 x 10	in.	14.00	10.00	35.00	35.13	35.00	–	–	23.80
350 x 250	mm	356	254	889	892	889	–	–	605
14 x 12	in.	14.00	12.00	35.00	35.13	35.00	17.32	12.59	23.80
350 x 250	mm	356	305	889	892	889	440	320	605
16 x 12	in.	16.00	12.00	39.00	39.13	39.00	–	–	27.00
400 x 300	mm	406	305	991	994	991	–	–	685
16 x 14	in.	16.00	14.00	39.00	39.13	39.00	19.88	13.38	24.70
400 x 350	mm	406	356	991	994	991	505	340	628
18 x 16	in.	18.00	16.00	43.00	43.13	43.00	23.22	16.14	29.30
450 x 400	mm	457	406	1092	1095	1092	590	410	745
20 x 16	in.	20.00	16.00	47.00	47.25	47.00	–	–	32.10
500 x 400	mm	508	406	1194	1200	1194	–	–	815
20 x 18	in.	20.00	18.00	47.00	47.25	47.00	27.55	17.51	32.10
500 x 450	mm	508	457	1194	1200	1194	700	445	815
24 x 20	in.	24.00	20.00	55.00	55.38	55.00	30.51	20.07	37.00
600 x 500	mm	610	508	1397	1407	1397	775	510	940
30 x 24	in.	30.00	24.00	66.30	65.50	66.30	–	–	44.50
750 x 600	mm	762	610	1651	1664	1651	–	–	1130
36 x 30	in.	36.00	30.00	82.00	82.63	82.00	–	–	51.80
900 x 750	mm	914	762	2083	2099	2083	–	–	1315

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 900

FULL BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	RJ	WE	B	C	E
2	in.	2.00	14.49	14.61	14.49	7.87	4.72	8.50
50	mm	51	368	371	368	200	120	220
3	in.	3.00	15.00	15.12	15.00	9.44	5.11	9.49
80	mm	76	381	384	381	240	130	241
4	in.	4.00	17.99	18.11	17.99	11.02	6.88	11.50
100	mm	102	457	460	457	280	175	290
6	in.	6.00	24.02	24.13	24.02	13.77	8.66	15.00
150	mm	152	610	613	610	350	220	381
8	in.	8.00	29.02	29.13	29.02	15.35	10.23	18.50
200	mm	203	737	740	737	390	260	470
10	in.	10.00	32.99	33.11	32.99	18.89	14.20	21.46
250	mm	254	838	841	838	480	310	545
12	in.	12.00	37.99	38.11	37.99	17.24	16.14	24.02
300	mm	305	965	968	965	438	410	610
14	in.	14.00	40.51	40.87	40.51	21.45	14.56	25.50
350	mm	356	1029	1038	1029	545	370	650
16	in.	16.00	44.49	44.88	44.49	25.59	16.53	27.95
400	mm	406	1130	1140	1130	650	420	710
18	in.	18.00	47.99	48.50	47.99	26.57	24.29	31.50
450	mm	457	1219	1232	1219	675	617	800
20	in.	20.00	52.01	52.48	52.01	31.10	28.54	35.04
500	mm	508	1321	1334	1321	790	725	890
24	in.	24.00	60.98	61.73	60.98	36.02	32.71	41.69
600	mm	610	1549	1568	1549	915	831	1059
28	in.	28.00	69.02	69.88	69.02	–	–	48.58
700	mm	711	1753	1775	1753	–	–	1234
30	in.	30.00	74.02	74.88	74.02	–	–	51.18
750	mm	762	1880	1902	1880	–	–	1300
32	in.	32.00	80.00	80.87	80.00	–	–	53.43
800	mm	813	2032	2054	2032	–	–	1357
34	in.	34.00	85.00	86.14	85.00	–	–	57.80
850	mm	864	2159	2188	2159	–	–	1468
36	in.	36.00	90.00	91.14	90.00	–	–	60.31
900	mm	914	2286	2315	2286	–	–	1532

Other dimension on request

CLASS 900

REDUCED BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	RJ	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	14.49	14.61	14.49	8.46	3.14	8.60
50 x 40	mm	51	38	368	371	368	215	80	220
3 x 2	in.	3.00	2.00	15.00	15.12	15.00	7.87	4.72	9.49
80 x 50	mm	76	51	381	384	381	200	120	241
4 x 3	in.	4.00	3.00	17.99	18.11	17.99	9.44	5.11	11.50
100 x 80	mm	102	76	457	460	457	240	130	290
6 x 4	in.	6.00	4.00	24.02	24.13	24.02	11.02	6.88	14.90
150 x 100	mm	152	102	610	613	610	280	175	380
8 x 6	in.	8.00	6.00	29.02	29.13	29.02	13.77	8.66	18.50
200 x 150	mm	203	152	737	740	737	350	220	470
10 x 8	in.	10.00	8.00	32.99	33.11	32.99	15.35	10.23	21.46
250 x 200	mm	254	203	838	841	838	390	260	545
12 x 10	in.	12.00	10.00	37.99	38.11	37.99	18.89	14.20	24.02
300 x 250	mm	305	254	965	968	965	480	310	610
14 x 10	in.	14.00	10.00	40.51	40.87	40.51	–	–	25.50
350 x 250	mm	356	254	1029	1038	1029	–	–	650
14 x 12	in.	14.00	12.00	40.51	40.87	40.51	17.24	16.14	27.90
350 x 300	mm	356	305	1029	1038	1029	438	410	710
16 x 12	in.	16.00	12.00	44.49	44.88	44.49	–	–	29.50
400 x 300	mm	406	305	1130	1140	1130	–	–	750
16 x 14	in.	16.00	14.00	44.49	44.88	44.49	21.45	14.56	31.10
400 x 350	mm	406	356	1130	1140	1130	545	370	790
18 x 16	in.	18.00	16.00	47.99	48.50	47.99	25.59	16.53	31.50
450 x 400	mm	457	406	1219	1232	1219	650	420	800
20 x 16	in.	20.00	16.00	52.01	52.48	52.01	–	–	31.10
500 x 400	mm	508	406	1321	1334	1321	–	–	790
20 x 18	in.	20.00	18.00	52.01	52.48	52.01	26.57	24.29	35.04
500 x 450	mm	508	457	1321	1334	1321	675	617	890
24 x 20	in.	24.00	20.00	60.98	61.73	60.98	31.10	28.54	40.94
600 x 500	mm	610	508	1549	1568	1549	790	725	1040
30 x 24	in.	30.00	24.00	74.02	74.88	74.02	–	–	48.43
750 x 600	mm	762	610	1880	1902	1880	–	–	1230
36 x 30	in.	36.00	30.00	90.00	91.14	90.00	–	–	57.48
900 x 750	mm	914	762	2286	2315	2286	–	–	1460

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
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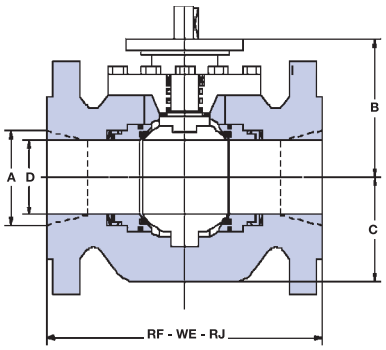


CLASS 1500

FULL BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	RJ	WE	B	C	E
2	in.	2.00	14.49	14.61	14.49	8.07	4.72	8.60
50	mm	51	368	371	368	205	120	220
3	in.	3.00	18.50	18.62	18.50	8.26	4.92	10.51
80	mm	76	470	473	470	210	125	267
4	in.	4.00	21.50	21.61	21.50	9.64	6.29	12.20
100	mm	102	546	549	546	245	160	310
6	in.	6.00	27.76	27.99	27.76	13.18	10.03	15.51
150	mm	152	705	711	705	335	255	394
8	in.	8.00	32.76	33.11	32.76	17.20	13.38	19.09
200	mm	203	832	841	832	437	340	485
10	in.	10.00	39.02	39.37	39.02	19.76	15.00	23.03
250	mm	254	991	1000	991	502	381	585
12	in.	12.00	44.49	44.61	44.49	20.98	17.24	27.95
300	mm	305	1130	1146	1130	533	438	710
14	in.	14.00	49.49	50.24	49.49	24.64	19.60	30.12
350	mm	356	1257	1276	1257	626	498	765
16	in.	16.00	54.49	55.35	54.49	28.54	18.11	33.39
400	mm	406	1384	1407	1384	725	460	848
18	in.	18.00	60.51	61.38	60.51	29.00	23.90	38.58
450	mm	457	1537	1559	1537	736	607	980
20	in.	20.00	65.51	66.38	66.51	30.00	25.40	39.96
500	mm	508	1664	1686	1664	763	644	1015
24	in.	24.00	80.43	81,54	80.43	32.00	28.50	50.91
600	mm	610	2043	1972	2043	813	725	1295

Other dimension on request

CLASS 1500

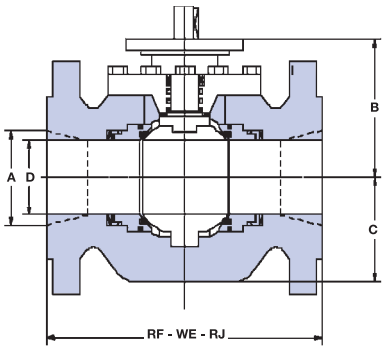
REDUCED BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	RJ	WE	B	C	E
2 x 1$^{1/2}$	in.	2.00	1.50	14.49	14.61	14.49	7.48	4.33	8.66
50 x 40	mm	51	38	368	371	368	190	110	220
3 x 2	in.	3.00	2.00	18.50	18.62	18.50	8.07	4.72	10.51
80 x 50	mm	76	51	470	473	470	205	120	2.67
4 x 3	in.	4.00	3.00	21.50	21.61	21.50	8.26	4.92	12.20
100 x 80	mm	102	76	546	549	546	210	125	310
6 x 4	in.	6.00	4.00	27.76	27.99	27.76	9.64	6.29	15.51
150 x 100	mm	152	102	705	711	705	245	160	394
8 x 6	in.	8.00	6.00	32.76	33.11	32.76	13.18	10.03	19.09
200 x 150	mm	203	152	832	841	832	335	255	485
10 x 8	in.	10.00	8.00	39.02	39.37	39.02	16.14	11.41	23.03
250 x 200	mm	254	203	991	1000	991	410	290	585
12 x 10	in.	12.00	10.00	44.49	44.61	44.49	18.30	13.18	26.57
300 x 250	mm	305	254	1130	1146	1130	465	335	675
14 x 10	in.	14.00	10.00	49.49	50.24	49.49	21.77	17.24	27.95
350 x 250	mm	356	254	1257	1276	1257	553	439	710
14 x 12	in.	14.00	12.00	49.49	50.24	49.49	21.77	17.24	29.92
350 x 300	mm	356	305	1257	1276	1257	553	438	760
16 x 12	in.	16.00	12.00	54.49	55.35	54.49	24.64	19.60	32.48
400 x 300	mm	406	305	1384	1407	1384	626	498	825
16 x 14	in.	16.00	14.00	54.49	55.35	54.49	24.64	19.60	32.48
400 x 350	mm	406	356	1384	1407	1384	626	498	825
18 x 16	in.	18.00	16.00	60.51	61.38	60.51	25.00	20.00	36.22
450 x 400	mm	457	406	1537	1559	1537	630	508	920
20 x 16	in.	20.00	16.00	65.51	66.38	66.51	26.00	20.00	38.97
500 x 400	mm	508	406	1664	1686	1664	660	508	990
20 x 18	in.	20.00	18.00	65.51	66.38	66.51	28.00	23.00	38.97
500 x 450	mm	508	457	1664	1686	1664	711	542	990
24 x 20	in.	24.00	20.00	80.43	81,54	80.43	30.00	25.00	46.06
600 x 500	mm	610	508	2043	1972	2043	762	635	1170

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 2500

FULL BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	RJ	WE	B	C	E
2	in.	1.65	17.76	17.87	17.76	8.46	5.11	9.05
50	mm	42	451	454	451	215	130	230
3	in.	2.44	22.76	22.99	22.76	8.66	5.31	11.08
80	mm	62	578	584	578	220	135	300
4	in.	3.43	26.50	26.89	26.50	10.03	6.96	14.02
100	mm	87	673	683	673	255	170	356
6	in.	5.16	35.98	36.50	35.98	16.92	10.43	19.09
150	mm	131	914	927	914	430	265	485
8	in.	7.05	40.24	40.87	40.24	16.92	13.30	24.41
200	mm	179	1022	1038	1022	430	340	620
10	in.	8.78	50.00	50.87	50.00	17.50	16.60	29.33
250	mm	223	1270	1292	1270	444	421	745
12	in.	10.43	55.98	56.89	55.98	18.00	18.90	34.44
300	mm	265	1422	1445	1422	457	480	875

Other dimension on request

CLASS 2500

REDUCED BORE, TOP ENTRY, 1 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	RJ	WE	B	C	E
2 x 1$^{1/2}$	in.	1.65	1.50	17.76	17.87	17.76	7.78	4.72	9.25
50 x 40	mm	42	38	451	454	451	200	120	230
3 x 2	in.	2.44	1.65	22.76	22.99	22.76	8.46	5.11	11.01
80 x 50	mm	62	42	578	584	578	215	130	300
4 x 3	in.	3.43	2.44	26.50	26.89	26.50	8.66	5.31	14.02
100 x 80	mm	87	62	673	683	673	220	135	356
6 x 4	in.	5.16	3.43	35.98	36.50	35.98	10.03	6.96	19.09
150 x 100	mm	131	87	914	927	914	255	170	485
8 x 6	in.	7.05	5.16	40.24	40.87	40.24	12.00	9.00	22.05
200 x 150	mm	179	131	1022	1038	1022	348	228	560
10 x 8	in.	8.78	7.05	50.00	50.87	50.00	14.00	13.00	26.57
250 x 200	mm	223	179	1270	1292	1270	355	330	670
12 x 10	in.	10.43	8.78	55.98	56.89	55.98	16.00	18.00	30.70
300 x 250	mm	265	223	1422	1445	1422	406	475	780

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.

TRUNNION FULL WELDED BALL VALVES

Design	Trunnion Mounted with external trunnio	std on small/medium OD
	Trunnion Mounted with bearing plates	std on large OD
	In line maintenance	no
	API6D	standard
	API6A	on request
	Separate Ball and Stem	standard
	Double Block and Bleed	standard
	Wetted area overlay	on request
	Internal lining	no
	Forged construction	standard
	Cast construction	no
	Gear	from 2”

Seat	Full, Reduced or Venturi Ports	on request
	Self Relieving seats	standard
	Single Piston Effect	standard
	Double Piston Effect	on request
	Soft insert seat	standard
	Metal seat	standard
	Elastomer, lipseal or Graphite seat seals	on request
	Seat pocket overlay	on request
	Emergency Seat injection	on request

Seal	Primary seal (body/closure): Metal	standard
	Secondary seal(Fire Seal): Weld	standard
	Seal Pocket overlay	no

Ends	Welded Ends	standard
	Flanged	on request
	Welded ends with pups pieces	on request
	Hub Connection	on request
	Compact Flanges	on request
	RJ Wled Overlay	on request

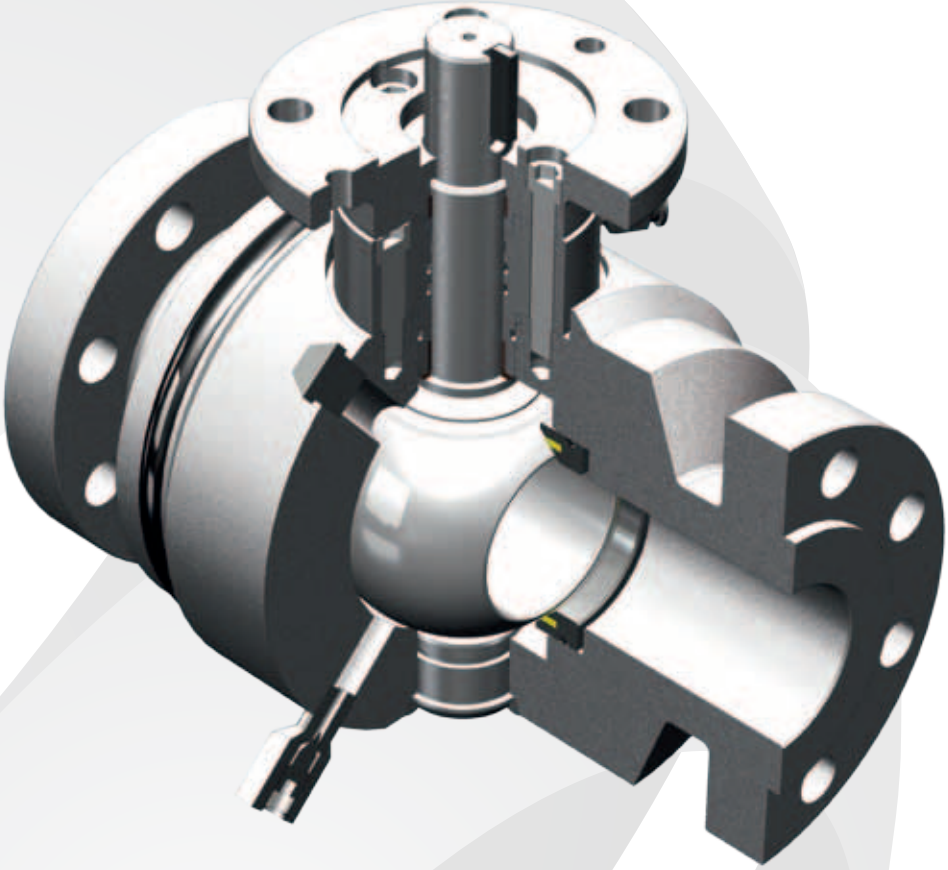
End-to-End	ASME B16.10	standard
	Special Lenght	on request

Fire Safe	API6FA	standard
	API607	on request
	BS6755	on request

Steam	Anti Blowout design	standard
	Antistatic	standard
	Triple stem seal	standard
	Emergency Stem sealant injection	on request
	Extended bonnet for underground use	on request

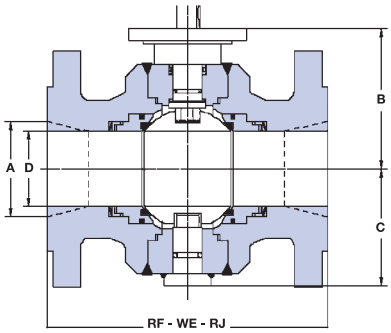
Features	Drain plugs	standard
	Drain valve	on request
	Vend valve	std from 8”
	Lifting Lugs	on request
	Supporting Legs	on request
	Cavity pressure balance hole in ball	standard

Oparation	Lever	standard
	Gear, lockable	standard
	Motor Operated	on request
	Hydro/Pneu Operated	on request



COMPONENT	A105/316	LF2/316	F316/316
NAMEPLATE	Stainless steel	Stainless steel	Stainless steel
TOP FLANGE	A105N	A350 LF2	A182 F316
VENT	A105N	A350 LF2	A182 F316
BOLT	A193 B7	A320 L7	A193 B8
NUT	2H	4H	GR.8
STEM	st/st 316	st/st 316	st/st 316
STEM SEAL	FKM*	FKM*	FKM*
STEM PACKING	Graphite	Graphite	Graphite
TRUNNION	st/st 316	st/st 316	st/st 316
BALL	st/st 316	st/st 316	st/st 316
SEAT	st/st 316	st/st 316	st/st 316
SEAT INSERT	PTFE+15% Glass	PTFE+15% Glass	PTFE+15% Glass
SEAT ORING	FKM*	FKM*	FKM*
TOP COVER	A105N	A350 LF2	A182 F316
BODY	A105N	A350 LF2	A182 F316

FKM = Viton® or equivalent. Viton is registrated trademark of DuPont Performance Elastomers*



CLASS 150

FULL BORE, FULLY WELDED, 2/3 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	WE	B	C	E
2	in.	2.00	7.00	8.50	5.51	3.54	5.90
50	mm	51	178	216	140	90	150
3	in.	3.00	8.00	11.13	7.48	4.13	7.48
80	mm	76	203	283	190	105	190
4	in.	4.00	9.00	12.00	9.72	5.55	9.00
100	mm	102	229	305	247	141	230
6	in.	6.00	15.50	18.00	11.61	6.88	12.20
150	mm	152	394	457	295	175	310
8	in.	8.00	18.00	20.50	12.99	8.26	15.35
200	mm	203	457	521	330	210	390
10	in.	10.00	21.00	22.00	15.74	9.84	18.11
250	mm	254	533	559	400	250	460
12	in.	12.00	24.00	25.00	18.11	12.20	21.45
300	mm	305	610	635	460	310	545
14	in.	14.00	27.00	30.00	18.89	13.38	24.00
350	mm	356	686	762	480	340	610
16	in.	16.00	30.00	33.00	21.25	15.15	26.37
400	mm	406	762	838	540	385	670
18	in.	18.00	34.00	36.00	22.83	16.85	24.80
450	mm	457	864	914	580	428	630
20	in.	20.00	36.00	39.00	23.00	21.45	33.43
500	mm	508	914	991	584	545	849
22	in.	22.00	40.00	43.00	24.00	23.00	36.81
550	mm	559	991	1092	610	584	935
24	in.	24.00	42.00	45.00	24.10	25.87	39.57
600	mm	610	1067	1143	612	655	1005
26	in.	26.00	45.00	49.00	24.69	22.20	41.73
650	mm	660	1143	1245	627	564	1060
28	in.	28.00	49.00	53.00	25.35	25.91	44.88
700	mm	711	1245	1346	644	658	1140
30	in.	30.00	51.00	55.00	27.20	27.70	47.24
750	mm	762	1295	1397	691	705	1200
32	in.	32.00	54.00	60.00	29.21	29.37	51.18
800	mm	813	1372	1524	742	746	1300
34	in.	34.00	58.00	64.00	29.88	30.51	53.94
850	mm	864	1473	1626	759	775	1370
36	in.	36.00	60.00	68.00	31.97	31.77	56.30
900	mm	914	1524	1727	812	807	1430
40	in.	40.00	69.00	77.00	35.43	35.35	63.00
1000	mm	1016	1753	1956	900	898	1600
42	in.	42.00	72.00	82.00	37.13	37.00	64.96
1050	mm	1067	1855	2083	943	940	1656
48	in.	48.00	80.00	94.00	43.19	41.73	75.59
1200	mm	1219	2134	2388	1097	1060	1920
56	in.	53.54	98.00	98.00	52.00	50.00	89.00
1400	mm	1360	2490	2490	13.21	1270	2260

CLASS 150

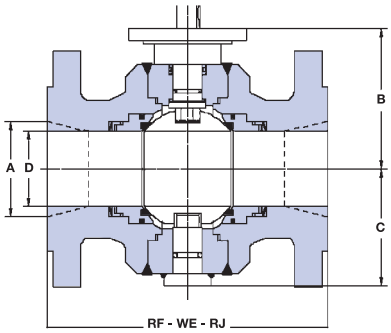
REDUCED BORE, FULLY WELDED, 2/3 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	7.00	8.50	4.00	3.00	5.90
50 x 40	mm	51	38	178	216	101	76	150
3 x 2	in.	3.00	2.00	8.00	11.13	5.51	3.54	7.48
80 x 50	mm	76	51	203	283	140	90	190
4 x 3	in.	4.00	3.00	9.00	12.00	7.48	4.13	9.00
100 x 80	mm	102	76	229	305	190	105	230
6 x 4	in.	6.00	4.00	15.50	18.00	11.02	6.53	12.20
150 x 100	mm	152	102	394	457	280	166	310
8 x 6	in.	8.00	6.00	18.00	20.50	11.61	6.88	15.35
200 x 150	mm	203	152	457	521	295	175	395
10 x 8	in.	10.00	8.00	21.00	22.00	12.99	8.26	15.98
250 x 200	mm	254	203	533	559	330	210	406
12 x 10	in.	12.00	10.00	24.00	25.00	15.74	9.84	19.02
300 x 250	mm	305	254	610	635	400	250	483
14 x 10	in.	14.00	10.00	27.00	30.00	18.11	12.30	21.06
350 x 250	mm	356	254	686	762	460	310	535
14 x 12	in.	14.00	12.00	27.00	30.00	18.11	12.20	21.06
350 x 300	mm	356	305	686	762	460	310	535
16 x 12	in.	16.00	12.00	30.00	33.00	18.89	13.38	23.43
400 x 300	mm	406	305	762	838	480	340	595
16 x 14	in.	16.00	14.00	30.00	33.00	18.89	13.38	23.43
400 x 350	mm	406	356	762	838	480	340	595
18 x 16	in.	18.00	16.00	34.00	36.00	21.25	15.15	24.80
450 x 400	mm	457	406	864	914	540	385	630
20 x 16	in.	20.00	16.00	36.00	39.00	22.83	16.85	27.56
500 x 400	mm	508	406	914	991	580	428	700
20 x 18	in.	20.00	18.00	36.00	39.00	22.83	16.85	27.56
500 x 450	mm	508	457	914	991	580	428	700
24 x 20	in.	24.00	20.00	42.00	45.00	23.00	18.00	32.28
600 x 500	mm	610	508	1067	1143	584	457	820
28 x 24	in.	28.00	24.00	49.00	53.00	24.50	19.49	37.40
700 x 600	mm	711	610	1245	1346	622	495	950
30 x 24	in.	30.00	24.00	51.00	55.00	25.15	20.28	38.78
750 x 600	mm	762	610	1295	1397	638	515	985
36 x 30	in.	36.00	30.00	60.00	68.00	27.17	27.56	46.06
900 x 750	mm	914	762	1524	1727	690	700	1170

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 300

FULL BORE, FULLY WELDED, 2/3 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	WE	B	C	E
2	in.	2.00	7.00	8.50	5.51	3.54	5.90
50	mm	51	178	216	140	90	150
3	in.	3.00	8.00	11.13	7.48	4.13	7.48
80	mm	76	203	283	190	105	190
4	in.	4.00	9.00	12.00	9.72	5.55	9.00
100	mm	102	229	305	247	141	230
6	in.	6.00	15.50	18.00	11.61	6.88	12.20
150	mm	152	394	457	295	175	310
8	in.	8.00	18.00	20.50	12.99	8.26	15.35
200	mm	203	457	521	330	210	390
10	in.	10.00	21.00	22.00	15.74	9.84	18.11
250	mm	254	533	559	400	250	460
12	in.	12.00	24.00	25.00	18.11	12.20	21.45
300	mm	305	610	635	460	310	545
14	in.	14.00	27.00	30.00	18.89	13.38	24.00
350	mm	356	686	762	480	340	610
16	in.	16.00	30.00	33.00	21.25	15.15	26.37
400	mm	406	762	838	540	385	670
18	in.	18.00	34.00	36.00	22.83	16.85	24.80
450	mm	457	864	914	580	428	630
20	in.	20.00	36.00	39.00	23.00	21.45	33.43
500	mm	508	914	991	584	545	849
22	in.	22.00	40.00	43.00	24.00	23.00	36.81
550	mm	559	991	1092	610	584	935
24	in.	24.00	42.00	45.00	24.10	25.87	39.57
600	mm	610	1067	1143	612	655	1005
26	in.	26.00	45.00	49.00	24.69	22.20	41.73
650	mm	660	1143	1245	627	564	1060
28	in.	28.00	49.00	53.00	25.35	25.91	44.88
700	mm	711	1245	1346	644	658	1140
30	in.	30.00	51.00	55.00	27.20	27.70	47.24
750	mm	762	1295	1397	691	705	1200
32	in.	32.00	54.00	60.00	29.21	29.37	51.18
800	mm	813	1372	1524	742	746	1300
34	in.	34.00	58.00	64.00	29.88	30.51	53.94
850	mm	864	1473	1626	759	775	1370
36	in.	36.00	60.00	68.00	31.97	31.77	56.30
900	mm	914	1524	1727	812	807	1430
40	in.	40.00	69.00	77.00	35.43	35.35	63.00
1000	mm	1016	1753	1956	900	898	1600
42	in.	42.00	72.00	82.00	37.13	37.00	64.96
1050	mm	1067	1855	2083	943	940	1656
48	in.	48.00	80.00	94.00	43.19	41.73	75.59
1200	mm	1219	2134	2388	1097	1060	1920
56	in.	53.54	98.00	98.00	52.00	50.00	89.00
1400	mm	1360	2490	2490	13.21	1270	2260

CLASS 300

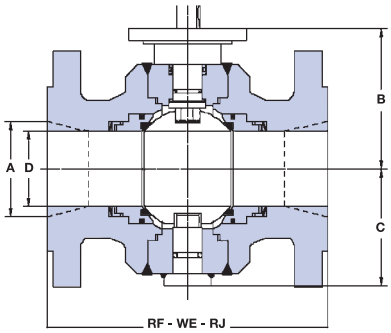
REDUCED BORE, FULLY WELDED, 2/3 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	8.50	8.50	6.88	3.14	6.50
50 x 40	mm	51	38	216	216	175	80	165
3 x 2	in.	3.00	2.00	11.10	11.13	7.87	4.72	8.50
80 x 50	mm	76	51	283	283	200	120	218
4 x 3	in.	4.00	3.00	12.00	12.00	9.44	5.11	10.00
100 x 80	mm	102	76	305	305	240	130	254
6 x 4	in.	6.00	4.00	15.90	18.00	11.02	5.90	12.20
150 x 100	mm	152	102	403	457	280	150	310
8 x 6	in.	8.00	6.00	19.80	20.50	11.61	6.88	15.40
200 x 150	mm	203	152	502	521	295	175	390
10 x 8	in.	10.00	8.00	22.40	22.00	12.99	8.26	17.50
250 x 200	mm	254	203	568	559	330	210	445
12 x 10	in.	12.00	10.00	25.50	25.00	16.53	10.62	20.50
300 x 250	mm	305	254	648	635	420	270	520
14 x 10	in.	14.00	10.00	30.00	30.00	18.30	12.79	23.00
350 x 250	mm	356	254	762	762	465	325	585
14 x 12	in.	14.00	12.00	30.00	30.00	18.30	12.79	23.00
350 x 300	mm	356	305	762	762	465	325	585
16 x 12	in.	16.00	12.00	33.00	33.00	21.45	16.92	25.60
400 x 300	mm	406	305	838	838	545	430	650
16 x 14	in.	16.00	14.00	33.00	33.00	21.45	16.92	25.60
400 x 350	mm	406	356	838	838	545	430	650
18 x 16	in.	18.00	16.00	36.00	36.00	23.62	18.50	28.00
450 x 400	mm	457	406	914	914	600	470	710
20 x 16	in.	20.00	16.00	39.00	39.00	24.40	20.07	30.70
500 x 400	mm	508	406	991	991	620	510	780
20 x 18	in.	20.00	18.00	39.00	39.00	24.40	20.07	30.40
500 x 450	mm	508	457	991	991	620	510	780
24 x 20	in.	24.00	20.00	45.00	45.00	25.10	19.68	36.00
600 x 500	mm	610	508	1143	1143	637	500	915
30 x 24	in.	30.00	24.00	55.00	55.00	25.80	21.20	42.90
750 x 600	mm	762	610	1397	1397	655	540	1090
36 x 30	in.	36.00	30.00	68.00	68.00	27.60	28.70	50.00
900 x 750	mm	914	762	1727	1727	700	730	1270

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 600

FULL BORE, FULLY WELDED, 2/3 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	WE	B	C	E
2	in.	2.00	11.50	11.50	6.67	4.33	6.50
50	mm	51	292	292	195	110	165
3	in.	3.00	14.00	14.00	9.44	4.33	8.50
80	mm	76	356	356	240	110	218
4	in.	4.00	17.00	17.00	11.02	6.88	10.70
100	mm	102	432	432	280	175	273
6	in.	6.00	22.00	22.00	12.00	7.67	14.10
150	mm	152	559	559	305	195	360
8	in.	8.00	26.00	26.00	15.74	11.02	16.50
200	mm	203	660	660	400	280	419
10	in.	10.00	31.00	31.00	17.12	11.22	20.40
250	mm	254	787	787	435	285	520
12	in.	12.00	33.00	33.00	17.32	12.59	22.60
300	mm	305	838	838	440	320	575
14	in.	14.00	35.00	35.00	19.88	13.38	24.70
350	mm	356	889	889	505	340	628
16	in.	16.00	39.00	39.00	23.22	16.14	27.60
400	mm	406	991	991	590	410	700
18	in.	18.00	43.00	43.00	23.55	17.51	30.50
450	mm	457	1092	1092	589	445	775
20	in.	20.00	47.00	47.00	23.80	20.07	34.10
500	mm	508	1194	1194	604	510	865
22	in.	22.00	51.00	51.00	24.00	20.35	37.40
550	mm	559	1296	1296	609	571	950
24	in.	24.00	55.00	55.00	24.50	25.19	40.50
600	mm	610	1397	1397	622	640	1028
26	in.	26.00	57.00	57.00	24.80	24.30	40.10
650	mm	660	1448	1448	630	618	1020
28	in.	28.00	61.00	61.00	26.20	27.20	46.10
700	mm	711	1549	1549	665	692	1172
30	in.	30.00	66.30	66.30	29.20	31.50	50.80
750	mm	762	1684	1684	741	800	1290
32	in.	32.00	70.00	70.00	29.80	31.70	52.40
800	mm	813	1778	1778	756	840	1330
34	in.	34.00	76.00	76.00	30.80	32.20	57.10
850	mm	864	1930	1930	782	817	1450
36	in.	36.00	82.00	82.00	34.20	37.20	60.90
900	mm	914	2083	2083	869	945	1546
40	in.	40.00	85.40	85.40	36.10	38.60	64.80
1000	mm	1016	2170	2170	916	98	1645
42	in.	42.00	85.60	85.60	39.20	43.70	70.80
1050	mm	1067	2175	2175	995	1110	1800
48	in.	48.00	95.90	95.90	44.60	49.80	81.50
1200	mm	1219	2435	2435	1132	1265	2070
56	in.	53.54	106.70	106.70	51.00	57.50	94.00
1400	mm	1360	2710	2710	1290	1460	2390

CLASS 600

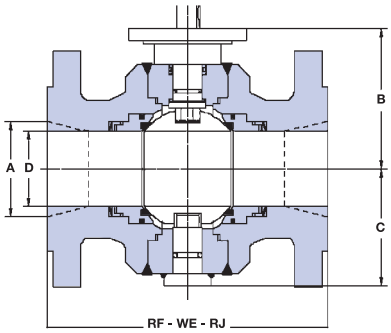
REDUCED BORE, FULLY WELDED, 2/3 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	11.50	11.50	7.48	3.54	6.50
50 x 40	mm	51	38	292	292	190	90	165
3 x 2	in.	3.00	2.00	14.09	14.09	7.67	4.33	8.30
80 x 50	mm	76	51	356	356	195	110	210
4 x 3	in.	4.00	3.00	17.00	17.00	9.44	4.33	14.70
100 x 80	mm	102	76	432	432	240	110	373
6 x 4	in.	6.00	4.00	22.00	22.00	11.02	6.88	14.00
150 x 100	mm	152	102	559	559	280	175	356
8 x 6	in.	8.00	6.00	26.00	26.00	12.00	6.67	16.50
200 x 150	mm	203	152	660	660	305	195	419
10 x 8	in.	10.00	8.00	31.00	31.00	15.74	11.02	20.10
250 x 200	mm	254	203	787	787	400	280	510
12 x 10	in.	12.00	10.00	33.00	33.00	17.12	11.22	22.00
300 x 250	mm	305	254	383	383	435	285	560
14 x 10	in.	14.00	10.00	35.00	35.00	17.32	12.59	23.80
350 x 250	mm	356	254	889	889	440	320	605
14 x 12	in.	14.00	12.00	35.00	35.00	17.32	12.59	23.80
350 x 300	mm	356	305	889	889	440	320	605
16 x 12	in.	16.00	12.00	39.00	39.00	19.88	13.38	27.00
400 x 300	mm	406	305	991	991	505	340	685
16 x 14	in.	16.00	14.00	35.00	35.00	19.88	13.38	24.70
400 x 350	mm	406	356	889	889	505	340	628
18 x 16	in.	18.00	16.00	43.00	43.00	23.22	16.14	29.30
450 x 400	mm	457	406	1092	1092	590	410	745
20 x 16	in.	20.00	16.00	47.00	47.00	23.80	17.51	32.10
500 x 400	mm	508	406	1194	1194	604	445	815
20 x 18	in.	20.00	18.00	47.00	47.00	24.00	17.51	32.10
500 x 450	mm	508	457	1194	1194	609	445	815
24 x 20	in.	24.00	20.00	55.00	55.00	24.50	20.07	37.00
600 x 500	mm	610	508	1397	1397	622	510	940
30 x 24	in.	30.00	24.00	66.30	66.30	24.80	22.40	44.50
750 x 600	mm	762	610	1684	1684	629	570	1130
36 x 30	in.	36.00	30.00	82.00	82.00	27.90	29.90	51.80
900 x 750	mm	914	762	2083	2083	708	760	1315

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.



CLASS 900

FULL BORE, FULLY WELDED, 2/3 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		D	RF	RJ	WE	B	C	E
2	in.	2.00	14.49	14.61	14.49	7.87	4.72	8.50
50	mm	51	368	371	368	200	120	220
3	in.	3.00	15.00	15.12	15.00	9.44	5.11	9.49
80	mm	76	381	384	381	240	130	241
4	in.	4.00	17.99	18.11	17.99	11.02	6.88	11.50
100	mm	102	457	460	457	280	175	290
6	in.	6.00	24.02	24.13	24.02	13.77	8.66	15.00
150	mm	152	610	613	610	350	220	381
8	in.	8.00	29.02	29.13	29.02	15.35	10.23	18.50
200	mm	203	737	740	737	390	260	470
10	in.	10.00	32.99	33.11	32.99	18.89	14.20	21.46
250	mm	254	838	841	838	480	310	545
12	in.	12.00	37.99	38.11	37.99	17.24	16.14	24.02
300	mm	305	965	968	965	438	410	610
14	in.	14.00	40.51	40.87	40.51	21.45	14.56	25.50
350	mm	356	1029	1038	1029	545	370	650
16	in.	16.00	44.49	44.88	44.49	25.59	16.53	27.95
400	mm	406	1130	1140	1130	650	420	710
18	in.	18.00	47.99	48.50	47.99	26.57	24.29	31.50
450	mm	457	1219	1232	1219	675	617	800
20	in.	20.00	52.01	52.48	52.01	31.10	28.54	35.04
500	mm	508	1321	1334	1321	790	725	890
24	in.	24.00	60.98	61.73	60.98	36.02	32.71	41.69
600	mm	610	1549	1568	1549	915	831	1059
28	in.	28.00	69.02	69.88	69.02	26.54	27.80	48.58
700	mm	711	1753	1775	1753	674	706	1234
30	in.	30.00	74.02	74.88	74.02	28.50	30.59	51.18
750	mm	762	1880	1902	1880	725	777	1300
32	in.	32.00	80.00	80.87	80.00	30.87	31.90	53.43
800	mm	813	2032	2054	2032	784	810	1357
34	in.	34.00	85.00	86.14	85.00	31.77	33.54	57.80
850	mm	864	2159	2188	2159	807	852	1468
36	in.	36.00	90.00	91.14	90.00	33.39	35.35	60.31
900	mm	914	2286	2315	2286	848	898	1532

Other dimension on request

CLASS 900

REDUCED BORE, FULLY WELDED, 2/3 PIECE, TRUNNION TO API6D
End-to-End According to ANSI 16.10 - Long pattern

SIZE		A	D	RF	RJ	WE	B	C	E
2 x 1 1/2	in.	2.00	1.50	14.49	14.61	14.49	6.10	4.25	8.60
50 x 40	mm	51	38	368	371	368	155	108	220
3 x 2	in.	3.00	2.00	15.00	15.12	15.00	7.87	4.72	9.49
80 x 50	mm	76	51	381	384	381	200	120	241
4 x 3	in.	4.00	3.00	17.99	18.11	17.99	9.44	5.11	11.50
100 x 80	mm	102	76	457	460	457	240	130	290
6 x 4	in.	6.00	4.00	24.02	24.13	24.02	11.02	6.88	14.90
150 x 100	mm	152	102	610	613	610	280	175	380
8 x 6	in.	8.00	6.00	29.02	29.13	29.02	13.77	8.66	18.50
200 x 150	mm	203	152	737	740	737	350	220	470
10 x 8	in.	10.00	8.00	32.99	33.11	32.99	15.35	10.23	21.46
250 x 200	mm	254	203	838	841	838	390	260	545
12 x 10	in.	12.00	10.00	37.99	38.11	37.99	18.89	14.20	24.02
300 x 250	mm	305	254	965	968	965	480	310	610
14 x 10	in.	14.00	10.00	40.51	40.87	40.51	17.24	16.14	25.50
350 x 250	mm	356	254	1029	1038	1029	438	410	650
14 x 12	in.	14.00	12.00	40.51	40.87	40.51	17.24	16.14	27.90
350 x 300	mm	356	305	1029	1038	1029	438	410	710
16 x 12	in.	16.00	12.00	44.49	44.88	44.49	21.45	14.56	29.50
400 x 300	mm	406	305	1130	1140	1130	545	370	750
16 x 14	in.	16.00	14.00	44.49	44.88	44.49	21.45	14.56	31.10
400 x 350	mm	406	356	1130	1140	1130	545	370	790
18 x 16	in.	18.00	16.00	47.99	48.50	47.99	25.59	16.53	31.50
450 x 400	mm	457	406	1219	1232	1219	650	420	800
20 x 16	in.	20.00	16.00	52.01	52.48	52.01	25.00	24.29	31.10
500 x 400	mm	508	406	1321	1334	1321	630	617	790
20 x 18	in.	20.00	18.00	52.01	52.48	52.01	26.57	24.29	35.04
500 x 450	mm	508	457	1321	1334	1321	675	617	890
24 x 20	in.	24.00	20.00	60.98	61.73	60.98	25.70	28.54	40.94
600 x 500	mm	610	508	1549	1568	1549	652	725	1040
30 x 24	in.	30.00	24.00	74.02	74.88	74.02	28.00	24.88	48.43
750 x 600	mm	762	610	1880	1902	1880	711	632	1230
36 x 30	in.	36.00	30.00	90.00	91.14	90.00	31.70	30.87	57.48
900 x 750	mm	914	762	2286	2315	2286	807	784	1460

Other dimension on request

- Flanges in accordance with ASME B16.5
- Shaded bore size (D) according to API 6D
- Butt welding ends according to ASME B16.25
- Shaded and-to-end dimension to API 6D

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.

COMPACT BALL VALVES

Design	Floating ball supported by the seats	standard
	2 pieces construction	standard
	API608	standard
	BS 5351 / ISO17292	standard
	API6D	Generally in accordance to API6D
	Separate Ball and Stem	standard
	Antistatic/ Antiblowout stem design	standard
	Wetted area overlay	on request, not available on small
	Internal lining	No
	Forged construction, close to shape forgings	standard
	Cast construction	No
	Lever / Gear	See table

Soft Seat	Full or Reduced ports	on request
	Self Relieving seats	standard
	Fixed seat, encapsulated (Soft)	standard
	Seat pocket overlay	on request, not available on small sizes

Metal Seat	Full or Reduced ports	on request
	Self Relieving seats	standard
	Energized seat, floating (Metal) Single piston effect	standard
	Energized seat, floating (Metal) Double piston effect	on request
	Elastomer, lipseal or Graphite seat seals	on request
	Seat pocket overlay Seat pocket overlay	on request, not available on small sizes

Seal	Primary seal (body/closure)	PTFE
		O-Ring only on request
	Secondary seal(Fire Seal)	Graphite
		O-Ring only on request
	Seal Pocket overlay	on request, not available on small sizes

Ends	Flanged	standard
	Welded Ends	on request
	Welded ends with pups pieces	on request
	Hub Connection	on request on high pressure
	Compact Flanges	on request on high pressure
	RJ Wled Overlay	on request

End-to-End	ASME B16.10	standard
	Special Lenght	on request

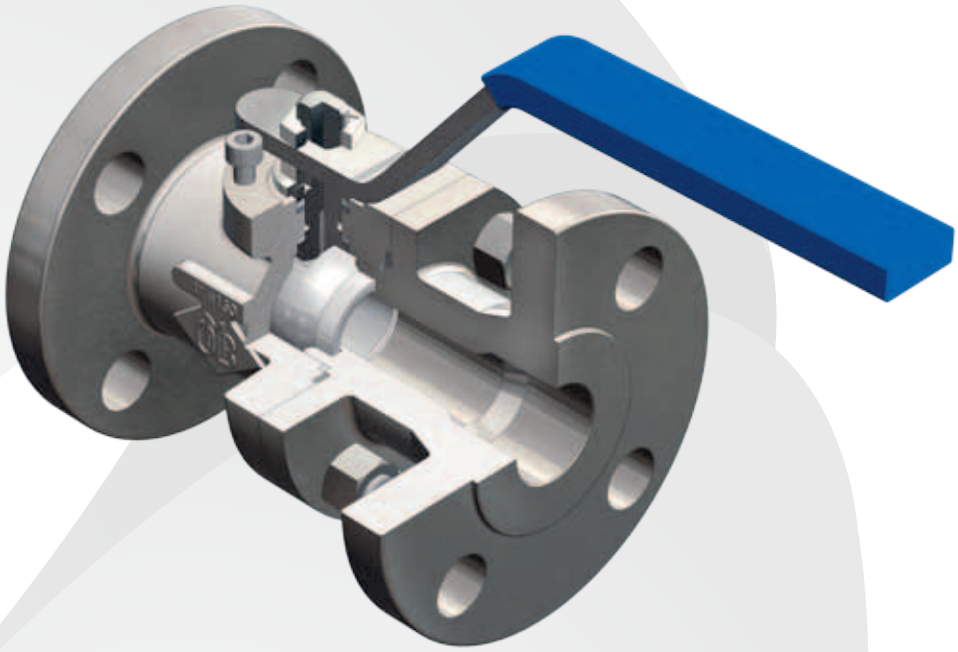
Fire Safe	BS6755	standard
	API607	on request
	API6FA	on request

Stem	Anti Blowout design	standard
	Antistatic	standard
	Double stem seal	standard
	Stem extension (not pressurized)	on request
	Extneded Stem for low/high temp service	on request

Features	ISO mounting pad	standard
	Thru Bore (ball part equal to pipe schedule)	on request
	Bleed hole on ball	on request
	Cavity pressure balance hole in ball	standard

Oparation	Lever	standard
	Oval Lever	on request
	Gear, lockable	on request
	Motor Operated	on request
	Hydro/Pneu Operated	on request

COMPACT BALL VALVES MATERIALS

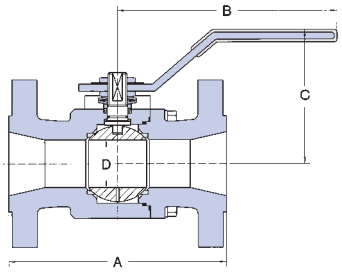


COMPONENT	A105/316	LF2/316	F316/316
LEVER NUT	Carbon Steel	Carbon Steel	Carbon Steel
NAMEPLATE	Aluminium	Aluminium	Aluminium
LEVER	Carbon Steel	Carbon Steel	Carbon Steel
PACKING	Graphite	Graphite	Graphite
GLAND	Stainless Steel	Stainless Steel	Stainless Steel
PACKING+STEM GASKET	PTFE+25% Fiberglass	PTFE+25% Fiberglass	PTFE+25% Fiberglass
BOLTS	A193 B7	A320 L7	A193 B8
SPRING	Harmonic Steel	Harmonic Steel	Harmonic Steel
STEM	st/st 316	st/st 316	st/st 316
END CONNECTOR	A105N	A350 LF2	A182 F316
BODY GASKET	PTFE+15% Glass	PTFE+15% Glass	PTFE+15% Glass
SEATS	PTFE+15% Glass	PTFE+15% Glass	PTFE+15% Glass
BODY	A105N	A350 LF2	A182 F316
BALL	st/st 316	st/st 316	st/st 316
FIRE SAFE GASKET	Graphite	Graphite	Graphite
STEM O-RING	FKM*	FKM*	FKM*

FKM = Viton® or equivalent. Viton is registrated trademark of DuPont Performance Elastomers*

CLASS 150

REDUCED BORE SIDE TWO PIECE BALL VALVES BODY - ISO 17292
Integral Flanged - End According to ANSI 16.10

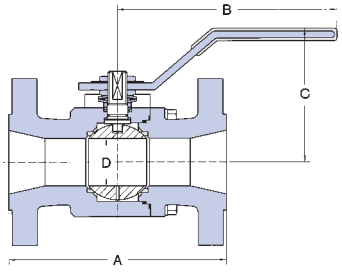


REDUCED BORE	F1-C-800	1/2 x 3/8		3/4 x 1/2		1 x 3/4		1 1/2 x 1 1/4		2 x 1 1/2		3 x 2		4 x 3		6 x 4	
		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
End to End	A	108	4.3	117	4.6	127	5	165	6.5	178	7.0	203	8.0	229	9.0	394	15.5
Lever	B	155	6.1	140	5.5	170	6.7	170	6.7	230	9.1	310	12.2	400	15.7	500	19.7
Center to Top	C	75	3.0	98	3.9	98	3.9	100	3.9	130	5.1	155	6.1	150	5.9	190	7.5
Ball Bore	D	11.1	0.4	14.2	0.6	20.5	0.8	31.7	1.2	38	1.5	51	2.0	76	3.0	102	4.0

*Grear operator suggest

CLASS 300

REDUCED BORE SIDE TWO PIECE BALL VALVES BODY - ISO 17292
Integral Flanged - End According to ANSI 16.10

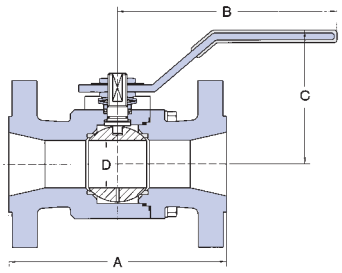


REDUCED BORE	F3-C-800	1/2 x 3/8		3/4 x 1/2		1 x 3/4		1 1/2 x 1 1/4		2 x 1 1/2		3 x 2		4 x 3		6 x 4	
		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
End to End	A	140	5.5	152	6.0	165	6.5	190	7.5	216	8.5	283	11.1	305	12.0	403	15.9
Lever	B	155	6.1	155	6.1	170	6.7	170	6.7	230	9.1	310	12.2	400	15.7	500	19.7
Center to Top	C	75	3.0	77	3.0	98	3.9	100	3.9	130	5.1	155	6.1	190	7.5	190	7.5
Ball Bore	D	11.1	0.4	14.2	0.6	20.5	0.8	31.7	1.2	38	1.5	51	2.0	76	3.0	102	4.0

*Grear operator suggest

CLASS 600

REDUCED BORE SIDE TWO PIECE BALL VALVES BODY - ISO 17292
Integral Flanged - End According to ANSI 16.10

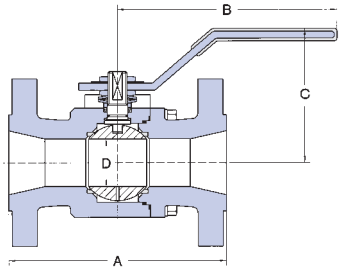


REDUCED BORE	F6-C-800	1/2 x 3/8		3/4 x 1/2		1 x 3/4		1 1/2 x 1 1/4		2 x 1 1/2		3 x 2		4 x 3		6 x 4	
		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
End to End	A	165	6.5	191	7.5	216	8.5	241	9.5	292	11.5	356	14.0	432	17.0	559	22.0
Lever	B	155	6.1	155	6.1	170	6.7	170	6.7	230	9.1	310	12.2	400	15.7	500	19.7
Center to Top	C	75	3.0	77	3.0	98	3.9	105	4.1	130	5.1	155	6.1	182	7.2	208	8.2
Ball Bore	D	11.1	0.4	14.2	0.6	20.5	0.8	31.7	1.2	38	1.5	51	2.0	76	3.0	102	4.0

*Grear operator suggest

CLASS 1500

REDUCED BORE SIDE TWO PIECE BALL VALVES BODY - ASME B16.34
Integral Flanged - End According to ANSI 16.10

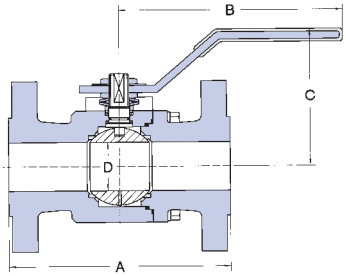


REDUCED BORE	F9-C-R900	1/2 x 3/8		3/4 x 1/2		1 x 3/4		1 1/2 x 1 1/4		2 x 1 1/2		3 x 2		4 x 3		6 x 4	
		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
End to End	A	216	8.5	229	9.0	254	10.0	305	12.0	368	14.5	-	-	-	-	-	-
Lever	B	170	6.7	170	6.7	170	6.7	230	9.1	310	12.2	-	-	-	-	-	-
Center to Top	C	95	3.7	95	3.7	98	3.9	120	4.7	155	6.1	-	-	-	-	-	-
Ball Bore	D	11.1	0.4	14.2	0.6	20.5	0.8	31.7	1.2	38	1.5	-	-	-	-	-	-

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.

CLASS 150

FULL BORE SIDE TWO PIECE BALL VALVES BODY - ISO 17292
Integral Flanged - End According to ANSI 16.10

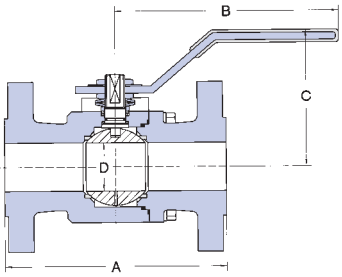


FULL BORE	F1-C-600	1/2		3/4		1		1 1/2		2		3		4		6	
		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
End to End	A	108	4.3	117	4.6	127	5	165	6.5	178	7.0	203	8.0	229	9.0	394	15.5
Lever	B	155	6.1	170	6.7	170	6.7	230	9.1	310	12.2	400	15.7	500	19.7	**	**
Center to Top	C	75	3.0	98	3.9	100	3.9	135	5.3	155	6.1	150	5.9	190	7.5	190	7.5
Ball Bore	D	14.2	0.6	20.5	0.8	25.4	1.0	38	1.5	51	2.0	76	3.0	102	4.0	102	4.0

*Grear operator suggest

CLASS 300

FULL BORE SIDE TWO PIECE BALL VALVES BODY - ISO 17292
Integral Flanged - End According to ANSI 16.10

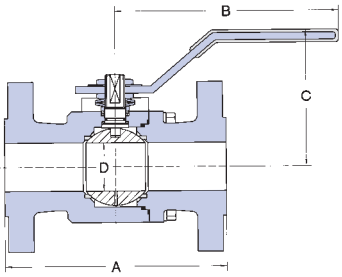


FULL BORE	F3-C-600	1/2		3/4		1		1 1/2		2		3		4		6	
		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
End to End	A	140	5.5	153	6.0	165	6.5	191	7.5	216	8.5	283	11.1	305	12.0	**	**
Lever	B	155	6.1	170	6.7	170	6.7	230	9.1	310	12.2	400	15.7	**	**	**	**
Center to Top	C	76	3.0	98	3.9	100	3.9	135	5.3	155	6.1	150	5.9	182	7.2	**	**
Ball Bore	D	14.2	0.6	20.5	0.8	25.4	1.0	38	1.5	51	2.0	76	3.0	102	4.0	**	**

*Grear operator suggest

CLASS 600

FULL BORE SIDE TWO PIECE BALL VALVES BODY - ISO 17292
Integral Flanged - End According to ANSI 16.10

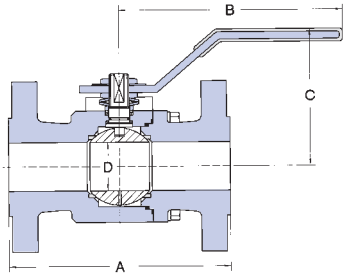


FULL BORE	F6-C-600	1/2		3/4		1		1 1/2		2		3		4		6	
		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
End to End	A	165	6.5	191	7.5	216	8.5	241	9.5	292	11.5	356	14.0	432	17.0	**	**
Lever	B	155	6.1	170	6.7	170	6.7	230	9.1	310	12.2	450	17.7	**	**	**	**
Center to Top	C	76	3.0	98	3.9	100	3.9	135	5.3	155	6.1	200	7.9	244	9.6	**	**
Ball Bore	D	14.2	0.6	20.5	0.8	25.4	1.0	38	1.5	51	2.0	76	3.0	102	4.0	**	**

*Grear operator suggest

CLASS 1500

FULL BORE SIDE TWO PIECE BALL VALVES BODY - ASME B16.34
Integral Flanged - End According to ANSI 16.10



FULL BORE	F9-C-900	1/2		3/4		1		1 1/2		2		3		4		6	
		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
End to End	A	216	8.5	229	9.0	254	10.0	305	12.0	368	14.5	**	**	**	**	**	**
Lever	B	170	6.7	170	6.7	230	9.1	310	12.2	400	15.7	**	**	**	**	**	**
Center to Top	C	86	3.4	120	4.7	120	4.7	140	5.5	170	6.7	**	**	**	**	**	**
Ball Bore	D	14.2	0.6	20.5	0.8	25.4	1.0	38	1.5	51	2.0	**	**	**	**	**	**

*Grear operator suggest

Weight figures are relevant to flanged end valves. (1) Please consult the factory. Note. For dimensions and weights in larger sizes consult the factory.
Dimensions and weights are subject to change without notice.

VALVE OPTIONS

OMB standard design meet the API6D for gas and fluid services
Customized design are available for special services
The following tables show some of the most common option for valves configurations

Service		Features
ST	Standard	Standar design which meet API6D requirements
CR	Cryogenic	Extended bonnet design and special seat and seal materials
HT	High temperature	Metal Seated design with special seals and close tollerances to offset thermal expansion
UG	Stem Extension - Underground	Stem and vent/drain connection extensions
SS	Sub sea	Special design to meet sub-sea service requirements (API6DSS and API17D)
XS	Special service	Specific design, material selection and test are defined for special services such as Sand, Hydrogen, Oxigen ect

Valves Type		Features
BSE	Side entry	Bolted, usually 3 pices design
BTE	Top Entry	On piece body, suitable for in line maintenance without removing the body form the line
WSE	Welded side entry	2 or 3 pices fully welded design for gas transmission lines
CSE	Compact side entry	Special design in 2 or 3 pices with shorter dimension to minimize weight and lenght

Ends		Features
F	Flanged	2 or 3 pices fully welded design for gas transmission lines
W	Butt weld	2 or 3 pices fully welded design for gas transmission lines
C	Clamp	2 or 3 pices fully welded design for gas transmission lines
S	Special	Special design in 2 or 3 pices with shorter dimension to minimize weight and lenght

Class		Rating		Body Test		HP Seat Test		LP Seat Test	
		BAR	PSI	BAR	PSI	BAR	PSI	BAR	PSI
1	150	19	275	28.5	413	20.9	303	6	100
3	300	50	720	75	1080	55	792	6	100
6	600	99	1140	148.5	2160	108.9	1584	6	100
9	900	149	2160	223.5	3240	163.9	2376	6	100
5	1500	248	3600	372	5400	272.8	3960	6	100
2	2500	413	5988	619.5	8982	454.3	6587	6	100

Bore Type		Features	
E	Reduced bore	Ball passage one size reduced from the end connection passage is standard	
F	Full bore	Ball passage equivalent to end connection passage, fully piggable	on request
D	Reduced bore, double reduction	Ball passage has 2 or more size reduction from end connection passage to lower weight and dimension	on request
S	Special bore	Special bore dimensions to customer specification are available on request	on request

OMB FIGURE NUMBER SYSTEM

OMB valves are identified by a figure numebr system base don below table.

Service		
1	ST	Standard
2	CR	Cryogenic
3	HT	High temperature
4	UG	Stem Extension - Underground
5	SS	Sub sea
6	XS	Special service

Valves Type		
1	BSE	Side entry
2	BTE	Top Entry
3	WSE	Welded side entry
4	CSE	Compact side entry

Ends		
1	F	Flanged
2	W	Butt weld
3	C	Clamp
4	S	Special

Class		
1	1	150
2	3	300
3	6	600
4	9	900
5	5	1500
6	2	2500

Diam			
1	3	1/2”	15
2	4	3/4”	20
3	5	1”	25
4	6	1.1/2”	40
5	7	2”	50
6	8	3”	80
7	A	4”	100
8	B	6”	150
9	C	8”	200
10	D	10”	250
11	E	12”	300
12	F	14”	350
13	G	16”	400
14	H	18”	450
15	L	20”	500
16	M	22”	550
17	N	24”	600
18	P	26”	650
19	R	28”	700
20	S	30”	750
21	T	32”	800
22	U	36”	900
23	Z	38”	950
24	J	40”	1000
25	K	42”	1050
26	X	48” - 60”	ect

Serv | Type | End | Class | Diam | Trun | Bore | Seat | Ends | Ends | Oper

Trunnion		
1	B	Bearing Plate
2	T	Trunnion

Bore Type		
1	F	Full bore
2	R	Reduced bore
3	D	Reduced bore double red
4	S	Special bore

Seat Type		
1	SS	SPE x SPE
2	DD	DPE x DPE
3	SD	SPE x DPE
4	DS	DPE x SPE

End to End		
1	L	Long pattern
2	S	Short pattern
3	A	Special

Ends details		
1	NT	NPT Threaded Ends
2	SW	Socket Weld
3	SN	SW x NPT
4	NS	NPT x SW
5	S1	BW Sh 10
6	S4	BW Sh 40
7	S8	BW Sh 80
8	S6	BW Sh 160
9	Sx	BW Sh XXS
10	SF	RF Smooth Finish 3.2-6.3 - Spiral
11	ST	RF- Stock Finish 6.3-12.5 Spiral
12	SS	RF Stock Finish Spec 1.6:3.2 Spiral
13	FC	RF - Smooth Finish 3.2-6.3 -Conc.
14	TC	RF - Stock Finish 6.3-12.5 Conc.
15	RJ	Fl. Ring Joint
16	SG	Fl. Small Groove
22	HB	Hub Ends

End to End		
1	L	Lever
2	G	Gear
3	B	Bare stem
4	R	ROV
5	S	Spring return
6	A	Lever+lock device
7	B	Lever+padlock
8	C	Gear+lock device
9	D	Gear+padlock
10	E	Gear+chain

CRYOGENIC AND LOW TEMPERATURE

OMB has a long experience in valves for low temperature and cryogenic service
We have supplied most of the largest LNG trains projects worlwide, many of the receiving terminals and a number of petrochemical projects where low temeprature service is required.

We offer a wide range of products in the cryogenic service:
- Floating Ball valves
- Trunnion Ball valves
- Gate, Globe and Check valves
- Triple Offset Butterfly valves

All our products are presented in the Catalog C-CR02 available on our web site

Floating

Trunnion

Gate, Globe & Check

TOBV

	Floating &Trunnion Mounted Ball valves						Gate, Globe, Check					Triple Offset butterfly			
	150	300	600	900	1500	2500	150	300	600	1500	2500	150	300	600	900
1/2”	Floating						Forged API602								
3/4”															
1”															
1.1/2”															
2”															
3”							Cast Steel API600								
4”															
6”	Trunnion														
8”															
10”															
12”															
14”															
16”															
18”															
20”															
24”															
28”															
30”															
32”															
36”															
40”															
42”															
48”															

VALVE DESIGN STANDARDS

Extended bonnet: Valves in Cryogenic service are equipped as standard with an extended bonnet
OMB design standard follows BS6364 section 2 para 4.5. in the selection of the valves extension lenght

Bonnet Extension		
1	BS6364	standard
x	Special lenght to customer specification	on request

Adjustable Drip Plate

Drip Plate: Valves extension can be equipped on request with drip plates.

Drip Plate		
X	None	standard
W	Welded	on request
A	Adjustable	on request

Vend and Drain: Valves vent and drain are available in many configurations

Vent: as standard: Blind plug Threaded NPT, other option on request
Drain: as standard Check valve Threaded NPT, other option on request

Vend and Drain		
A	Vent + Drain separated	standard
C	Vent + Drain combined	std on small size
V	Vent (only)	on request
D	Drain (only)	on request
X	None	on request

Special extended bonnet valve vent/drain

Sealant Injector: As a standard OMB does not supply sealnt injector on Cryogenic valves

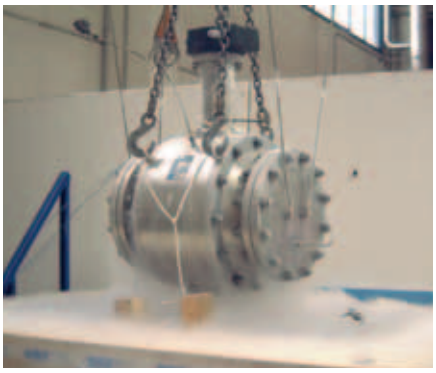
TEST FACILITIES

OMB plants are fully equipped to perform complete cryogenic test in liquid nitrogen to -196C in test bunkers qualified to the latest HSE standards.

Our fixed test benches can handle valves from 1/2" up to 36" 1500,
Our R&D department has a special test bunker where type test are performed on regular base in presence of our customers to verify the design of our valves.

Vend and Drain		
1/2 - 2"	6 test benches	12 test per day
3" - 10"	3 test benches	6 test per day
12" - 36"	1 test bench	1 test per day

24" 900 class at low temp test



12" 150class at cryo test

16" 600 class gas test

HIGH TEMPERATURE

OMB supplies valves in high temperature service with Metal seated construction.
We offer different coating technologies to meet required temperature range
We offer both floating and trunnion design
All our high temperature valves have design appraisal done via FEA to verify thermal expansion.
We are able to perform Hot Stroke Test on all the valves we offer.

32"/150 BW

20", 300

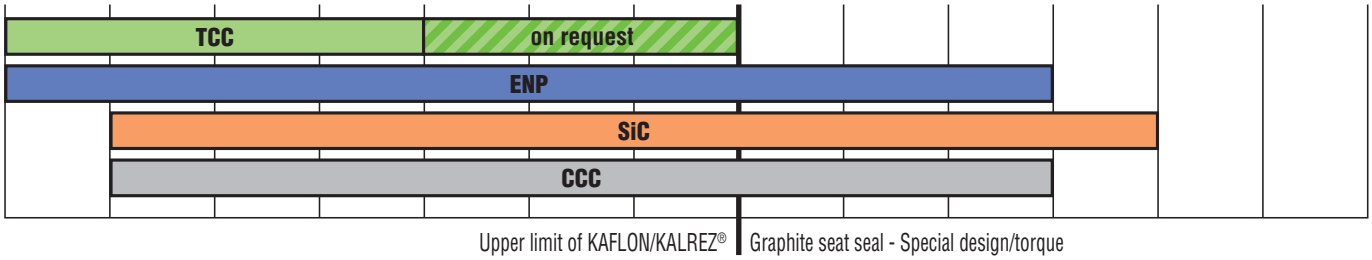
8", 600

12", 600 - F22 Forged

	Trunnion Mounted Ball valves						Gate, Globe, Check					Triple Offset butterfly			
	150	300	600	900	1500	2500	150	300	600	1500	2500	150	300	600	900
1/2"							Bolted								
3/4"															
1"															
1.1/2"															
2"							Pressure Seal								
3"															
4"															
6"															
8"															
10"															
12"															
14"															
16"															
18"															
20"															
24"															
28"															
30"															
32"															
36"															
40"															
42"															
48"															

Mteal Seat coating are available in different grades: please see the table on following pages for more specific options

C	-200°	100°	180°	230°	250°	300°	315°	370°	380°	400°	450°	550°	650°
F	-328°	212°	356°	446°	482°	572°	599°	698°	716°	752°	842°	1022°	1202°



Maximum temp applicable on TCC is 230°C Recommended thickness is 150 micron
Maximum temp applicable on CCC is 450°C Recommended thickness is 150 micron
Maximum temp applicable on SCC is 550°C Recommended thickness is 35 micron

STEM EXTENSION - UNDERGROUND

OMB can supply valves with stem extension for underground or special application.
Valves can be supplied with gears or actuators.
Vents and drain extension are standard features on large OD valves

Misc. valves diam. underground extension

20", 300

42", 600

SPECIAL SERVICES

OMB has specific guidelines for special services. These rules are applied in combination with customer specifications

HYDROGEN	NACE MR0175/ISO 15156, Petroleum and Natural Gas Industries - Materials for Use in H2S-containing Environments in Oil and Gas Production,and/or NACE MR0103, Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments, can be used as guidelines for general materials selection to avoid hydrogen embrittlement	on request
OXIGEN	Special cleaning and preservation procedure are sused for Oxigen services	on request
HYDROFLUORIC ACID (HF)	Special material selection, preservation and packing procedure.	on request
SAND SERVICE	Special design of the seat to limit erosion and sand built up in the body cavities We have qualified our design to specific Sand Slurry Test	on request

SUBSEA

OMB manufacture subsea ball, check and thru conduit gate valves to the latest specifications.

We manufacture in accordance to API6DSS or API6A for higher pressure classes
Valves are tested to API17D and most of the designs have been qualified via a PR2 test + Endurance test

We offer valves in:
- Side Entry Design (2 or 3 pieces)
- Top Entry Deisgn (bolted or Fully Welded)

Our valves can be supplied with
- Pup Pieces
- Hub Connections
- Compact Flanges

6", 1500 class

20", 300 class

8", 600 class

Top Entry vlves in Bend test

Top Entry Fully Welded

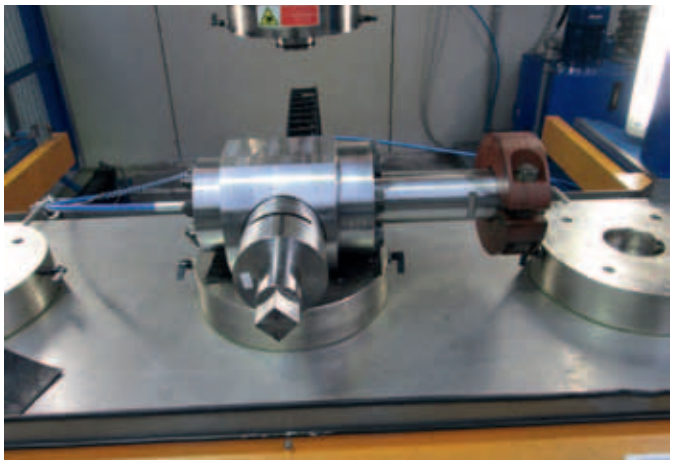
Our valves
can be supplied with
- ROV interfaces
- Actuators

ROV operated Ball valves

SUBSEA

OMB can perform in house all required test to ensure the highest quality of its subsea products in accordance to **API 17D** (Design and Operation of Subsea Production Systems-Subsea Wellhead and Tree Equipment) / ISO 13628-4

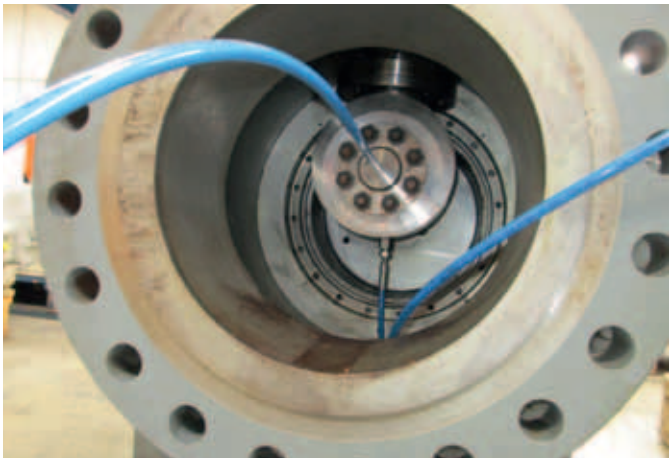
In our test facility in Cenate Plant we are able to perform:
- Hydraulic and Pneumatic Test up to 20,000 Class
- High Pressure Gas Test
- PR2 and endurance tests
- High and Low Temperature tests
- Hyperbaric Test
- Bend Test



Hydro test *API6A 15000 class, 1.1/13”*

Endurance test *15000 class, 24”*

Gas test *15000 class, 24”*



Hyperbaric test *API6A 15000 class, 1.1/13”*

High temp. test *API6A 15000 class, 1.1/13”*

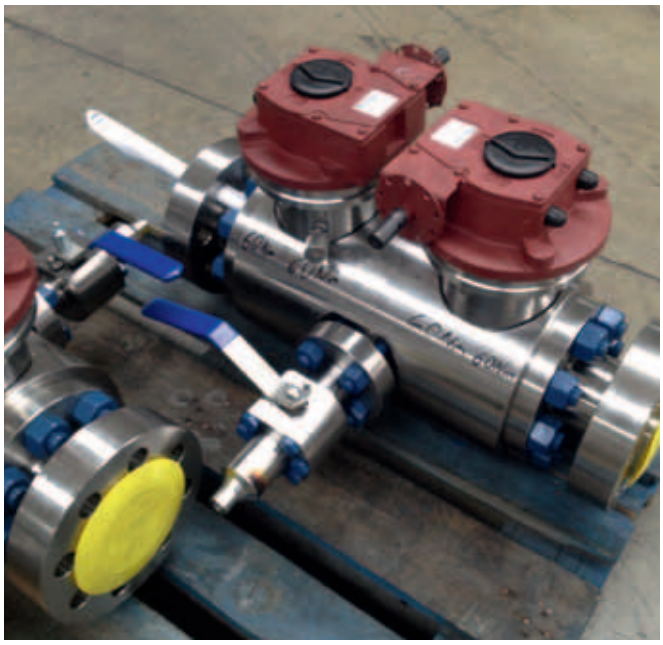
Low temp test *API6A 15000 class, 1.1/13”*

MODULAR VALVES

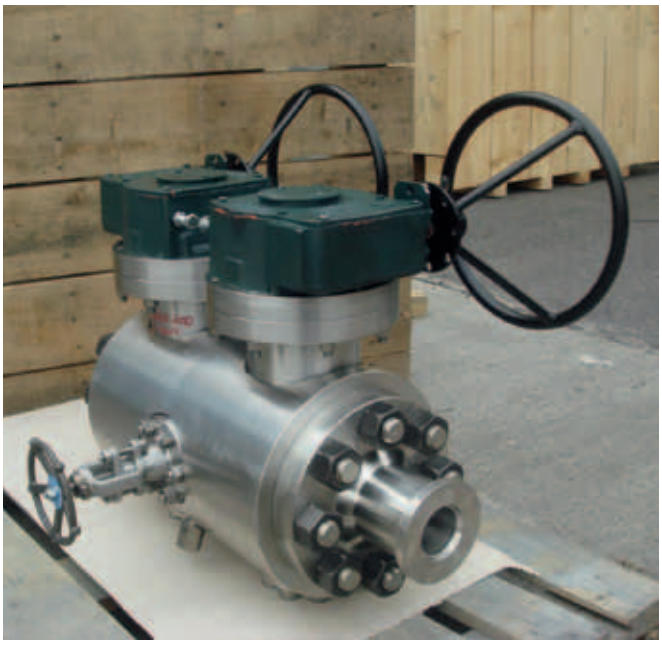
OMB offers a comprehensive line of modula valves for double block and bleed application in a single body design

We can offer valves with Single and Double insulation design with
- floating ball
- trunnion mounted ball
- wedge gate
- thru conduit gate
- globe

OMB MODULAR VALVES catalog is available on our web site

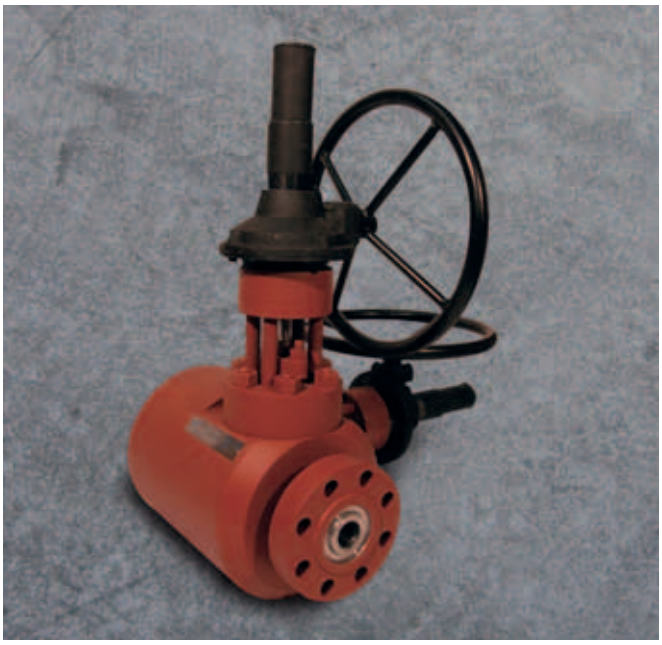


Trunnion Mounted valves



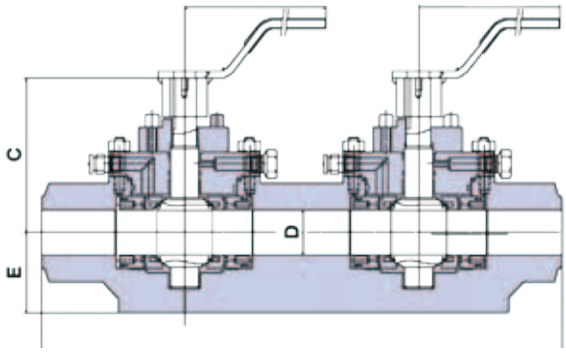
Hub ends Trunnion Mounted modular valves

Floating Ball modular valves

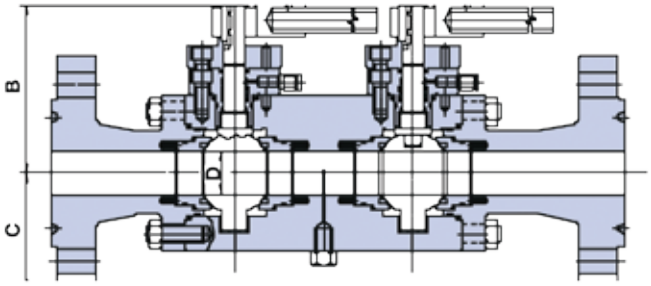


Thru conduit modular valves

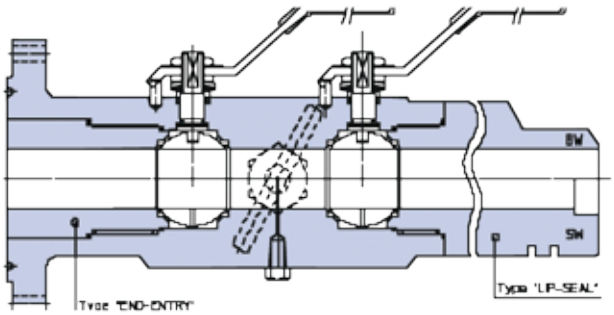
TRUNNION TOP ENTRY



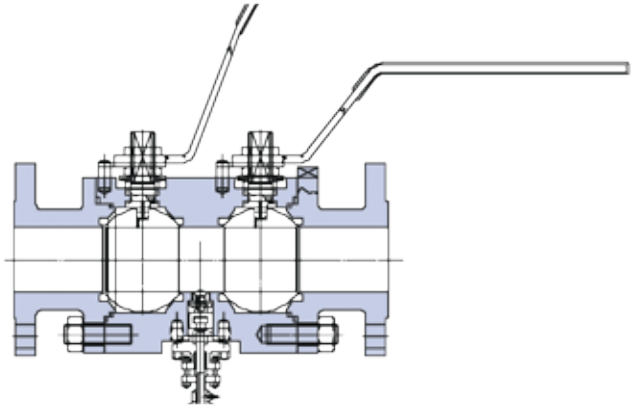
TRUNNION TOP ENTRY



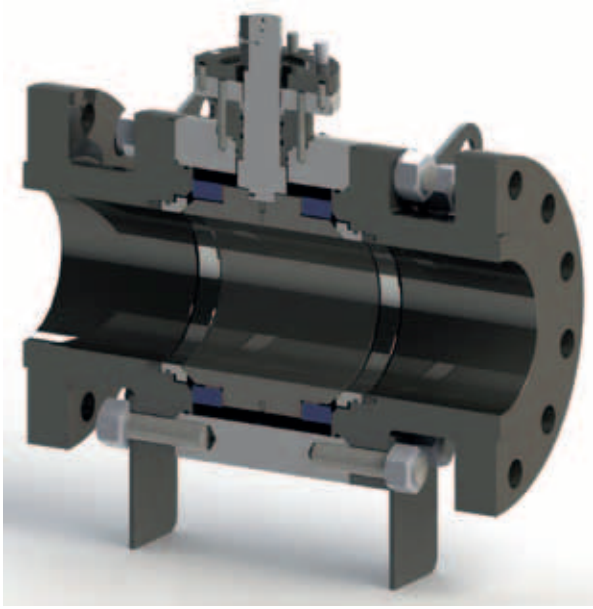
TRUNNION TOP ENTRY



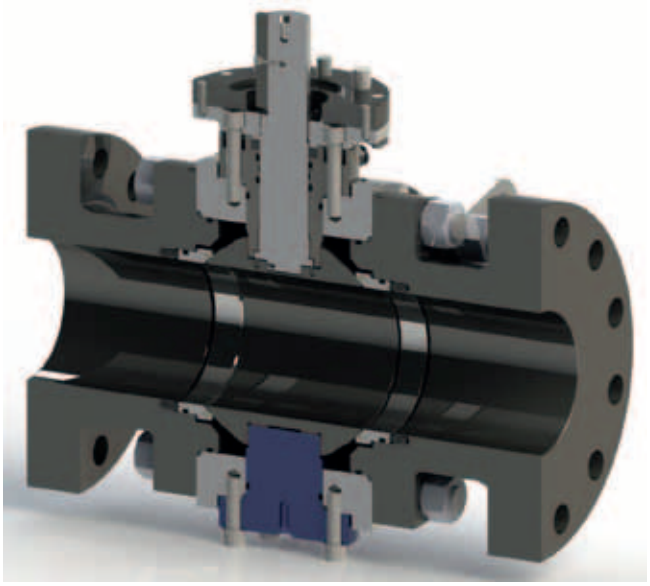
TRUNNION TOP ENTRY



Trunnion		Features
B	Bearing Plate	Bearing plates are used on large size valves as standard
T	Trunnion	External trunnion is used on small size valves



B type: bearing plate construction



T type: external trunnion construction

End to End		Features	
L	Long pattern	End to end to ASME B1610 Long Pattern is standard	
S	Short pattern	End to end to ASME B1610 Short Pattern is available	on request
A	Special	Special lenghts to customer specification are available on request	on request

Short Pattern

Lugged

Special lenghts

OMB Ball valves can be supplied in the following configurations

- Flanged to ASME/ANSI standards
- Flanged to DIN and GOST standards
- Compact Flanges to Norsok L005 or special design
- Butt Weld Ends with or without transitions pups
- Hub connectors

SEAT DESIGN

We offer a number of differnet seats sealing configurations according to service conditions

THERMOPLASTIC SEAT INSERTS with ORING

This configuration is standard and used for most applications
We offer a wide selection of Elastomer oring seals
Please see followng page for seal selection and properties

THERMOPLASTIC SEAT INSERT with LIP SEALS

In low temeprature and cryogenic services we offer
as a stanbdard a Thermolpastic insert with LIP SEAL
Single or Double Lip Seals sealing are available according
to service requirements

METAL SEAT with ORING

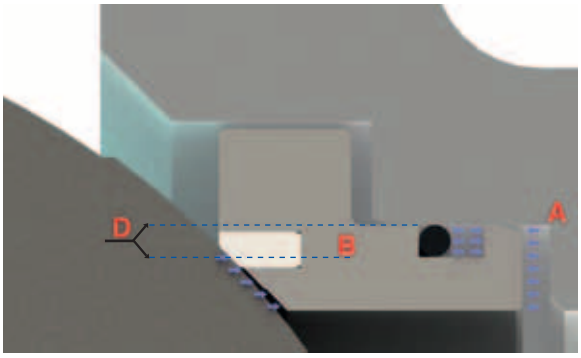
In severe service we offer a seat configuration with
metal sealing in either Tungsten Carbide, Chrome Carbide
or Silicium Carbide and

METAL SEAT with GRAPHITE SEAL

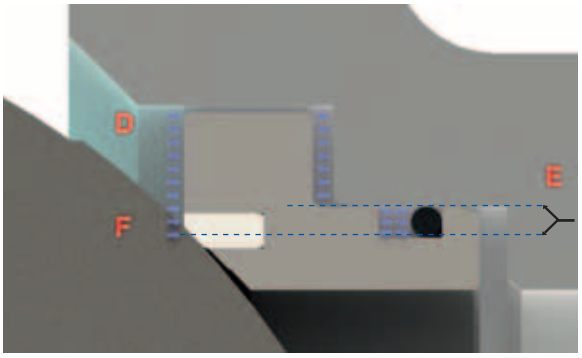
In high temperature configuration we offer a metal sealing
in Chrome Carbite or Silicium Carbite with graphite seals
Seat Type

Seat Type		Features	
SS	SPE x SPE	A dual set of Single Piston Effect seat is OMB standard offer	
DD	DPE x DPE	Double piston effect on both seast are avalvle on request	on request
SD	SPE x DPE	Combination Single and Double Piston Effect are avalavle on request	on request
DS	DPE x SPE	Combination Single and Double Piston Effect are avalavle on request	on request

SINGLE PISTON EFFECT



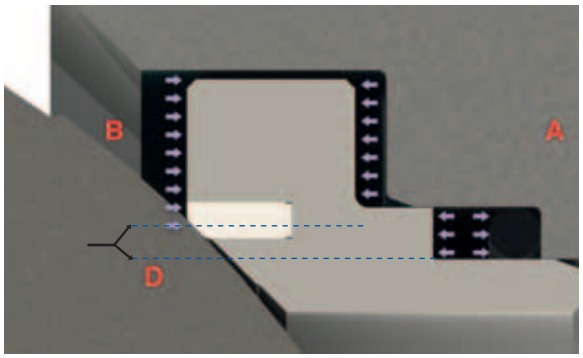
As line pressure increases, the seat differential area C = A - B creates a piston effect forcing the seat on the ball: higher the line pressure, tighter the piston action.



If pressure grows up into the cavity, it relieves to the line as differential area F= D - E has greater force than the spring load.

DOUBLE PISTON EFFECT

Seat seal may be designed to provide additional sealing capability : the cavity pressure enhances the contact pressure between seat and ball, as differential area D=A-B creates a piston effect forcing the seat on the ball (a pressure relief valve is installed to protect the cavity by excess pressure).



OPERATORS

OMB standards design offer levers or gear operators in accordance to the below tables

Operator			
L	Lever	Standard application for low torque valves	
G	Gear	Standard application for high torque valves	
B	Bare stem	On request valves can be supplied bare stem	on request
S	Spring return	Spring return (either standard or pneumatically assisted) are available	on request
A	Lever+lock device	Locking devices are available	on request
B	Lever+padlock	Padlock are available	on request
C	Gear+lock device	Locking devices are available	on request
D	Gear+padlock	Padlock are available	on request
E	Gear+chain	Chain operated gear are available	on request
R	ROV	SubSea valves can be equipped with ROV operator	on request

Lever heads are in forged material with lever made from 3/4" Sch 160 CS pipe

L - Lever: standard design

B - Lever + padlock: on request

Floating - soft seated

	150	300	600	900	1500	2500
1/2"	Lever	Lever	Lever	Lever	Lever	Lever
3/4"	Lever	Lever	Lever	Lever	Lever	Lever
1"	Lever	Lever	Lever	Lever	Lever	Lever
1.1/2"	Lever	Lever	Lever	Lever	Lever	Gear
2"	Lever	Lever	Lever	Lever	Lever	Gear
3"	Lever	Lever	Gear			
4"	Lever	Gear	Gear			
6"	Gear	Gear	Gear			

Trunnion mounted - soft seated

	150	300	600	900	1500	2500
3/4"	Lever	Lever	Lever	Lever	Lever	Lever
1"	Lever	Lever	Lever	Lever	Lever	Lever
1.1/2"	Lever	Lever	Lever	Lever	Gear	Gear
2"	Lever	Lever	Lever	Lever	Gear	Gear
3"	Lever	Lever	Gear	Gear	Gear	Gear
4"	Lever	Lever	Gear	Gear	Gear	Gear
6"	Lever	Lever	Gear	Gear	Gear	Gear
>8"	Gear	Gear	Gear	Gear	Gear	Gear

Floating - metal seated

	150	300	600	900	1500	2500
1/2"	Lever	Lever	Lever	Gear	Gear	Gear
3/4"	Lever	Lever	Lever	Gear	Gear	Gear
1"	Lever	Lever	Lever	Gear	Gear	Gear
1.1/2"	Lever	Lever	Lever	Gear	Gear	Gear
2"	Lever	Lever	Gear	Gear	Gear	Gear
3"	Gear	Gear	Gear			
4"	Gear	Gear	Gear			
6"	Gear	Gear	Gear			

Trunnion mounted - metal seated

	150	300	600	900	1500	2500
3/4"	Gear	Gear	Gear	Gear	Gear	Gear
1"	Gear	Gear	Gear	Gear	Gear	Gear
1.1/2"	Gear	Gear	Gear	Gear	Gear	Gear
2"	Gear	Gear	Gear	Gear	Gear	Gear
3"	Gear	Gear	Gear	Gear	Gear	Gear
4"	Gear	Gear	Gear	Gear	Gear	Gear
6"	Gear	Gear	Gear	Gear	Gear	Gear
>8"	Gear	Gear	Gear	Gear	Gear	Gear

VENT & DRAIN

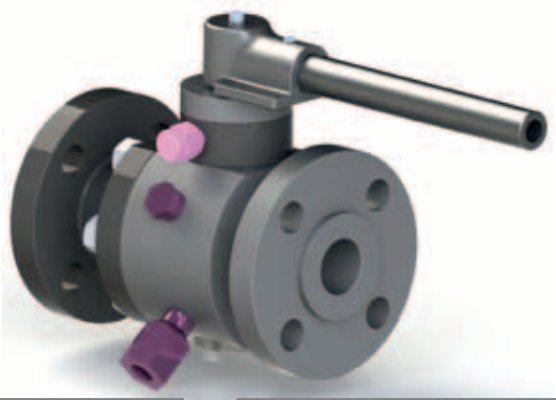
Vent and Drain

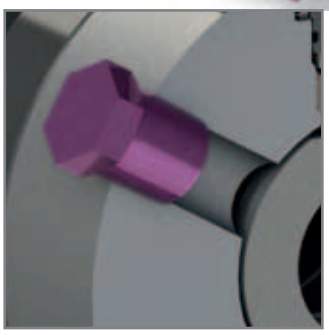
OMB offer as standard vent and drain with hole size according to the below table. Vend and drain material same as body.

Vent: as standard: Blind plug Threaded NPT, other option on request
Drain: as standard Check valve Threaded NPT, other option on request

Vent and Drain	
A	Vent + Drain separated
C	Vent + Drain combined
V	Vent (only)
D	Drain (only)
X	None

Design	Vent	Drain
	Blind NPT pulg	NPT check
<1”	1/4”	1/4”
1.1/2”	1/2”	1/2”
2”	1/2”	1/2”
3”	1/2”	1/2”
4”	3/4”	3/4”
6”	3/4”	3/4”
>8”	1”	1”





SEALANT INJECTORS

Emergency sealant injection is available on request to restore sealing integrity in case of damaged sealing surfaces

Stem Sealant injectors

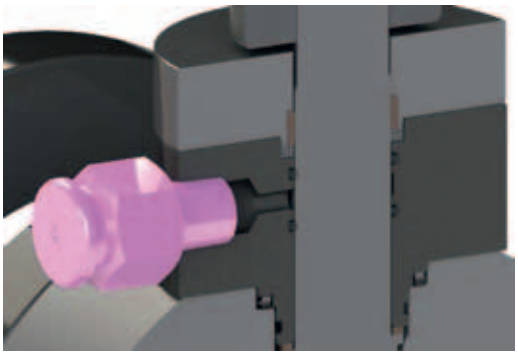
OMB offer as standard a stem sealant injector

Seat Sealant injectors

An emergency sealant injection system through the seat up to the ball contact circle may provide temporary sealing until the time when it is possible to restore the primary seal.
OMB offer seat injection on request.

Grease injectors	
S	Steam
T	Seat
A	Steam + Seat
X	None

Design	Injector	Injector
	on stem	on seats
<1”	no	on request
1.1/2”	yes	on request
2”	yes	on request
3”	yes	on request
4”	yes	on request
6”	yes	on request
>8”	yes	on request



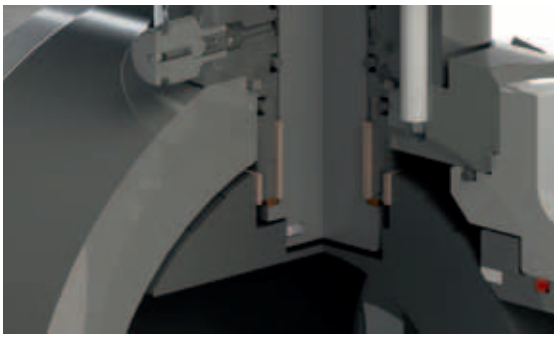
Stem Sealant injector

Seat Sealant injector

ANTISTATIC

Antistatic Device

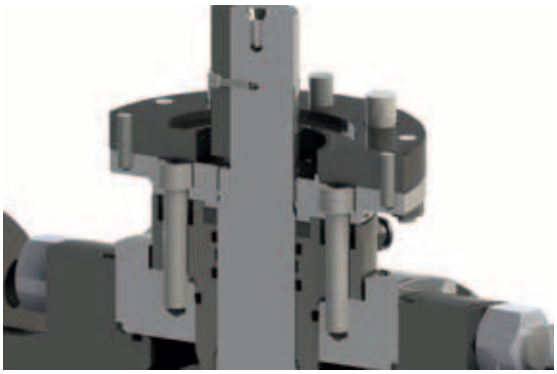
Internal parts that are insulated from the body may build up a static electric charge.
When service conditions require electrical continuity to prevent static discharge, this is ensured by the adoption of coil springs between body, ball and stem.
This feature is standard on both Trunnion and Floating type valves



ANTI-BLOWOUT

Anti-Blowout design

The design of the valve ensures that the stem cannot be blown out of the body, in the event of the gland being removed while the valve is under pressure.
This feature is standard on both Trunnion and Floating type valves



SUPPORTS

Cradle / Feet

OMB valves are equipped with Cradle/feet as per below table

Design	Feet	Cradle
<1”	no	no
1.1/2”	no	no
2”	no	no
3”	no	no
4”	no	no
6”	no	no
>8”	standard	on request

LIFTING LUGS

Lifting Lugs

All valves above 8” have lifting lugs as per API6D requirements
OMB offer as standard lifting lugs on valves above 250 kg

Design	Luftings Lugs
<1”	no
1.1/2”	no
2”	no
3”	no
4”	no
6”	no
>8”	standard

WELD OVERLAYS

CRA Cladding

Large OD valves in severe corrosive services can be supplied with CRA clad conditions.
This operation ensure a highly reliable surface while reducing the cost of the components.
Cladding operation are done in house at OMB state-of-the-art welding shop

Weld overlay		
W	Wet areas	Overlay on all are in contact with fluid
S	All seal areas	Overlay on all seal contact area
D	Dynamic seal areas	Overlay on dynamic seals area
T	Seat seal	Overlay on seat seal area
M	Stem seal	Overlay on stem seal area
G	Flange groove	Overlay in flange groove
B	Ball	Overlay on all ball
E	Stem	Overlay on all stem
C	Ball+stem	Overlay on all stem and ball

36” Ball overlayed in Alloy 625

FBE -FUSION BONDED EPOXY

FBE-Fusion Bonded Epoxy

OMB can supply valves for water, seawater and wastewater services with FBE coating in the wet area. The process guarantee a corrosion resistant protection by the mean of a epoxy-based powder coat which is irreversibly applied at high temperature to the wet surface of the valves body and closures.
Ball and drive train components are usually machined from Alloy 625 or similar CRAs.
The largest valves supplied with FBE is a 60” 600 class trunnion mounted valves

Special design options		
F	FBE	FUSION BONDED EPOXY is available as internal lining for seawater service

36” Ball overlayed in Alloy 625

SPECIAL OPTIONS

A number of other special design or feature are available on customer specific requirements

Special design options		
W	Wiper ring	Special design of seats for dirty services
S	Special seat	Seat design can be engineered for special conditions
B	Bypass	ByPass are available on request
T	Test port	Special designed Test port are available on request
2	Second seal	Second seal barrier are available on request
L	Limit switch	Limit Switches can be mounted on our valves on request
I	Interlock	Valves can be predisposed for Interlock application

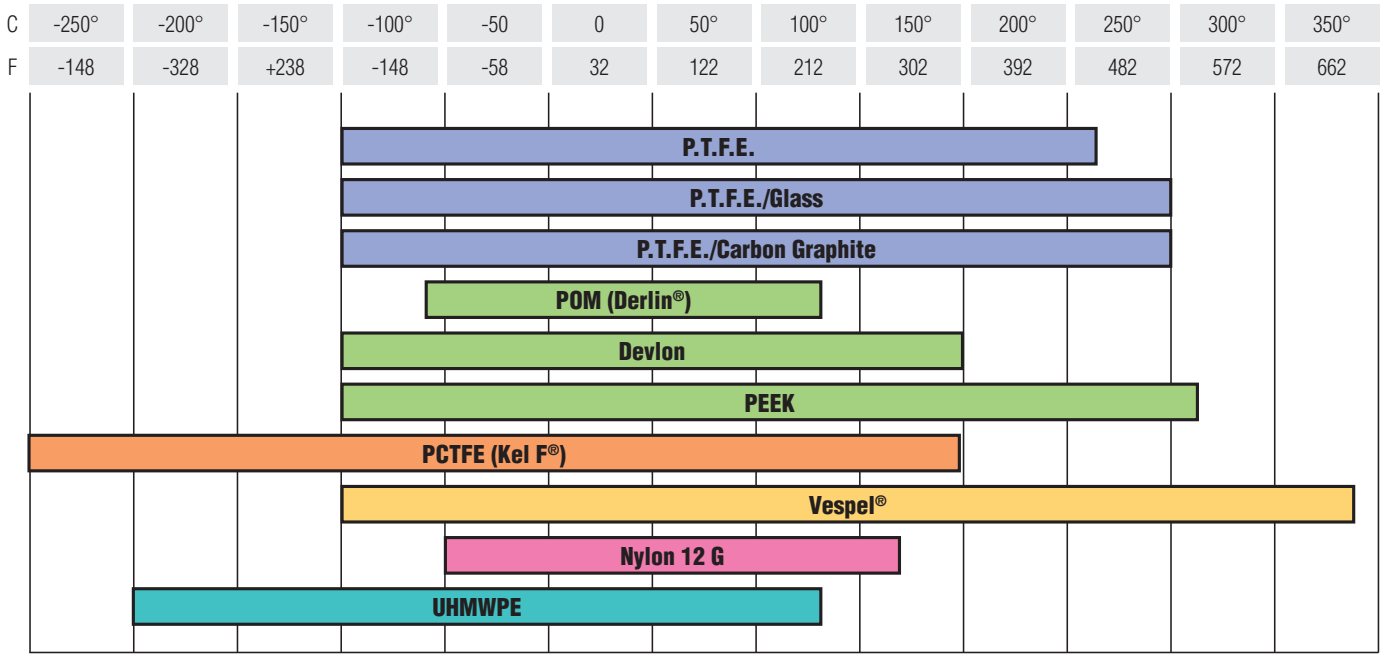
VALVES MANUFACTURING E TEST SPECIFICATIONS				
STANDARD	**REV**	**API related std**	**Content**	
ISO 17292:2004	2004	API608/4th	Design	Metal ball valves for petroleum, petrochemical and allied industries ISO 17292:2004 specifies the requirements for a series of metal ball valves suitable for petroleum, petrochemical, natural gas plants, and related industrial applications. It covers valves of the nominal sizes DN 8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100, 150, 200, 250, 300, 350, 400, 450 and 500, corresponding to nominal pipe sizes NPS 1/4, 3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2, 2, 2 1/2, 3, 4, 6, 8, 10, 12, 14, 16, 18 and 20, and is applicable for pressure designations of Class 150, 300, 600 and 800 (the last applicable only for valves with reduced bore and with threaded and socket welding end), and PN 16, 25 and 40.
BS5351 (discontinued)	1986		Design	Valve seat and body pressure/temperature ratings, the design, materials, dimensions, operation, performance, testing and marking of straightway steel ball valves having specified wall thickness, antistatic feature and fire tested design. Valves of PN 10 to PN 40 and classes 150, 300, 600 and 800 with a variety of end fittings.
ASME B16.34	2009		Design	This standard applies to new construction and covers pressure-temperature ratings, dimensions, tolerances, materials, nondestructive examination requirements, testing, and marking for cast, forged, and fabricated flanged, threaded, and welding end and wafer or flangeless valves of steel, nickel-base alloys, and other alloys shown in Table 1. Wafer or flangeless valves, bolted or through-bolt types, that are installed between flanges or against a flange are treated as flanged-end valves. Alternative rules for NPS 2½ and smaller valves are given in Mandatory Appendix V
ISO 14313:2007/Cor 1:2009	2009	API6D	Design	Petroleum and natural gas industries - Pipeline transportation systems - Pipeline valves. - 3rd edition.
ISO5211	2001		Feature	Industrial valves -- Part-turn actuator attachments
ISO5208:2008	2008	API598/9th	Test	Industrial valves -- Pressure testing of metallic valves
API598/9th	2009		Test	This standard covers inspection, examination, supplementary examinations, and pressure test requirements for resilient-seated, nonmetallic-seated (e.g. ceramic), and metal-to-metal-seated valves of the gate, globe, plug, ball, check, and butterfly types
ISO15848-1:2006	2006	API622/API624	Test	Industrial valves -- Measurement, test and qualification procedures for fugitive emissions -- Part 1: Classification system and qualification procedures for type testing of valves
ISO15848-2:2006	2006	API622/API624	Test	Industrial valves -- Measurement, test and qualification procedures for fugitive emissions -- Part 2: Production acceptance test of valves
ISO10497:2004	2004	API607/6th 2010		Testing of valves -- Fire type-testing requirements ISO 10497:2010 specifies fire type-testing requirements and a fire type-test method for confirming the pressure-containing capability of a valve under pressure during and after the fire test. It is not applicable to the testing requirements for valve actuators other than manually operated gear boxes or similar mechanisms when these form part of the normal valve assembly. Other types of valve actuators (e.g. electrical, pneumatic or hydraulic) can need special protection to operate in the environment considered in this valve test, and the fire testing of such actuators is outside the scope of ISO 10497:2010

*Excluding TCC coating

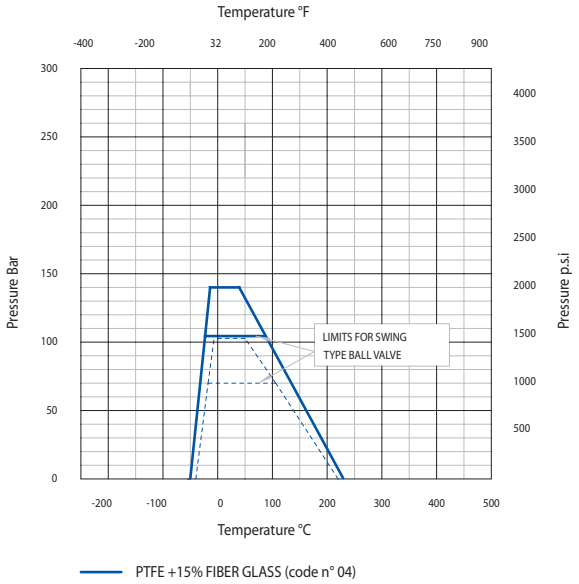
Material Group	Common Name	Forging Spec.	Nominal Type	UNS	Casting Spec.	Bar Spec.	Temp.	Application Notes
Carbon Steel	CS	A105N	C-Si	K03504	A216-WCB	A105N	-20F to 800F	General non-corrosive service from -20F(-29C) to 800F(427C)
Low Temperature Carbon Steel	LTCS	A350-LF2	C-Mn-Si	K03011	A352-LCA A352-LCB A352-LCC	A350-LF2	-50F to 800F	General non-corrosive service from -50F(-46C) to 650F(340C), LF2 to 800F(427C).
	LTCS	A350-LF6	C-MN-SI-V					with impact test -51C
	LTCS	A350-LF6 cl2	C-MN-SI-V					with impact test -51C
	LTCS	A350-LF6 cl3	C-MN-SI-V					with impact test -18C
	LTCS	A350-LF3	31/2Ni		A352-LC3	A352-LC3	-150F to 650F	-150F(-101C) to 650F(340C)
	LTCS	A350-LF1	C-Mn-Si			A350-LF1	-20F to 800F	-20F(-29C) to 800F(427C)
Low Alloy Steel	Moly Steel	A182-F1	C-1/2Mo	N02233	A217-WC1	A182-F1	-20F to 875F	Up to 875F(468C)
	Moly Steel	A182-F2	1/2Cr-1/2Mo				-20F to 1000F	
	Alloy Steel Chrome Moly	A182-F11cl.2	1.1/4Cr-1/2Mo	K11572	A217-WC6		-20F to 1100F	
		A182-F22 cl.3	2.1/4Cr-1Mo	K21590	A217-WC9		-20F to 1100F	
		A182-F5	5Cr-1/2Mo	K41583			-20F to 1200F	High temp refinery service
		A182-F5a	5Cr-1/2Mo	K41583	A217-C5		-20F to 1200F	High temp refinery service
		A182-F9	9Cr-1Mo	K90941	A217-C12		-20F to 1200F	High temp erosive refinery service
		A182-F91	9Cr-1Mo-V	K91560	A217-C12A		-20F to 1200F	High pressure steam
		AISI 4130	25-CrMo4	G41300	7Q (4130)			
		AISI 4140	42-CrMo4	G41400	8Q (4140)			
		ASTM A694 F60						
		ASTM A694 F65						
Martensitic stainless steel	F6	A182 F6	Cr 13	X12C 13				
	F6NM	A182-F6NM	13Cr-4Ni		A217-CA6NM			
Stainless Steel	Austenitic S.Steel 300 series S.Steel	A182-F304	18Cr-8Ni	S30400	A351-CF8	A182-F304	-425F TO 1000F	0.04% min. carbon for temp.>1000F(538C)
		A182-F304L	18Cr-8Ni	S30403	A351-CF3	A182-F304L	-425F TO 800F	
		A182-F304H	18Cr-8nl	S30409	A351-CF10	A182-F304H	-20 TO 1500F	
		A182-F316	16Cr-12Ni-2Mo	S31600	A351-CF8M		-425F TO 1000F	0.04% min. carbon for temp.>1000F(538C)
		A182-F316L	16Cr-12Ni-2Mo	S31603	A351-CF3M	A182-F316L	-425F TO 800F	
		A182-F316H	316H :	S31609		A182-F316H	-20 TO 1500F	
		A182-F316Ti	316Ti:	S31635				
		A182-F321	18Cr-10Ni-Ti	S32100	-	A182-F321	-425F TO 1000F	0.04% min. carbon (grade F321H) and heat treat at 2000F(1100C) for service temps.>1000F(538C)
		A182-F321H	18Cr-10Ni-Ti	S32109	A321-CF8C	A182-F321H	-20F TO 1500F	
		A182-F347	18Cr-10Ni-Cb(Nb)	S34700	A351-CF8C	A182-F347	-425F TO 1000F	0.04% min. carbon (grade F347H) and heat treat at 2000F(1100C) for service temps.>1000F(538C)
		A182-F347H	18Cr-10Ni-Cb	S34709	A351-CF8C	A182-F347H	-20F TO 1500F	
		A182-F317L	317L	S31703				
	Duplex	A182-F51	22Cr-5Ni-3Mo-N	S31803 S32205	A995-4A	A478-S31803	-20F TO 600F	service to 600F(316C) -The original S31803 UNS designation has been supplemented by S32205 which has higher minimum N, Cr, and Mo.
		A182-F60		S32205				
	Super Duplex	A182-F53	25Cr-7Ni-4Mo-N	S32750	A995-6A A351-CD3MW-CuN	A479-S32750	-30F TO 600F	service to 600F(316C)
		A182-F55	25Cr-7Ni-3.5 Mo-N-Cu-w	S32760	A351-CD3MWCuN			
		A182-F65		S32906				Sandvik SAFUREX(r): superduplex for UREA application
	NITRONIC 50	A182 XM-19	12Ni-23Cr-2Mo	S20910				
Super Austenitic	Super Austenitic 6Mo	A182-F44	20Cr-18Ni-6Mo	S31254	A351-CK3MCuN	A479-S31254	-20F TO 750F	
	904L	B649-N08904L	44Fe-25nl-21cR-Mo	N08904	A351-CK3MCuN	B649-N08904L	-20f to 700f	
	926	B649-N08926		N08926				
Ni Cr Mo SS Alloy	Alloy 20	B462-N08020 B473-N08020	35Ni-35Fe-20Cr-Cb	N08020	A351-CN7M(obs) A990-CN3MCu	B473-N08020	-20F to 800F	
	Alloy 28			N08028				
Nickel-Iron Alloy	Incoloy 800	B564-N08800	33Ni-42Fe-21Cr	N08800	A351-CT15C	B408-N08800	-20F TO 1500F	
	Incoloy 802		35Ni-35Fe-20Cr-Cb	N08802	A351-CN7M			
	Incoloy 825	B425-N08825	42Ni-21.5Cr-3Mo-2.3Cu	N08825	A494-CU5MCuC	B425-N08825	-20F to 1000F	
Nickel	Nickel	B160- N02200/1	99/95Ni	N02200	A494-CZ-100	A494-CZ100	-423F TO 600F	service to 600F(316C) for N02200, 1200F(648C) for N02201
Nickel-Molybdenum Alloy	Hastelloy B	B335-N10001	62Ni-28Mo-5Fe		A494-N-12MV	B335-N10001	-425F TO 800F	
	Hastelloy B-2	B335-N10665	65Ni-28Mo-2Fe		A494-N-7M			
	Hastelloy B-3	B564-N10675	65Ni-29.5Mo-2Fe					
Nickel Superalloys	Inconel 600	B564-N06600	72Ni-15Cr-8Fe	N06600	A494-CY40	B164-N06600	-430F TO 1200F	
	Inconel 625	B564-N06625	60Ni-22Cr-9Mo-3.5Cb	N06625	A494-CW-6MC	B446-N06625	-430F TO 1200F	*Difficult to forge in close dye
	Inconel 718	UNS N07718		N07718				
	Hastelloy C-4	B574-N06455	61Ni-16Cr-16Mo		A494-CW-6M	B574-N06455	-425F TO 800F	
	Hastelloy C-22	B564-N06022	54Ni-21Cr-13Mo	N06022	A494-CXMW	B574-N06022	-430 TO 1250F	
	Hastelloy C-276	B564-N10276	54Ni-15Cr-16Mo	N10276	A494-CW2M	B574-N010276	-425F TO 1250F	*Difficult to forge in close dye
Nickel-Copper	Monel 400	B564-N04400	67Ni-30Cu	N04400	A494-M35-1	B164-N04400	-423F TO 900F	Available as well in 500 grade
Titanium	Titanium gr.2	B381-F2	98Ti	R50400	ASTM B367- C2			
	Titanium gr.5	B381-F5		R56400				
	Titanium gr.7	B381-F7						
Allum/Bronze		B150 C63200			B148-UNS-C95400			

SEAT MATERIALS

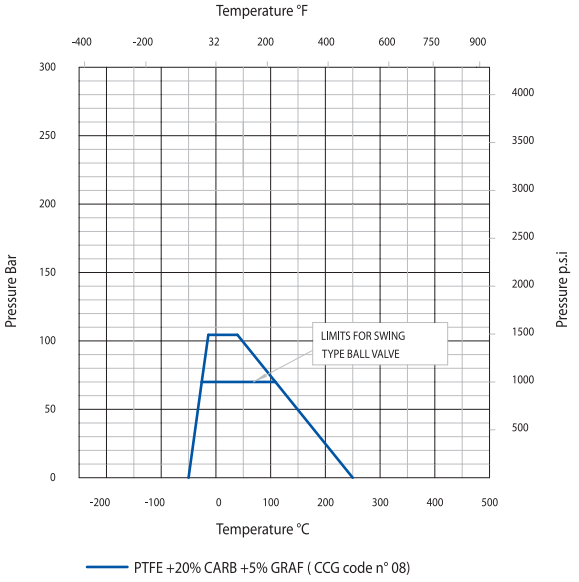
	OMB DESIGNATION	CHEMICAL NAME/DESIGNATION	TEMPERATURE RANGE	APPLICATION	TRADEMARK
THERMOPLASTIC	P.T.F.E	Polytetrafluoroethylene	-100° to + 180°/220°C	Virgin PTFE is used as a standard material for its high lubricity and superior sealing up to 180°C. It is white in colour.	DuPont™ Teflon®
	R.P.T.F.E/Glass	Polytetrafluoroethylene glass filled	-100° to + 200°/250°C	Reinforced PTFE seats are made with glass filled PTFE (20%). They are harder than virgin PTFE. White in colour with green or blue speckles.	DuPont™ Teflon®
	R.P.T.F.E/Carbon Graphite	Polytetrafluoroethylene carbon-graphite filled	-100° to + 200°/250°C	Reinforced PTFE with 20% carbon and 5% Graphite. These seats are black in colour.	-
	POM (Delrin®)	Polyoxymethylene acetal resin	-57°C to 82°C	This material is very rigid it has a combination of strength, stiffness, hardness dimensional stability, toughness, fatigue resistance, abrasion resistance low wear and low friction. It can withstand pressure up to 5000 PSIG depending on valve size. Do not use on oxygen service.	DuPont™ Delrin®
	Devlon® V	Polyamide	-100° to +150°C	Devlon® V is similar to Nylon 12G, but with a wider range of temperature application (lower and higher).	Devol Eng. Ltd.
	PEEK	Polyetheretherketone	-100° to 260°C	Peek is recommended for high temperature (up to 260°C) but it is very hard compared to other non metallic materials. Not applicable for concentrated sulphuric acid.	-
	PCTFE (Kel F®)	Polyclorotrifluoroethilene	-250° + 150°C	PCTFE is specifically recommended for cryogenic service.	3-M™ KEL-F® Daikin™ Neoflon®
	Vespel® Sp21	15% Graphite Filled Polyimide	-100° to 340°C	15% Graphite filler. Performs well in a variety of chemical environments and a variety of industrial fluids at elevated temperatures.	DuPont™ Vespel®
	Nylon 12 G	Polyamide	-50° to + 120°C	Nylon 12G is more suitable than PTFE for higher pressure, but has a limited range in temperature.	-
	UHMWPE	Ultra High Molecular Weight Polyethylene	-200°C to 80°C	UHMWPE (05) is a common substitute where PTFE is not permitted and has excellent abrasion resistance.	-



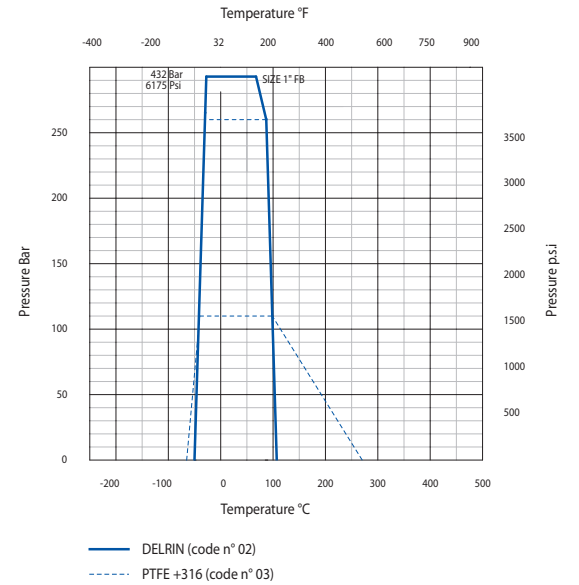
SEAT MATERIAL PRESSURE - TEMPERATURE LIMIT



PTFE + 15% Fiberglass
The glass content decreases the characteristics when in the presence of alcohol and it can be corroded by hydrofluoric acid.



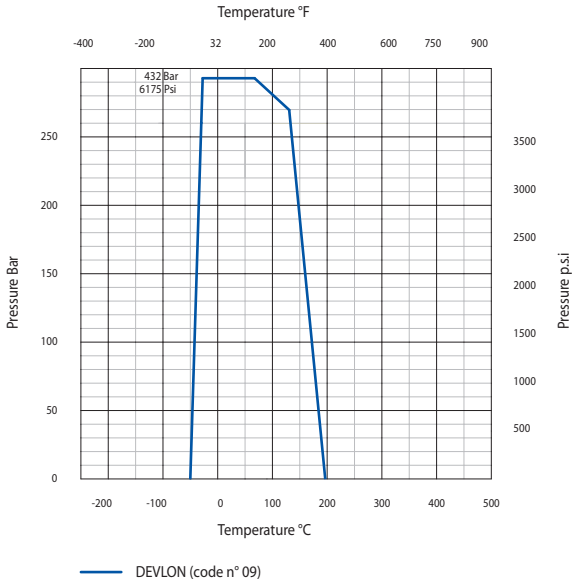
PTFE + 20% Graphite & 5% Carbon
Graohite and Carbon content increase temperature and pressure range of this compound which is the OMB standard.



Derlin®
DuPont's trademark for Polyoxy-methylene. This material is very rigid and does not undergo cold flow. It has a combination of strength, stiffness, hardness, dimensional stability, toughness, fatigue resistance, abrasion resistance, low wear and low friction. it can withstand pressure up to 5000 PSIG depending on valve size. Has a temperature range of -70°F to 180°F (-57°C to 82°C). Better radiation rating than PTFE with maximum $1x10^6$ rads lifetime dose Do not use on oxygen service.
Color - glossy white.

Derlin® is a DuPont's trademark

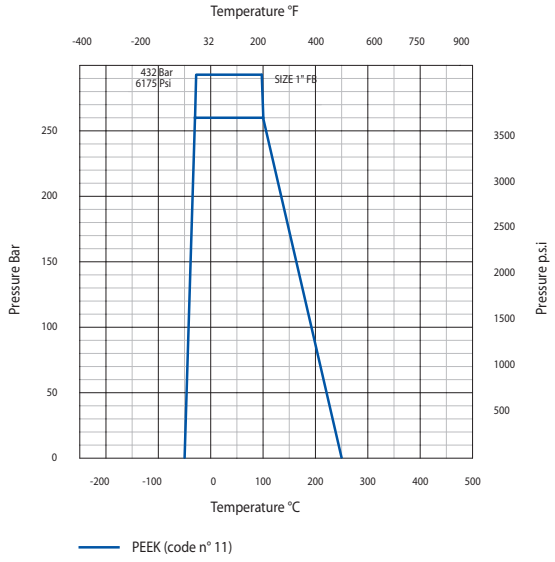
SEAT MATERIAL PRESSURE - TEMPERATURE LIMIT



Devlon®

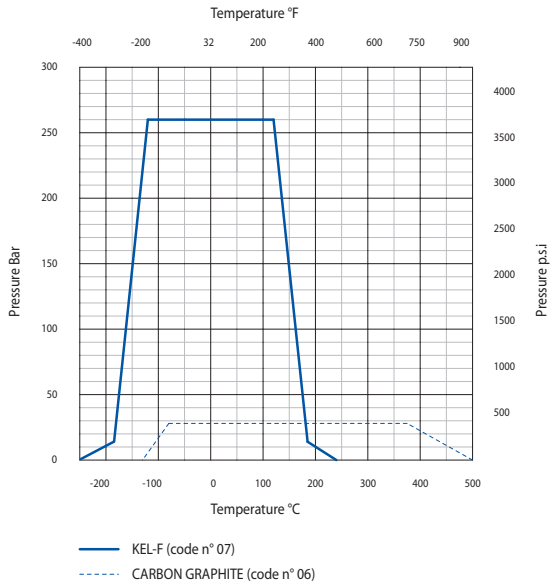
Devlon V-API has many advantages over nylon and PTFE, with one material replacing several thermoplastics over a wide range of operating pressures and temperatures.
In comparison with virgin or glass-filled PTFE, Devlon V-API has similar friction values at low and high temperatures, with the benefit of superior dimensional stability.
It also has a considerable cost advantage over PTFE and PEEK, and can be manufactured up to 2.25m (88.6-inch) diameter.

Devlon® is a Devol Eng. Ltd trademark



PEEK* (Unfilled) Polyetheretherketone

Peek Polymer offers a unique combination of chemical, mechanical and thermal properties. Excellent for water and steam application at elevated temperatures up to 600°F and pressures up to 6000 PSIG. Not aplicable for concentrated sulfuric acid. Excellent resistance to radiation with maximum $1x10^9$ rads lifetime dose. Color-beige.

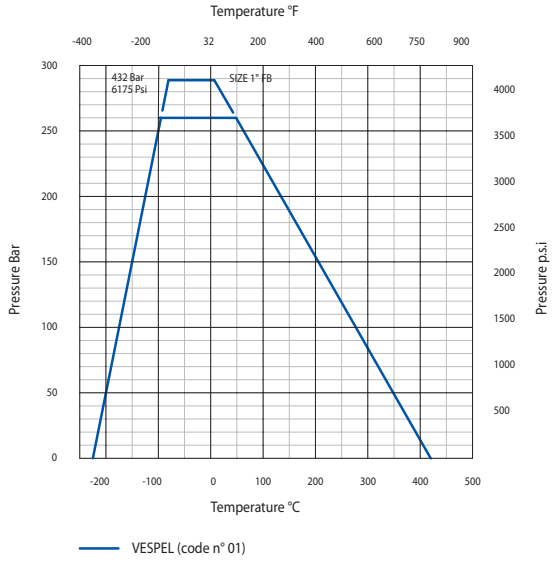


KEL-F® Polychlorotrifluoroethylene (PCTFE)

PCTFE is a fluorocarbon based polymer. It offers a unique combination of physical and mechanical properties non-flammability, chemical resistance, and near zero moisture absorption. It has a temperature range of -400°F to 400°F (-240°C to 204°C) which is suitable for **cryogenic** applications.

KEL-F® is a 3-M's trademark

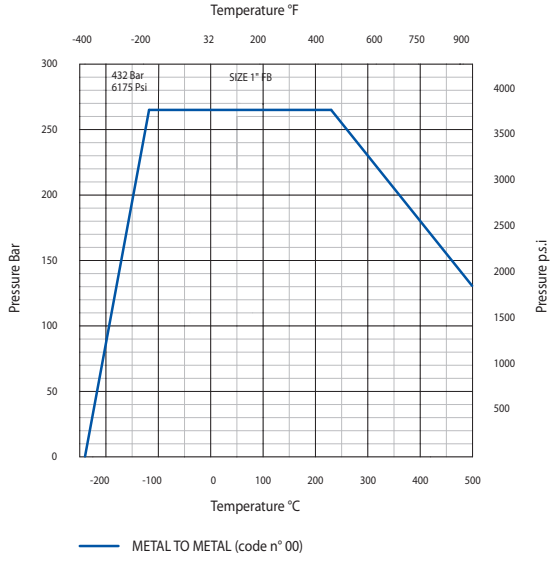
SEAT MATERIAL PRESSURE - TEMPERATURE LIMIT



VESPEL®

Vespel® SP-1 are high-performance polyimide shapes offer a broad combination of temperature resistance, chemical resistance, mechanical toughness, natural lubricity,wear-resistance and insulation properties.

Vespel® is a DuPont's trademark



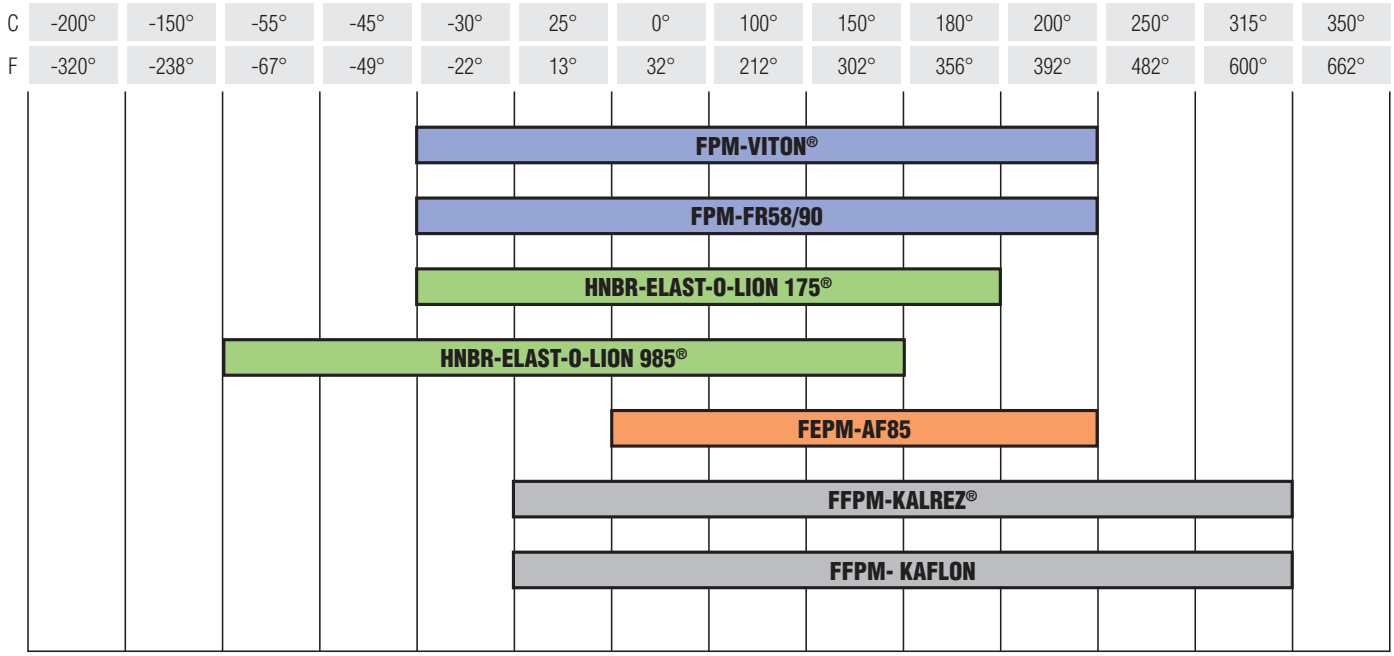
METAL TO METAL

Tungsten carbide is an inorganic chemical compound containing equal parts of tungsten and carbon.
It is approximately three times stiffer than steel leading to high abrasive resistance.
TCC can be used in high temperatures service where Thermoplastic cannot survive.
The application method is High velocity oxy-fuel HVOF thermal spray coating done on both ball and seats.
This type of finish increase the torque value of the valve and the table on page 30 is not applicable to this option.

(See table on page 37)

SEAL MATERIALS

SEAL TYPE	DEFINITION/BRAND	MAKER	AED GRADE	MIN	MAX T
FPM (FKM ASTM grade)	**Fluoroelastomer**				
FPM (FKM ASTM grade)	Viton®	® DuPont	AED	-30C	200C
FPM (FKM ASTM grade)	FR58/90	® J Walker	AED	-30C	200C
HNBR	**Hydrogenated Nitrile**				
HNBR	ELAST-O-LION®101	® J Walker		-29C	160C
HNBR	ELAST-O-LION®985	® J Walker	AED	-55C	150C
TFE/P (FEPM ASTM grade)	**Tetrafluoroethylene/Propylene**				
FEPM (Aflas®)	AF 85/90	® Asahi Chem	AED	0	200C
FFPM (FFKM ASTM grade)	**Perfluoroelastomer**				
FFPM (FFKM ASTM grade)	Kalrez® 1050 LF	® DuPont		5C	365C
FFPM (FFKM ASTM grade)	Kaflon 72B	TM GMI		-25C	315C



INTERNATIONAL STANDARDS	
ASTM D5538	ASTM D5538 - 07 Standard Practice for Thermoplastic Elastomers-Terminology and Abbreviations
ISO 18064:2003	Thermoplastic Elastomers-Terminology and Abbreviations
ASTM D1418	ASTM D1418 - 10a Standard Practice for Rubber and Rubber Latices-Nomenclature
ISO 1629:1995	Rubber and Latices-Nomenclature
ISO 6472:2010	Rubber compounding Nomenclature

EXCELLENT SEALING CHARACTERISTICS

WIDE RANGE OF FLUID SERVICES

STANDARD AND EXTREME OPERATING TEMPERATURES

Superior Sealing
High precision machining results in superior ball and seat interfacing for tight shutoff conforming to ANSI B16.104 class V and MSS SP-61.

Dependable Operations
Spring loaded seats maintain close contact with the ball assuring tight sealing even at low pressures. This results in stable opening and closing torques at high differential pressures over a wide range of temperatures as well as high frequency.

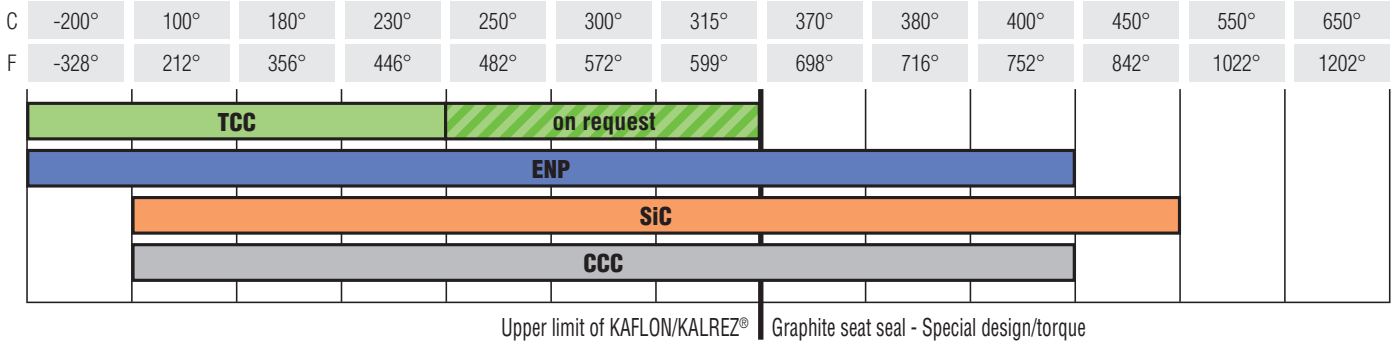
Fire Safe
The combination of metal seats and soft carbon seals insure fire-safe capabilities.

Material Selection
Various material components are available for a variety of service applications up to 500° C (932° F).

Versatility
Surface-hardened ball and seats allows use in more severe applications such as slurries, pulp stock and other abrasive media in long life.

BALL/SEAT/COATING - TEMPERATURE LIMITATION GUIDELINES

BASE MATERIAL GRADES		BASE MATERIAL Temp. Limit °C	COATING	COATING Temp. Limit °C	COMBINED Temp. Limit °C
Duplex	ASTM A182 F51	370	TCC	230	230
	ASTM A182 F55		ENP	400	370
			SiC	550	370
			CCC	650	370
6Mo	ASTM A182 F44	427	TCC	230	230
	Alloy 20		ENP	400	400
			SiC	550	427
			CCC	450	427
13Cr	ASTM A 182 F6A	640	TCC	230	230
	ASTM A182 F6NM		ENP	400	400
			SiC	550	550
			CCC	450	450
CRA	625	700	TCC	230	230
	718		ENP	400	400
	X-750		SiC	550	550
	825		CCC	450	450
SS	ASTM A182 F316	700	TCC	230	230
	ASTM A182 F304		ENP	400	400
	ASTM A182 F347		SiC	550	550
			CCC	450	450



Maximum temp applicable on TCC is 230°C Recommended thickness is 150 micron
Maximum temp applicable on CCC is 450°C Recommended thickness is 150 micron
Maximum temp applicable on SCC is 550°C Recommended thickness is 35 micron

CORROSION

CORROSION MEDIA	Carbon Steel	Stainless Steel 304	Stainless Steel 316	inconel	Monel
Acetate Solvents, Crude	D	A	A	A	B
Acetate Solvents, Pure	C	A	A	A	A
Acetic Acid, 95%	D	B	A	A	A
Acetic Anhydride, Boiling	D	B	A	A	A
Acetone	B	A	A	A	A
Alcohols	B	A	A	A	A
Amines	B	A	A	A	A
Ammonia, Anhydrous	B	A	A	A	A
Ammonium Hydroxide, Hot	B	A	A	A	D
Ammonium Nitrate	B	A	A	A	C
Aniline Hydrochloride	D	D	C	B	B
Antimony Trichloride	D	D	C	B	B
Asphalt	B	A	A	A	A
Barium Chloride, 5%	C	A	A	A	A
Barium Hydroxide	C	A	A	A	A
Barium Nitrate	C	A	A	B	C
Benzene, Hot	B	A	A	A	A
Benzoic Acid	B	A	A	A	A
Blood	D	A	A	A	A
Bromine, Dry Gas	D	A	A	B	A
Bromine, Moist Gas	D	D	D	D	C
Buttermilk	D	A	A	A	A
Calcium Bisulfite, Hot	D	C	B	A	A
Calcium Chloride, Dilute	C	B	A	A	A
Calcium Hydroxide, 20%, Boiling	D	A	A	A	A
Calcium Hydrochloride, < 2%	C	C	B	B	C
Carbolic Acid, 90%	C	A	A	A	B
Carbon Dioxide, Dry	C	A	A	A	A
Carbon Disulphide	B	A	A	A	B
Chloroacetic Acid	D	D	C	B	B
Chloric Acid	D	D	C	C	C
Chlorinated Water, Sat.	D	D	C	C	C
Chlorine, Dry Gas	B	B	B	A	A
Chlorine, Moist Gas	D	D	C	D	C
Citric Acid, Dilute	D	A	A	A	A
Citric Acid, Hot, Conc.	D	C	B	B	B
Creosote, Hot	B	A	A	A	A
Cupric Chloride, 5%	D	D	C	D	D
Ethyl Chloride	A	A	A	A	A
Ethylene Glycol	A	A	A	A	A
Ferric Chloride < 1%	D	C	B	B	C
Ferric Nitrate, 5%	D	B	A	C	D
Ferric Sulfate, 5%	D	B	A	B	C
Ferrous Sulfate, 10%	C	A	A	B	A
Flourine, Dry Gas	C	C	B	A	A
Flourine, Moist Gas	D	D	D	B	A
Freon, Wet	C	C	C	B	A
Fuel Oil, 140°F	A	A	A	A	B

CORROSION MEDIA	Carbon Steel	Stainless Steel 304	Stainless Steel 316	inconel	Monel
Furfural	B	B	B	B	B
Gasoline Sour	B	A	A	C	C
Gasoline Refined	A	A	A	B	A
Gelatine	D	B	A	A	A
Glucose	B	A	A	A	A
Glycerine	B	A	A	A	A
Hydrofluoric Acid, Boiling	D	D	D	D	B
Hydrofluosilicic Acid	D	D	C	B	A
Hydrogen Chloride, Dry	B	D	C	A	A
Hydrogen Chloride, Moist	D	D	D	D	C
Hydrogen Fluoride, Dry	C	D	C	A	A
Hydrogen Peroxide, Boiling	D	C	B	B	B
Hydrogen Sulfide, Dry	B	A	A	A	A
Hydrogen Sulfide, Moist	C	B	A	A	B
Iodine, Dry	D	D	B	A	A
Kerosene	A	A	A	A	A
Lactic Acid, 5%	D	B	A	A	B
Lactic Acid, 10%	D	B	A	A	B
Lactic Acid, Boiling, 5%	D	C	B	B	C
Lactic Acid, Boiling, 10%	D	D	B	B	C
Lead Acetate, Hot	D	A	A	B	B
Magnesium Chloride, Hot, 5%	D	C	B	A	A
Magnesium Hydroxide	B	A	A	A	A
Magnesium Sulfate	B	A	A	B	A
Magnesium Sulfate, Boiling	C	A	A	C	A
Mercury	B	A	A	A	B
Mercuric Chloride, < 2%	D	D	D	D	D
Mercuric Cyanide	D	B	B	B	D
Methyl Chloride, Dry	D	B	B	A	A
Milk	D	A	A	A	B
Molasses	B	A	A	A	A
Naptha	B	A	A	A	A
Nickel Chloride	D	C	B	B	B
Nickel Sulfate, Boiling	D	C	C	B	A
Nitric Acid, 20%	D	A	A	B	D
Nitric Acid, Boiling, Conc.	D	D	D	D	D
Nitrous Acid	D	B	B	B	C
Nitrobenzene	D	B	A	B	B
Oils - Miner.	B	A	A	C	B
Oxalic Acid, Boiling, 10%	C	A	A	A	A
Oxalic Acid, Boiling, 50%	D	D	C	B	B
Oxygen	B	A	A	A	A
Picric Acid	C	A	A	D	D
Potassium Bromide	D	C	B	A	A
Potassium Carbonate	B	A	A	A	A
Potassium Chlorate	B	A	A	A	B
Potassium Chloride	D	A	A	A	A
Potassium Chloride, Hot	D	C	B	B	A

CORROSION MEDIA	Carbon Steel	Stainless Steel 304	Stainless Steel 316	inconel	Monel
Potassium Cyanide	B	B	B	B	B
Potassium Sulfate, Dil.	B	A	A	A	A
Propane, Liquid & Gas	B	A	A	A	A
Pyrogallic Acid	B	A	A	B	A
Rosin, Molten	D	A	A	A	A
Salicylic Acid	D	B	B	B	B
Silver Bromide	D	B	A	C	B
Silver Chloride	D	D	D	C	B
Silver Nitrate	D	A	A	A	C
Sodium Acetate	C	A	A	A	A
Sodium Bisulfate	D	B	B	B	A
Sodium Bromide, Dil.	D	B	B	B	A
Sodium Cyanide	B	B	B	B	A
Sodium Fluoride, 5%	D	B	A	B	A
Sodium Hydroxide, 50%	B	A	A	A	A
Sodium Hyposulfite	D	B	A	B	A
Sodium Nitrate	B	B	A	A	B
Sodium Perborate	C	A	A	A	B
Sodium Peroxide	C	A	A	A	B
Sodium Phosphate, Tribasic	C	A	A	A	A
Sodium Silicate	B	A	A	A	B
Sodium Thiosulfate	D	B	A	B	B
Stannous Chloride, Sat.	D	D	B	B	B
Steam, 212°F	A	A	A	A	A
Steam, 600°F	C	A	A	A	A
Sulfite Liquors	D	C	B	D	D
Sulfur Chloride	D	C	D	B	B
Sulfur Dioxide, Moist	D	B	A	D	D
Sulfuric Acid, Conc.	B	B	B	B	D
Sulfurous Acid, Sat.	D	B	B	D	D
Tannic Acid, 10%	D	A	A	B	A
Tar, Hot	B	A	A	A	B
Tartaric Acid, 120°F	D	B	A	A	A
Toluene	A	A	A	A	A
Trichlorethylene	B	A	A	A	A
Turpentine	B	A	A	A	A
Varnish, Hot	C	A	A	A	A
Vegetable Oils	B	A	A	A	B
Vinegar	D	A	A	A	A
Water, Acid Mine	D	A	A	A	C
Water, Boiler Feed	B	A	A	A	A
Water, Distilled	D	A	A	A	A
Water, Salt Sea	D	C	B	B	A
Whiskey, Boiling	D	A	A	A	C
Wine	D	A	A	A	C
Xylene, Boiling	D	A	A	A	A
Zinc Chloride, 5%	D	C	B	B	B
Zinc Sulfate, Boiling	D	A	A	B	A

A = Substantial residance - Preferred material of construction.
B = Moderate resistance - Satisfactory for use under most condition.
C = Questionable resistance - Use with caution.
D = Inadequate resistance - Not recommended.

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