Cleveland
INDUSTRIAL VALVES

Forged steel ball valve trunnion

FIGURE 30.20.1

CIV FORGED BALL

Standards Compliance:
* Design&Manufacture:API 6D/API 608/ANSI B16.34
* Face to face:ANSI B16.10/API 6D
* End flange:ANSI B16.5
* Welding Ends:ANSI B16.25
* Pressure-Temp.Rating:ANSI B16.34
* Inspection & Test:API 6D/API 598

* Construction:
Split Body.Full Bore.Trunnion Mounted Ball,Double Seal Design-Floating Seats.Double Block & Bleed.Blow-out Proof Stem,Cavity Relieving Seats.

* Options:
Fire-safe Design,Antl-static Device,Pressure Balance Hole in Ball.

Standard materials specifications

Part Name	Body/Cap	Ball/Stem	Seats	Seats
A216 WCB	A216 WCB	A105/WCB+HCr	PTFE	PTFE Viton
A351 CF8	A351 CF8	A351 CF8/304SS		
A351 CF8M	A351 CF8M	A351 CF8M/316SS		

Torque date for lion forged steel ball valves

				Kgf.m)
Size(In)	CLASS 150	CLASS 300	CLASS 400	CLASS 600
2	2	3	7	20
3	8	15	25	45
4	15	30	40	60
5	20	50	65	93
6	40	70	86	115
8	64	94	130	175
10	110	160	230	300
12	175	250	380	475
14	260	360	550	690
16	390	525	750	970
18	620	715	1000	1260
20	750	880	1200	1550
24	1050	1320	1850	2450

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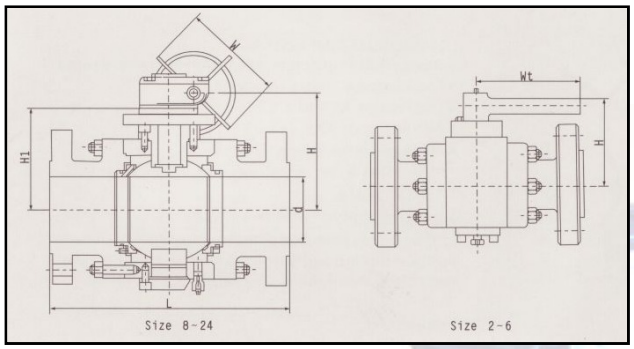
Cleveland
INDUSTRIAL VALVES

Forged steel ball valve trunnion

FIGURE 30.20.1

CIV FORGED BALL



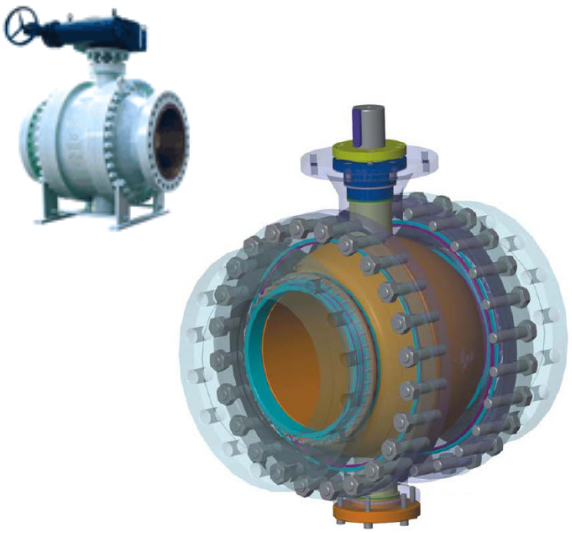
Size(in)		Class	2	3	4	6	8	10	12	14	16	18	20	24
L		150	178	203	229	394	457	533	610	686	762	864	914	1067
		300	216	283	305	403	502	568	648	762	838	914	991	1143
Ho		150	100	123	143	195	243	348	401	423	491	526	840	1050
		300	100	123	143	195	243	348	401	423	491	526	840	1050
H1		150	150	183	203	260	288	393	456	478	801	836	840	1050
		300	107	152	178	330	398	495	580	625	670	698	840	1050
W		150	250	350	460	1000	355	355	600	600	600	600	800	800
		300	230	400	650	1050	600	600	800	800	800	800	800	800
Wt(kg)		150	12	22	35	74	190	270	470	570	875	935	1190	2100
		300	15	39	63	152	236	303	502	602	1001	1135	1540	3900
L	RF	400	292	356	406	495	597	673	762	826	902		1054	1232
	RTJ	400	295	359	410	498	600	676	765	829	905		1080	1241
H		400	108	197	235	300	374	445	512	550	615		810	1010
W		400	600	600	600	600	800	800	800	800	800	800	800	800
Wt(kg)		400	23	49	91	192	355	640	880	1100	1540		2800	5300
L	RF	600	292	356	432	559	660	787	838	889	991	1219	1194	1397
	RTJ		371	384	460	613	740	841	968	1038	1140	1232	1334	1568
	RF	900	368	381	457	610	737	838	965	1029	1130	1219	1321	1549
	RTJ		371	384	460	613	740	841	968	1038	1140	1232	1334	1568
H1		600	100	123	143	195	243	348	401	423	491	526	840	1050
		900	100	123	143	195	243	348	401	423	491	526	840	1050
H		600	108	197	235	300	374	445	512	550	615		810	1010
		900	126	191	216	270	394	502	572	675	762	866	894	956
W		600	600	600	600	600	800	800	800	800	800	800	800	800
		900	600	600	600	800	800	800	800	800	800	800	800	800
Wt(kg)		600	35	55	102	232	390	710	960	1700	1970		3250	5800
		900	50	80	125	270								
L	RF	1500	368	381	546	705	832	991	1130	1257	1384	1537	1664	1698
	RTJ	1500	371	384	549	711	841	1000	1146	1276	1407	1559	1686	1902
H1		1500												
H		1500	217	259	297	365	475	578	696	761	831	900	950	1080
W		1500	600	600	600	800	800	800	800	800	800	800	800	800
Wt(kg)		1500	50	117	216	380								

Cleveland
INDUSTRIAL VALVES

Trunnion ball valve Cast steel

FIGURE 30.20.2

CIV CAST BALL



Construction :

Two-piece or three-piece body body, Full port or reduced port, Blowout-proof stem, Fire-safe,
Anti-static.
Description:

Design and manufacture: API 6D, API 608 and
End flange dimensions: s:ANSI B16.34 or BS5351
Test and inspection: API6D, API 598.
Face to face dimensions: ANSI B16.10
End flange dimensions: 2"~24" to ANSI B16.5
End flange dimensions: over 26" to MSS SP-44 or
End flange dimensions: API 605
Butt-welding ends: ANSI B16.25
Fire safe: API607, API6FA**Size:** 2" - 28"
Material: WCB, LCB,CF8, CF8M, CF3 and CF3M etc.
Type of operation: lever, gear, electric or pneumatic

No.	Parts	Carbon Steel		Stainless Steel			
		WCB	LCB	CF8	CF8M	CF3	CF3M
1	Body	A216 WCB	A352 LCB	A351 CF8	A351 F8M	A351 CF3	A351 CF3M
2	L-body	A216 WCB	A352LCB	A351 CF8	A351 F8M	A351 CF3	A351 CF3M
3	R-body	A216 WCB	A352LCB	A351 CF8	A351 F8M	A351 CF3	A351 CF3M
4	Ball	A105/Ep. Cr	A182 304	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
5	Stem	A182 F6	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L
6	Seat	A182 F6	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L
7	Seat ring	PTFE, POM or HF(Co-CrA)					
8	Gasket	PTFE or flexible graphite and stainless steel					
9	O-ring	VITON	VITON	VITON	VITON	VITON	VITON
10	Trunnion	A182 F6	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L
11	Spring	AISI 6150 / 17-17PH (inconel for NACE) / Ni-Cr Alloy					
12	Drain plug	A182 F6	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L
13	Bolt	A193B7 / A320L7 / A193B8 / A193B8M					
14	Stem beating	PTFE or stainless steel and graphite					
15	Stem seat	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
16	Small spring	17-17PH (inconel for NACE) / Ni-Cr Alloy					
17	Small ball	A182 F304 / A182F316					
18	Trunnion beating	PTFE or stainless steel and graphite					
19	Plug	A105	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L
20	Spring seat	A105	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L
21	Bonnet bolt	A193B7 / A320L7 / A193B8 / A193B8M					
22	Bonnet nut	A194 2H / A194 4 / A194 8					
23	Pin	Carbon steel or alloy steel					
24	Gland	A182 F6	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L
25	Gland flange	A216 WCB	A352LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
26	Stem packing	PTFE or flexible graphite					
27	Bonnet	A216 WCB	A352LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M

Cleveland
INDUSTRIAL VALVES

Trunnion ball valve Cast steel

FIGURE 30.20.2

Class 150

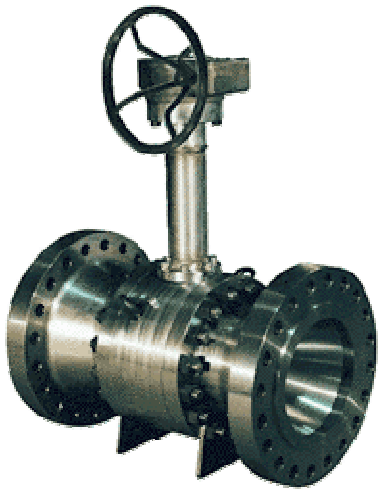
DN	50	65	80	100	150	200	250	300	350	400	450	500	600	700
NPS	2	2.1/2	3	4	6	8	10	12	14	16	18	20	24	28
L (RF)	178 7	191 7.5	203 8	229 9	394 15.5	457 18	533 21	610 24	686 27	762 30	864 34	914 36	1067 42	1245 49
L1 (BW)	216 8.5	241 9.5	283 11.13	305 12	457 18	521 20.5	559 22	635 25	762 30	838 33	914 36	991 39	1143 45.5	1346 53
H	153 6.05	165 6.5	195 7.68	213 8.39	272 10.7	342 13.5	495 19.5	580 22.85	625 24.6	720 28.35	790 31	840 33.1	1050 41.34	1150 45.3
Do (W)	400 15.74	400 15.74	600 23.62	850 33.46	1100 43.3	1500 59	*350 13.8	*350 13.8	*600 23.6	*600 23.6	*800 31.5	*800 31.5	*800 31.5	*800 31.5
RF (Kgs)	15	19	38	65	97	160	240	390	510	750	895	1190	2100	3000
BW (Kgs)	13	17	35	55	92.8	154	227	365	478	711	868	1138	2015	2900

Class 300

DN	50	65	80	100	150	200	250	300	350	400	450	500	600	700
NPS	2	2.1/2	3	4	6	8	10	12	14	16	18	20	24	28
L (RF)	216 8.5	241 9.5	283 11.13	305 12	403 15.88	502 19.75	568 22.38	648 25.5	762 30	838 33	914 36	991 39	1143 45	1346 53
L1 (BW)	216 8.5	241 9.5	283 11.13	305 12	457 18	521 20.5	559 22	635 25	762 30	838 33	914 36	991 39	1143 45.5	1346 53
H	153 6.02	165 6.5	195 7.68	213 8.39	272 10.7	342 13.5	495 19.5	580 22.85	625 24.6	720 28.35	790 31	840 33.1	1050 41.34	1150 45.3
Do (W)	400 15.74	400 15.74	600 23.62	850 33.46	1100 43.3	1500 59	*350 13.8	*350 13.8	*600 23.6	*600 23.6	*800 31.5	*800 31.5	*800 31.5	*800 31.5
RF (Kgs)	18	27	47	80	118	200	365	530	740	1030	1320	1540	2600	3900
BW (Kgs)	14	22	38	65	105	185	342	503	713	1000	1285	1498	2540	3825

Class 600

DN	50	65	80	100	150	200	250	300	350	400	450	500
NPS	2	2.1/2	3	4	6	8	10	12	14	16	18	20
L (RF)	292 11.5	330 13	356 14	432 17	559 22	660 26	787 31	838 33	889 35	991 39	1092 43	1194 47
L1 (BW)	292 11.5	330 13	356 14	432 17	559 22	660 26	787 31	838 33	889 35	991 39	1092 43	1194 47
H	153 6.02	165 6.5	195 7.68	213 8.39	272 10.7	342 13.5	495 19.5	580 22.85	630 24.8	725 28.5	800 31.5	850 33.5
Do (W)	600 23.62	850 33.46	1250 49.25	1300 51.22	1500 59	*350 13.8	*350 13.8	*600 23.6	*600 23.6	*800 31.5	*800 31.5	*800 31.5
RF (Kgs)	38	56	66	122	217	350	660	820	830	1160	1420	1650
BW (Kgs)	31	51	58	117	200	327	605	790	800	1030	1305	1505



CIV Cryogenic

Construction :

Service temperature to -196 ºC

Construction DIN PN 16/40 & ANSI 150 / 300 lbs

Construction floating and guided ball.

Cavity pressure relief.

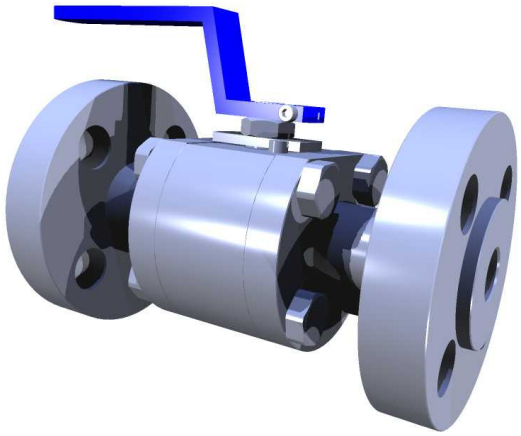
MATERIALS	VERSION DIN	VERSION ANSI
BODIES	AISI A351 CF 8M	AISI A351 CF 8M
BALL	A351 CF 8M	
STEM	A351 CF 8M	
SEATS	KELFT	KELFT
SEALS	PTFE+GF	PTFE+GF
BOLTS	A4-70	B8M

ANSI		½"	¾"	1"	2"	3"	4"	6"	8"	10"	12"		
DN		15	20	32	40	50	65	80	100	150	200	250	300
DIN	PN16	x	x	x	x	x	x	x	x	x	x	x	X
	PN40	x	X	x	x	x	x	x	x	x	x	X	x
ANSI	CL150	x	x	x	x	x	x	x	x	x	X		
	CL300	X	X	X	x	X	x	x	x	x	x		

Cleveland
INDUSTRIAL VALVES

Floating ball valve

FIGURE 30.20.4



CIV Float Flanged

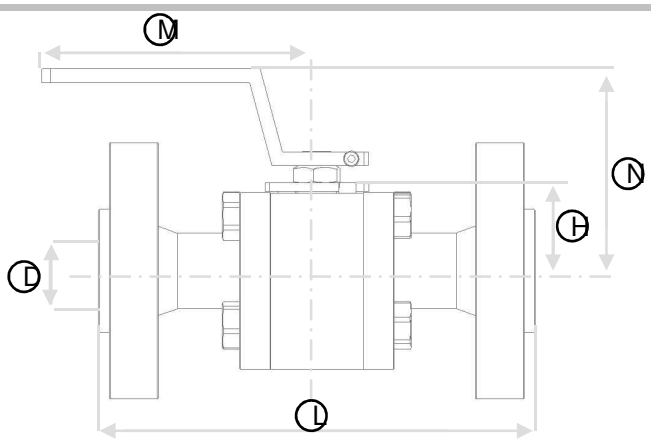
Construction :

Three pieces body, full bore or reduced bore , free floating ball, fire-safety tested design to API 607, blow-out proof stem,anti-static device,pressure balance hole in bal lDesign acc.to API 6D ,top flange ISO 5211.

Rating: API 6D CLASS 600-900

Connection : Flanges ASME B 16.5 RF,SMOTH FINISH.
Flanges ASME B16.5 RTJ.

On request CIV supply valves up to 72” in SS, CS , CI , DI , Monel , Inconel.



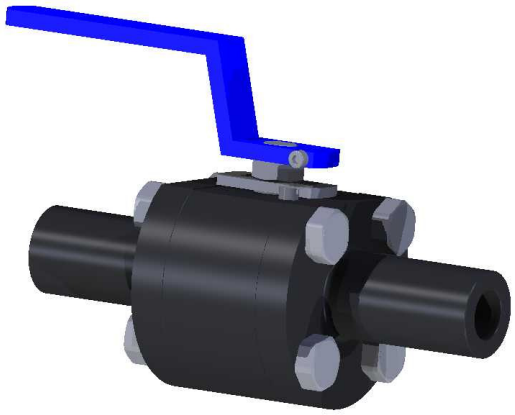
MATERIALS	VERSION CS	VERSION SS
BODIES	ASTM-A-105/N	SS 316
BALL/STEM	ASTM A351 CF8M / SS316	
SEATS	RPTFE	RPTFE
SEALS	PTFE+GF-VITON	PTFE+GF-VITON
BOLTS	ASTM A-193 B7	ASTM A-193 B7

NPS		CLASS 600		CLASS 900					ISO 5211	Cv	CLASS 600	CLASS 900	CLASS 600	CLASS 900
		RF	RTJ	RF	RTJ									
	D	L				M	N	H			TORQUE *		WEIGHT	
	mm										Nm		Kg	
1/2”x3/8”	11	165	163,5	-	-	150	45	33	F05	9	12	20	4	-
1/2”	14	165	163,5	216	216	200	55	43,5	F05	16	16	27	5	13
3/4”x1/2”	14	190,5	190,5	229	229	200	55	43,5	F05	14	16	27	6,5	15
3/4”	19	190,5	190,5	229	229	200	58	43,5	F05	32	28	47	7,5	20
1”x3/4”	19	216	216	254	254	200	58	43,5	F05	27	28	47	8	22
1”	24	216	216	254	254	240	73	56	F05	54	50	83	11,5	25
1 1/2”x1”	24	241	241	305	305	240	73	56	F05	45	250	83	15,5	30
1 1/2”	38	241	241	305	305	550	157	77	F07	157	75	120	22	34
2”x1 1/2”	38	292	295	368	371	550	157	77	F07	117	75	120	24,5	42
2”	51	292	295	368	371	550	165	86	F07	307	151	221	29	45,5
3”x2”	51	356	359	-	-	550	165	86	F07	216	151	-	39	-
3”	76	356	359	-	-	550	190	112	F10	767	330	-	57,5	-
4”x3”	76	432	435	-	-	550	190	112	F10	496	330	-	77	-
4”	102	432	435	-	-	-	-	145	F12	1.5 02	561	-	124,5	-
6”x4”	102	559	562	-	-	-	-	145	F12	910	561	-	179	-

Cleveland
INDUSTRIAL VALVES

Floating ball valve

FIGURE 30.20.5



CIV Float Weld

Construction :

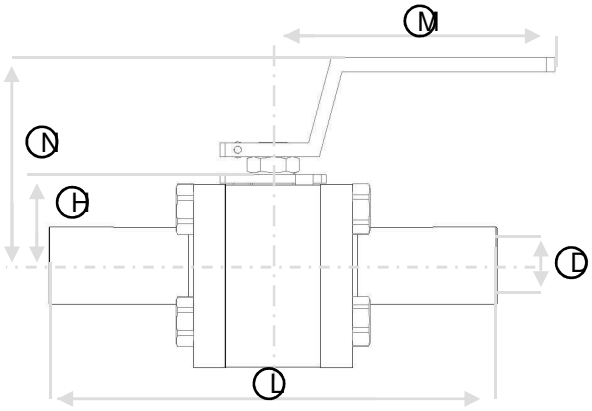
Three pieces body, full bore, free floating ball, fire-safety tested design to API 607, blow-out proof stem,anti-static device,pressure balance hole in ball,Design acc.to API 6D ,top flange ISO 5211.

Rating: API 6D CLASS 600-900

Connection : SCREWED-END VALVES NPT-BSP

WELD-END VALVES SW – ANSI B16.11SCH 80-160

BW – ANSI B16.25SCH 80-160



MATERIALS	VERSION CS	VERSION SS
BODIES	ASTM-A-105/N	SS 316
BALL/STEM	ASTM A351 CF8M / SS316	
SEATS	RPTFE	RPTFE
SEALS	PTFE+GF-VITON	PTFE+GF-VITON
BOLTS	ASTM A-193 B7	ASTM A-193 B7

NPS		CLASS 600		CLASS 900					ISO 5211	Cv	CLASS 600	CLASS 900	SCREW	WELD
		SCREW	WELD	SCREW	WELD									
	D	L				M	N	H			TORQUE *		WEIGHT	
	Mm										Nm		Kg	
1/4"	8	110	216	110	216	150	42	30	F05	9	12	20	3	4
3/8"	10	110	216	110	216	150	52,5	41	F05	16	16	27	3	4
1/2"	15	110	216	110	216	200	52,5	41	F05	14	16	27	3	4
3/4"	20	140	229	140	229	200	55,5	41	F05	32	28	47	5	7
1"	25	140	254	140	254	240	55,5	41	F05	27	28	47	7	9
1.1/4"	32	170	280	170	280	300	71	54	F05	45	250	83	14	18
1 1/2"	40	170	305	170	305	550	155,5	75	F07	157	75	120	15	18
2"	50	200	368	200	368	550	155,5	75	F07	117	75	120	19	25

Cleveland
INDUSTRIAL VALVES

Floating ball valve Wafer type

FIGURE 40.10.1

CIV Float WAFER

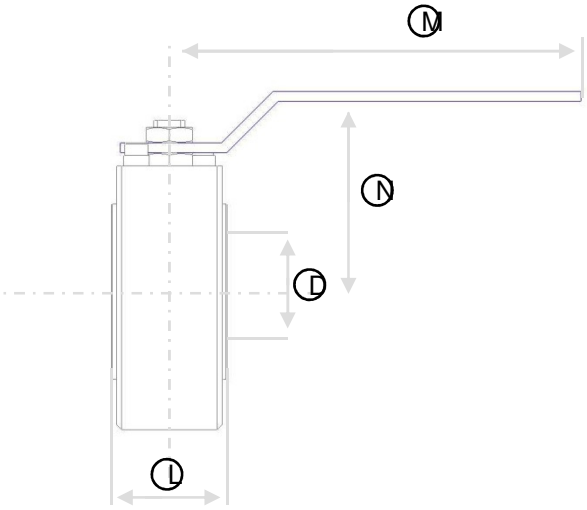
Construction :

Type Wafer , One piece body construction. Floating ball.

Rating:.

Connection : PN 16 (On request PN 25/40 & ANSI 150-300-600)

On request CIV supply valves up to 72” in SS, CS , CI , DI , Monel , Inconel.



MATERIALS	VERSION CS	VERSION SS
BODIES	ASTM-A-105/N	SS 316
BALL/STEM	ASTM A351 CF8M / SS316	
SEATS	PTF	PTF
SEALS	GRAPHITE/ VITON B	GRAPHITE/ VITON B
BOLTS	ASTM A-193 B7	ASTM A-193 B7

	D	L	M	N	TORQUE *	WEIGHT
	mm				Nm	Kg
1/2”	**14**	**32**	**150**	**68**	**8**	**1.2**
3/4”	**20**	**42**	**150**	**73**	**8**	**2**
1”	**25**	**45**	**160**	**84**	**10**	**2.5**
1.1/4”	**32**	**54**	**190**	**86**	**20**	**4.3**
1.1/2”	**40**	**70**	**190**	**95**	**25**	**6.2**
2”	**50**	**83**	**200**	**107**	**35**	**7.4**
2.1/2”	**65**	**108**	**250**	**118**	**50**	**14.5**
3”	**80**	**118**	**250**	**133**	**90**	**22**
4”	**100**	**152**	**350**	**158**	**175**	**30.5**

Cleveland
INDUSTRIAL VALVES

Floating ball valve monobloc

FIGURE 40.10.2

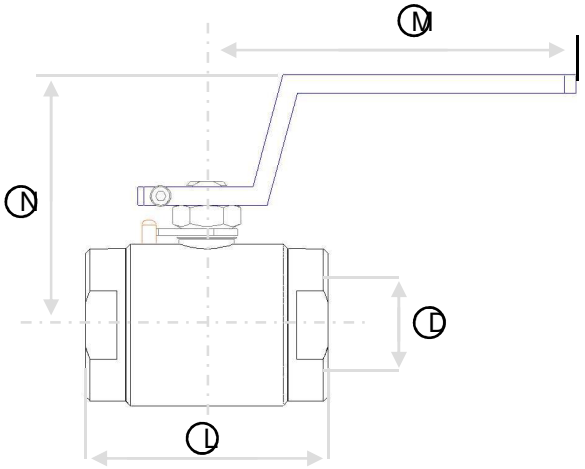
CIV Float Threaded

Construction :

Three pieces body, full bore , free floating ball, fire-safety tested design to BS6755 part 2,blowout-proof stem, cavity relieving seats, anti-static device,pressure balance hole in ball , desing acc.to BS 5351.

Rating: BS 5351 CLASS 900

Connection :Screwed ASME B1.20.1 NPT
Socket Weld (SW) ASME B16.11
Butt Weld (BW) ASME B16.25



MATERIALS	VERSION CS	VERSION SS
BODIES	ASTM-A-105/N	SS 316
BALL/STEM	ASTM A351 CF8M / SS316	
SEATS	RPTFE	RPTFE
SEALS	PTFE+GF-VITON	PTFE+GF-VITON
BOLTS	ASTM A-193 B7	ASTM A-193 B7

	D	L	M	N	TORQUE *	WEIGHT
	mm				Nm	Kg
1/2”	**14**	**75**	**130**	**65**	**11**	**1**
3/4”	**20**	**90**	**130**	**65**	**20**	**1.5**
1”	**25**	**105**	**150**	**70**	**22**	**2.1**
1.1/4”	**32**	**120**	**250**	**80**	**30**	**3**
1.1/2”	**40**	**130**	**250**	**100**	**48**	**4**
2”	**50**	**150**	**300**	**110**	**67**	**7**