

FLOATING & TRUNNION MOUNTED BALL VALVE

Il futuro come tradizione



Our tradition is the future



FLOATING FORGED BALL VALVE

ASME Class 800

1/2" ÷ 2" (DN15 ÷ 50) – SW, NPT, BSP Ends

FEATURES

The floating ball valve has carbon steel body and Stainless steel trim suitable for high temperature. Our ball valve has a PTFE or reinforced PTFE sealing to serve the hot media under pressure, as steam or superheated water.

Besides this, the ball valve designed to avoid leakages fugitive emission in the environment as well as to maintain a safe tightness also in case of fire, so being suitable dangerous or flammable media too.

Bonetti's 3 piece ball valve serve for industrial application also suitable for high flow capacity and tight shutoff where reliability, functionality and interchangeability are essential for product. The innovative features of this valve is the "sealing system", that is capability to grant sealing both by downstream seating, as in usual floating ball valve, and also by upstream seating (see Fig. 1). Valves are available with full or reduced bore



Working condition

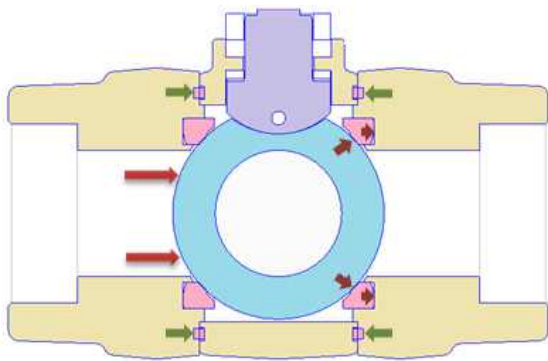


Fig. 1

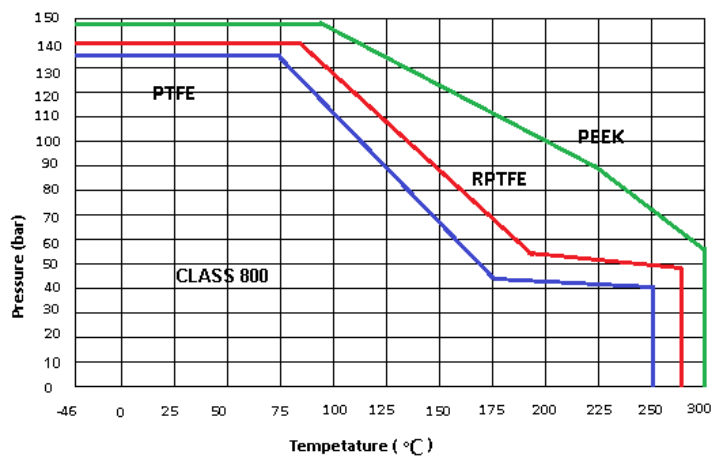


Fig. 2

Reference Standards

- ISO 17292 for Design
- ASSME B 16.11 for SW ends
- ASME B1.20.1 for NPT threaded ends
- ISO 12209-9 for BSP threaded ends
- API607 fire safe

Fig. 2 shows the operating condition of valve
 Note: for temperatures under -46°C, please apply to our Technical or Sales Department.

Technical data

Bore	: Full & Reduced
Online tightness	: Grade A according to ISO17292
Antistatic Device	: According to ISO17292 and BS5351
Connections	: Socket weld (SW) Threaded according to NPT or BSP with end to end DIN 3202 M3

Operating starting torque (Nm) at 138 Bar

DN	1/2"	3/4"	1"	1.1/2"	2"
Reduced Bore	-	15	20	31	36
Full Bore	15	20	31	36	48

Above values refer to a frequently operated valve.

In above case the valve is not operated for a long time, or in case of heavy media, the operating starting torque must be increased

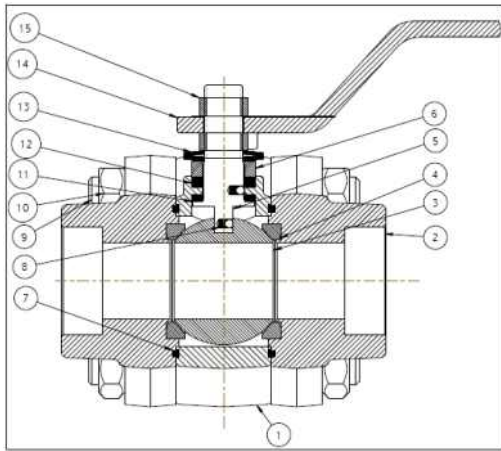


Fig. 3

Table 1

No.	Item	A105	F316
1	Body	A105	F316
2	End-Piece	A105	F316
3	Ball	SS 316	SS 316
4*	Seat	PTFE	PTFE
5	Stem	SS 316	SS 316
6	Gland	A479 T410 C2	A479 T410 C2
7*	Gasket	GRAPHITE	GRAPHITE
8	Antistatic device	SS302 ASTM A313	SS302 ASTM A313
9	Stud	A193 B7	A193 B8
10	Nut	A194 2H	A194 8M
11*	Washer	PTFE	PTFE
12*	Packing	GRAPHITE	GRAPHITE
13	Belleville washer	SPRING STEEL	SPRING STEEL
14	Lever	CARBON STEEL	CARBON STEEL
15	Locknut	STEEL Gr. 8	STEEL Gr. 8

(a) 1.4301(AISI 304) for ND ≤ 1" (DN 25)
1.4086 (AISI 430F) for ND > 1" (DN 25)
(b) RPTFE = PTFE + 25% carbon

Option

- Depressurizing hole on the ball
- Extended stem
- Oval handle for application in small space

Safety information

For installation and maintenance

For detailed information about installation, maintenance and safety criteria please refer to Use and Maintenance Manual.

Spare parts

Suggested spare parts are evidenced by an asterisk (*) on the table of materials (Table 1).

Dimension and weight

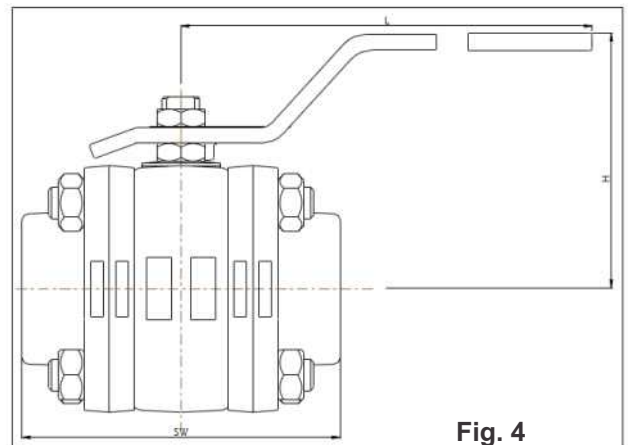


Fig. 4

Full bore valves

DN	CLASS	SW mm	L mm	H mm	WEIGHT kg
1/2"	800	64	170	60	0.85
3/4"	800	92	170	65	1.4
1"	800	102	205	78	2.65
1 1/2"	800	112	290	117	5.2
2"	800	143	290	125	8.3

Reduced bore valves

DN	CLASS	SW mm	L mm	H mm	WEIGHT kg
3/4"	800	64	170	60	0.98
1"	800	92	170	65	1.8
1 1/2"	800	102	205	78	3.75
2"	800	112	290	117	6.5
2 1/2"	800	143	290	125	9.8

INVESTMENT CASTED BALL VALVE WITH MOUNTING PLATE ACC. TO DIN/ISO 5211 ASME Class 800

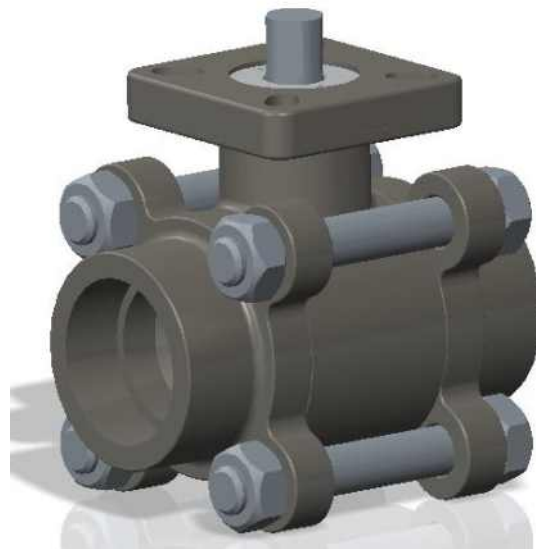
1/2" ÷ 2" (DN15 ÷ 50) – SW, NPT, BSP Ends

FEATURES

The Bonetti's floating ball valves are equipped with an integral actuator mounting plate designed and manufactured according to ISO 5211 specification. This easily and uniformly enable mounting of actuator provided with ISO 5211 mounting flange. With ISO mounting flange no need to loosen body when fitting actuator.

Bonetti has various valve solutions and designs that give the end user the freedom of choice for the toughest requirement imposed by industry and by industrial application.

The three piece body construction enables user's maintenance and replacement of internal parts of in-line valves.



Technical data

Bore	: Full & Reduced Bore
Mounting plate	: DIN/ISO 5211
Online tightness	: Grade A according to ISO17292
Connections	: Socket weld (SW) Threaded according to NPT or BSP with end to end to DIN 3202 M3

Operating starting torque (Nm) at 138 Bar

DN	1/2"	3/4"	1"	1.1/2"	2"
Reduced bore	-	16	20	35	40
Full bore	16	20	35	40	50

Above values refer to a frequently operated valve.

In case the valve is not operated for a long time, or in case of heavy media, the operating starting torque must be increased

Reference Standards

ASME B 16.11 for SW ends
 ASME B1.20.1 for NPT threaded ends
 ISO 12209-9 for BSP threaded ends
 ISO 5211 ("Mounting plate")

Option

- Depressurizing hole on the ball
- Extended stem
- Handle for application in small space

Safety information

For installation and maintenance

For detailed information about installation, maintenance and safety criteria please refer to Use and Maintenance Manual.

Spare parts

Suggested spares parts are evidence by an asterisk on the table of materials (Table 1).

Dimension and weight

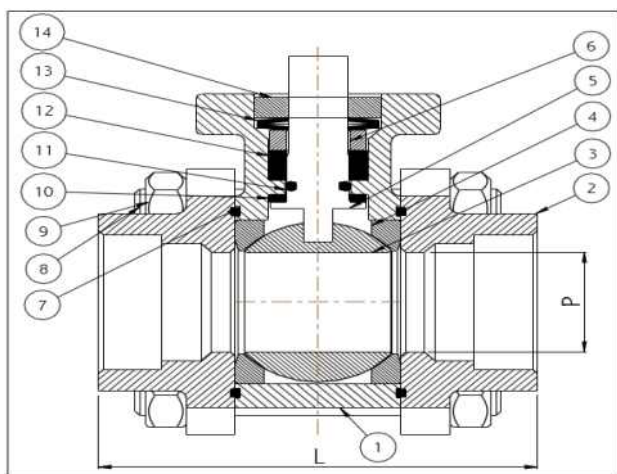
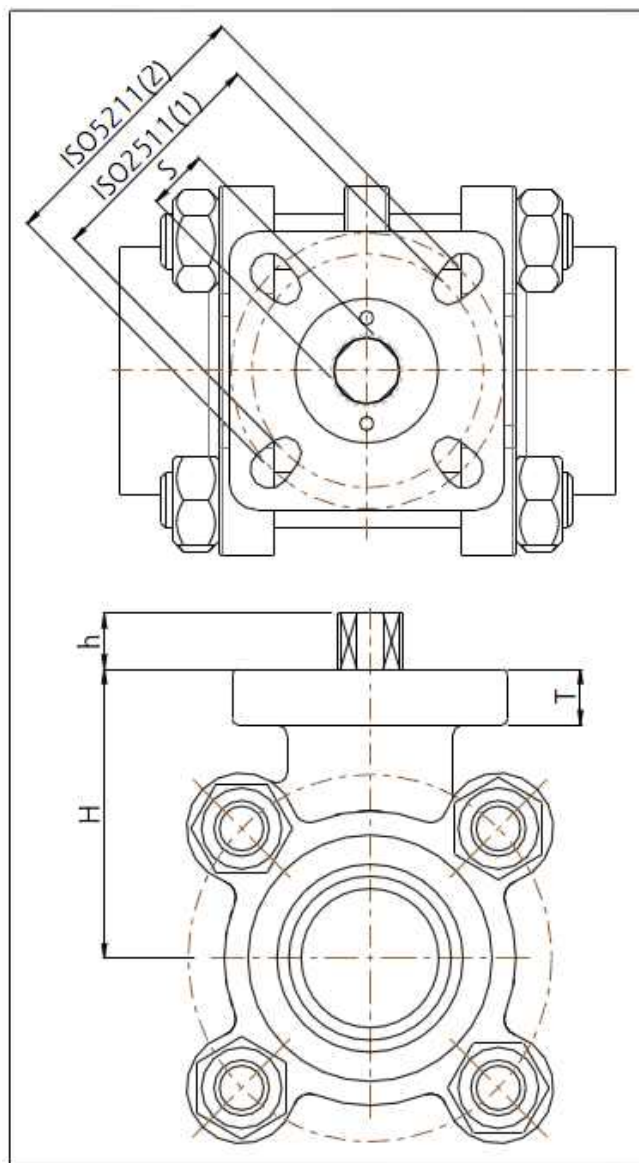


Table 1

No.	Item	SS316	Carbon steel
1	Body	SS316	Carbon steel
2	End-Piece	SS316	Carbon steel
3	Ball	SS 316	SS 316
4*	Seat	PTFE	PTFE
5	Stem	SS 316	SS 316
6	Gland	A479 T410 C2	A479 T410 C2
7*	Gasket	PTFE	PTFE
8	Stud	A193 B7	A193 B8
9	Nut	A194 2H	A194 8M
10*	Washer	PTFE	PTFE
11*	O-Ring	Viton	Viton
12*	Packing	PTFE	PTFE
13	Belleville washer	SPRING STEEL	SPRING STEEL
14	Locknut	STEEL Gr. 8	STEEL Gr. 8

(a) 1.4301(AISI 304) for ND ≤ 1" (DN 25)
 1.4086 (AISI 430F) for ND > 1" (DN 25)
 (b) RPTFE = PTFE + 25% carbon



Full bore valve							
DN	P	L	H	S	T	ISO 5211	Wt. kg
1/2"	16	75	40	9	9	F03 PCD36 ø6 x 4 F03 PCD42 ø6 x 4	0.7
3/4"	20	80	44	9	9	F03 PCD36 ø6 x 4 F03 PCD42 ø6 x 4	1.5
1"	25	90	52	1	10	F03 PCD42 ø6 x 4 F03 PCD50 ø7 x 4	1.8
1 1/2"	40	120	68	14	13	F03 PCD50 ø7 x 4 F03 PCD70 ø9 x 4	4.0
2"	50	140	77	14	13	F03 PCD50 ø7 x 4 F03 PCD70 ø9 x 4	5.8

Reduced bore valve							
DN	P	L	H	S	T	ISO 5211	Wt. kg
3/4"	16	75	40	9	9	F03 PCD36 ø6 x 4 F03 PCD42 ø6 x 4	0.9
1"	20	80	44	9	9	F03 PCD36 ø6 x 4 F03 PCD42 ø6 x 4	2.0
1 1/2"	25	90	52	1	10	F03 PCD42 ø6 x 4 F03 PCD50 ø7 x 4	2.5
2"	40	120	68	14	13	F03 PCD50 ø7 x 4 F03 PCD70 ø9 x 4	4.6
2 1/2"	50	140	77	14	13	F03 PCD50 ø7 x 4 F03 PCD70 ø9 x 4	6.5

Carbon Steel – Stainless Steel
Type HTB, for High Temperature
Rating DIN 2401 PN 40, PN 63 and PN 100
Rating ASME B16.34 Class 300 and 600, full rated
Size DN 15 to DN 100 - 1/2" to 4"

Description

The BONETTI HTB is a one way floating ball and the only one valve suitable for continuous service from very low (-101 °C) up to very high (+550 °C) temperature. It's primary innovation is the original patented semi-soft seat. The valve is suitable for any kind of fluid compatible with graphite (es: water/steam even with high pressure drop), even abrasive fluid and dirty media (its packing avoids any measurable fugitive emission in the environment); the valve has a high resistance to erosion. The alternating metal-graphite layers of the seat sweep the ball surface cleaning it during every open-close operation. The valve is maintenance free. However if, for any reason, maintenance is ever required, the seat replacement is simple and inexpensive, thanks to the low cost of the seat rings and their ability to autoadapt to the ball.

Technical features

- Split body, three pieces
- Floating Ball
- Body Seat: Patented Metal / Graphite Compound
- Adjustable Graphite Long Life Packing
- Gland: Flanged Type - One Piece bushed
- Stem: Anti blow-out
- Design is intrinsically Antistatic
- Low Torque due to Special Packing, Material, Design
- Every valve, even if already installed, can be completed with an actuator (attachment according to ISO 5211)
- Nearly indefinite bubble tight (Class VI) seat tightness throughout the full range of operations

Sizes and connections

DN 15 to DN 100, 1/2" to 4"

Connections:

- Threaded NPT to ANSI B1.20.1
- SW to ANSI B16.11
- BW to ANSI B16.25 and DIN 3239

Flanged:

European Standards (UNI, DIN, AFNOR, etc.)
 PN 40, PN 63 and PN 100

Flanges are supplied raised faced to UNI 2229, drilled, Face to face dimension (A) to DIN 3202-F1 (PN 40) and to DIN 3202-F2 (PN 63 and 100)

Flanged:

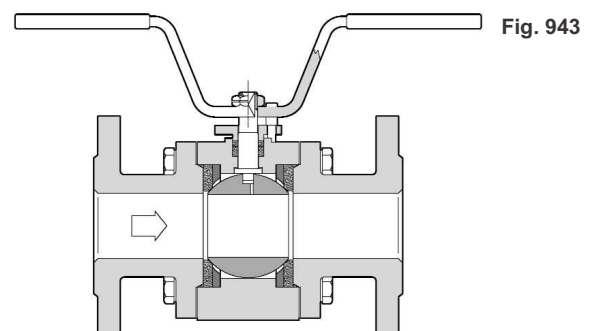
American Standard
 ASME B16.34 Class 300 and 600
 Flanges are supplied R.F. drilled to ASME B16.5
 Face to face dimension (A) to ASME B16.10



Standard

This product fully complies with:

- ASME B16.34, B16.5, B16.11, B16.25MSS SP 72, BS 5351
- DIN 2401, DIN 3239



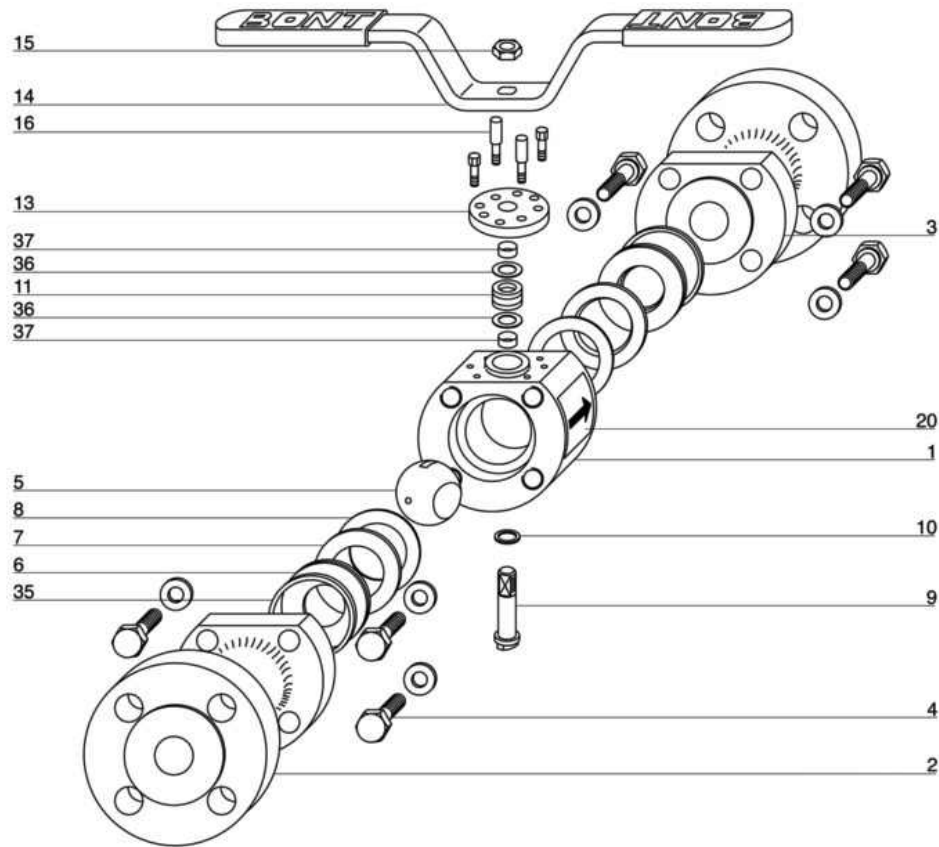
FIRE SAFE: API 6FA and BS 6775;

certificate n° MLN9901225/1-2

- The breakaway torque difference before and after fire test is negligible

TA LUFT TEST: certificate n° 86T00002

- No need of packing retightening during tests, although allowed
- Checked leakages of some order of magnitude inferior to the admitted ones
- Test has been performed at temperature of 427 °C (800 °F), limit imposed by the valve body material (more tests at temperature of 550 °C, with different body material, have been performed with satisfactory results)



No.	Part	Material (schedule 52)	Material (schedule 63)
1	Body	ASTM A105	ASTM A182 F316
2	End Connection Inlet	ASTM A105	ASTM A182 F316
3	End Connection Outlet	ASTM A105	ASTM A182 F316
4	Bolt	ASTM A193 B7	ASTM A193 B8
5	Ball	ASTM A182 F316 + S.H.	ASTM A182 F316 + S.H.
6	Seat	Graphite T1	Graphite T1
7	Cushion Plate	AISI 316	AISI 316
8	Cushion Joint	Graphite	Graphite
9	Stem	ASTM SA479 XM19	ASTM SA479 Xm19
10	Bottom Stem Joint	AISI 316	AISI 316
11	Packing	Graphite T1+T4	Graphite T1+T4
13	Gland Flange	AISI 416	AISI 416
14	Handle	Carbon Steel	Carbon Steel
15	Handle Nut	ASTM A194 GR.8	ASTM A194 GR.8
16	Gland Bolt and Stop Pin	AISI 420/ASTM A193 B8	AISI 420/ASTM A193 B8
20	Name Plate	Stainless Steel	Stainless Steel
35	Autoseal Ring ♠	Graphite	Graphite
36	Spacer Ring ◆	ASTM B150 C62300	ASTM B150 C62300
37	Stem Ring ◆	Graphite	Graphite

♠. only on Full Bore \geq DN 32 and \geq 1/4" and on Reduced Bore \geq DN 40 and \geq 1.1/2" - f. only on Full Bore \geq DN 20 and \geq 3/4" and on Reduced Bore \geq DN 25 and \geq 1"

BONETTI Ball Valves type HTB - Full Bore

DN	Dimension		Threaded or SW or BW		Flanged DIN PN 40			Flanged DIN PN 63			Flanged DIN PN 100			Flanged ASME 300			Flanged ASME 600		
	B mm	C mm	A mm	Weight kg	A mm	D mm	Weight kg	A mm	D mm	Weight kg	A mm	D mm	Weight kg	A mm	D mm	Weight kg	A mm	D mm	Weight kg
½"	15	110 180	90	2,5	130	95	3,5	210	105	5	210	105	5	140	95	4,3	165	95	4,5
¾"	20	140 210	100	3,2	150	105	4,7	230	130	6,7	230	130	6,7	152	117	5,4	191	117	6
1"	25	164 270	110	5,5	160	115	7	230	140	8,1	230	140	8,1	165	124	7	216	124	7,8
1.¼"	30	215 350	140	7,6	180	140	11,6	260	155	14,4	260	155	14,4	178	133	10,5	229	133	11,4
1.½"	40	220 350	150	10,6	200	150	15,5	260	170	20,1	260	170	22,4	191	155	15,0	241	155	17,3
2"	50	230 350	170	14,7	230	165	22,5	300	180	24,2	300	195	26,5	216	165	21,9	292	165	23,6
2.½"	65	235♣ 500	210	29	290	185	43,7	340	205	47,2	340	220	50,6	241	190	43,7	330	190	46,0
3"	80	250♣ 500	305	35	310	200	50,0	380	215	53,8	380	230	57,5	283	209	50,0	356	209	52,9

♣ for BW type only

ASME Class 150 may be supplied on request. Please note that FACE TO FACE (Dimension A) for ASME 150 are as per ASME 300 -

BONETTI Ball Valves type HTB - Reduced Bore

DN	Dimension		Threaded or SW or BW		Flanged DIN PN 40			Flanged DIN PN 63			Flanged DIN PN 100			Flanged ASME 300			Flanged ASME 600		
	B mm	C mm	A mm	Weight kg	A mm	D mm	Weight kg	A mm	D mm	Weight kg	A mm	D mm	Weight kg	A mm	D mm	Weight kg	A mm	D mm	Weight kg
¾"	20	110 180	90	2,9	150	105	3,9	230	130	5,3	230	130	5,3	152	117	4,6	191	117	4,8
1"	25	140 210	100	4	160	115	5,5	230	140	7,5	230	140	7,5	165	124	5,8	216	124	6,6
1.¼"	32	164 270	110	6	180	140	7,5	260	155	8,8	260	155	8,8	178	133	8,5	229	133	9,5
1.½"	40	215 350	140	8,1	200	150	12	260	170	14,5	260	170	14,5	191	155	11,5	241	155	13,5
2"	50	220 350	150	11,2	230	165	16	300	180	20,7	300	195	23,0	216	165	17,3	292	165	19,6
2.½"	65	230♣ 350	191	17	290	185	24	340	205	25,9	340	220	28,8	241	190	25,3	330	190	27,6
3"	80	235♣ 500	210	31	310	200	45	380	215	48,9	380	230	52,3	283	209	47,2	356	209	50,6
4"	100	250♣ 500	305	38	350	235	52	430	250	55,8	430	265	59,8	305	254	54,1	432	273	57,5

♣ for BW type only

ASME Class 150 may be supplied on request. Please note that FACE TO FACE (Dimension A) for ASME 150 are as per ASME 300 -

RATING for the Materials mentioned in this Bulletin

Max operating TEMPERATURE to DIN	Max. Operating PRESSURE to DIN 2401					
	Class PN 40 Mater. Sched.	Class PN 40 Mater. Sched.	Class PN 63 Mater. Sched.	Class PN 63 Mater. Sched.	Class PN 100 Mater. Sched.	Class PN 100 Mater. Sched.
	52	63	52	63	52	63
°C	bar	bar	bar	bar	bar	bar
- 10 20	40	40	63	63	100	100
120	40	40	63	63	100	100
200	35	35	50	50	80	80
250	32	32	45	45	70	70
300	28	28	40	40	60	60
350	24	24	36	36	56	56
400	21	21	32	32	50	50
425	-	-	-	-	-	-
450	-	-	-	-	-	-
500	-	-	-	-	-	-
550	-	-	-	-	-	-

Max operating TEMPERATURE to ASME and API	Max. Operating PRESSURE to ASME					
	Class 150 Mater. Sched.	Class 150 Mater. Sched.	Class 300 Mater. Sched.	Class 300 Mater. Sched.	Class 600 Mater. Sched.	Class 600 Mater. Sched.
	52	63	52	63	52	63
°C	bar	bar	bar	bar		
- 29 38	19.6	19.0	51.1	49.6	102.1	99.3
100	17.7	16.2	46.4	42.2	92.8	84.5
200	14.0	13.7	43.8	35.7	90.5	71.2
250	12.1	12.1	41.7	33.4	83.4	66.7
300	10.2	10.2	38.7	31.6	77.5	63.1
350	8.4	8.4	37.0	30.4	73.9	63.1
400	6.5	6.5	34.5	29.3	69.0	58.9
425	5.6	5.6	28.8	29.0	57.5	58.3
450	4.7	4.6	20.0	29.0	40.1	57.7
500	2.8	2.8	8.8	27.3	17.6	54.8
550	-	1.6	-	23.8	-	47.8

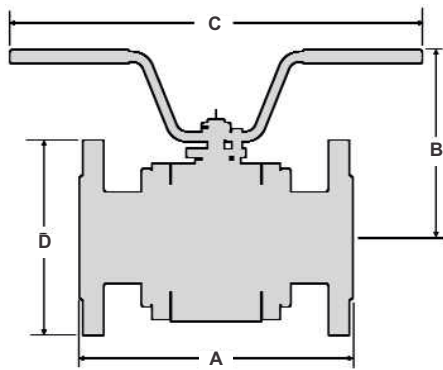


Fig. 941

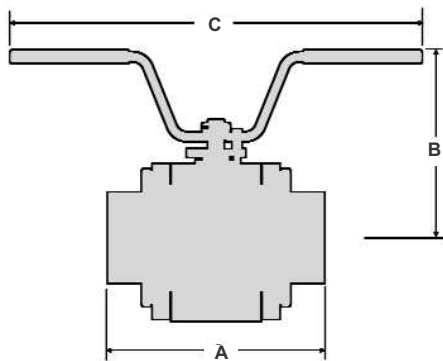
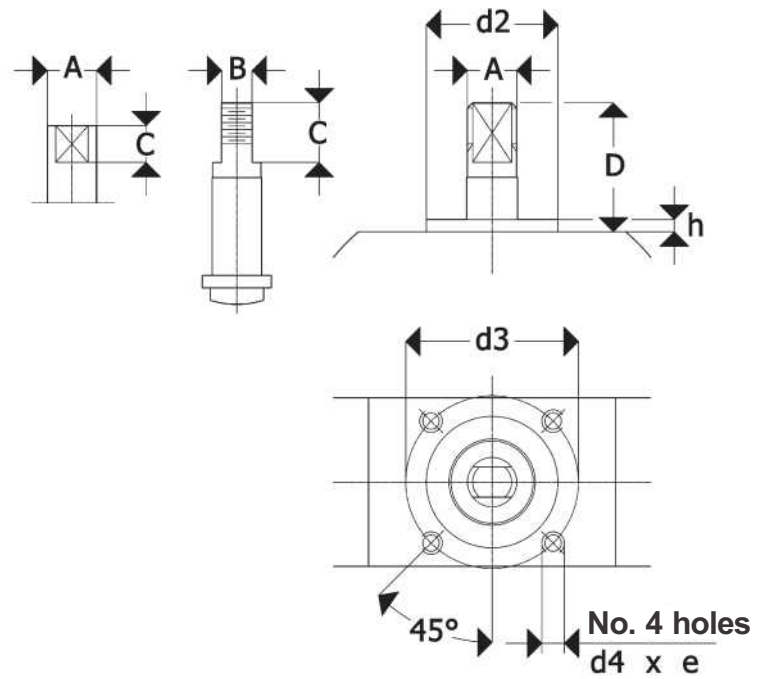


Fig. 942

Attachment to Bracket for Actuator

according to ISO 5211

Fig. 944



Option for insulating service

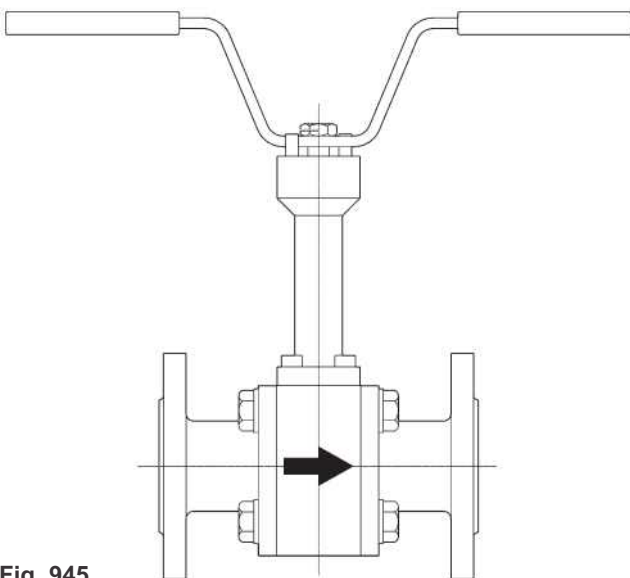


Fig. 945

Valve DN		Flange ISO 5211	Ød2 f8	Ød3	Ød4 x e	h	A	B	C	D
Full Bore	Red. Bore									
1/2"	3/4"	F03	25	36	M5X6.5	2	Ø9.8	6	4.5	10.5
3/4"	1"	F03	25	36	M5x8	3	M12	7.4	10	23.0
1"	1.1/4"	F04	30	42	M5x8	3	M12	7.4	14.5	30.5
1.1/4"	1.1/2"	F05	35	50	M6x8	3	M14	8.8	16	35
1.1/2"	2"	F05	35	50	M6x8	3	M14	8.8	16	35
2"	2.1/2"	F05	35	50	M6x8	3	M14	8.8	16	35
2.1/2"	3"	F07	55	70	M8x8	3	M24	18	27	61
3"	4"	F07	55	70	M8x8	3	M24	18	27	61

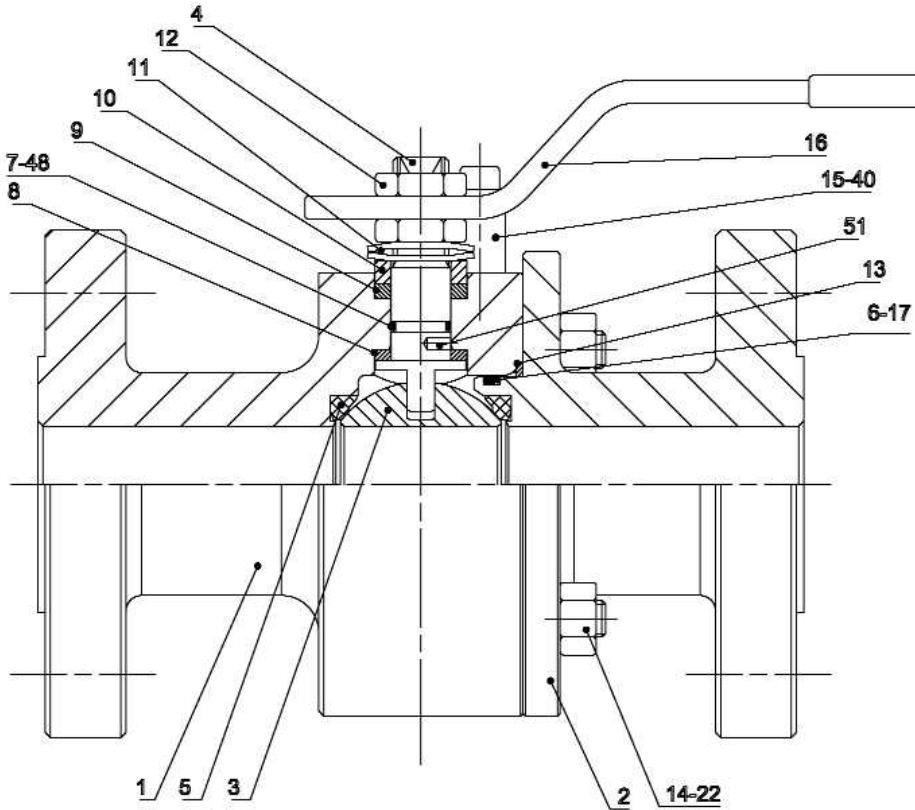
Relevant Break-away Torque will be communicated on request, based on the process condition.

BONETTI WVE FLOATING ball valves - Bolted Body - Side Entry

ASME Class from 150 up to 1500

Split body type - Flanged Ends

Size from ½" up to 10" X 8" (see table on page)


PARTS ITEM LIST

No.	Item
1	Body
2	Body end
3	Ball
4	Stem
5 •	Seat ring
6 •	Body O-ring
7 •	Stem O-ring
8 •	Stem gasket
9 •	Fire safe gasket
10	Gland
11	Spring washer
12	Stem nuts
13 •	Fire safe gasket
14	Stud bolt
15	Back stop
16	Control lever
17 •★	Back-up body O-ring
22	Stud bolt nut
40	Cap screw
48 •★	Back-up stem O-ring
51 ■	Antistatic device"

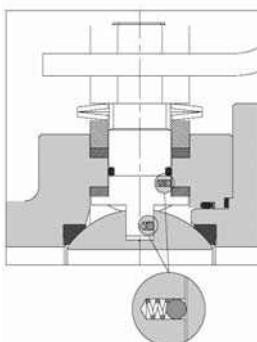
- Recommended spare parts
- On request

FLOATING BALL VALVES ACCESSORIES & FEATURES

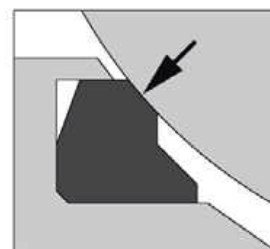
Fire Safe Design to API 6FA, API 607, BS 6755 Pt 2	Standard	Emergency Sealant Injection on Stem	On Request
Primary Soft Seat – Secondary Metal Seat	Standard	Stem Pocket Overlay	On Request
Metal to Metal Seat	On Request	Seat Pocket Overlay	On Request
Valve Ends RF, RTJ, BW, NPT, SW ecc.	On Request	Extended Bonnet for Low or High Temperature	On Request
Antistatic Design	Standard	Locking Device	On Request
Anti-Blow-Out Stem	Standard	Manual or Motorized	On Request
Drain Plug	On Request	In-line Maintenance	N/A
Vent Plug	On Request	On site Maintenance	Standard

ANTISTATIC DESIGN

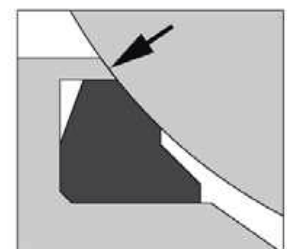
To avoid any possibility to generate statical electricity when operating the valves, all **BONETTI-WVE** ball valves incorporate one or more antistatic "ball-spring" device to ensure electrical conductance continuity between all metallic parts.


VALVE SEAT DESIGN

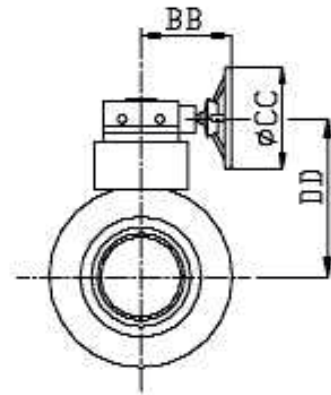
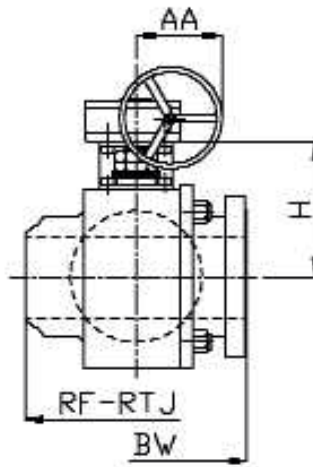
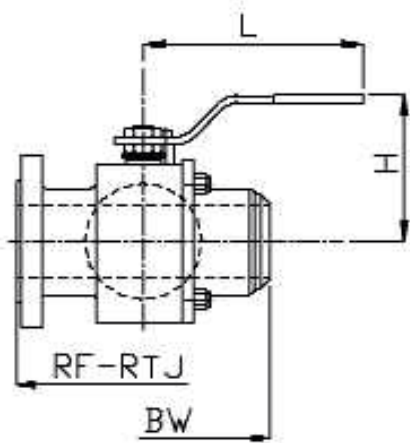
In valves designed for standard service, a special resilient elastomeric material is inserted into the metal seat holder to provide, in addition to the metal to metal seating, a "soft seating" action between the ball and the resilient elastomeric material of the seat. The insert and the insert holder are designed to prevent ingress and entrapment of dirt or contaminant materials.



Primary: soft seal



Secondary: metal seal



FLOATING BALL VALVES SPLIT BODY			OVERALL DIMENSIONS (in millimeters)													
DN	Class	TYPE	LONG PATTERN				SHORT PATTERN				HANDWHEEL OPERATED GERBOX					
			Code	RF	BW	RTJ	Code	RF	BW	RTJ	H	L	ØCC	AA	DD	BB
1/2"	150	Two Pieces	121	108	140		101	108	108		68	160				
3/4"	150	Two Pieces	121	117	152		101	117	117		72	160				
1"	150	Two Pieces	121	127	165		101	127	127		89	215				
1.1/2"	150	Two Pieces	121	165	190		101	165	165		122	290				
2"	150	Two Pieces	121	178	216		101	178	178		130	290				
3"	150	Two Pieces	121	203	282		101	203	203		160	385				
4"	150	Two Pieces	121	229	305		101	229	229		220	500				
6"	150	Two Pieces	121	394	457		101	267	403		290	700				
8"	150	Three Pieces	121	457	521		101	292	419		290		300	240	340	247
1/2"	300	Two Pieces	122	140	140		102	140	140		68	160				
3/4"	300	Two Pieces	122	152	152		102	152	152		72	160				
1"	300	Two Pieces	122	165	165		102	165	165		89	215				
1.1/2"	300	Two Pieces	122	190	190		102	190	190		122	290				
2"	300	Two Pieces	122	216	216		102	216	216		138	385				
3"	300	Two Pieces	122	282	282		102	282	282		160	385				
4"	300	Two Pieces	122	305	305		102	305	305		220	500				
6"	300	Two Pieces	122	403	457		102	403	403		245		300	210	287	220
8"	300	Three Pieces	122	502	521		102	419	419		290		350	260	340	247
1/2"	600	Two Pieces	124	165	165	165					82	215				
3/4"	600	Two Pieces	124	190	190	190					84	215				
1"	600	Two Pieces	124	216	216	216					115	290				
1.1/2"	600	Two Pieces	124	241	241	241					132	385				
2"	600	Two Pieces	124	292	292	295					138	385				
3"	600	Two Pieces	124	356	356	359					190	500				
4"	600	Two Pieces	124	432	432	435					230	700				
1/2"	900-1500	Two Pieces	126	216	216	216					84	215				
3/4"	900-1500	Two Pieces	126	229	229	229					84	215				
1"	900-1500	Two Pieces	126	254	254	254					115	290				
1.1/2"	900-1500	Two Pieces	126	305	305	305					132	385				
3/4"x1/2"	150	Two Pieces	131	117	152		111	117	117		68	160				
1"x3/4"	150	Two Pieces	131	127	165		111	127	127		72	160				
1.1/2"x1"	150	Two Pieces	131	165	190		111	165	165		89	215				
2"x1.1/2"	150	Two Pieces	131	178	216		111	178	178		122	290				
3"x2"	150	Two Pieces	131	203	282		111	203	203		130	290				
4"x3"	150	Two Pieces	131	229	305		111	229	229		160	385				
6"x4"	150	Two Pieces	131	394	457		111	267	403		220	500				
8"x6"	150	Two Pieces	131	457	521		111	292	419		290	700				
10"x8"	150	Three Pieces	131	533	559		111	330	457		290		300	240	340	247
3/4"x1/2"	300	Two Pieces	132	152	152		112	152	152							
1"x3/4"	300	Two Pieces	132	165	165		112	165	165							
1.1/2"x1"	300	Two Pieces	132	190	190		112	190	190							
2"x1.1/2"	300	Two Pieces	132	216	216		112	216	216							
3"x2"	300	Two Pieces	132	282	282		112	282	282							
4"x3"	300	Two Pieces	132	305	305		112	305	305							
6"x4"	300	Two Pieces	132	403	457		112	403	403							
8"x6"	300	Two Pieces	132	502	521		112	419	419							
10"x8"	300	Three Pieces	132	568	559		112	457	457							
3/4"x1/2"	600	Two Pieces	134	190	190	190					82	215				
1"x3/4"	600	Two Pieces	134	216	216	216					84	215				
1.1/2"x1"	600	Two Pieces	134	241	241	241					115	290				
2"x1.1/2"	600	Two Pieces	134	292	292	295					132	385				
3"x2"	600	Two Pieces	134	356	356	359					138	385				
4"x3"	600	Two Pieces	134	432	432	435					190	500				
6"x4"	600	Two Pieces	134	559	559	561					230	700				
3/4"x1/2"	900-1500	Two Pieces	136	229	229	229					84	215				
1"x3/4"	900-1500	Two Pieces	136	254	254	254					84	215				
1.1/2"x1"	900-1500	Two Pieces	136	305	305	305					115	290				
2"x1.1/2"	900-1500	Two Pieces	136	368	368	371					132	385				

Note: For dimension in larger sizes, please apply to our sales department

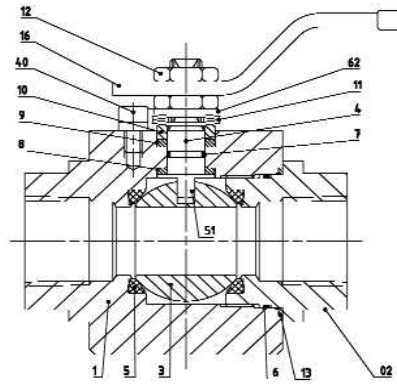
Dimensions H, L, ØCC, AA, DD, BB are subject to change without notice

BONETTI WVE FLOATING ball valves - Screwed Body - Side Entry

Class from 800 up to 3000 psi

Split body type - Threaded Ends, BW Ends, SW Ends

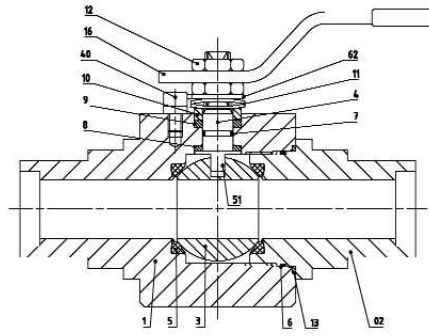
Size From 1/4" up to 2"



PARTS ITEM LIST

- No.Item
- 1 Body
 - 2 Body end
 - 3 Ball
 - 4 Stem
 - 5 • Seat ring
 - 6 • Body O-ring
 - 7 • Stem O-ring
 - 8 • Stem gasket
 - 9 • Fire safe gasket
 - 10 Gland
 - 11 Spring washer
 - 12 Stem nuts
 - 13 • Fire safe gasket
 - 15 Back stop
 - 16 Control lever
 - 40 Cap screw
 - 51 Antistatic device
 - 62 Stop lever

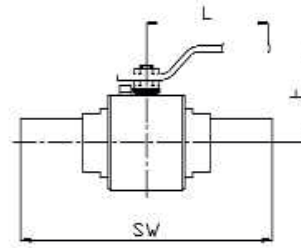
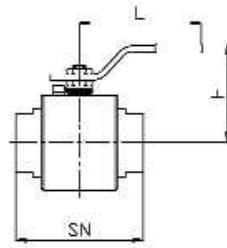
• Recommended spare parts



PARTS ITEM LIST

- No.Item
- 1 Body
 - 2 Body end
 - 3 Ball
 - 4 Stem
 - 5 • Seat ring
 - 6 • Body O-ring
 - 7 • Stem O-ring
 - 8 • Stem gasket
 - 9 • Fire safe gasket
 - 10 Gland
 - 11 Spring washer
 - 12 Stem nuts
 - 13 • Fire safe gasket
 - 15 Back stop
 - 16 Control lever
 - 40 Cap screw
 - 51 Antistatic device
 - 62 Stop lever

• Recommended spare parts



FLOATING BALL VALVES SPLIT SCREWED BODY				OVERALL DIMENSION (in mm)					
				SN	SOCKET WELD			H	L
DN	Rating	Code	Type		L1	L2	L3		
1/4"	800-3000 Psi	17T	Two Pieces	65				55	145
3/8"	800-3000 Psi	17T	Two Pieces	65				55	145
1/2"	800-3000 Psi	17T	Two Pieces	83				66	160
3/4"	800-3000 Psi	17T	Two Pieces	90				78	215
1"	800-3000 Psi	17T	Two Pieces	110				87	215
1.1/2"	800-3000 Psi	17T	Two Pieces	130				128	290
2"	800-3000 Psi	17T	Two Pieces	150				138	385
1/4"	800-3000 Psi	19T	Two Pieces		140			55	145
3/8"	800-3000 Psi	19T	Two Pieces		140			55	145
1/2"	800-3000 Psi	19T	Two Pieces		140			66	160
3/4"	800-3000 Psi	19T	Two Pieces		152			78	215
1"	800-3000 Psi	19T	Two Pieces		165			87	215
1.1/2"	800-3000 Psi	19T	Two Pieces		190			128	290
2"	800-3000 Psi	19T	Two Pieces		216			138	385
1/4"	800-3000 Psi	50T	Two Pieces			203		55	145
3/8"	800-3000 Psi	50T	Two Pieces			203		55	145
1/2"	800-3000 Psi	50T	Two Pieces			254		66	160
3/4"	800-3000 Psi	50T	Two Pieces			279		78	215
1"	800-3000 Psi	50T	Two Pieces			279		87	215
1.1/2"	800-3000 Psi	50T	Two Pieces			305		128	290
2"	800-3000 Psi	50T	Two Pieces			356		138	385
1/4"	800-3000 Psi	50T	Two Pieces				203	55	145
3/8"	800-3000 Psi	50T	Two Pieces				203	55	145
1/2"	800-3000 Psi	50T	Two Pieces				254	66	160
3/4"	800-3000 Psi	50T	Two Pieces				279	78	215
1"	800-3000 Psi	50T	Two Pieces				330	87	215
1.1/2"	800-3000 Psi	50T	Two Pieces				356	128	290
2"	800-3000 Psi	50T	Two Pieces				406	138	385

**TRUNNION AND FLOATING BALL VALVES
STANDARD AND SPECIAL VALVES FOR HIGH
PRESSURE AND HIGH TEMPERATURE
SOFT OR METAL TO METAL SEATS
CRYOGENIC, SUBSEA AND UNDERGROUND
APPLICATION**

All **BONETTI-WVE** ball valves incorporate one or more antistatic device to ensure electrical conductance continuity between all metallic parts.

Other optional features include emergency sealant injection on stem and seats, transition rings or pipe pups (BW ends only), manual gearbox, electric, pneumatic, hydraulic, gas over oil or other means of actuation, locking and interlocking devices and other special accessories on request.

MANUFACTURING RANGE

- Sizes** : from 1/4" up to 32"
- Classes** : from DIN PN 16 up to PN100
from ASME Class 150 up to 2500
from API 2000 psi up to 10000 psi
- Pressures** : from vacuum up to 690 bar
- Temperatures** : from -196°C up to +660°C
depending on pressure and material.

Materials:

- Forged Carbon Steels : A105, LF2, 60K.
- Forged Stainless : F304, F316(L), F6, 17-4PH, AISI
- & Duplex Steels : 4140, F321, F347, F44, F51, F53, F55.
- Other Materials : Inconel, Hastelloy, Monel, Alloy 20, Sanycro 28, Titanium.
- Soft Seats & Inserts : PTFE, Nylon, HNBR, VITON, Fluoroloy, PEEK, Vespel, KEL-F, Buna N
- Seals & Gaskets : Viton, HNBR, Graphite, SW316+Graph., Kel-F, Buna, Lip Seals.
- Special Processes : TCC (Tungsten Carbide Coating), C.R.A. overlays & Claddings.



Other materials are available on request.

INDUSTRIAL FIELDS OF APPLICATION

- Oil & Gas shaft hauling - On-shore & Off-shore
- Oil & Gas pipelines
- Chemical & Petrochemical
- Pharmaceutical
- Energy & Power
- Pulp & Paper
- Food & Beverage
- Slurries
- Generic Industrial Processing

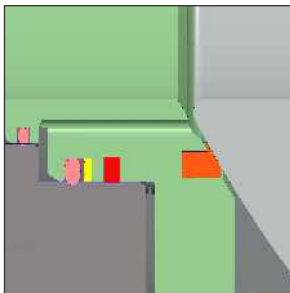
LIST OF MATERIAL FOR TYPICAL EXECUTION (Different materials are available on request)

	Carbon Steel	Stainless steel	F 51
Body & body ends	A 105 N	A 182 F316	A 182 F51
Ball	A 105 N + ENP	A 182 F316	A 182 F51
Stem	A 105 N + ENP	A 182 F316	A 182 F51
Seat ring	A 105 N + ENP + PTFE / Nylon 12	A 182 F316 + PTFE / Nylon 12	A 182 F51 + PTFE / Nylon 12
Bonnet	A 105 N	A 182 F316	A 182 F51
Stud bolts & nuts	A 193 B7 - A 194 2H	193 B8 Cl. 2 - A 194 Gr. 8	A 193 B7 - A 194 2H
O-rings	Viton	Viton	Viton
Gaskets	Graphite	Graphite	Graphite
Injectors	A 105 Zinc plated	S 31600	S 31803
Vent & drain plugs	A 105 N	S 31600	S 31803

BONETTI WVE TRUNNION ball valves - Bolted Body - Side Entry
ASME Class from 150 up to 2500
Size from 1" up to 24"
Split Body: two pieces from 1" up to 4" - three pieces from 6" and larger

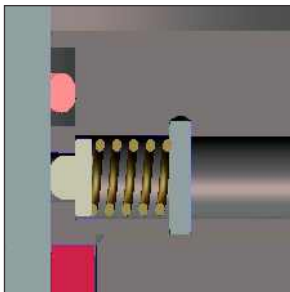
"TRUNNION" MOUNTED BALL VALVES

In this type of valves the ball rotates without moving on the horizontal axis, where seats are "floating" and free to move on the same axis. The side load generated by fluid pressure on the ball is absorbed by bearings. At low pressure the seat starting sealing is achieved by the thrust action of springs acting on seats. As the fluid pressure increases, the pressure itself pushes the seats against the ball so giving more and more tightness.



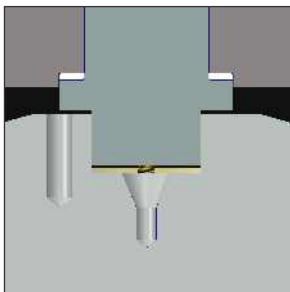
FLOATING" SEAT RINGS

Floating seats achieve bi-directional tightness of the valve. Seats are designed to minimise the torque required to operate the valve without losing sealing power, which is assured starting from zero differential pressure up to the maximum admitted pressure according to the valve rating.



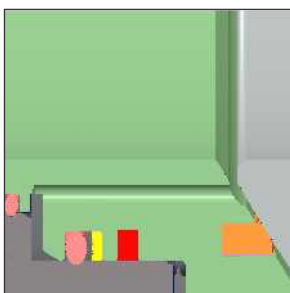
ANTISTATIC DESIGN

To avoid any possibility to generate static electricity when operating the valves, all **BONETTI-WVE** ball valves incorporate one or more antistatic device to ensure electrical conductance continuity between all metallic parts.



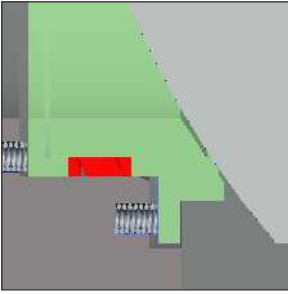
INDEPENDENT BALL AND STEM

The ball and the stem are fully independent. A calculated backlash eliminates any side thrust effect to the stem generated by the fluid pressure acting on the ball.



"SOFT SEATED" VALVES

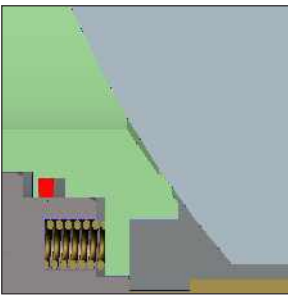
In **BONETTI-WVE** ball valves designed for standard service, a special resilient elastomeric material is inserted into the metal seat holder to provide, in addition to the metal to metal seating, a "soft seating" action between the ball and such resilient elastomeric material of the seat.



“METAL SEATED” VALVES

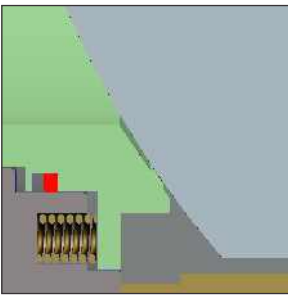
In this type of ball valves, tightness between the seats and the ball is provided by the “metal to metal” contact. In this case, sealing surfaces of both the seats and the ball are hardfaced using special processes to increase surfaces hardness so granting lower wear and better rotatory slipping of the ball between the seats.

This kind of seats fits applications with abrasive fluids or if a very high temperature does not consent to employ resilient elastomeric materials.



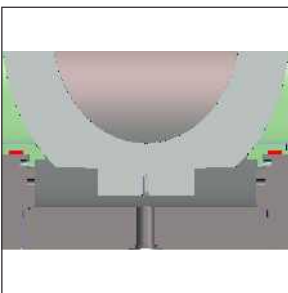
“SINGLE PISTON EFFECT” SEATS

When it is employed a seat designed to obtain a “Simple Piston Effect”, also called “Self Relieving” type, the upstream or downstream fluid pressure acts on the external side of the seat ring holders and pushes the seat ring against the ball, so increasing the valve tightness. If some overpressure is generated inside the body cavity of the valve, the rings are free to move and to consent discharging of such overpressure inside the piping.



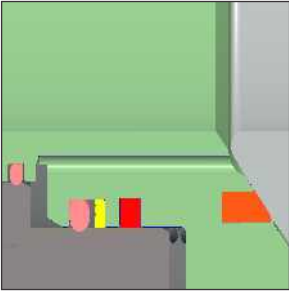
“DOUBLE PISTON EFFECT” SEATS

Using this type of seats, the fluid pressure, acting both on the external and on the internal side of seat ring holders, thanks to their special design, generates a thrust force pushing the two upstream and downstream seats against the ball. Therefore both seats achieve tightness also when pressure is only inside the valve body.



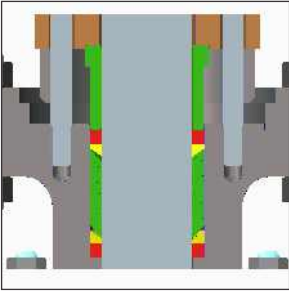
“DOUBLE BLOCK & BLEED”

All Bonetti BONETTI-WVE “trunnion” type ball valves achieve the “Double Block & Bleed” function, that is the possibility to drain the internal cavity of the valve both in closed as well as in open position, draining without any external leakage of the line, also when there is pressure and flow through the valve.



FIRE SAFE

All “trunnion” **BONETTI WVE** ball valves are designed, tested and certified “Fire Safe” according to API 6FA, API 607, BS 6755 Part II Standards.

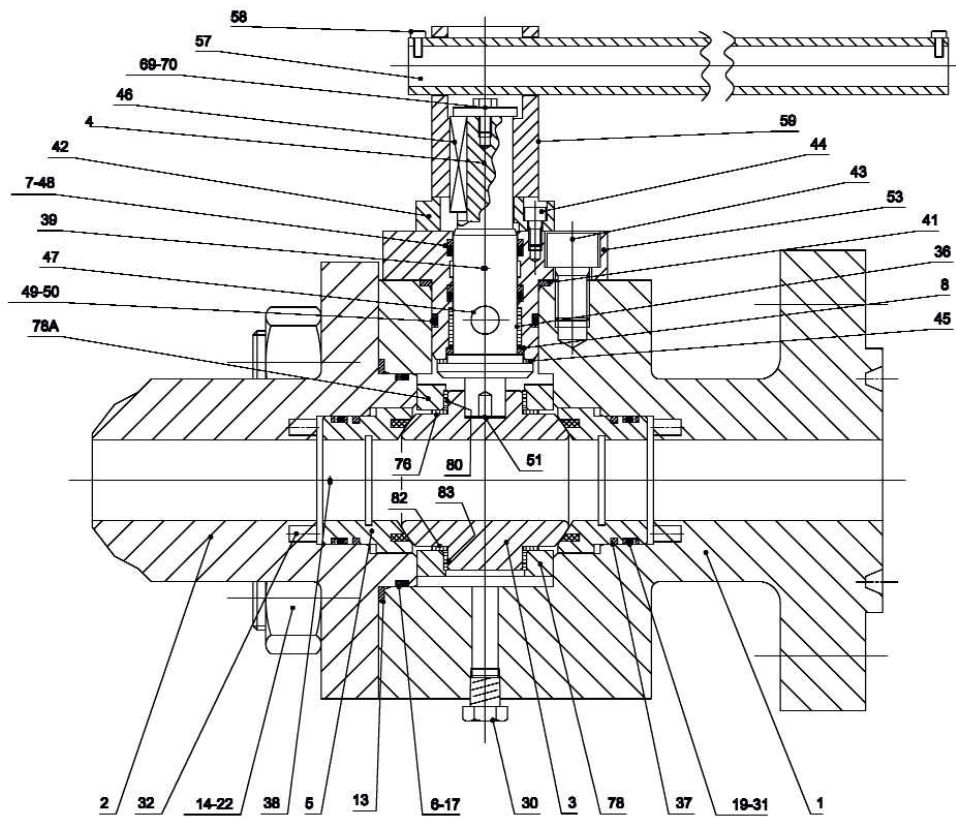


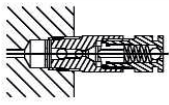
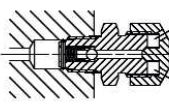
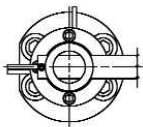
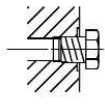
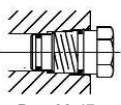
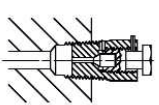
LOW EMISSION VALVES

Accurate machining of stem, of stem packing housing, and of any sealing surface, together with the best quality of any used sealing material, ensure compliance with the most severe pollution control regulations.

TRUNNION MOUNTED BALL VALVES ACCESSORIES & FEATURES

API 6D or API 6A Design and Construction	Standard
API Monogram	On Request
Fire Safe Design to API 6FA – API 607 – BS 6755 Pt 2	On Request
Primary Soft Seat – Secondary Metal Seat	Standard
Metal to Metal Seat	On Request
Single Piston Seat Effect	Standard
Double Piston Seat Effect	On Request
Double Block & Bleed	On Request
Valve Ends RF, RTJ, BW ecc.	On Request
Antistatic Designe	Standard
Anti-Blow-Out Stem	Standard
Drain Plug	Standard
Vent Plug	Standard (4” & larger)
Emergency Sealant Injection on Stem	On Request
Emergency Sealant Injection on Seat	On Request (4” & larger)
Seat and Stem Pocket Overlay	On Request
Extended Stem for Underground Installation	On Request
Extended Bonnet for Low or High Temperature	On Request
Locking Device	On Request
Manual or Motorized	On Request
In-line Maintenance	N/A
On site Maintenance	Standard

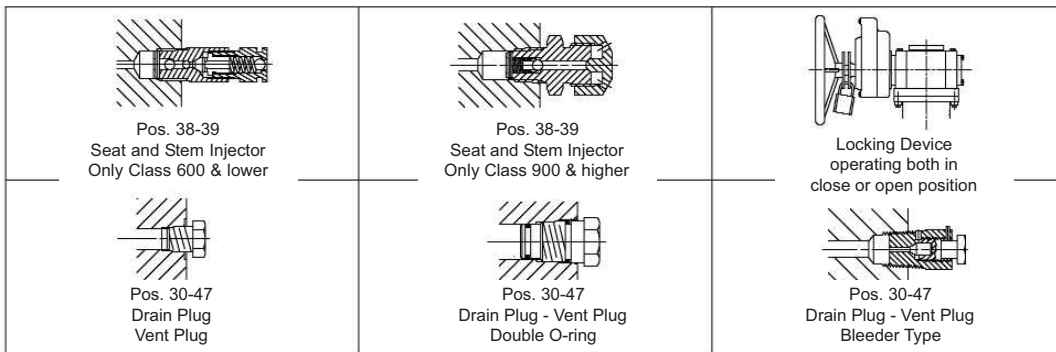
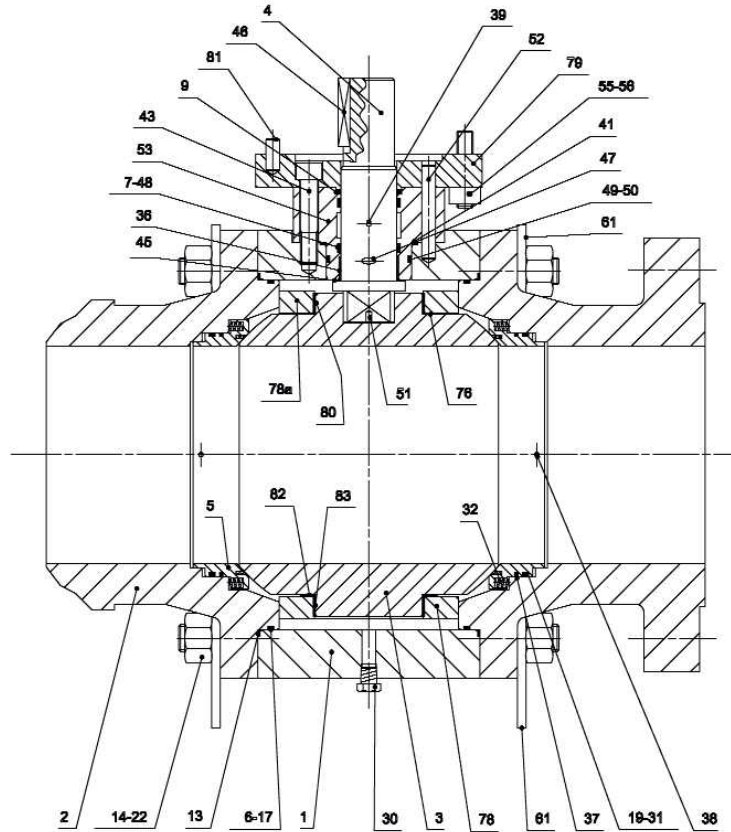


 <p>Pos. 38-39 Seat and Stem Injector Only Class 600 & lower</p>	 <p>Pos. 38-39 Seat and Stem Injector Only Class 900 & higher</p>	 <p>Locking Device operating both in close or open position</p>
 <p>Pos. 30-47 Drain Plug Vent Plug</p>	 <p>Pos. 30-47 Drain Plug - Vent Plug Double O-ring</p>	 <p>Pos. 30-47 Drain Plug - Vent Plug Bleeder Type</p>

PARTS ITEM LIST

No.	Item	No.	Item	No.	Item	No.	Item
1	Body	19 ●★	Back-up seat O-ring	43	Cap screw	58	Cap screw
2	Body end	22	Stud bolt nut	44	Cap screw	59	Support lever
3	Ball	30	Drain plug	45	Thrust bearing	69	Washer
4	Stem	31 ●	Seat O-ring	46	Key	70	Hexagonal screw
5	Seat ring	32	Spring	47 ■	Vent plug	76	Upper thrust bearing
6 ●	Body O-ring	36	Stem bearing	48 ●★	Back-up stem O-ring	78	Spacer
7 ●	Stem O-ring	37 ●	Fire safe gasket	49 ●	Bonnet O-ring	78	A Spacer
8 ●	Fire safe gasket	38 ■	Seat injector	50 ●★	Back-up bonnet O-ring	80	Upper bearing
13 ●	Fire safe gasket	39 ■	Stem injector	51 ■	Antistatic device	82	Lower thrust bearing
14	Stud bolt	41 ●	Fire safe gasket	53	Bonnet	83	Lower bearing
17 ●★	Backup body O-ring	42	Adapter plate	57	Control lever		

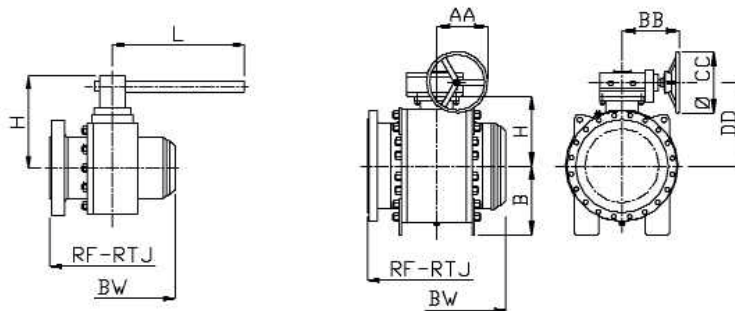
● Recommended spare parts - ■ On request - ★ Class 600 and higher



PARTS ITEM LIST

No.	Item	No.	Item	No.	Item	No.	Item
1	Body	19 ●★	Back-up seat O-ring	43	Cap screw	57	Control lever
2	Body end	22	Stud bolt nut	44	Cap screw	58	Cap screw
3	Ball	30	Drain plug	45	Thrust bearing	59	Support lever
4	Stem	31 ●	Seat O-ring	46	Key	69	Washer
5	Seat ring	32	Spring	47 ❖	Vent plug	70	Hexagonal screw
6 ●	Body O-ring	36	Stem bearing	48 ●★	Back-up stem O-ring	76	Upper thrust bearing
7 ●	Stem O-ring	37 ●	Fire safe gasket	49 ●	Bonnet O-ring	78	Spacer
8 ●	Fire safe gasket	38 ■	Seat injector	50 ●★	Back-up bonnet O-ring	78A	Spacer
13 ●	Fire safe gasket	39 ■	Stem injector	51 ■	Antistatic device	80	Upper bearing
14	Stud bolt	41 ●	Fire safe gasket	52	Pin	82	Lower thrust bearing
17 ●★	Backup body O-ring	42	Adapter plate	53	Bonnet	83	Lower bearing

● Recommended spare parts - ■ On request - ★ Class 600 and higher ❖ On request for sizes ≤ 4", standard for sizes 6" and larger



TRUNNION BALL VALVES SPLIT BODY				OVERALL DIMENSIONS (in millimeters)									
				RF	BW	RTJ	H	B	L	HANDWHEEL OPERATED GEARBOX			
DN	Class	Code	TYPE							ØCC	AA	DD	BB
1"	150	251	Two Pieces	165			120		165				
1"	300	252	Two Pieces	190			125		200				
1"	600	254	Two Pieces	254		254	150		300				
1"	900	255	Two Pieces	305		305	190		350				
1"	1500	256	Two Pieces	305		305	196		550				
1"	2500	257	Two Pieces	451	451	454	260		800				
1.1/2"	150	251	Two Pieces	178	216	191	175		320				
1.1/2"	300	252	Two Pieces	216	216	232	175		320				
1.1/2"	600	254	Two Pieces	292	292	295	200		450				
1.1/2"	900	255	Two Pieces	368	368	371	215		550				
1.1/2"	1500	256	Two Pieces	368	368	371	215		650				
1.1/2"	2500	257	Two Pieces	451	451	454	205			250	180	240	200
2"	150	251	Two Pieces	178	216	191	180		320				
2"	300	252	Two Pieces	216	216	232	180		470				
2"	600	254	Two Pieces	292	292	295	198		565				
2"	900	255	Two Pieces	368	368	371	233		900				
2"	1500	256	Two Pieces	368	368	371	241		900				
2"	2500	257	Two Pieces	451	451	454	225			500	230	270	195
3"	150	251	Two Pieces	203	283	216	220		365				
3"	300	252	Two Pieces	283	283	298	220		565				
3"	600	254	Two Pieces	356	356	359	248		715				
3"	900	255	Two Pieces	381	381	384	206			300	215	251	290
3"	1500	256	Two Pieces	470	470	473	223			400	240	262	297
3"	2500	257	Two Pieces	578	578	584	250			500	340	300	200
4"	150	251	Two Pieces	229	305	241	250		600				
4"	300	252	Two Pieces	305	305	321	275		650				
4"	600	254	Two Pieces	432	432	435	215			350	240	265	200
4"	900	255	Two Pieces	457	457	460	238			400	284	286	250
4"	1500	256	Two Pieces	546	546	549	267			500	340	325	250
4"	2500	257	Three Pieces	673	673	683	300	275		500	375	365	260
6"	150	251	Three Pieces	394	457	406	252	220		300	216	297	257
6"	300	252	Three Pieces	403	457	419	252	230		400	284	300	268
6"	600	254	Three Pieces	559	559	562	268	260		500	334	316	320
6"	900	255	Three Pieces	610	610	613	280	250		600	390	336	300
6"	1500	256	Three Pieces	705	705	711	316	275		600	400	381	315
6"	2500	257	Three Pieces	914	914	927	395	340		600	430	475	350
8"	150	251	Three Pieces	457	521	470	290	290		500	340	346	310
8"	300	252	Three Pieces	502	521	518	310	290		600	392	362	297
8"	600	254	Three Pieces	660	660	664	318	290		600	430	366	395
8"	900	255	Three Pieces	737	737	740	335	320		500	305	418	315
8"	1500	256	Three Pieces	832	832	841	349	340		500	364	430	326
10"	150	251	Three Pieces	533	559	546	331	335		500	334	380	313
10"	300	252	Three Pieces	568	559	584	341	335		500	355	397	383
10"	600	254	Three Pieces	787	787	791	363	320		500	355	441	416
10"	900	255	Three Pieces	838	838	841	363	360		600	429	463	348
10"	1500	256	Three Pieces	991	991	1000	405	395		600	434	475	360
12"	150	251	Three Pieces	610	635	622	379	370		600	400	439	363
12"	300	252	Three Pieces	648	635	664	395	370		500	355	473	416
12"	600	254	Three Pieces	838	838	841	418	400		500	402	495	445
12"	900	255	Three Pieces	965	965	968	418	420		600	480	482	365
12"	1500	256	Three Pieces	1130	1130	1146	462	470		700	542	528	384
14"	150	251	Three Pieces	686	762	699	402	400		500	355	458	383
14"	300	252	Three Pieces	762	762	778	420	400		500	379	498	416
14"	600	254	Three Pieces	889	889	892	422	415		600	429	500	448
14"	900	255	Three Pieces	1029	1029	1038	460	440		600	450	570	580
14"	1500	256	Three Pieces	1257	1257	1276	550	575		700	530	650	700
16"	150	251	Three Pieces	762	838	775	455	425		500	355	533	416
16"	300	252	Three Pieces	838	838	854	460	435		600	429	538	448
16"	600	254	Three Pieces	991	991	994	468	460		700	520	548	468
18"	150	251	Three Pieces	864	914	876	490	480		500	430	530	410
18"	300	252	Three Pieces	914	914	930	490	480		600	460	570	420
18"	600	254	Three Pieces	1092	1092	1065	520	500		600	480	590	440
20"	150	251	Three Pieces	914	991	927	540	520		500	400	690	350
20"	300	252	Three Pieces	991	991	1010	530	520		600	490	640	420
20"	600	254	Three Pieces	1194	1194	1200	550	540		700	510	660	440
24"	150	251	Three Pieces	1067	1143	1080	620	600		600	520	710	410
24"	300	252	Three Pieces	1143	1143	1165	620	600		700	540	730	430
24"	600	254	Three Pieces	1295	1295	1305	640	630		700	600	770	580

Note: For dimension in larger sizes, please apply to our sales department

Dimensions H, L, ØCC, AA, DD, BB are subject to change without notice

The best solution to avoid fugitive emission in gas or underground applications

The BONETTI's fully welded, trunnion mounted ball valves are the most reliable solution to minimize the risk of leakages or fugitive emission from valve body.

They are recommended for oil and gas application, specially for gas transportation and storage.

To comply with the specific requirements of such application, all valves are bidirectional and include the double block and bleed feature.

Therefore, venting and draining of the body cavity is possible in both open and close positions. All valves are manufactured using forged steel.

Seat inserts can be thermoplastic or metallic, as standard.

On request, the new exclusive **BONETTI** patented **HTL** seating is available (see at page). Design, manufacturing and materials comply with all main international standards



STANDARD FEATURES

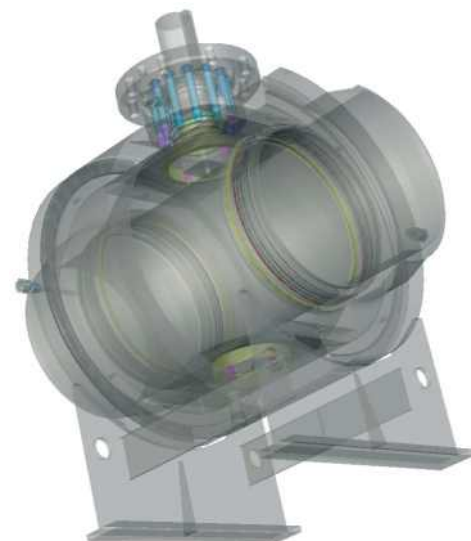
- Design, manufacturing and materials according to PED Directive.
- Design to ASME B16.34
- ATEX Product certificate
- API 6D certificate
- Fire-safe approved design
- Single piston effect, providing self-relieving of the body cavity.
- Blow-out proof stem
- Bi-directional flow
- Antistatic design
- Thermoplastic seating

OPTIONS

- Metallic seating or **HTL** (see at page)
- Double piston effect, providing double sealing
- Extensions available
- Stem extension for mechanical driving available
- Vent and drain valves
- Full or reduced bore
- Manual or powered operation
- NACE materials available
- Pups available on request
- Removable stem lantern ring
- Seat and/or stem grease injectors

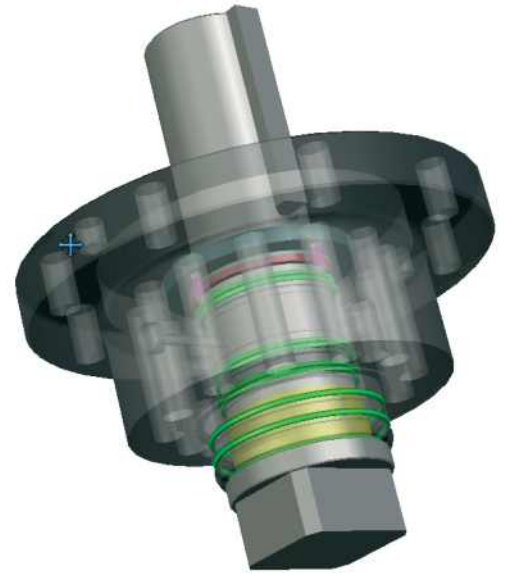
Technical data

- Sizes : DN 50 to DN 1000, 2" to 40" and over on request, FB and RB
- Pressure rating : Class 150 to 900
- Body materials : Forged Carbon steel A350 Lf2 and other on request
- Temperature range : -46 °C to +200 °C with thermoplastic seats
-46 °C to 550 °C (and over) with **BONETTI's HTL** inserts (see page)
- Connections : Butt weld ends to ASME B16.25, other connections on request
- Face to face : according to API 6D
- Hydraulic and pneumatic tests according to API 6D and API 598



Other options and notes

- Seat area weld overlays or coatings available
 - Operator protection in case of upper stem seal disassembling:
All disassembly functions can be carried out under safe conditions :
- 1 Double Block and Bleed design. The body cavity is isolated from the line pressure (closed/open position).
 - 2 Lip seal provided for each size and rating.
 - 3 Vent valve provided for each valve size/rating. It must always be in position during seal replacement as indicated in the Operation and Maintenance Manual.



The new BONETTI's HTL seating

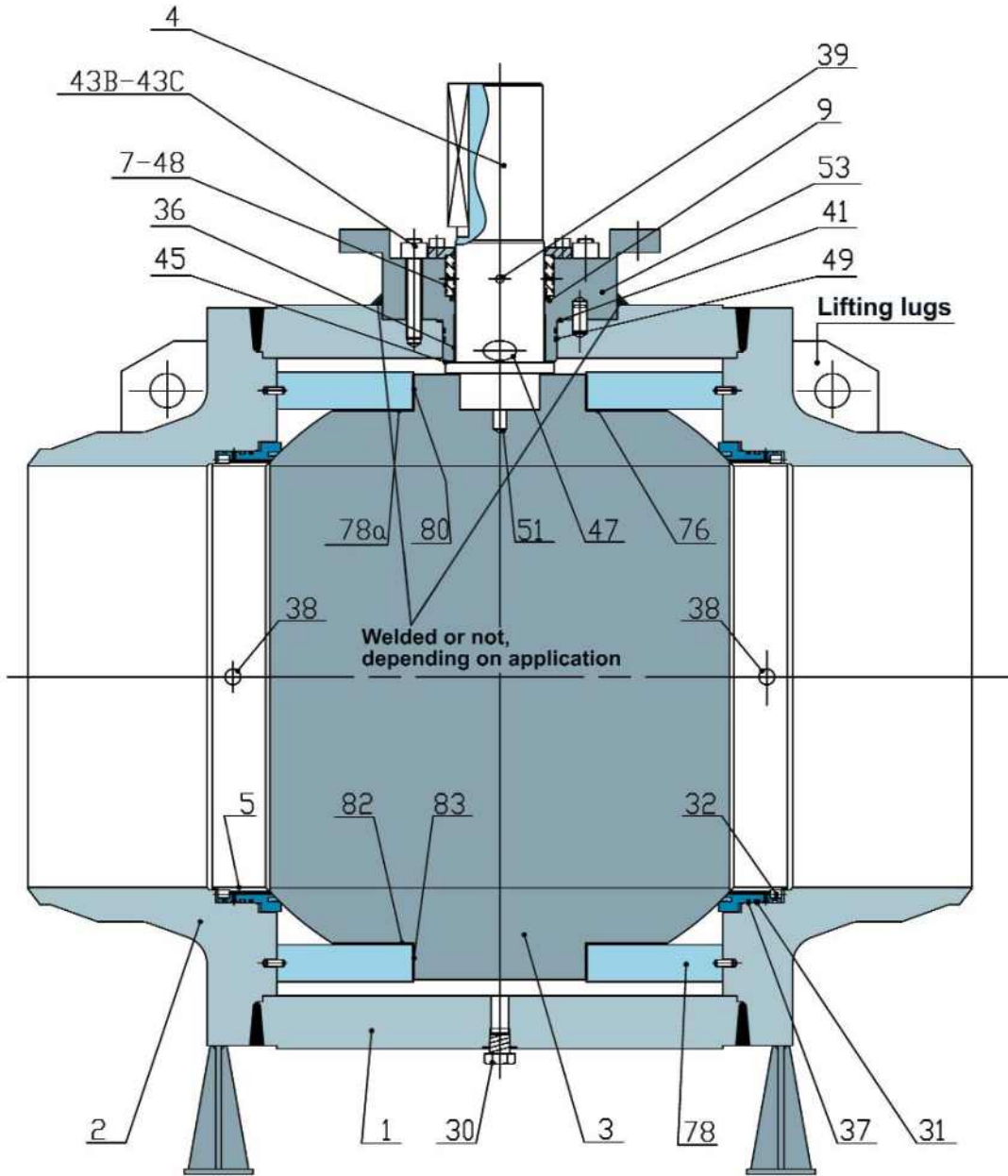
This revolutionary solution, using alternate layers of pure graphite and stainless steel (or other alloys on request), assure bubble tightness with a very low operating torque also having high pressure and temperature (up to 550 °C – 1020 °F in presence of Oxygen or higher in absence of it).

Features:

- Multilayer metal/graphite seating system: each single layer guarantees an independent sealing. Damages to some layer are not affecting the tightness of the others.
- Zero leakage “bubble tight” shut-off: machining accuracy, tolerances, multiple lamination and the resilient metal/graphite to metal sealing allows severe differential expansions and self compensation for high differential temperatures between ball and seat without affecting the perfect tightness of the valve.
- Low torque operation is guaranteed both by the resilience of the multilayer seat ring as well as by the self lubrication of graphite. A smaller actuator size and torque is needed to operate the valve.
- Intrinsically fire-safe design: the metal/graphite design without any burning item makes inherently fire-safe the valves equipped with HTL seatings. The performances do not change in case fire would occur outside and or inside the valve.
- The high resistance also to media containing abrasive particles, grants such perfect sealing with practically endless valve life, also after hundreds of thousands

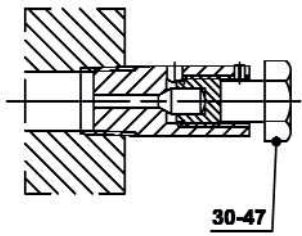


The new patented **BONETTI HTL** multilayer “Metal-Soft” seatings

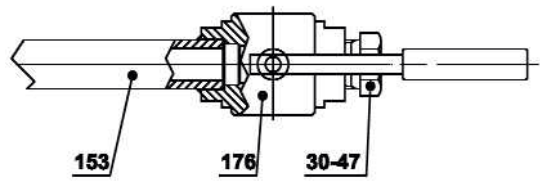


No.	PART NAME
1	BODY
2	BODY END
3	BALL
4	STEM
5	SEAT RING
7	STEM O-RING
9	FIRE SAFE GASKET
30	DRAIN
31	SEAT O-RING
32	SPRING
36	STEM BEARING
37	FIRE SAFE GASKET
38	SEAT INJECTOR
39	STEM INJECTOR
41	FIRE SAFE GASKET
43B	STUD BOLT
43C	STUD BOLT NUT
45	THRUST BEARING
47	VENT
48	BACK-UP
49	BONNET O-RING
51	ANTISTATIC DEVICE
53	BONNET
76	UPPER THRUST BEARING
78	SPACER
78A	SPACER
80	UPPER BEARING
82	LOWER THRUST BEARING
83	LOWER BEARING

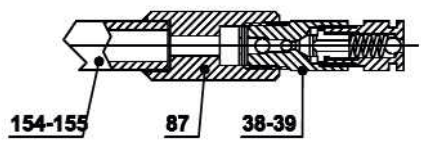
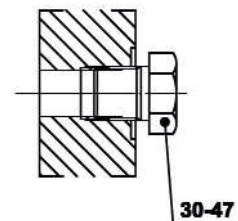
DRAIN & VENT PLUG BLEEDER TYPE



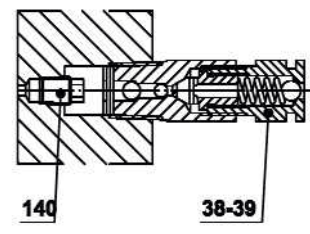
DRAIN & VENT PLUG WITH FLOATING BALL VALVE



DRAIN & VENT PLUG



SEAT & STEM INJECTOR



SEAT & STEM INJECTOR WITH CHECK VALVE



Garbagnate Milanese (MI) | Italy

Vapi - Gujarat | India

Limburg an der Lahn | Germany

Suzhou - Jiangsu | China



A Complete International sales network, covering more than 70 countries across the world.



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