CARILO

Carilo Valve Co., Ltd

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Ball Valve Series

· *Floating Ball Valve* · *Trunnion Ball Valve* · *Top Entry Ball Valve*

CARILO BA

CARILO

About Us

Carilo is one of the biggest valve manufacturers in China, with the workshop located in the valve home town-Oubei industrial zone, Wenzhou City.

Carilo has been an export-oriented manufacturer from the very beginning. All valves are designed, manufactured, and tested according to international standards such as API, ANSI, ASTM, NACE, ISO, EN, BS, DIN, MSS SP, etc. Its product range includes carbon steel, stainless steel and al-bronze ball valve, gate valve, globe valve, check valve and butterfly valve, with bore sizes from 1/2" to 42"; pressures up 2500Lb.

Carilo staff treats every detail carefully and takes valves as our babies. Due to our superior quality, competitive price, and satisfying service, our valves are widely used industrial oil & gas pipeline throughout the world, either under the brand of Carilo or OEM brands. And most our OEM customers are from Europe. Carilo's goal is to produce zero-defect and long-life span products. We are ready to make constant improvements towards this goal to minimize the cost for all our customers.

Carilo Valves-Safety and Reliability Engineering.

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Why Us

We have an extensive customer base which includes trading companies, stockist, engineering contractors and Oil & Gas operators. These companies choose to work with Carilo
because:

- Sound technical support, higher product quality, better sales service
- Unique, fully integrated in-house production facility
- Proven track record of long term valve reliability
- Focus on"on time delivery" in an "engineered to order", project-based environment
- Ability to provide a :one stop solution" especially for Electrical, pneumatic, hydraulic actuated valve
- Promotion of close and long-term partnership with customers, coupled with open contracting policies and superior management tools

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CARILO




Production Equipment

Carilo has accumulated large number of talents and abundant experience after many years of development , with its special technology and fine quality of product , Carilo has attracted many merchants at home and abroad , during the communication with them, we have been more aware of the importance of good quality and service. In other words ,cooperation is also a process of growing up and studying.



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Carilo Valve Will Be A Provider Of Quality Services And Products, Consistently Meeting Or Exceeding Our Customers' Expectations.

Incorporating Quality Standard ISO 9001：2000, all employees, together with management are encouraged and directed to implement and comply with the requirements of the quality system as a minimum expectation. All the valves conform to major National & International standards. Stringent quality inspection and perfect records & documentation are maintained at all the floor levels of the factory without compromising the product quality. All the inputs are closely monitored at the different assembly levels & manufacturing procedures, assuring the clients and of course end user with a long, trouble free & hassle free service life. To assure a client of the product quality, Carilo is submitting all the necessary test Certificates along with the supply.

Every Step, from procurement to production, welding, assembly, testing and packaging, is in accordance with written quality programs and procedures.

Carilo Valve Quality Depart.

Top Entry Ball Valve

Forged Steel Trunnion Mounted Ball Valve

Full Welded Trunnion Mounted Ball Valve






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Contents

Carilo Valves – Safety and Reliability Engineering.

Carilo Valve Co.,Ltd

www.carilovalve.com

HOW TO ORDER

● Example

8	BT	1	R	A	12666	–	G
1	2	3	4	5	6		7

Carilo figure numbers are designed to cover essential features. When ordering, please show figure numbers to avoid misunder standing of your requirements. However a detailed description must accompany any special orders.

Following descriptions provide a basic guideline in valve specification:

● 1 Valve Size

Code	S1	S2	S3	S4	S5	01	A1	02	A2	03	……	60	……
Size	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1–1/2"	2"	2"	2–1/2"	3"……	60"	……

● 2 Symbol For Ball Valve Type

Symbol	Type	Symbol	Type
B	2–pcs Floating type in casting	BT	2–pcs side entry Trunnion Mounted type
BA	1–pc Floating type	BS	3–pcs side entry Trunnion Mounted type
BB	2–pcs Floating type in forging	BE	Top Entry Trunnion Mounted type
BC	3–pcs Floating type	BM	Metal Seated Floating type

● 3 ANSI Rating Pressure

Code	1	3	6	8	9	15	25
Class (LB)	150	300	600	800	900	1500	2500

● 4 End connection

Symbol	Type	Symbol	Type
R	Raised face flanged end	W	A Water
J	RTJ flanged end	S	Socket welding end
B	Butt–welding end	N	Screwed

● 5 Body Material

Material	Symbol	Classification Steel	ASTM Ref.	Recommended Temperature Limits ℃	Recommended Temperature Limits °F	Application
WCB (A105)	A	Carbon	A216 Grade WCB	–29 to 425	–20 to 800	Steam, water oil, oil vapour, gas and general service
LCB (LF2)	B	Carbon	A352 Grade LCB	–46 to 350	–50 to 650	Low temperature
LCC	C	Carbon	A352 Grade LCC	–46 to 350	–50 to 650	
WC 6 (F11)	D	Chromium Moly 1.25%Cr, 0.5% Mo	A217 Grade WC 6	–29 to 590	–20 to 1100	Steam, water oil, oil vapour, gas and general service
WC 9 (F22)	E	Chromium Moly 2.25%Cr, 1% Mo	A217 Grade WC 9	–29 to 590	–20 to 1100	
C5	F	Chromium Moly 5%Cr, 0.5% Mo	A217 Grade C5	–29 to 650	–20 to 1200	Corrosive, erosive oil refinery service
CF8M (316)	G	Stainless 18%Cr,9% Ni 2%Mo	A351 G rade CF8M	–196 to 815	–320 to 1500	High and low temperature corrosion resistance
CF 8 (304)	H	Stainless 18%Cr,8% Ni	A351 Grade CF 8	–196 to 815	–320 to 1500	
CF3M (316L)	I	Low Carbon Stainless 18%Cr,9% Ni	A351 Grade CF3M	–196 to 815	–320 to 1500	Cryogenic service is also available upon request
CF 3 (304L)	J	Low Carbon Stainless 18%Cr,8% Ni	A351 Grade CF 3	–196 to 815	–320 to 1500	
CN7M Alloy 20	P	Stainless 19%Cr, 29% Ni	A351 Grade CN7M	–196 to 425	–320 to 800	Corrosion resistance

HOW TO ORDER

●6 Trim Code

Seat Insert		O-ring		Stem		Ball		Seat	
Code	Material	Code	Material	Code	Material	Code	Material	Code	Material
1	PTFE	1	NBR	1	F6a	1	F6a	1	F6a
2	NYLON1010	2	VITON	2	F304	2	F304	2	F304
3	PEEK	3	VITON AED	3	A105/ENP	3	A105/ENP	3	A105/ENP
4	Polyphenylene	4	VITON B	4	17-4PH	4	17-4PH	4	17-4PH
5	DEVLON 5	5	HSN	5	AISI 4140	5	AISI 4140	5	AISI 4140
6	KEL-F	6	PTFE COATED VITON	6	F316	6	F316	6	F316
7	NYLON 12	7	VITON GLT	7	F304L	7	F304L	7	F304L
8	PCTFE	8	BUNA-N	8	F316L	8	F316L	8	F316L
9	MOLON	9	ELAST-O-LION 101	9	LF2/ENP	9	LF2/ENP	9	LF2/ENP
A	PVDF	A	EPDM	A	F51	A	F51	A	F51
		B	FCTFE	B	LF/ENP	B	LF/ENP	B	LF/ENP
		C							

●7 Operation

Symbol	Description
L	Lever / wrench
G	Gear operator
E	Electric actuator
P	Pneumatic actuator
LL	Lever/wrench+Lock
GL	Gear+Lock
GC	Gear+Chain

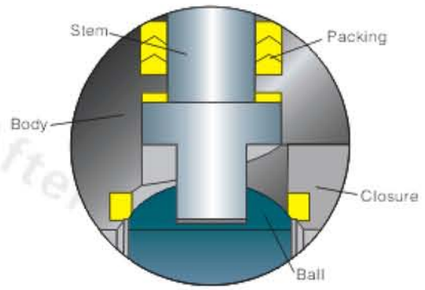
●8 Other Specifications

Symbol	Description
EB	Extended bonnet
ES	Extended stem
I	Indicator
NC	NACE
GI	Grease Injection in seat and stem

FLOATING BALL VALVE DESIGN FEATURE

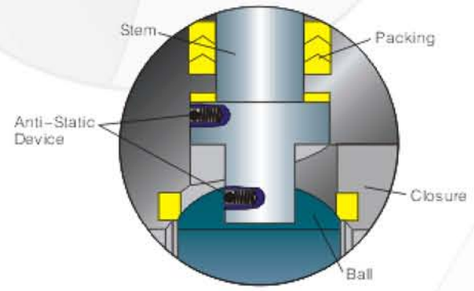
●Blow-out Proof Stem

Stem lower end is integral T-shape designed to be blow-out proof. It is internally inserted and functions as the backseat to assure stem sealing under all pressures



●Anti-static Device

When static are generated and concentrated on the ball, the spring-loaded pins installed on the ball, stem can ensure electrical continuity throughout the valve.

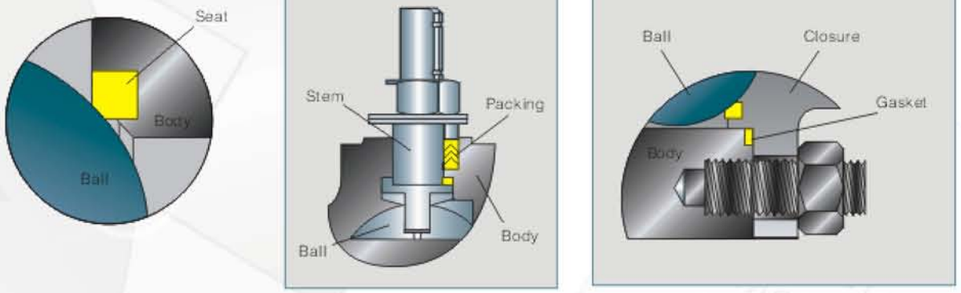


●Fire Safe Seat Sealing

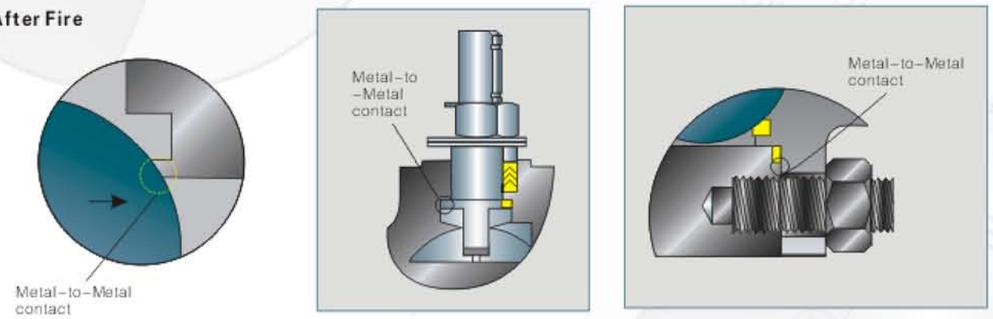
When non-metal sealing material is damaged a plant fire, the upstream line pressure pushes the ball to contact with the metal seat lip beneath the soft seat to shut off the fluid line, to minimize the internal leakage.

Additionally, the fire safe metal seat can prevent the line pressure erosion on soft seat and minimize soft seat creep deformation. All Carilo floating ball valves are fire safe designed and tested in accordance with API 607.

Before Fire



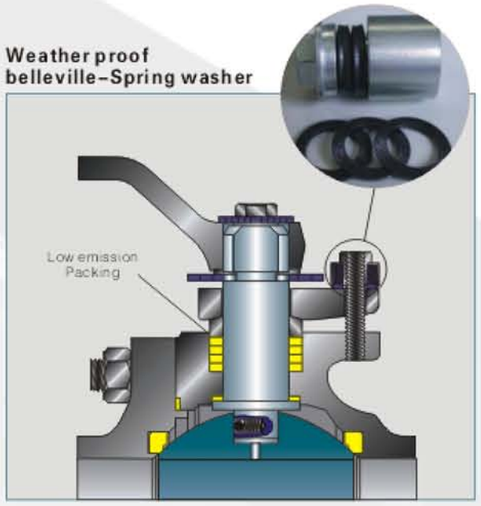
After Fire



FLOATING BALL VALVE DESIGN FEATURE

For the elimination of air pollution, it is essential to control the fugitive emissions leakage of various chemicals from valves in your chemical plant. CARILO low emissions ball valves installed with our emissions defense packing have been designed and tested to meet the 100 PPM maximum emission level(acceptance test per Shell SPE 77/312). This is CARILO standard specification for all series BA, B and BB flanged floating ball valve.

Weather proof belleville-Spring washer



Design Feature

Live Loaded Gland Flange

Live loading is designed to provide gland load retention, compensating for expected in-service consolidation of the packing. A set of Belleville-Spring Washers are used on each gland stud to help exert a continuous compressive force on the gland follower flange and therefore reduce fugitive emissions from the stem packing. CARILO standard Belleville-Spring Washers are protected by a weatherproof cap to keep them free from environmental contamination, resulting in a long stable life.

Low Emission Packing

The packing set a combination of parallel and vertical layer sealing elements,which are made of expanding graphite in die-formed rings and have features of heat resistance, less stress relaxation and low creep. With this special structure, it allows for a low-friction on rotary& rising stem valves, therefore providing the stabilized seal performance for long cycle life.For medium and low temperature service, the standard V shape PTFE packing rings are installed for low emission control.

Controlled Stem & Stuffing Box Finish

The stem surface finish is controlled between Ra0.4 and Ra0.8 which will ensure the graphite to fill and migrate into the stems micro scratches, and function as a lubricant to reduce stem leakage.

The stuffing box surface is controlled by a maximum of Ra3.2, a reasonably rougher surface finish to allow for better holding of the packing ring and results in a better sealing performance.

CAST STEEL FLOATING BALL VALVE

This series ball valves are featured with two-piece bolted carbon steel with flanged end body and floating ball. B series ball valve is available in size from 1/2" to 12" full port or regular port and offers ANSI class rating 150 to 300 and temperature ratings of -46℃ to 200℃. All valves meet the requirements of Bs5351, 6755 and API 607. Fire safe tests have been witnessed and certified by Lloyds Register.

Nace standard MR 0175 requirement can be satisfied for Sour Gas service application. A wide selection of soft seat material: Teflon, PEEK, Delrin, Polyphenylene are available for different working pressure and temperature rating.

Blowout-proof stem, anti-static device and locking device are standard design, low emission packing with live loaded gland flange design can be available upon request. Manual handle operation is basic standard, but fully machined mounting pad can also easily install with gear, motor or pneumatic operator.

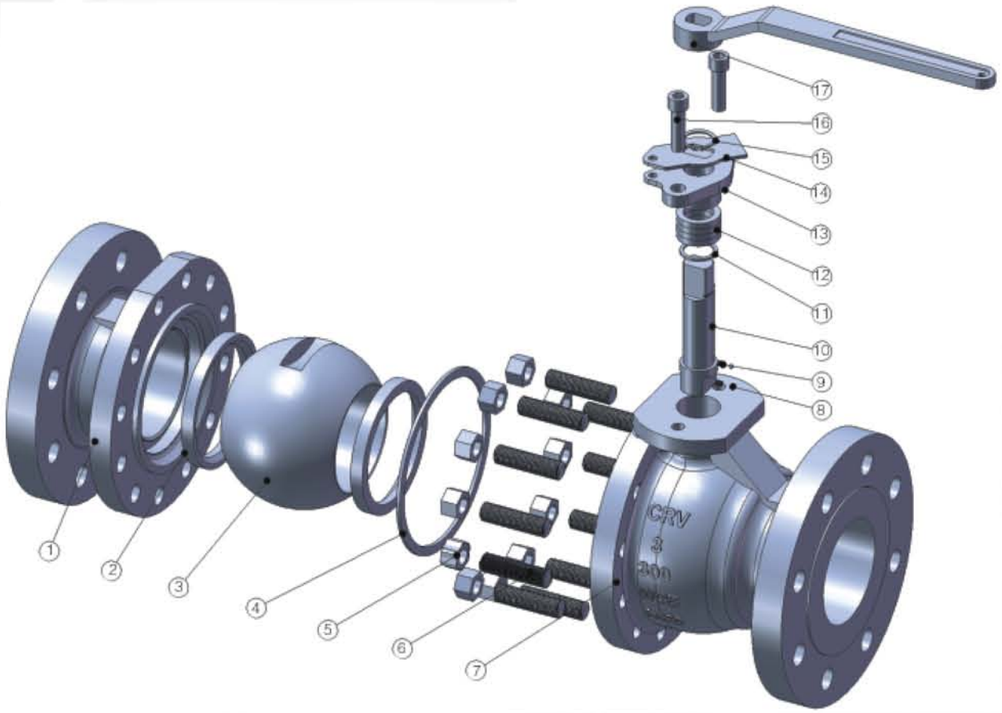
This series ball valve also has cryogenic and super metal seated Design for servicing in working temperature down to- 196℃ or above 400℃, details please refer to page 54~57.

CARILO BALL VALVES

CAST STEEL FLOATING BALL VALVE

●Form of Major Parts Name

No.	Part	No.	Part	No.	Part
1	Left/ Right body	7	Body	13	Packing gland
2	Seal ring	8	Anti-static ball	14	Spacer
3	Ball	9	Anti-static spring	15	Circlip for shaft
4	Gasket	10	Stem	16	Screw
5	Nut	11	Thrust washer	17	Lever
6	Stud bolt	12	Packing		



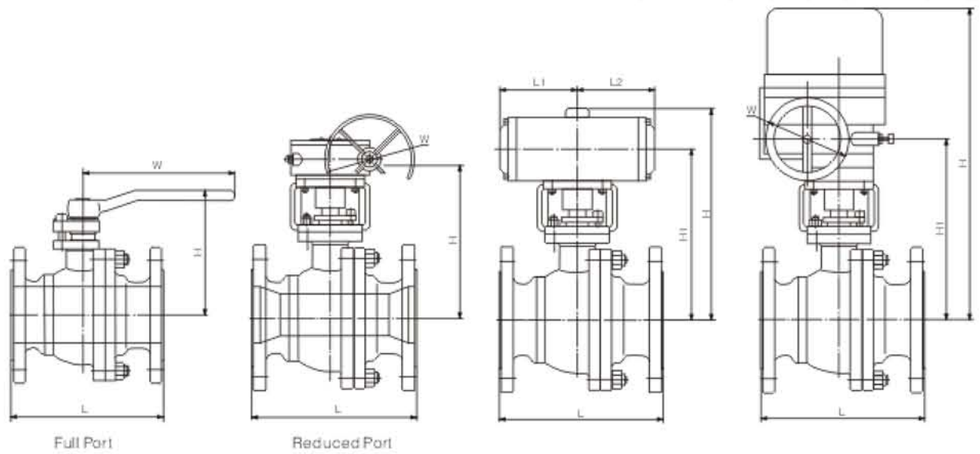
CAST STEEL FLOATING BALL VALVE

●Form of Major Parts Materials

No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Left/ Right body	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A352 LCB
2	Seal ring	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek
3	Ball	ASTM A105+ENP	ASTM A182 F316	ASTM A182 F316	ASTM A350 LF2+ENP
4	Gasket	316SS+Graphite/ PTFE	316SS+Graphite/ PTFE	316SS+Graphite/ PTFE	316SS+Graphite/ PTFE
5	Nut	ASTM A194 2H	ASTM A194-8M	ASTM A194-2HM	ASTM A194-4
6	Stud bolt	ASTM A193 B7	ASTM A193-B8M	ASTM A193-B7M	ASTM A320-L7
7	Body	ASTM A216 WCB	ASTM A351 CF8M	ASTM A216 WCB	ASTM A352 LCB
8	Anti-static ball	SS 316	SS 316	SS 316	SS 316
9	Anti-static spring	SS 316	SS 316	SS 316	SS 316
10	Stem	ASTM A182 F6a	ASTM A182 F316	ASTM A182 F316	ASTM A182 F6a
11	Thrust washer	PTFE	PTFE	PTFE	PTFE
12	Packing	Graphite/ PTFE	Graphite/ PTFE	Graphite/ PTFE	Graphite/ PTFE
13	Packing gland	ASTM A216 WCB	ASTM A351 CF8M	ASTM A216 WCB	ASTM A352 LCB
14	Spacer	CS	SS	SS	SS
15	Circlip for shaft	65MM	65MM	65MM	65MM
16	Screw	ASTM A192 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
17	Lever	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB

CARILO BALL VALVES

CAST STEEL FLOATING BALL VALVE



●Dimensions

150LB

	Size in	1/2	3/4	1	1-1/2	2	2-1/2	3	4	5	6	8	10	12
Full Port	Dmm	13	19	25	38	49	62	74	100	127	150	201	252	303
	Lmm	108	117	127	165	178	190	203	229	356	394	457	533	610
	Hmm	59	63	76	97	107	142	152	178	252	272	342	345	479
	Wmm	130	130	160	230	230	400	400	700	1100	300*	300*	400*	600*
Weight (Kg)		1.78	2.00	3.51	7.23	11.05	14.0	22.0	53.0	58.0	108.0	195.0	312.0	346.0

●Dimensions

300LB

	Size in	1/2	3/4	1	1-1/2	2	2-1/2	3	4	5	6	8	10
Full Port	Dmm	13	19	25	38	49	62	74	100	127	150	201	252
	Lmm	140	152	165	190	216	241	283	305	381	403	502	568
	Hmm	59	63	76	97	107	142	152	178	252	272	342	345
	Wmm	130	130	160	230	230	400	400	700	1100	300*	400*	400*
Weight (Kg)		2.29	3.6	5.1	10.0	14.0	23.0	30.6	50.5	93.0	116.0	234.5	493.0

●Dimensions

150LB

	Size in	3/4*1/2*3/4	1*3/4*1	1-1/2*1-1/2	2*1-1/2*2	2-1/2*2*2-1/2	3*2*3	4*3*4	6*4*6	8*6*8	10*8*10	12*10*12
Reduced Port	dmm	13	19	25	38	49	49	74	100	150	201	253
	Dmm	19	25	38	49	62	74	100	150	201	253	303
	Lmm	117	127	165	178	190	203	229	394	457	533	610
	Hmm	82	85	100	115	120	153	162	191	290	340	442
	Wmm	130	130	160	230	230	400	400	460	300*	300*	400*
Weight (Kg)		3.0	4.5	7.0	9.0	15.0	16.0	29.5	48.0	123.0	218.0	230.0

●Dimensions

300LB

	Size in	3/4*1/2*3/4	1*3/4*1	1-1/2*1-1/2	2*1-1/2*2	2-1/2*2*2-1/2	3*2-1/2*3	4*3*4	6*4*6	8*6*8	10*8*10
Reduced Port	dmm	13	19	25	38	49	62	74	100	150	201
	Dmm	19	25	38	49	62	74	100	150	201	252
	Lmm	152	165	190	216	241	283	305	403	502	568
	Hmm	82	85	100	115	120	153	162	191	290	340
	Wmm	130	130	160	230	230	400	400	460	300*	300*
Weight (Kg)		3.5	5.5	10.0	11.0	23.5	30.0	39.0	72.5	148.0	320.0

*Gear Operator

FORGED STEEL FLOATING BALL VALVE

Ball valves of this series are featured of two-piece bolted body with flanged end and floating ball. Body and closure are made of fully forged steel which eliminates the inevitable casting defects and is ideal for high pressure service. BB series ball valves are available in size from 1/2" to 4" with ANSI class rating 600 to 2500, all fire safe designed as per BS 6755 and API 607.

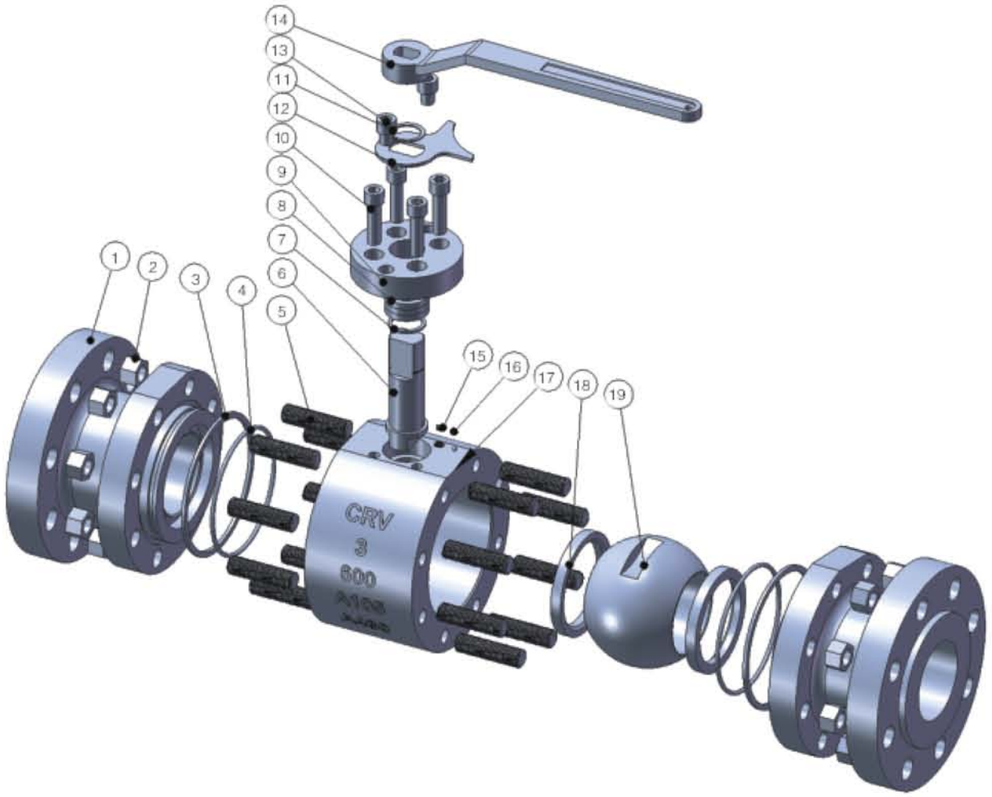
Blowout-proof stem, anti-static device and locking device are standard design, low emission packing with live loaded gland flange design can be available upon request. Manual handle operation is basic standard, but fully machined mounting pad can also easily be installed with gear, motor or pneumatic operator.

ANSI Class 150 to 300 and Three-piece design can be supplied upon request.

FORGED STEEL FLOATING BALL VALVE

●Form of Major Parts Name

No.	Part	No.	Part	No.	Part
1	Left/Right body	8	Stem Packing	15	Small spring
2	Nut	9	Gland	16	Small ball
3	Gasket	10	Screw	17	Body
4	O-ring	11	Circlip for shaft	18	Seat ring
5	Bolt	12	Spacer	19	Ball
6	Stem	13	Screw		
7	Gasket	14	Lever		

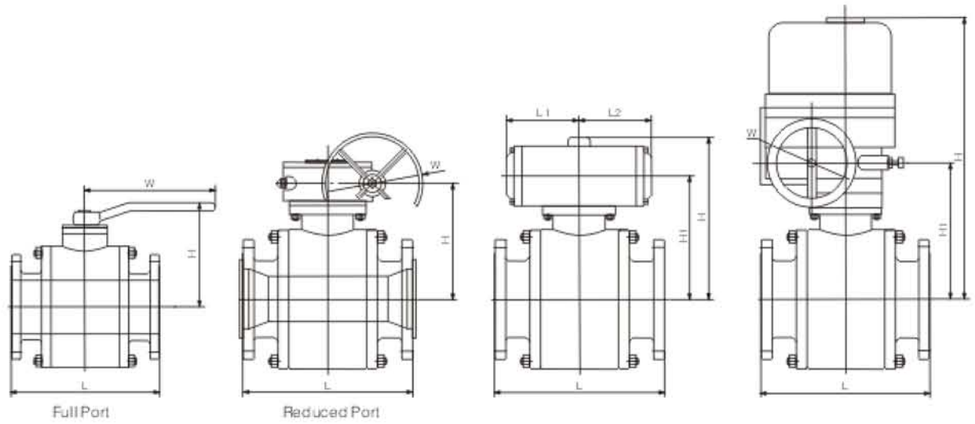


FORGED STEEL FLOATING BALL VALVE

●Form of Major Parts Materials

No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Left/Right body	ASTM A105	ASTM A182 F316	ASTM A105	ASTM A350 LF2
2	Nut	ASTM A194-2H	ASTM A194-8M	ASTM A194-2HM	ASTM A194-4
3	Gasket	316+Graphite/ PTFE	316+Graphite/ PTFE	316+Graphite/ PTFE	316+Graphite/ PTFE
4	O-ring	Viton	Viton	Viton	Viton
5	Bolt	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
6	Stem	ASTM A182-F6a	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
7	Gasket	PTFE	PTFE	PTFE	PTFE
8	Stem Packing	Graphite/PTFE	Graphite/ PTFE	Graphite/ PTFE	Graphite/ PTFE
9	Gland	ASTM A105	ASTM A182-F316	ASTM A105	ASTM A350 LF2
10	Screw	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
11	Circlip for shaft	ASTM 1566	ASTM 1566	ASTM 1566	ASTM 1566
12	Spacer	CS	SS	SS	SS
13	Screw	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
14	Lever	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB
15	Small spring	SS 316	SS 316	SS 316	SS 316
16	Small ball	SS 316	SS 316	SS 316	SS 316
17	Body	ASTM A105	ASTM A182-F316	ASTM A105	ASTM A350-LF2
18	Seat ring	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek
19	Ball	ASTM A105/ ENP	ASTM A182-F316	ASTM A182-F316	ASTM 350 LF2+ENP

FORGED STEEL FLOATING BALL VALVE



Dimensions

600LB

	Size in	1/2	3/4	1	1-1/2	2	3	4
Full Port	D mm	13	19	25	38	49	74	100
	L mm	165	190	216	241	292	356	432
	H mm	66	88	90	120	135	180	224
	W mm	160	170	170	280	300	450	500
Weight (Kg)		3.5	5.8	6.5	13.2	29.0	60.0	135.5

Dimensions

900LB

	Size in	1/2	3/4	1	1-1/2	2	3
Full Port	D mm	13	19	25	38	49	74
	L mm	216	229	254	305	368	381
	H mm	83	11	123	143	177	200
	W mm	170	170	130	300	350	450
Weight (Kg)		8.5	11.0	16.0	33.0	45.0	87.0

Dimensions

600LB

	Size in	1/2"1/4"1/2	3/4"1/2"3/4	1"3/4"1	1-1/2"1"1-1/2	2"1-1/2"2	3"2"3	4"3"4
Reduced Port	d mm	7	13	19	25	38	49	74
	D mm	13	19	25	38	49	74	100
	L mm	165	190	216	241	292	356	432
	H mm	43	66	88	90	120	135	180
	W mm	130	160	170	170	280	300	450
Weight (Kg)		2.9	5.0	5.3	10.6	25.0	42.0	81.5

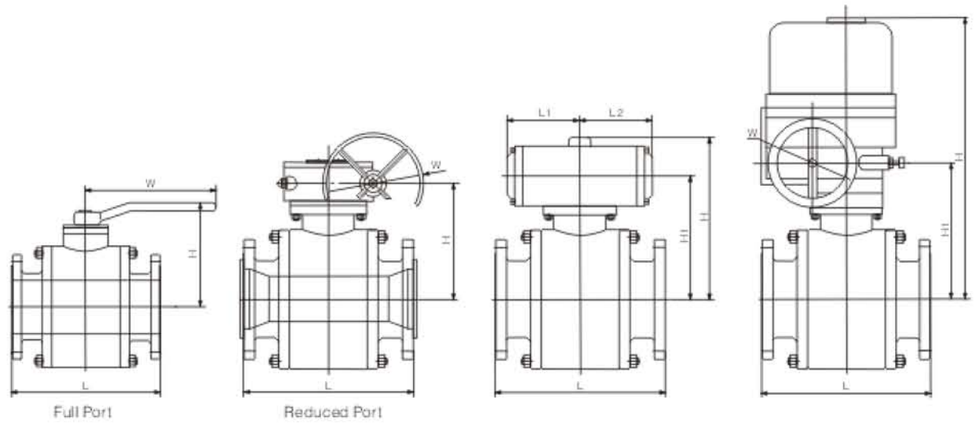
Dimensions

900LB

	Size in	1/2"1/4"1/2	3/4"1/2"3/4	1"3/4"1	1-1/2"1"1-1/2	2"1-1/2"2	3"2-1/2"3
Reduced Port	d mm	7	13	19	25	38	49
	D mm	13	19	25	38	49	74
	L mm	216	229	254	305	368	381
	H mm	70	83	112	123	143	177
	W mm	140	170	170	230	300	300
Weight (Kg)		7.5	10.0	15.0	28.0	40.0	69.0

*Gear Operator

FORGED STEEL FLOATING BALL VALVE



Dimensions

1500LB

	Size in	1/2	3/4	1	1-1/2	2	3
Full Port	D mm	13	19	25	38	49	74
	L mm	216	229	254	305	368	470
	H mm	83	112	123	143	177	200
	W mm	230	230	300	400	450	700
Weight (Kg)		6.8	11.0	16.0	32.6	64.0	90.0

Dimensions

2500LB

	Size in	1/2	3/4	1	1-1/2	2	3
Full Port	D mm	13	19	25	38	42	62
	L mm	264	273	308	368	451	578
	H mm	88	117	128	148	183	205
	W mm	230	230	300	400	450	700
Weight (Kg)		9.0	15.0	17.5	34.0	55.0	110.0

Dimensions

1500LB

	Size in	1/2"1/4"1/2	3/4"1/2"3/4	1"3/4"1	1-1/2"1"1-1/2	2"1-1/2"2	3"2"3
Reduced Port	d mm	7	13	19	25	38	49
	D mm	13	19	25	38	49	74
	L mm	216	229	254	305	368	470
	H mm	70	83	112	123	143	177
	W mm	170	230	230	300	400	450
Weight (Kg)		7.5	10.0	15.0	28.0	41.0	82.0

Dimensions

2500LB

	Size in	1/2"1/4"1/2	3/4"1/2"3/4	1"3/4"1	1-1/2"1"1-1/2	2"1-1/2"2	3"2"3
Reduced Port	d mm	7	13	19	25	38	42
	D mm	13	19	25	38	42	62
	L mm	264	273	308	368	451	578
	H mm	75	88	117	128	148	183
	W mm	170	230	230	300	400	450
Weight (Kg)		8.0	14.0	16.0	32.0	52.0	102.0

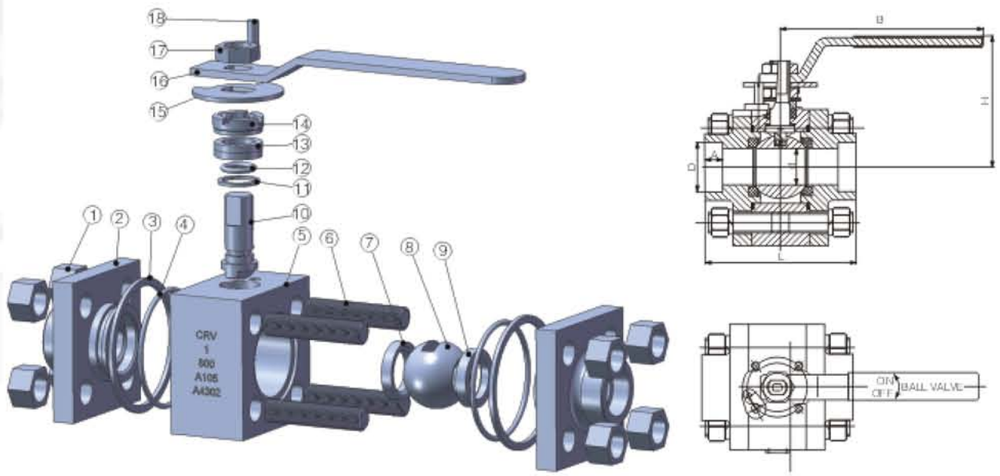
*Gear Operator

CARILO BALL VALVES

FORGED STEEL FLOATING BALL VALVE

●Form of Major Parts Name

No.	Part	No.	Part	No.	Part
1	Nut	7	Seat ring	13	Stem Packing
2	Left/Right body	8	Ball	14	Gland
3	Gasket	9	Seat ring	15	Spacer
4	O-ring	10	Stem	16	Lever
5	Body	11	Thrust washer	17	Hexagon Nut
6	Bolt	12	O-ring	18	Pin



●Dimension of 800LB/1500LB (Full Port)

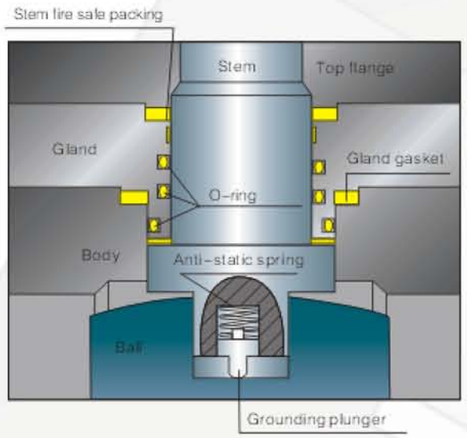
NPS	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
d	12.7	17.5	22	28.5	38	47.5
D	21.7	27.05	33.8	42.55	65	61.1
H	65	72	80	80	105	114
A	10	13	13	13	13	16
L	92	111	127	140	150	155
B	150	150	170	170	240	240

FORGED STEEL FLOATING BALL VALVE

●Form of Major Parts Materials

No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Nut	ASTM A194-2H	ASTM A194-8M	ASTM A194-2HM	ASTM A194-4
2	Left/Right body	ASTM A105	ASTM A182 F316	ASTM A105	ASTM A352 LF2
3	Gasket	316+Graphite/PTFE	316+Graphite/PTFE	316+Graphite/PTFE	316+Graphite/Peek
4	O-ring	Viton	Viton	Viton	Viton
5	Body	ASTM A105	ASTM 182 F316	ASTM A105	ASTM A352 LI2
6	Bolt	ASTM A193 B7	ASTM A193-B8M	ASTM A193-B7M	ASTM A320 L7
7	Seat ring	RPTFE/Nylon/Peek	RPTFE/Nylon/Peek	RPTFE/Nylon/Peek	RPTFE/Nylon/Peek
8	Ball	ASTM A105+ENP	ASTM A182-F316	ASTM A182 F316	ASTM A320/LF2+ENP
9	Seat ring	RPTFE/Nylon/Peek	RPTFE/Nylon/Peek	RPTFE/Nylon/Peek	RPTFE/Nylon/Peek
10	Stem	ASTM A182 F6a	ASTM A182 F316	ASTM A182 F316	ASTM A182 F6a
11	Thrust washer	PTFE	PTFE	PTFE	PTFE
12	O-ring	Viton	Viton	Viton	Viton
13	Stem Packing	Graphite/PTFE	Graphite/PTFE	Graphite/PTFE	Graphite/Peek
14	Gland	CS	CS	CS	CS
15	Spacer	SS316	SS 316	SS316	SS 316
16	Lever	Ss316	SS 316	SS316	SS 316
17	Hexagon nut	ASTM A194-2H	ASTM A194-8M	ASTM A194-2HM	ASTM A194-4
18	Pin	304	304	304	304

TRUNNION MOUNTED BALL VALVE DESIGN FEATURE



● Super Fire Safe Design

External leakage Prevention

Leakage from the valve stem area is prevented by double sealing with 2 O-rings and gland gasket. Leakage through the valve body joint is also blocked by double sealing with O-ring and body gasket. After a fire damages O-rings, gland gasket, body gasket and stem fire safe packing are the measure to avoid external fluid leakage.

Internal leakage prevention

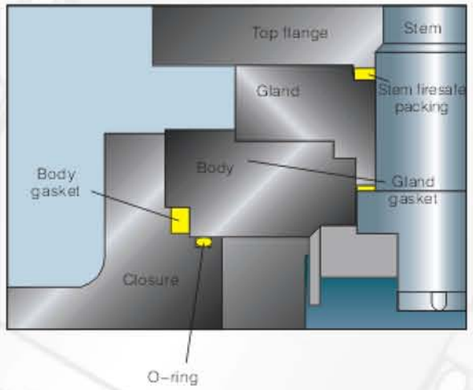
When non-metal materials such as O-ring, seat insert and spacer are damaged by fire, the edge of the metal seat preloaded by the seat spring contacts with the ball to shut off the line fluid, and minimize internal leakage through the valve bore. Also the

● Anti Blow-out Stem

The stem is made separately from the ball; The lower end of the stem is designed with an integral collar to be blowout-proof.

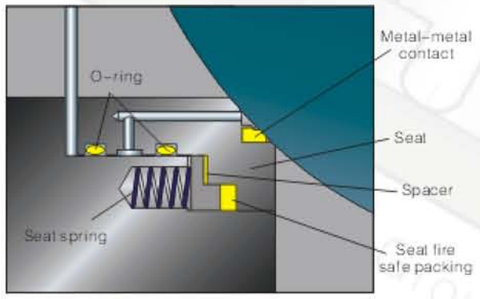
● Anti-static Device

Antistatic device is a standard feature of CARILO ball valve. A spring-loaded pin between ball, stem and body, assures the electrical continuity, so as to avoid sparks during turning of the stem to open and close the valve, which could be dangerous in case of hazardous area installation.

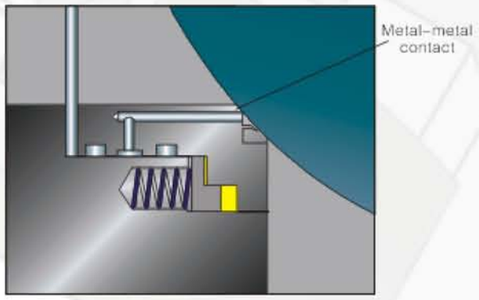


fire safe flexible graphite seat packing will be compressed by the seat spring to avoid fluid leakage between the valve body and the seat.

Before fire



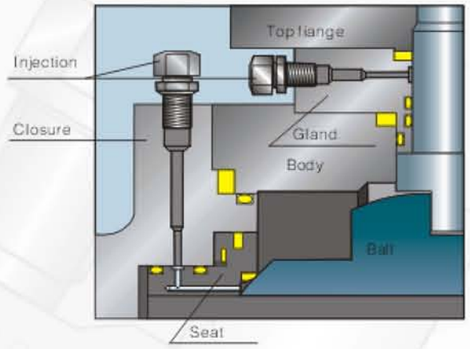
After fire

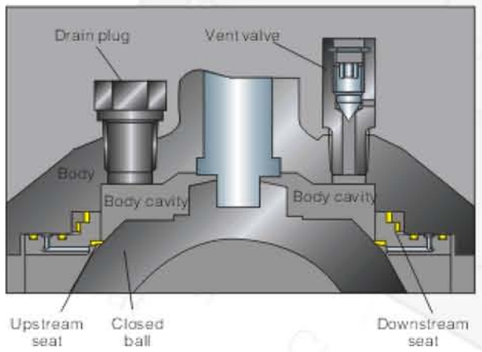


TRUNNION MOUNTED BALL VALVE DESIGN FEATURE

● Emergency Sealant Injection System

6 inch and larger CARILO Trunnion mounted ball valves will be installed with sealant injection fittings on both stem and seats. When the sealing materials (seat sealing or stem o-ring) are damaged by fire or other accidental causes, leakage from the seat and stem can be prevented by injection of sealant into these fittings. Fitting is also intergrally installed a second check valve to provide backup sealing.



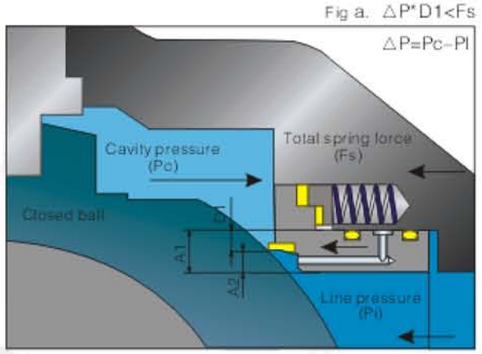


● Double Block And Bleed

Each ball seat shuts off the line fluid independently on the upstream and downstream side, allowing double block operation. When the pressure is simultaneously applied to both sides of the ball in closed position, the valve bore and the body cavity will be isolated from each other, and the residue within the body cavity can be released through the drain plug.

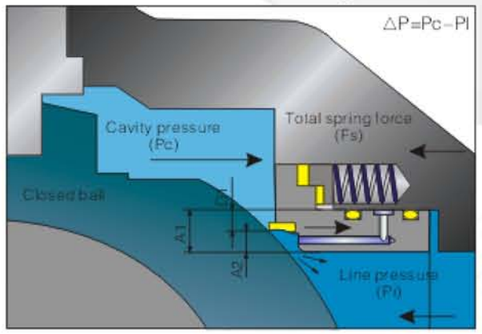
● Cavity Pressure Relief

Fig a. $\Delta P^*D1<Fs$



When cavity pressure (Pc) is lower than seat spring and line pressure(Pl), i.e. $\Delta P^*D1 < Fs$, then contact between ball and seat ring can assure a tight seal.

Fig b. $\Delta P^*D1<Fs$

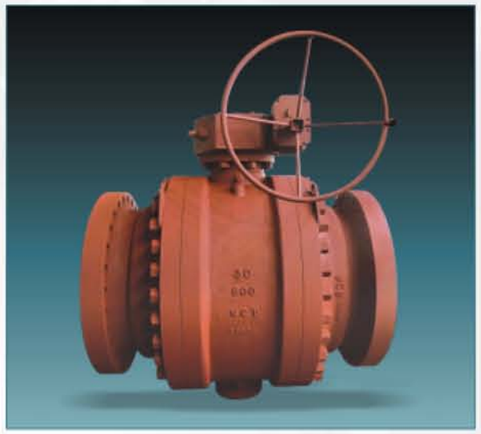


When cavity pressure is higher than seat spring and line pressure, i.e. $\Delta P^*D1 < Fs$, the self relieving action allows that valve seat will move slightly away from the ball surface, therefore any over pressure in the body cavity is discharged into the line to restore the balance between the body cavity and line (either upstream or downstream).

CAST STEEL TRUNNION MOUNTED BALL VALVE

CARILO trunnion mounted ball valve contains 3 main series: BT series for cast steel two-piece design, BS series for forged steel three-piece design and TTE series for top entry uni-body design , all designd as per API 6D and fire tested as per from BS 6755 and API 6FA. They are available in size from 2" to 48" wide range of body and trim material is available for service temperature from -46℃ to 200℃ and pressure rating from ANSI class 150 to 1500 or for sour serivice as per NACE Mr0175.

Ball valves of this series are trunnion mounted which provides excellent tightness over an extensive range of temperatures and pressures. They are available in size from 2" to 24" and ANSI class rating pressure ratings from 150 to 1500, temperature ratings from -46℃ to 200℃.



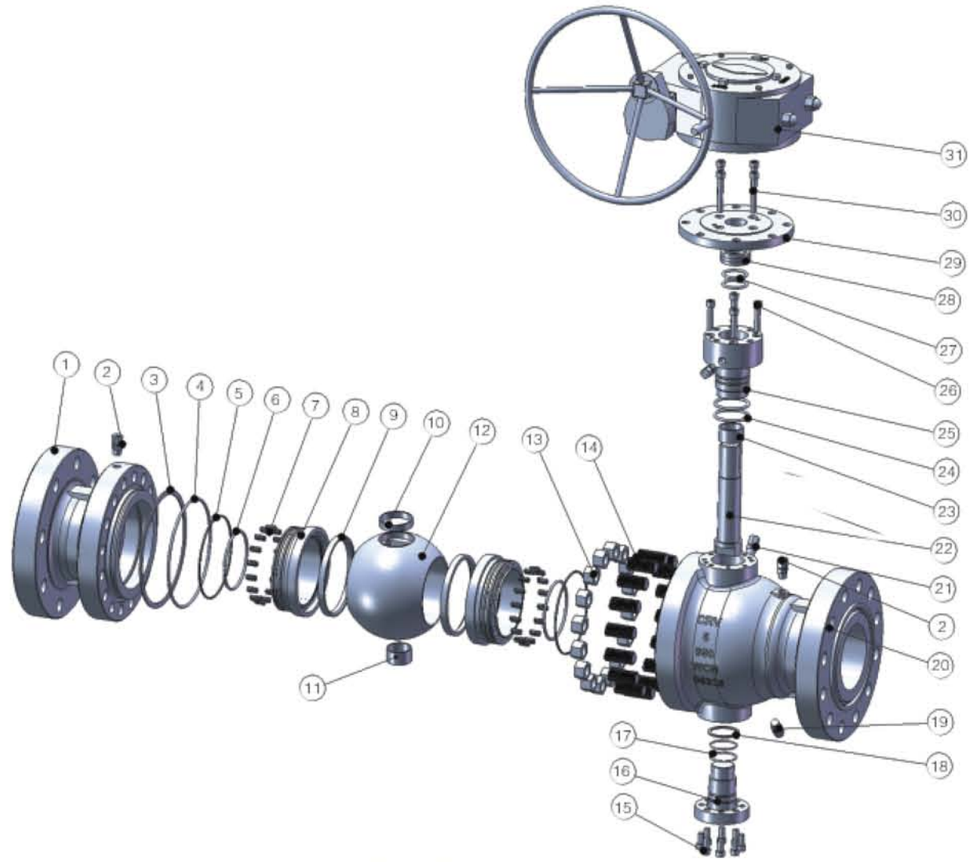
Valves are designed and manufactured in conformance with specification of API 6D, fire safe tested to BS 6755 and API 6FA, which have been witnessed and certified by Lloyd's Register that qualify this series of valves for virtually all oil and gas services.

All BT series ball valves are featured of trunnion mounted ball and unique spring loaded seats which provide bubble - tight shut off and low operating torques even at low different pressure. A large trunnion design ensures central positioning under the highest working pressure.
Detailed design features are exhibited in page 30,31.

CAST STEEL TRUNNION MOUNTED BALL VALVE

Form of Major Parts Name

No.	Part	No.	Part	No.	Part
1	Bonnet	12	Ball	23	Beating
2	Injection fitting	13	Nut	24	O-ring
3	Gasket	14	Bolt	25	Stuffing box
4	O-ring	15	Screw	26	Screw
5	Fire safe ring	16	Trunnion	27	O-ring
6	O-ring	17	O-ring	28	Stem Packing
7	Spring	18	Gasket	29	Yoke
8	Seat	19	Bleed	30	Screw
9	Seat ring	20	Body	31	Gear
10	Bearing	21	Block		
11	Beating	22	Stem		



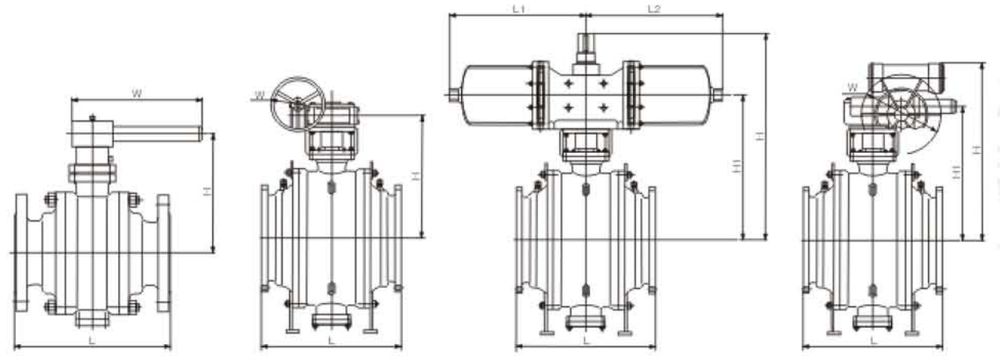
CAST STEEL TRUNNION MOUNTED BALL VALVE

Form of Major Parts Materials

No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Bonnet	ASTM A216-WCB	ASTM A351-CF8M	ASTM A216-WCB	ASTM A352-LCB
2	Injection fitting	CS	SS	SS	SS
3	Gasket	316SS+Graphite	316SS+Graphite/PTFE	316SS+Graphite/ PTFE	316SS+Graphite
4	O-ring	Viton	Viton	Viton	Viton
5	Fire safe ring	Graphite	Graphite	Graphite	Graphite
6	O-ring	Viton	Viton	Viton	Viton
7	Spring	17-7pH	17-7pH	17-7pH	17-7pH
8	Seat	ASTM A105+ENP	ASTM A182-F316	ASTM A182 F316+ENP	ASTM A350-LF2+ENP
9	Seat ring	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek
10	Bearing	316+PTFE	316+PTFE	316+PTFE	316+PTFE
11	Beating	316+PTFE	316+PTFE	316+PTFE	316+PTFE
12	Ball	ASTM A105/ENP	ASTM A182-F316	ASTM A105/ENP	ASTM A350-LF2/ENP
13	Nut	ASTM A1094-2H	ASTM A194-8M	ASTM A194-2HM	ASTM A194-4
14	Bolt	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320-L7
15	Screw	ASTM A193-B7	ASTM A193-B8M	ASTM A193-B7M	ASTM A320-L7
16	Trunnion	ASTM A105	ASTM A182 F316	ASTM A182 F316	ASTM A350 LF2
17	O-ring	Viton	Vtion	Viton	Viton
18	Gasket	316SS+Graphite	316SS+Graphite/PTFE	316SS+Graphite/ PTFE	316SS+Graphite
19	Bleed	CS	SS	SS	SS
20	Body	ASTM A216-WCB	ASTM A351-CF8M	ASTM A216-WCB	ASTM A352-LCB
21	Block	CS	SS	SS	SS
22	Stem	ASTM A182 F6a	ASTM A182 F316	ASTM A182 F316	ASTM A182 F6a
23	Beating	316+PTFE	316+PTFE	316+PTFE	316+PTFE
24	O-ring	Viton	Vtion	Viton	Viton
25	Stuffing box	ASTM A105	ASTM A182 F316	ASTM A182 F16	ASTM A350 LF2
26	Screw	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
27	O-ring	Viton	Viton	Viton	Viton
28	Stem Packing	Graphite	Graphite/ PTFE	Graphite/ PTFE	Graphite
29	Yoke	ASTM A105	ASTM A182 F316	ASTM A105	ASTM A350 LF2
30	Screw	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
31	Gear	Components	Components	Components	Components



CAST STEEL TRUNNION MOUNTED BALL VALVE



Dimensions

150LB

	Size in	2	3	4	6	8	10	12	14	16	18	20	22	24
Full Port	D mm	49	74	100	150	201	252	303	334	385	435	487	538	589
	L mm	178	203	229	394	457	533	610	686	762	864	914	1016	1067
	H mm	165	193	231	329	393	401	441	481	598	643	708	798	863
	W mm	230	400	460	1000	*500	*500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		17	33	50	93	166	273	475	570	778	935	1190	1346	1579

Dimensions

300LB

	Size in	2	3	4	6	8	10	12	14	16	18	20	22	24
Full Port	D mm	49	74	100	150	201	252	303	334	385	435	487	538	589
	L mm	216	283	305	403	502	568	648	762	838	914	991	1092	1143
	H mm	165	193	231	329	393	401	441	481	598	643	708	798	863
	W mm	230	400	460	1000	*500	*500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		18	40	63	150	240	305	407	602	1000	1160	1320	1540	1874

Dimensions

150LB

	Size in	3"2"3	4"3"4	6"4"6	8"6"8	10"8"10	12"10"12	14"12"14	16"14"16	18"16"18	20"18"20	22"20"22	24"20"24
Reduced Port	d mm	49	74	100	150	201	252	303	334	385	435	487	487
	D mm	74	100	150	201	252	303	334	385	435	487	538	589
	L mm	203	229	394	457	533	610	686	762	864	914	1016	1067
	H mm	165	193	231	329	393	393	441	481	598	643	643	708
	W mm	230	400	400	460	1000	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		30	47	90	161	268	467	560	766	902	1130	1300	1520

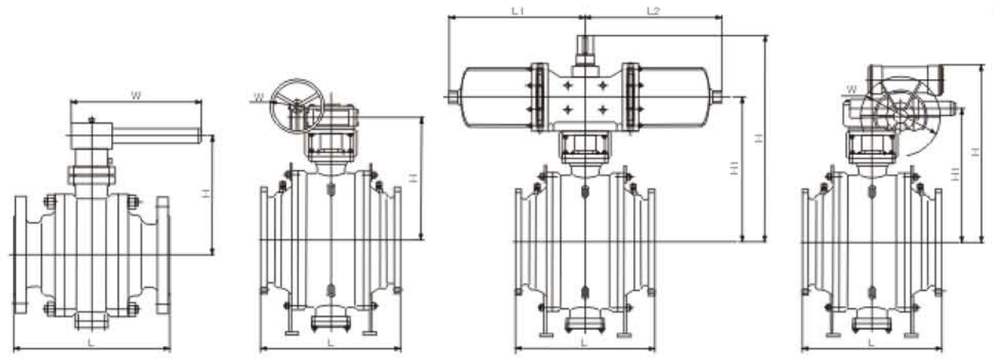
Dimensions

300LB

	Size in	3"2"3	4"3"4	6"4"6	8"6"8	10"8"10	12"10"12	14"12"14	16"14"16	18"16"18	20"18"20	22"20"22	24"20"24
Reduced Port	d mm	49	74	100	150	201	252	303	334	385	435	487	487
	D mm	74	100	150	201	252	303	334	385	435	487	538	589
	L mm	283	305	403	502	568	648	762	838	914	991	1092	1143
	H mm	165	193	231	329	393	393	440	481	598	643	643	708
	W mm	230	400	750	1000	1500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		38	60	147	234	295	488	570	910	1020	1280	1360	1670

*Gear Operator

CAST STEEL TRUNNION MOUNTED BALL VALVE



Dimensions

600LB

	Size in	2	3	4	6	8	10	12	14	16	18	20	24
Full Port	D mm	49	74	100	150	201	22	303	334	385	435	487	589
	L mm	292	356	432	559	660	787	838	889	991	1092	1194	1397
	H mm	176	247	276	363	363	426	548	598	648	740	810	920
	W mm	400	750	1000	1500	*500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		27	50	80	251.8	350	600	820	1130	1550	2100	2800	3626

Dimensions

900LB

	Size in	2	3	4	6	8	10	12	14	16	18	20	24
Full Port	D mm	49	74	100	150	201	252	303	322	373	423	471	570
	L mm	368	381	457	610	737	838	965	1029	1130	1219	1321	1549
	H mm	192	279	315	323	381	518	568	665	730	795	825	973
	W mm	460	1000	1500	*500	*500	*500	*500	*500	*500	*500	*610	*610
Weight (Kg)		53	97	138	288	448	748	1018	1398	1828	2328	2928	4178

Dimensions

600LB

	Size in	3"2"3	4"3"4	6"4"6	8"6"8	10"8"10	12"10"12	14"12"14	16"14"16	18"16"18	20"18"20	24"20"24
Reduced Port	d mm	49	74	100	150	201	252	303	334	385	435	487
	D mm	74	100	150	201	252	303	334	385	435	481	589
	L mm	356	432	559	660	787	838	889	991	1092	1194	1397
	H mm	176	247	276	263	263	426	548	598	648	740	810
	W mm	400	750	1000	1500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		41	70	122	255	440	6620	1060	1440	1860	2400	3240

Dimensions

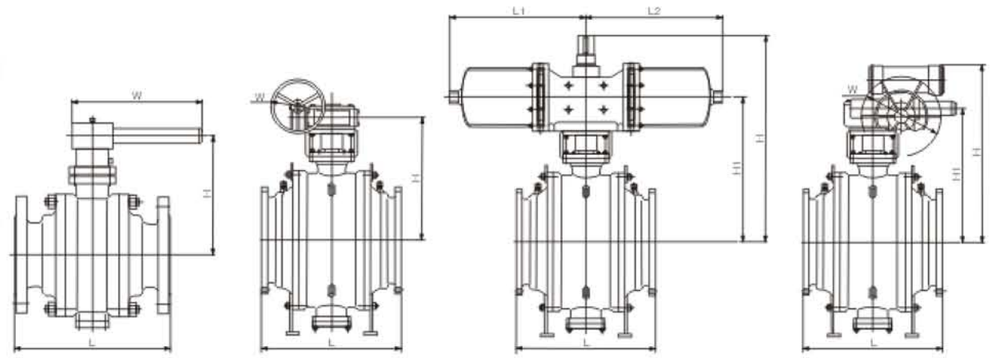
900LB

	Size in	3"2"3	4"3"4	6"4"6	8"6"8	10"8"10	12"10"12	14"12"14	16"14"16	18"16"18	20"18"20	24"20"24
Reduced Port	d mm	49	74	100	150	201	252	303	322	373	423	471
	D mm	74	100	150	201	252	303	322	373	423	471	570
	L mm	381	457	610	737	838	965	1029	1130	1219	1321	1549
	H mm	192	279	315	323	381	518	568	665	730	795	825
	W mm	460	1000	1500	*500	*500	*500	*500	*500	*500	*500	*610
Weight (Kg)		83	103	201	348	598	788	1100	1420	1928	2428	3578

*Gear Operator

CARILO BALL VALVES

CAST STEEL TRUNNION MOUNTED BALL VALVE



Dimensions

1500LB

	Size in	2	3	4	6	8	10	12	14	16	18	20
Full Port	D mm	49	74	100	144	192	238	287	315	360	406	454
	L mm	368	470	546	705	832	991	1130	1257	1384	1537	1664
	H mm	252	300	272	341	493	565	700	747	795	877	985
	W mm	750	1500	*500	*500	*500	*500	*500	*500	*610	*610	*610
Weight (Kg)		86	136	221	388	580	948	1338	1748	2228	2850	4860

Dimensions

1500LB

	Size in	3"2"3	4"3"4	6"4"6	8"6"8	10"8"10	12"10"12	14"12"14	16"14"16	18"16"18	20"18"20
Reduced Port	d mm	49	74	100	144	192	238	287	318	360	406
	D mm	74	100	144	192	238	287	318	360	406	454
	L mm	470	546	705	832	991	1130	1257	1384	1537	1664
	H mm	252	300	272	341	493	565	700	747	795	877
	W mm	750	1500	*500	*500	*500	*500	*500	*500	*610	*610
Weight (Kg)		98	138	288	448	748	1020	1400	1820	2328	4150

*Gear Operator

FORGED STEEL TRUNNION MOUNTED BALL VALVE

CARILO series BS ball valves are trunnion mounted and available in size from 2 to 48, ANSI class rating from 150 to 1500 and temperature ratings of –46℃ to 200℃. All meet the fire safe requirements of BS 6755 and API 6FA.

Fully forged steel body and closure eliminates the inevitable defects of castings. It also has advantage of short delivery time, thus more popular in modern oil and gas industry.

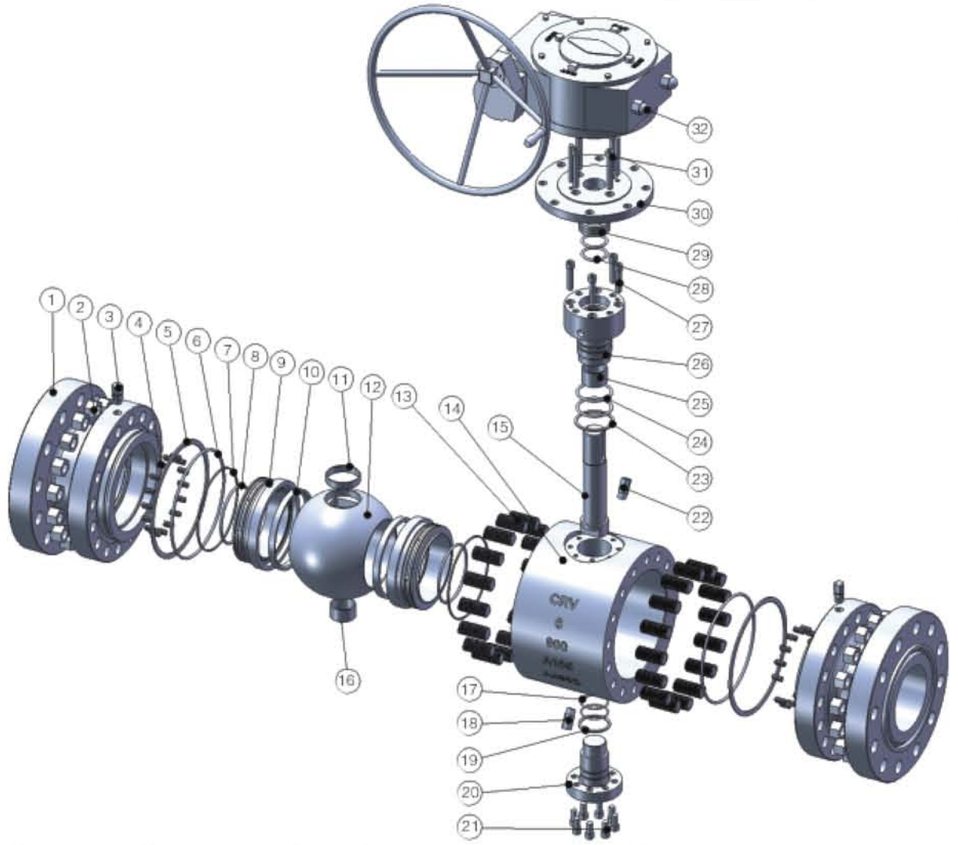
All TB 3 Series ball valves are featured of trunnion mounted ball and independent floating spring loaded seats which provides bubble–tight shut off and low operating torques even at low different pressure. Double sealing O–rings or a combination of an O–ring and gasket in stem making this series of ball valve suitable for both above ground or under –ground service.

Detailed design features are exhibited in page 30,31.

FORGED STEEL TRUNNION MOUNTED BALL VALVE

Form of Major Parts Name

No.	Part	No.	Part	No.	Part
1	Bonnet	12	Ball	23	Gasket
2	Nut	13	Bolt	24	O–ring
3	Injection fitting	14	Body	25	Bearing
4	spring	15	Stem	26	Stuffing box
5	Gasket	16	Bearing	27	Screw
6	O–ring	17	O–ring	28	O–ring
7	Fire safe ring	18	Bleed	29	Stem Packing
8	O–ring	19	Gasket	30	Yoke
9	Seat	20	Trunnion	31	Screw
10	Seat ring	21	O–ring	32	Gear
11	Bearing	22	Block		



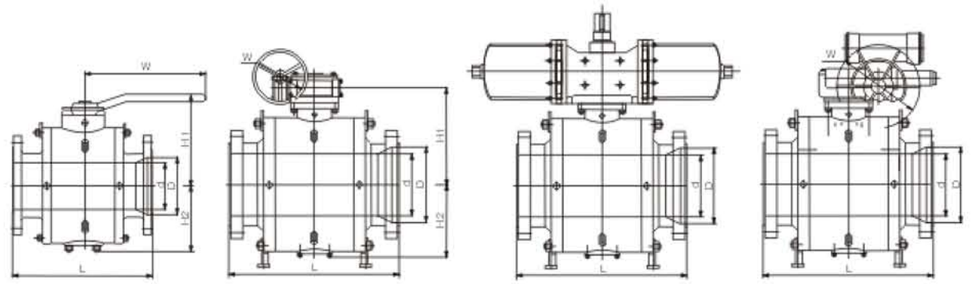
FORGED STEEL TRUNNION MOUNTED BALL VALVE

Form of Major Parts Materials

No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Bonnet	ASTM A105	ASTM A182-F316	ASTM A105	ASTM A350-LF2
2	Nut	ASTM A194-2H	ASTM A194-8M	ASTM A194-2HM	ASTM A194-4
3	Injection fitting	CS	SS	SS	SS
4	spring	17-7pH	17-7pH	17-7pH	17-7pH
5	Gasket	316SS+Graphite	316SS+Graphite	316SS+Graphite/ PTFE	316SS+Graphite
6	O-ring	Viton	Viton	Viton	Viton
7	Fire safe ring	Flexible graphite rope	Flexible graphite rope	Flexible graphite rope	Flexible graphite rope
8	O-ring	Viton	Viton	Viton	Viton
9	Seal	ASTM A105+ENP	ASTM A182 F316	ASTM A182 F316	ASTM A350 LF2+ENP
10	Seat ring	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek	RPTFE/ Nylon/ Peek
11	Bearing	316+PTFE	316+PTFE	316+PTFE	316+PTFE
12	Ball	ASTM A105/ENP	ASTM A182-F316	ASTM A182 F316	ASTM A350-LF2/ENP
13	Bolt	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
14	Body	ASTM A105	ASTM A182-F316	ASTM A105	ASTM A350 LF2
15	Stem	ASTM A182 F6a	ASTM A182-F316	ASTM A182 F316	ASTM A182 F6a
16	Bearing	316+PTFE	316+PTFE	316+PTFE	316+PTFE
17	O-ring	Viton	Viton	Viton	Viton
18	Bleed	CS	SS	SS	SS
19	Gasket	316SS+Graphite	316SS+Graphite/ PTFE	316SS+Graphite/ PTFE	PTFE
20	Trunnion	ASTM A105	ASTM A182 F316	ASTM A182 F316	ASTM A350 LF2
21	O-ring	Viton	Viton	Viton	Viton
22	Block	CS	SS	SS	SS
23	Gasket	316SS+Graphite	316SS+Graphite/ PTFE	316SS+Graphite/ PTFE	PTFE
24	O-ring	Viton	Viton	Viton	Viton
25	Bearing	316+PTFE	316+PTFE	316+PTFE	316+PTFE
26	Stuffing box	ASTM A105	ASTM A182 F316	ASTM A182 F316	ASTM A350 LF2
27	Screw	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
28	O-ring	Viton	Viton	Viton	Viton
29	Stem Packing	Graphite	Graphite/ PTFE	Graphite/ PTFE	Graphite
30	Yoke	ASTM A105	ASTM A182 F316	ASTM A105	ASTM A350 LF2
31	Screw	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
32	Gear	Components	Components	Components	Components



FORGED STEEL TRUNNION MOUNTED BALL VALVE



Dimensions 150LB

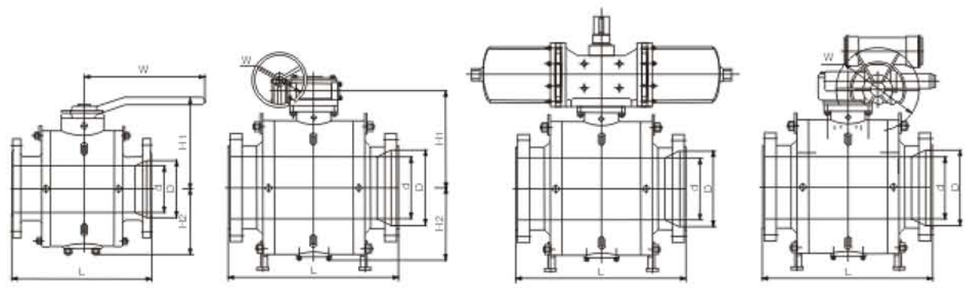
Full Port						
Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight (Kg)
2	49	178	200	110	265	21.11
3	74	203	300	126	285	32.09
4	100	229	315	165	285	50
6	150	394	335	165	*300	164
8	201	457	405	200	*300	345
10	252	533	427	220	*300	440
12	303	610	465	262	*500	577
14	334	686	506	293	*600	859
16	385	762	622	341	*600	1144
18	436	864	666	92	*600	1440
20	487	914	730	435	*600	1944
22	538	1016	833	480	*600	2352
24	589	1067	895	518	*800	2803
26	633	1143	900	535	*800	3200
28	684	1245	935	542	*800	4045
30	735	1295	1010	605	*800	6200
32	779	1372	1060	650	*800	5490
34	830	1473	1077	650	*800	6704
36	874	1524	1115	700	*800	9600
40	976	1727	1400	865	*800	10271
42	1020	1855	1598	900	*800	12110
48	1166	2134	1722	1042	*800	18360

*Gear Operator

Dimensions 150LB

Reduced Port							
Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight (Kg)
3*2*3	49	74	203	200	110	265	26.45
4*3*4	74	100	229	300	126	285	40
6*4*6	100	150	394	315	165	285	68
8*6*8	150	201	457	335	170	*300	177
10*8*10	201	252	533	405	200	*300	307
12*10*12	252	302	610	427	220	*300	509
14*12*14	303	334	686	465	262	*500	722
16*14*16	334	385	762	506	293	*600	920
18*16*18	385	436	864	622	341	*600	1241
20*18*20	436	487	914	666	392	*600	1670
22*18*22	436	538	1016	666	392	*600	2343
24*20*24	487	589	1067	730	435	*600	2060
26*22*26	538	633	1143	833	480	*600	2215
28*24*28	589	684	1245	895	518	*800	2700
30*24*30	589	735	1295	895	518	*800	2918
32*26*32	633	779	1372	900	535	*800	4005
34*28*34	684	830	1473	935	542	*800	4445
36*30*36	735	874	1524	1010	605	*800	4995
40*34*40	830	976	1727	1077	650	*800	8200
42*36*42	874	1020	1855	1115	700	*800	10871
48*40*48	976	1166	2134	1400	865	*800	13520

FORGED STEEL TRUNNION MOUNTED BALL VALVE



●Dimensions 300LB

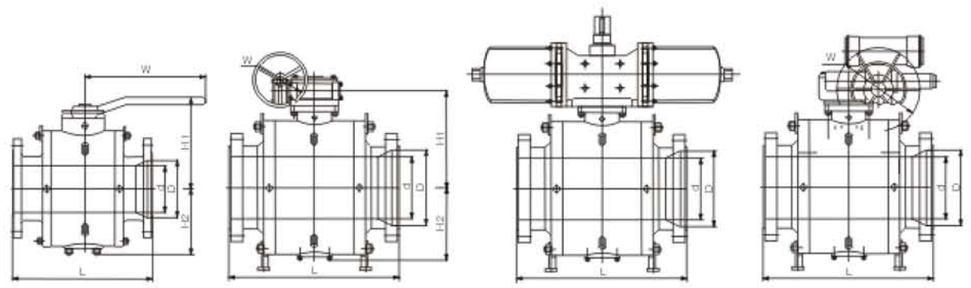
Full Port						Weight (Kg)
Size in	D mm	L mm	H1 mm	H2 mm	W mm	
2	49	216	206	113	265	25
3	74	283	315	129	400	45.68
4	100	305	330	169	750	77
6	150	403	345	148	*300	211
8	201	502	415	185	*300	322
10	252	568	427	226	*400	517
12	303	648	465	269	*500	758
14	334	762	519	300	*600	975
16	385	838	638	350	*600	1350
18	436	914	683	402	*600	1715
20	487	991	748	446	*600	2090
22	538	1092	854	492	*600	2220
24	589	1143	917	531	*800	2890
28	684	1346	958	556	*800	4575
30	735	1397	1035	620	*800	5590
32	779	1524	1087	666	*800	6240
34	830	1626	1104	666	*800	7370
36	874	1727	1143	718	*800	8435
40	976	1930	1435	887	*800	11200
42	1020	2032	1638	923	*800	13050
48	1166	2692	1765	1068	*800	19000

*Gear Operator

●Dimensions 300LB

Reduced Port							Weight (Kg)
Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	
3"2"3	49	74	283	206	113	265	36
4"3"4	74	100	305	315	129	400	55
6"4"6	100	150	403	330	169	750	112
8"6"8	150	201	502	345	148	*300	222
10"8"10	201	252	568	415	185	*300	381
12"10"12	252	303	648	427	226	*500	619
14"12"14	303	334	762	465	269	*600	920
16"14"16	334	385	838	519	300	*600	1050
18"16"18	385	436	914	638	350	*600	1530
20"18"20	436	487	991	683	402	*600	1830
22"18"22	436	538	1092	683	402	*600	2010
24"20"24	487	589	1143	748	446	*600	2220
28"24"28	589	684	1346	917	531	*800	3200
30"24"30	589	735	1397	917	531	*800	3200
34"28"34	684	830	1626	958	556	*800	4845
36"30"36	735	874	1727	1035	620	*800	6100
40"34"40	830	976	1930	1104	666	*800	8200
42"36"42	874	1020	2032	1143	718	*800	9200
48"40"48	976	1166	2692	1435	887	*800	15000

FORGED STEEL TRUNNION MOUNTED BALL VALVE



●Dimensions 600LB

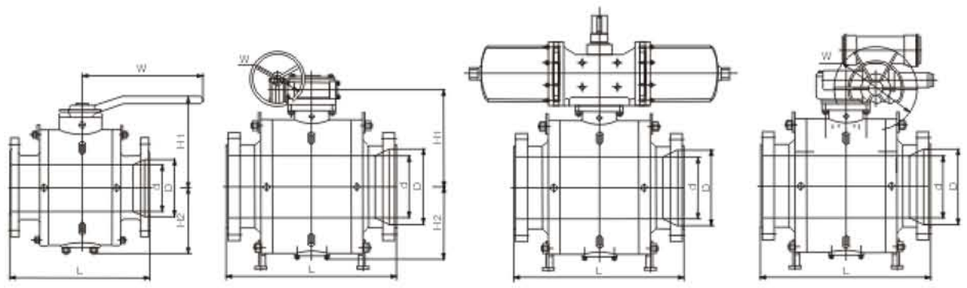
Full Port						Weight (Kg)
Size in	D mm	L mm	H1 mm	H2 mm	W mm	
2	49	292	206	113	400	33
3	74	356	315	129	750	63.5
4	100	432	330	169	1000	117
6	150	559	345	148	*300	285
8	201	660	415	185	*300	452
10	252	787	427	226	*400	736
12	303	838	465	269	*500	1000
14	334	889	519	300	*600	1329
16	385	991	638	350	*600	1730
18	436	1092	683	402	*600	2285
20	487	1194	748	446	*600	2814
22	538	1295	854	492	*600	3370
24	589	1397	917	531	*800	4920
28	684	1549	958	556	*800	6060
30	735	1651	1035	620	*800	6690
32	779	1778	1087	666	*800	7825
34	830	1930	1104	666	*800	8460
36	874	2083	1143	718	*800	10650
40	976	2337	1435	887	*800	14700
42	1020	2438	1638	923	*800	16410
48	1166	2845	1765	1068	*800	24200

*Gear Operator

●Dimensions 600LB

Reduced Port							Weight (Kg)
Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	
3"2"3	49	74	356	206	113	400	46.5
4"3"4	74	100	432	315	129	750	86
6"4"6	100	150	559	330	169	1000	176
8"6"8	150	201	660	345	148	*300	304
10"8"10	201	252	787	415	185	*300	536
12"10"12	252	302	838	427	226	*500	834
14"12"14	303	334	889	465	269	*600	1090
16"14"16	334	385	991	519	300	*600	1310
18"16"18	385	436	1092	638	350	*600	1876
20"18"20	436	486	1194	683	402	*600	2270
22"18"22	436	538	1295	683	402	*600	2430
24"20"24	487	589	1397	748	446	*600	3440
28"24"28	589	684	1549	917	531	*800	4250
30"24"30	589	735	1651	917	531	*800	4730
34"28"34	684	830	1930	958	556	*800	7200
36"30"36	735	874	2083	1035	620	*800	8600
40"34"40	830	976	2337	1104	666	*800	10020
42"36"42	874	1020	2438	1143	718	*800	11100
48"40"48	976	1166	2845	1435	887	*800	17200

FORGED STEEL TRUNNION MOUNTED BALL VALVE



●Dimensions 900LB

Full Port						Weight (Kg)
Size in	D mm	L mm	H1 mm	H2 mm	W mm	
2	49	368	217	119	460	65
3	74	381	327	133	1000	92
4	100	457	343	176	1500	154
6	150	610	358	153	*300	392
8	201	737	431	193	*400	613
10	252	838	443	235	*500	820
12	303	965	484	280	*600	1125
14	322	1029	540	312	*600	1610
16	373	1130	660	365	*600	2010
18	423	1219	700	414	*600	2810
20	471	1321	770	459	*600	3460
22	522	1422	880	507	*800	4410
24	570	1549	945	547	*800	5497
28	665	1753	987	573	*800	10202
30	712	1880	1066	638	*800	11620
32	760	2032	1120	686	*800	12102
34	808	2159	1137	688	*800	17462
36	855	2286	1177	739	*800	20154

●Dimensions 900LB

Reduced Port							Weight (Kg)
Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	
3"2"3	49	74	381	217	119	460	71
4"3"4	74	100	457	327	133	1000	111
6"4"6	100	150	610	343	176	1500	214
8"6"8	150	201	737	358	153	*300	480
10"8"10	201	252	838	431	193	*400	650
12"10"12	252	303	965	443	235	*500	868
14"12"14	303	322	1029	484	280	*600	1310
16"14"16	322	373	1130	540	312	*600	1830
18"16"18	373	423	1219	660	365	*600	2205
20"18"20	423	471	1321	700	414	*600	3140
22"18"22	423	522	1422	700	414	*600	3288
24"20"24	471	570	1549	770	459	*600	4800
28"24"30	570	665	1753	945	547	*800	7580
30"24"30	570	712	1880	945	547	*800	7981
34"28"34	665	808	2159	987	573	*800	11202
36"30"36	712	855	2286	1066	638	*800	15653

●Dimensions 1500LB

Full Port						Weight (Kg)
Size in	D mm	L mm	H1 mm	H2 mm	W mm	
2	49	368	221	130	750	65
3	74	470	297	152	1500	145
4	100	546	345	166	*300	259
6	144	705	365	192	*400	475
8	192	832	423	238	*500	821
10	239	991	560	274	*600	1826
12	287	1130	608	318	*600	2170
14	315	1257	662	483	*600	2250
16	360	1384	796	534	*600	2760
18	406	1537	849	606	*600	3646
20	454	1664	964	686	*800	4497
22	500	1816	1025	731	*800	5731
24	546	2043	1065	775	*800	7151

*Gear Operator

●Dimensions 1500LB

Reduced Port							Weight (Kg)
Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	
3"2"3	49	74	470	221	130	460	85
4"3"4	74	100	546	297	152	1000	169
6"4"6	100	144	705	345	166	1500	345
8"6"8	144	192	832	365	192	*300	599
10"8"10	192	239	991	423	238	*400	1196
12"10"12	239	287	1130	560	274	*500	1340
14"12"14	287	315	1257	608	318	*600	2070
16"14"16	315	360	1384	662	485	*600	2470
18"16"18	360	406	1537	796	534	*600	2950
20"18"20	406	454	1664	849	606	*600	3350
22"18"22	406	500	1816	849	303	*600	3600
24"20"24	454	546	2043	964	686	*800	5850

TOP ENTRY CAST STEEL TRUNNION MOUNTED BALL VALVE

Top entry ball valves of series BE are available in size 2"~24", ANSI class rating 600 to 1500 and temperature ratings of –46℃ to 200℃. All meet the fire safe requirement of BS 6755 and API 6FA.

The top entry trunnion mounted design and unique seat retraction technique give the convenience of in–line repair or replaceing valve internal components without dismantling it from pipe line.

Because each ball seat shuts off the line fluid independently on the upstream and downstream side, of this series ball valves are suitable for double block and bleed application. Secondary sealant injection system for stem and seat is provided for emergency stop of accidental seat or stem leakage.

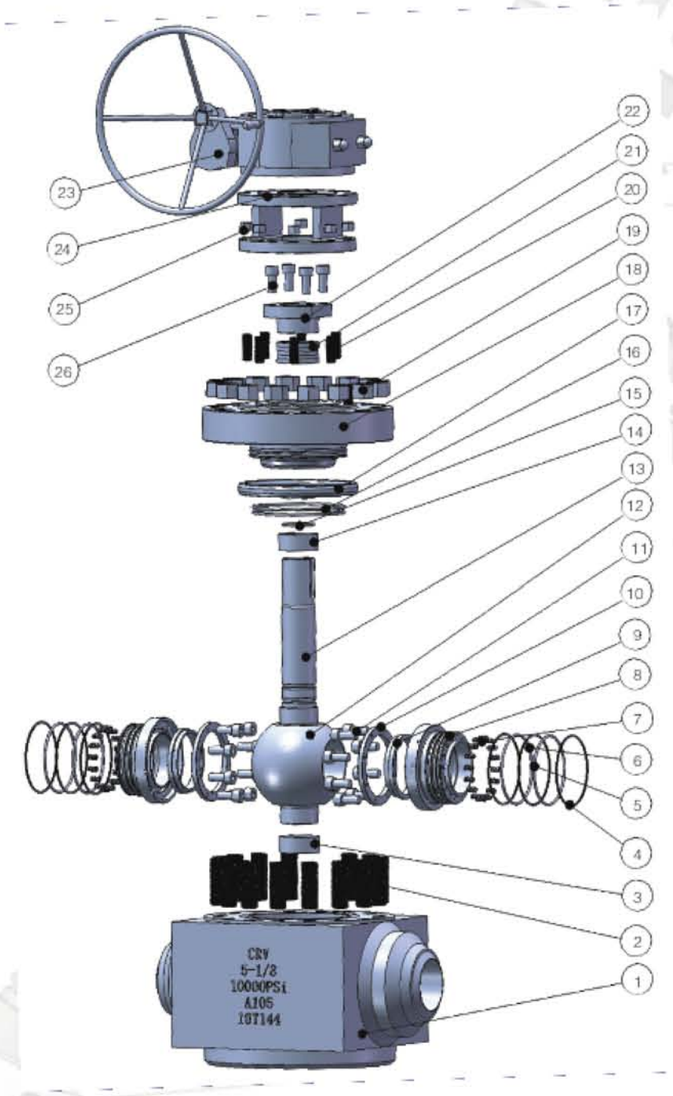
Detailed design features are exhibited in page 30,31

CARILO BALL VALVES

TOP ENTRY CAST STEEL TRUNNION MOUNTED BALL VALVE

● Form of Major Parts Name

No.	Part
1	Body
2	Bolt
3	Beating
4	Fire safe ring
5	O-ring
6	Thrust washer
7	spring
8	Seat
9	Seat ring
10	Seat ring
11	Screw
12	Ball
13	Stem
14	Bearing
15	O-ring
16	O-ring
17	Metal ring
18	Bonnet
19	Nut
20	Bolt
21	Stem Packing
22	Gland
23	Gear
24	Yoke
25	Nut
26	Screw



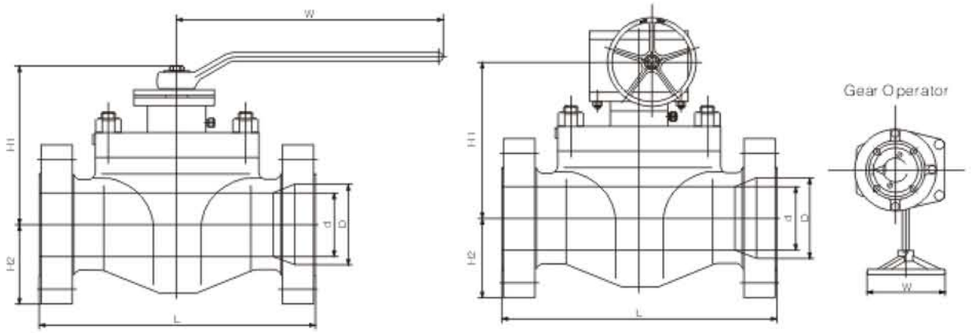
TOP ENTRY CAST STEEL TRUNNION MOUNTED BALL VALVE

● Form of Major Parts Materials

No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTM A105	ASTM A182-F316	ASTM A105	ASTM A350-LF2
2	Bolt	ASTM A193-B7	ASTM A193-B8M	ASTM A193-B7M	ASTM A320-L7
3	Beating	316+PTFE	316+PTFE	316+PTFE	316+PTFE
4	Fire safe ring	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
5	O-ring	Viton	Viton	Viton	Viton
6	Thrust washer	PTFE	PTFE	PTFE	PTFE
7	spring	ASTM 17-7pH	ASTM 17-7pH	ASTM 17-7pH	ASTM-17-7pH
8	Seat	ASTM A105/ENP	ASTM A182-F316	ASTM A105/ENP	ASTM A350-LF2/ENP
9	Seat ring	PEEK	PEEK	PEEK	PEEK
10	Seat ring	ASM A105/ENP	ASTM A182-F316	ASTM A105/ENP	ASTM A350-LF2/ENP
11	Screw	ASTM A193-B7	ASTM A193-B8M	ASTM A193-B7M	ASTM A320-L7
12	Ball	ASTM A105/ENP	ASTM A182-F316	ASTM A105/ENP	ASTM A350-LF2/ENP
13	Stem	ASTM A182-F6a	ASTM A182-F316	ASTM A182-F6a	ASTM A182 F6a
14	Bearing	316+PTFE	316+PTFE	316+PTFE	316+PTFE
15	O-ring	Viton	Viton	Viton	Viton
16	O-ring	Viton	Viton	Viton	Viton
17	Metal ring	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316
18	Bonnet	ASTM A105	ASTM A182-F316	ASTM A105	ASTM A350-LF2
19	Nut	ASTM A194-2H	ASTM A194-8M	ASTM A194-2HM	ASTM A194-4
20	Bolt	ASTM A193-B7	ASTM A193-B8M	ASTM A193-B7M	ASTM A320-L7
21	Stem Packing	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
22	Gland	ASTM A105	ASTM A182-F316	ASTM A105	ASTM A350-LF2
23	Gear	Ductile Iron	Ductile Iron	Ductile Iron	Ductile Iron
24	Yoke	ASTM A216-WCB	ASTM A216-WCB	ASTM A216-WCB	ASTM A216-WCB
25	Nut	ASTM A194-2H	ASTM A194-8M	ASTM A194-2HM	ASTM A194-4
26	Screw	ASTM A193-B7	ASTM A193-B8M	ASTM A193 B7M	ASTM A320-L7

CARILO BALL VALVES

TOP ENTRY CAST STEEL TRUNNION MOUNTED BALL VALVE



●Dimensions

600LB

	Size in	1-1/2	2	3	4	6	8	10	12	14	16	18	20	24
Full Port	D mm	38	49	74	100	150	201	252	303	334	385	436	487	589
	L mm	241	292	356	432	559	660	787	838	889	991	1092	1194	1397
	H1 mm	209	195	240	280	305	400	435	440	505	590	700	775	840
	H2 mm	70	110	110	175	195	280	285	320	340	410	445	510	640
	W mm	400	400	750	1000	*300	*300	*500	*600	*600	*600	*600	*600	*600
Weight (Kg)		30	38	80	150	296	438	601	625	1230	1535	2135	2640	3960

●Dimensions

900LB

	Size in	1-1/2	2	3	4	6	8	10	12
Full Port	D mm	38	49	74	100	150	201	252	303
	L mm	305	368	381	457	610	737	838	965
	H1 mm	215	200	240	280	350	390	480	538
	H2 mm	80	120	130	175	220	260	310	410
	W mm	400	750	1000	*300	*400	*600	*600	*600
Weight (Kg)		40	52	87	160	385	560	820	1125

●Dimensions

1500LB

	Size in	1-1/2	2	3	4	6	8	10	12
Full Port	D mm	38	49	74	100	144	192	239	287
	L mm	305	368	470	546	705	832	991	1130
	H1 mm	220	205	210	245	335	427	502	533
	H2 mm	90	120	125	160	255	340	381	438
	W mm	400	750	1000	*300	*400	*500	*600	*600
Weight (Kg)		40	60	115	194	580	752	1192	2170

* Gear Operator

HOW TO ORDER TRUNNION MOUNTED BALL VALVE

8*6	BS	1	R	–	G	,	A105N	/	12666
1	2	3	4		5		6		7

CARILO figure numbers are designed to cover essential features. When ordering ,please show the figure numbers and a detailed description to avoid misunderstanding of your requirements.

Following descriptions provide a basic guideline in valve specification:

●1 Valve Size

Full bore:

In	2	2-1/2	3	3-1/2	4	5	6	8	10	12	14
mm	50	65	80	90	100	125	150	200	250	300	350
In	16	18	20	22	24	26	28	30	32	34	36
mm	400	450	500	550	600	650	700	750	800	850	900
In	38	40	42	44	48	52	54	56	60	—	—
mm	950	1000	1050	1100	1200	1300	1350	1400	1500		

Reduced Bore:

In	2×1-1/2	2-1/2×2	3×2	4×3	6×4	8×6	10×8	12×10	14×12	16×14	18×16
mm	50*40	65*50	80*50	100*80	150*100	250*200	250*200	300*200	350*300	400*350	450*400
In	20×18	22×20	24×20	26×24	28×24	32×30	32×30	34×30	36×30	38×32	40×36
mm	500*450	550*500	600*500	650*600	700*600	800*750	800*750	850*750	900*750	950*800	1000*900

●2 Valve Types

Symbol	Valve Type	Symbol	Valve Type
BT	2-pcs Casting Trunnion Mounted type	BW	Fully Welded Trunnion Mounted type
BS	3-pcs Forging Trunnion Mounted type	BSP	Double Piston Effective Trunnion Mounted type
BE	Top Entry Trunnion Mounted type	BWP	Double Piston Effective Full Welded Trunnion Mounted type

●3 ASME Class

Code	1	3	4	6	8	9	15	25
Class(LB)	150	300	400	600	800	900	1500	2500

●4 End Connections

Symbol	End	Symbol	End
R	Raised face flanged end	S	Socket weld end
J	RTJ flanged end	N	Screwed end
B	Butt-weld end	SN	Socket Weld/Screwed End
F	Flat Face Flanged End	NC	55° Taper Screwed End

●5 Operator

Symbol	Description	Symbol	Description
	Lever	BS	Bare shaft
G	Gear operator	H	Hydraulic actuator
M	Electric actuator	L	Gas over oil actuator
P	Pneumatic actuator	C	Gear operator (Operation face≤350N)

HOW TO ORDER TRUNNION MOUNTED BALL VALVE

●6 Body Materials

Material	Classification Steel	ASTM Ref.	Recommended Temperature Limits		Application
			℃	℉	
WCB(A105)	Carbon	A216 Grade WCB	-29 to 425	-20 to 800	Steam, water oil, oil vapour, gas and general service
LCB(LI2)	Carbon	A352 Grade LCB	-46 to 350	-50 to 650	Low temperature
LCC	Carbon	A352 Grade LCC	-46 to 350	-50 to 650	
WC 6(F11)	Chromium Moly 1.25%Cr, 0.5% Mo	A217 Grade WC6	-29 to 590	-20 to 1100	Steam, water oil, oil vapour, gas and general service
WC 9(F22)	Chromium Moly 2.25%Cr, 1% Mo	A217 Grade WC9	-29 to 590	-20 to 1100	
C5	Chromium Moly 5%Cr, 0.5% Mo	A217 Grade C5	-29 to 650	-20 to 1200	Corrosive, erosive oil refinery service
CF8M(316)	Stainless 18%Cr,9% Ni 2%Mo	A351 Grade CF8M	-196 to 815	-320 to 1500	High and low temperature corrosion resistance
CF 8(304)	Stainless 18%Cr,8% Ni	A351 Grade CF 8	-196 to 815	-320 to 1500	
CF3M(316L)	Low Carbon Stainless 18%Cr,9% Ni	A351 Grade CF3M	-196 to 815	-320 to 1500	Cryogenic service is also available upon request
CF 3(304L)	Low Carbon Stainless 18%Cr,8% Ni	A351 Grade CF 3	-196 to 815	-320 to 1500	
CN7M Alloy 20	Stainless 19%Cr, 29% Ni	A351 Grade CN7M	-196 to 425	-320 to 800	Corrosion resistance

●7 Trim Code

Seat Insert		O-ring		Stem		Ball		Seat	
Code	Material	Code	Material	Code	Material	Code	Material	Code	Material
1	PTFE	1	NBR	1	F6a	1	F6a	1	F6a
2	NYLON1010	2	VITON A	2	F304	2	F304	2	F304
3	PEEK	3	VITON AED	3	A105N/ENP	3	A105N/ENP	3	A105N/ENP
4	Polyphenylene	4	VITON B	4	17-4PH	4	17-4PH	4	17-4PH
5	DEVLON V	5	HSN	5	AISI 4140	5	AISI 4140	5	AISI 4140
6	KEL-F	6		6	F316	6	F316	6	F316
7	NYLON 12	7	PTFE COATED VITON	7	F304L	7	F304L	7	F304L
8	PCTFE	8	VITON GLT	8	F316L	8	F316L	8	F316L
9	MOLON	9	BUNA-N	9	LF2/ENP	9	LF2/ENP	9	LF2/ENP
A	PVDF	A	ELAST-O-LION 101	A	F51	A	F51	A	F51
		B	EPDM						

Note: Other materials upon request.

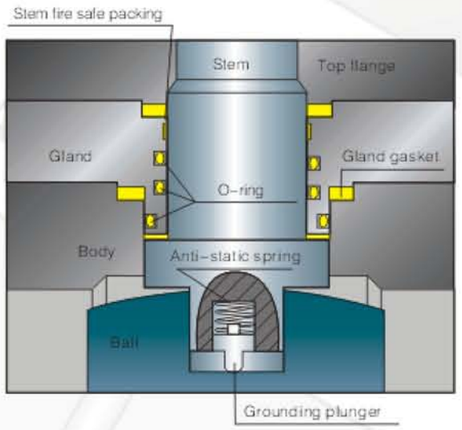
TRUNNION MOUNTED BALL VALVE DESIGN FEATURES

●Anti Blow-out Stem

The stem is made separately from the ball. The lower end of the stem is designed with an integral collar to be blowout-proof.

●Anti-static Device

The Anti-static Device is a standard feature of the CARILO ball valve. A spring-loaded pin assures the electrical continuity between the ball, stem and body, to avoid sparking during the turning of the stem to open and close the valve.



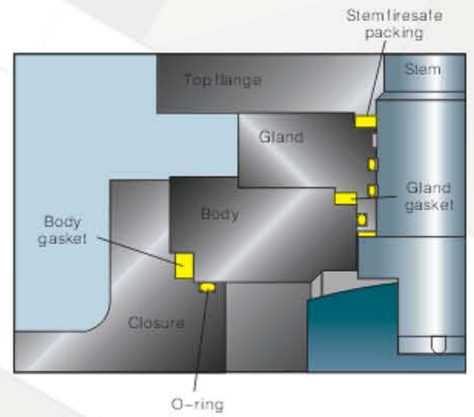
●Super Fire Safe Design

External leakage prevention

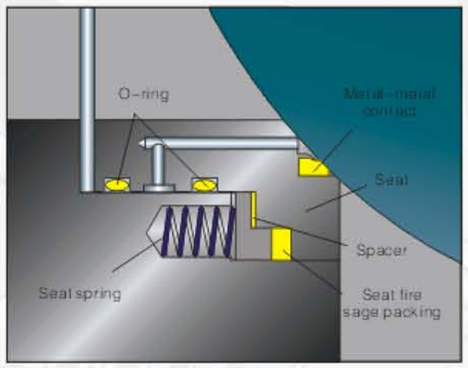
Leakage from the valve stem area is prevented with two O-rings seals and a gland gasket. Leakage through the valve body joint is also blocked by an O-ring seal and a body gasket. After a fire damages the O-rings, gland gasket and body gasket, the fire safe stem packing can avoid external process media leakage.

Internal leakage prevention

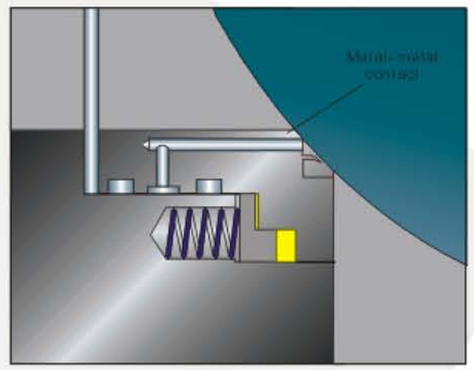
When soft goods such as O-rings, soft seats and a spacer are damaged by fire, the edge of the metal seat preloaded by the seat spring contacts with the ball to shut off the process media and minimize internal leakage through the valve bore. Also the fire safe graphite packing is compressed by the seat spring to prevent process media between the valve body and the seat.



Before fire



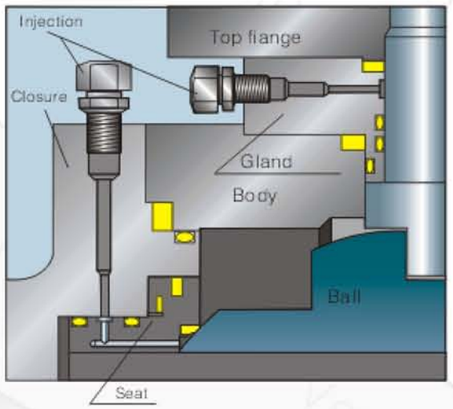
After fire



TRUNNION MOUNTED BALL VALVE DESIGN FEATURES

●Emergency Sealant Injection System

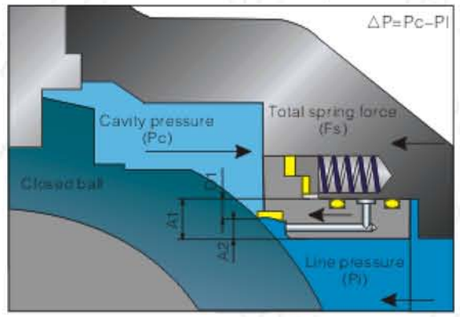
For 6 inch and larger CARILO Trunnion mounted ball valves, sealant injected fittings will be installed on both the stem and seats. When the sealing materials (soft seat or the stem o-ring) are damaged or decomposed by fire or other accidental causes, the seat and stem leakage can be prevented by the injection of sealant into these fittings. The fitting contains a check valve and also an internally installed check valve to provide backup sealing.



●Cavity Pressure Relief

When cavity pressure (Pc) is lower than seat spring and line pressure (Pl),i.e. △P*D1<Fs, then contact between ball and seat ring can ensure a tight seal.

Fig a. △P*D1<Fs



When cavity pressure is higher than seat spring and line pressure, i.e.P*D1>Fs, the self relieving action allows the valve seat to move slightly away from the ball surface. Therefore, redundant pressure inside the body cavity is discharged into the pipeline to restore the balance between the body cavity and (either upstream or downstream side).

●Double Block And Bleed

Each seat shuts off the process media independently on the upstream and downstream side of the ball, allowing double block operation. When the pressure is simultaneously applied to both sides of the ball in the closed position, the valve bore and the body cavity will be isolated from each other; And the pressure within the body cavity can be released through the drain plug.

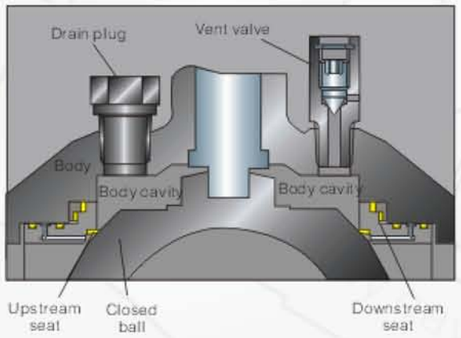
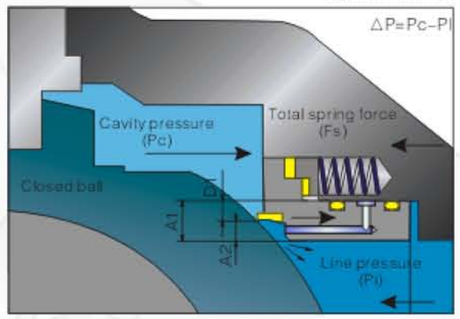


Fig b.△P*D1<Fs

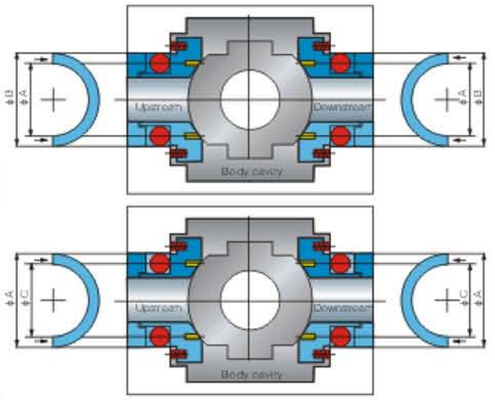


TRUNNION MOUNTED BALL VALVE DESIGN FEATURES

●Double Piston Effect Seats

Double piston effect seats are pressure energized in both directions. Upstream and downstream pressure creates the thrust. So the seat rings are pushed toward the ball at all times. If the upstream seat fails, the downstream seat can still insure valve tightness. Since double piston effect valves do not have the self-relieving function, they can not release valve body cavity redundant pressure. A pressure relief design feature is added.

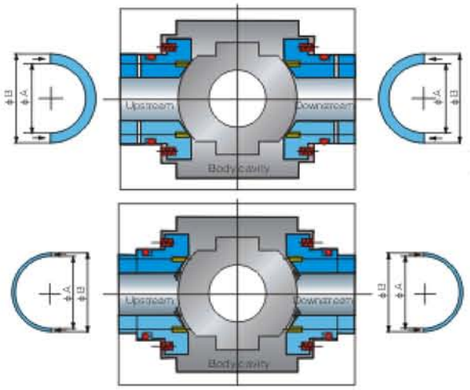
Standard
Optional double piston effetive



●Self Relieving Seats(single Piston Effect)

The single piston is the the standard design for trunnion mounted ball valves. Both the upstream and downstream fluid pressure pushes the seat rings towards the ball. If the thrust created by the body cavity pressure is greater than the spring preload and the fluid pressure thrust, the seats are pushed against the ball. Then, any redundant pressure in the body cavity is released automatically in the valves' fully opened or fully closed position.

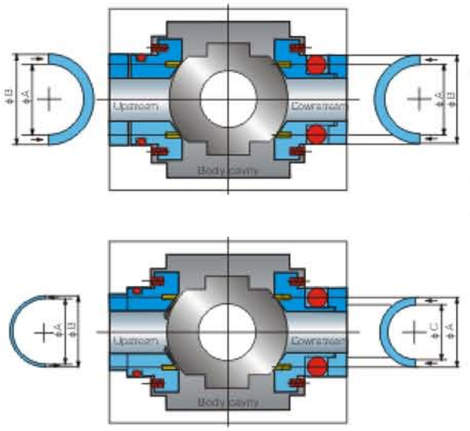
Optional
Standard single piston effective(self-relievng seats)



●Self Relieving Upstream Seat And Double Piston Effective Downstream Seat

The fluid pushes the double piston effect seat towards the ball on the downstream side. So the seat is pressure energized at all times. If the upstream seat fails, the down stream seat can still insure valve tightness.On the other side, the upstream seat is designed with a single piston effect, when pressure is greater than the spring preload and the fluid pressure thrust, the seats are pushed against the ball. Then, any redundant pressure between downstream seats and the body cavity shall be released automatically into upstream side.

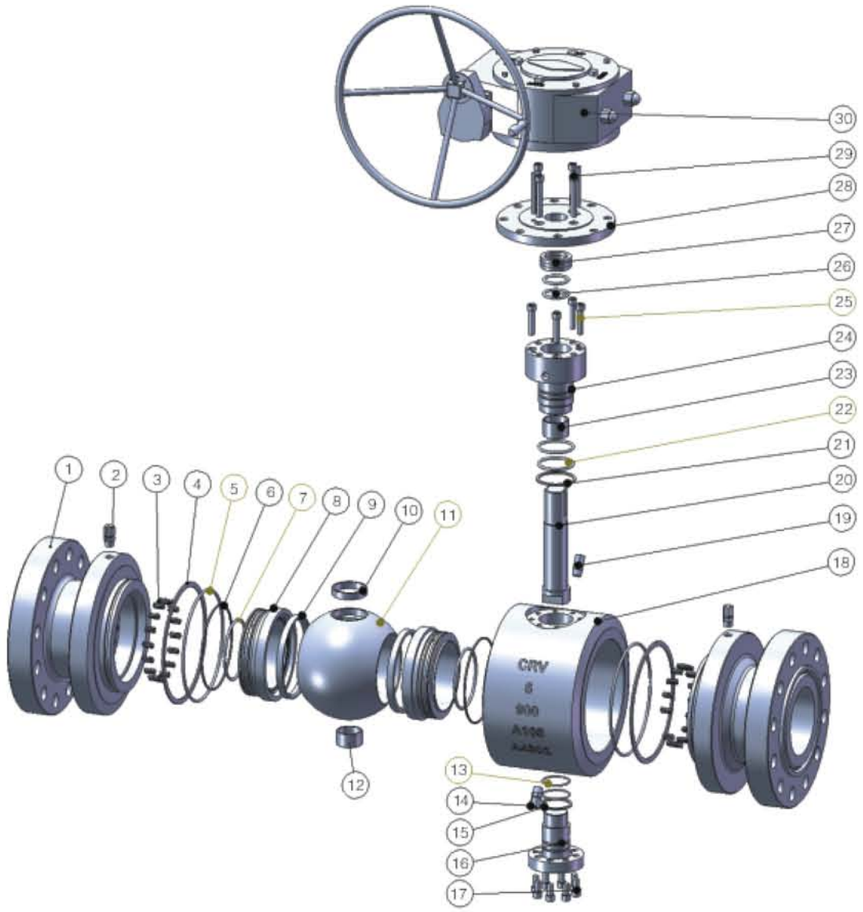
Optional
Optional upstream seat piston effective



WELDED TRUNNION MOUNTED BALL VALVE

●Form of Major Parts Name

No.	Part	No.	Part	No.	Part
1	Bonnet	11	Ball	21	Gasket
2	Injection fitting	12	Beating	22	O-ring
3	spring	13	O-ring	23	Beating
4	Gasket	14	Bleed	24	Stuffing box
5	O-ring	15	Gasket	25	Screw
6	Fire safe ring	16	Trunnion	26	O-ring
7	O-ring	17	Screw	27	Stem Packing
8	Seat	18	Body	28	Yoke
9	Seat ring	19	Block	29	Screw
10	Beating	20	Stem	30	Gear

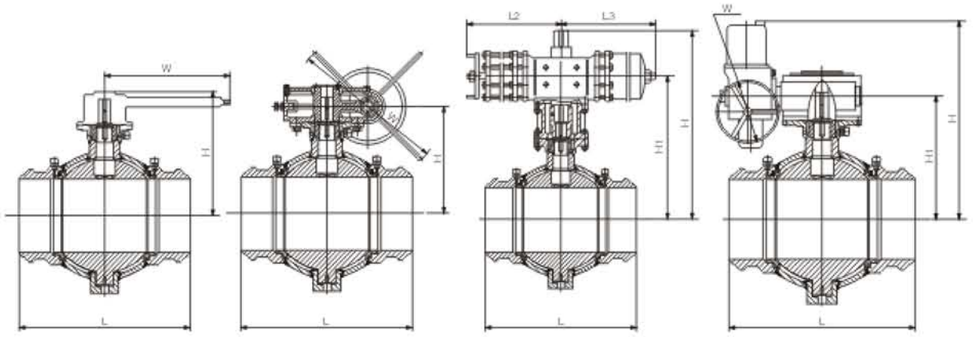


WELDED TRUNNION MOUNTED BALL VALVE

●Form of Major Parts Materials

No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Bonnet	ASTM A216-WCB	ASTM A351-CF8M	ASTM A216-WCB	ASTM A352-LCB
2	Injection fitting	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
3	spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
4	Gasket	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
5	O-ring	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON
6	Fire safe ring	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
7	O-ring	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON
8	Seat	ASTM A105+ENP	ASTM A182 F316	ASTM A182 F316	ASTM A350 LF2+ENP
9	Seat ring	RPTFE/NYLON/PEEK	RPTFE/NYLON/PEEK	RPTFE/NYLON/PEEK	RPTFE/NYLON/PEEK
10	Beating	316+PTFE	316+PTFE	316+PTFE	316+PTFE
11	Ball	ASTM A105/ENP	ASTM A182-F316	ASTM A105N/ENP	ASTM A350-LF2/ENP
12	Beating	316+PTFE	316+PTFE	316+PTFE	316+PTFE
13	O-ring	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON
14	Bleed	CS	SS	SS	SS
15	Gasket	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
16	Trunnion	ASTM A216-WCB/ENP	ASTM A351-CF8M	ASTM A216-WCB/ENP	ASTM A352-LCB/ENP
17	Screw	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
18	Body	ASTM A216-WCB	ASTM A351-CF8M	ASTM A216-WCB	ASTM A352-LCB
19	Block	CS	SS	SS	SS
20	Stem	ASTM A105/ENP	ASTM A182-F316	ASTM A105/ENP	ASTM A350-LF2/ENP
21	Gasket	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
22	O-ring	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON
23	Beating	316+PTFE	316+PTFE	316+PTFE	316+PTFE
24	Stuffing box	ASTM A105	ASTM A182 F316	ASTM A105	ASTM A350 LF2
25	Screw	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
26	O-ring	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON	NBR/HNBR/VITON
27	Stem Packing	Graphite/PTFE	Graphite/PTFE	Graphite/PTFE	Graphite/PTFE
28	Yoke	ASTM A105	ASTM A182 F316	ASTM A105	ASTM A350 LF2
29	Screw	ASTM A193 B7	ASTM A193 B8M	ASTM A193 B7M	ASTM A320 L7
30	Gear	Components	Components	Components	Components

FULL WELDED TRUNNION MOUNTED BALL VALVE



Dimensions

150LB

	Size in	2	3	4	6	8	10	12	14	16	18	20	22	24
Full Port	D mm	49	74	100	150	201	252	303	334	385	435	487	538	589
	L mm	46	283	305	457	521	559	635	762	838	914	991	1092	1143
	H mm	165	193	231	329	393	401	441	481	598	643	708	798	863
	W mm	230	400	460	1000	*500	*500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		17	33	50	93	166	273	475	570	778	935	1190	1346	1579

Dimensions

300LB

	Size in	2	3	4	6	8	10	12	14	16	18	20	22	24
Full Port	D mm	49	74	100	150	201	252	303	334	385	435	487	538	589
	L mm	216	283	305	457	521	559	635	762	838	914	991	1092	1143
	H mm	165	193	231	329	393	401	441	481	598	643	708	798	863
	W mm	230	400	460	1000	*500	*500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		18	40	63	150	240	305	407	602	1000	1160	1320	1540	1874

Dimensions

150LB

	Size in	3"2"3	4"3"4	6"4"6	8"6"8	10"8"10	12"10"12	14"12"14	16"14"16	18"16"18	20"18"20	22"20"22	24"20"24
Reduced Port	d mm	49	74	100	150	201	252	303	334	385	435	487	487
	D mm	74	100	150	201	252	303	334	385	435	487	538	589
	L mm	283	305	457	521	559	635	762	838	914	991	1092	1143
	H mm	165	193	231	329	393	393	441	481	598	643	643	708
	W mm	230	400	400	460	1000	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		30	47	90	161	268	467	560	766	902	1130	1300	1520

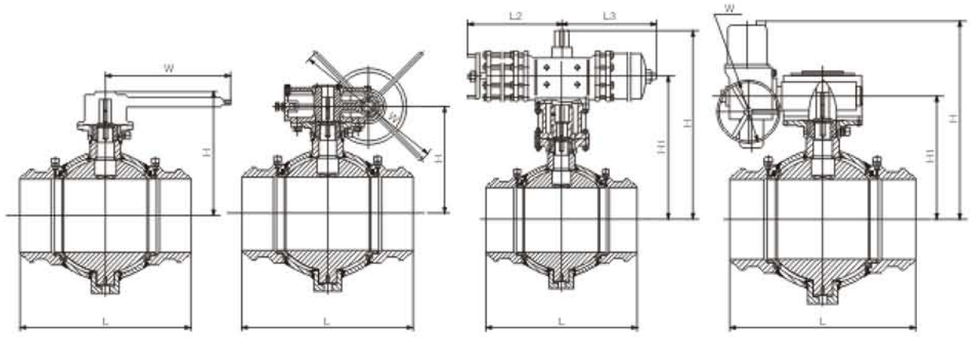
Dimensions

300LB

	Size in	3"2"3	4"3"4	6"4"6	8"6"8	10"8"10	12"10"12	14"12"14	16"14"16	18"16"18	20"18"20	22"20"22	24"20"24
Reduced Port	d mm	49	74	100	150	201	252	303	334	385	435	487	487
	D mm	74	100	150	201	252	303	334	385	435	487	538	589
	L mm	283	305	457	521	559	635	762	838	914	991	1092	1143
	H mm	165	193	231	329	393	393	440	481	598	643	643	708
	W mm	230	400	750	1000	1500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		38	60	147	234	295	488	570	910	1020	1280	1360	1670

*Gear Operator

FULL WELDED TRUNNION MOUNTED BALL VALVE



Dimensions

600LB

	Size in	2	3	4	6	8	10	12	14	16	18	20	24
Full Port	D mm	49	74	100	150	201	22	303	334	385	435	487	589
	L mm	292	356	432	559	660	787	838	889	991	1092	1194	1397
	H mm	176	247	276	363	363	426	548	598	648	740	810	920
	W mm	400	750	1000	1500	*500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		27	50	80	251.8	350	600	820	1130	1550	2100	2800	3626

Dimensions

900LB

	Size in	2	3	4	6	8	10	12	14	16	18	20	24
Full Port	D mm	49	74	100	150	201	252	303	322	373	423	471	570
	L mm	368	381	457	610	737	838	965	1029	1130	1219	1321	1549
	H mm	192	279	315	323	381	518	568	665	730	795	825	973
	W mm	460	1000	1500	*500	*500	*500	*500	*500	*500	*500	*610	*610
Weight (Kg)		53	97	138	288	448	748	1018	1398	1828	2328	2928	4178

Dimensions

600LB

	Size in	3"2"3	4"3"4	6"4"6	8"6"8	10"8"10	12"10"12	14"12"14	16"14"16	18"16"18	20"18"20	24"20"24
Reduced Port	d mm	49	74	100	150	201	252	303	334	385	435	487
	D mm	74	100	150	201	252	303	334	385	435	481	589
	L mm	356	432	559	660	787	838	889	991	1092	1194	1397
	H mm	176	247	276	263	263	426	548	598	648	740	810
	W mm	400	750	1000	1500	*500	*500	*500	*500	*500	*500	*500
Weight (Kg)		41	70	122	255	440	6620	1060	1440	1860	2400	3240

Dimensions

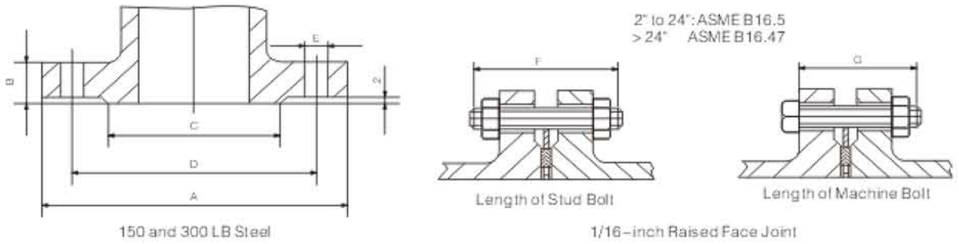
900LB

	Size in	3"2"3	4"3"4	6"4"6	8"6"8	10"8"10	12"10"12	14"12"14	16"14"16	18"16"18	20"18"20	24"20"24
Reduced Port	d mm	49	74	100	150	201	252	303	322	373	423	471
	D mm	74	100	150	201	252	303	322	373	423	471	570
	L mm	381	457	610	737	838	965	1029	1130	1219	1321	1549
	H mm	192	279	315	323	381	518	568	665	730	795	825
	W mm	460	1000	1500	*500	*500	*500	*500	*500	*500	*500	*610
Weight (Kg)		83	103	201	348	598	788	1100	1420	1928	2428	3578

*Gear Operator

CARILO BALL VALVES

FLANGED SIZE

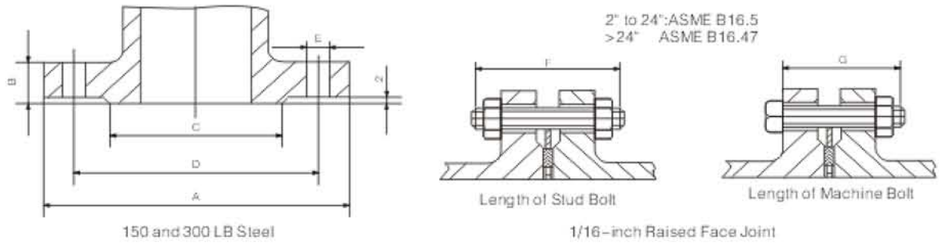


CLASS 150.RF

Nominal Size		A		B*		C		D		E		Bolt		F		G	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	No.	Diam	in	mm	in	mm
2	50	6.0	150	0.64	16.3	3.62	92.1	4.75	120.7	0.75	19	4	5/8	3.25	85	2.75	70
2 1/2	65	7.0	180	0.70	17.9	4.12	104.8	5.50	139.7	0.75	19	4	5/8	3.50	90	3.00	75
3	80	7.5	190	0.76	19.5	5.00	127.0	6.00	152.4	0.75	19	4	5/8	3.50	90	3.00	75
4	100	9.0	230	0.95	24.3	6.19	157.2	7.50	190.5	0.75	19	8	5/8	3.50	90	3.00	75
5	125	10.0	255	0.95	274.3	7.31	185.7	8.50	215.9	0.88	22	8	3/4	3.75	95	3.25	85
6	150	11.0	280	1.00	25.9	8.50	215.9	9.50	241.3	0.88	22	8	3/4	4.00	100	3.25	85
8	200	13.5	345	1.14	29	10.62	269.9	11.75	298.5	0.88	22	8	3/4	4.25	110	3.50	90
10	250	16.0	405	1.2	30.6	12.75	323.8	14.25	362.0	1.00	26	12	7/8	4.50	115	4.00	100
12	300	19.0	485	1.26	32.2	15.00	381.0	17.00	431.8	1.00	26	12	7/8	4.75	120	4.00	100
14	350	21.0	535	1.39	35.4	16.25	412.8	18.75	476.3	1.12	29	12	1	5.25	135	4.50	115
16	400	23.5	595	1.45	37	18.50	469.9	21.25	539.8	1.12	29	16	1	5.25	135	4.50	115
18	450	25.0	635.0	1.57	40.1	21.00	533.4	22.75	577.9	1.25	32	16	1 1/8	5.75	145	5.00	125
20	500	27.5	700	1.7	43.3	23.00	584.2	25.00	653.0	1.25	32	20	1 1/8	6.25	160	5.50	140
24	600	32.0	815	1.88	48.1	27.25	692.2	29.50	749.3	1.38	35	20	1 1/4	6.75	170	6.00	150
26	650	34.25	870.0	2.7	68.7	29.50	749	31.75	806.4	1.38	35	24	1-1/4	8.50	215	7.50	190
28	700	36.50	925	2.83	71.9	31.50	800	34.00	863.6	1.38	35	28	1-1/4	8.75	220	7.75	195
30	750	38.75	985	2.95	75.1	33.75	857	36.00	914.4	1.38	35	28	1 1/4	9.00	230	8.25	210
32	800	41.75	1060	3.2	81.4	36.00	914	38.50	977.9	1.62	41	28	1-1/2	10.00	255	8.75	220
34	850	43.75	1110	3.26	83	38.00	965	40.50	1028.7	1.62	41	32	1-1/2	10.25	260	9.00	230
36	900	46.0	1170	3.57	90.9	40.25	1022	42.75	1085.8	1.62	41	32	1 1/2	10.75	275	10.00	240
40	1000	50.75	1290	3.57	90.9	44.25	1124	47.25	1200.2	1.62	41	36	1-1/2	10.75	275	9.50	240
42	1050	53.00	1345	3.83	97.3	47.00	114	49.50	1257.3	1.62	41	36	1-1/2	11.25	285	10.00	255
44	1100	55.25	1405	4.02	102.1	49.00	1245	51.75	1314.4	1.62	41	40	1-1/2	11.50	290	10.25	260
48	1200	59.50	1510	4.26	108.4	53.50	1359	56.00	1422.4	1.62	41	44	1-1/2	12.25	310	11.00	280

(1) The regular 1/16 inch (1.6mm) raised face 150 and 300 lb flanges is included in the minimum flange thickness given above, but other raised faces must be added thereto.
(2) Flanges for nominal Pipe Size above 24 inches are available to BS 3293, API 605 and MSS-SP 44.
* For integral valve flange of class 150, the dimension "B" is 0.62 for 2", 0.69 for 2 1/2" and 0.75 for 3".

FLANGED SIZE



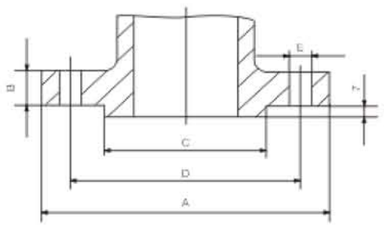
CLASS 300.RF

Nominal Size		A		B*		C		D		E		Bolt		F		G	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	No.	Diam	in	mm	in	mm
2	50	6.50	165	0.89	227	3.62	92.1	5.00	127.0	0.75	19	8	5/8	3.50	90	3.00	75
2 1/2	65	7.50	190	1.00	25.9	4.12	104.8	5.88	149.2	0.88	22	8	3/4	4.00	100	3.25	85
3	80	8.25	210	1.14	29	5.00	127.0	6.62	168.3	0.88	22	8	3/4	4.25	110	3.50	90
4	100	10.00	255	1.26	32.2	6.19	157.2	7.88	200	0.88	22	8	3/4	4.50	115	3.75	95
5	125	11.00	280	1.39	35.4	7.31	185.7	9.25	235.0	0.88	22	8	3/4	4.75	120	4.25	110
6	150	12.50	320	1.45	37	8.50	215.9	10.62	269.9	0.88	22	12	3/4	4.75	120	4.25	110
8	200	15.00	380	1.64	41.7	10.62	269.9	13.00	330.2	1.00	25	12	7/8	5.50	140	4.75	120
10	250	17.50	445	1.89	48.1	12.75	323.8	15.25	387.4	1.12	29	16	1	6.25	160	5.50	140
12	300	20.50	520	2.01	51.3	15.00	381.0	17.75	450.8	1.25	32	16	1 1/8	6.75	170	5.75	145
14	350	23.00	585	2.14	54.4	16.25	412.8	20.25	514.4	1.25	32	20	1 1/8	7.00	180	6.25	160
16	400	25.50	650	2.26	57.6	18.50	469.9	22.50	571.5	1.38	35	20	1 1/4	7.50	190	6.50	165
18	450	28.00	710	2.39	690.8	21.00	533.4	24.75	628.6	1.38	35	24	1 1/4	7.75	195	6.75	170
20	500	30.50	775	2.52	64	23.00	584.2	27.00	685.8	1.38	35	24	1 1/4	8.00	205	7.25	185
24	600	36.00	915	2.76	70.3	27.25	692.2	32.00	812.8	1.62	41	24	1 1/2	9.00	230	8.00	205
26	650	38.25	970	3.14	79.8	29.50	749	34.50	876.3	1.75	45	28	1-5/8	10.00	255	8.75	220
28	700	40.75	1035	3.39	86.2	31.50	800	37.00	939.8	1.75	45	28	1-5/8	10.75	275	9.50	240
30	750	43.00	1090	3.64	92.5	33.75	857	39.25	997.0	1.88	48	28	1 3/4	11.50	290	10.75	275
32	800	45.25	1150	3.89	98.9	36.00	914	41.50	1054.1	2.00	51	28	1-7/8	12.25	310	10.75	275
34	850	47.50	1250	4.02	102.1	38.00	965	43.50	1104.9	2.00	51	28	1-7/8	12.50	320	11.00	280
36	900	50.00	1270	4.14	105.2	40.25	1022	46.00	1168.4	2.12	54	32	2	13.00	330	11.25	285
40	1000	48.75	1240	5.52	114.8	42.75	1086	45.50	1155.7	1.75	45	32	1-5/8	13.00	330	11.50	290
42	1050	50.75	1290	4.7	119.5	44.75	1137	47.50	1206.5	1.75	45	32	1-5/8	13.25	335	11.75	300
44	1100	53.25	1355	4.89	124.3	47.00	1194	49.75	1263.6	1.88	48	32	1-3/8	14.00	355	12.25	310
48	1200	57.75	1465	5.26	133.8	51.25	1302	54.00	1371.6	2.00	51	32	1-7/8	14.00	380	13.25	335

(1) The regular 1/16 inch (1.6mm) raised face 150 and 300 lb flanges is included in the minimum flange thickness given above, but other raised faces must be added thereto.
(2) Flanges for nominal Pipe Size above 24 inches are available to BS 3293, API 605 and MSS-SP 44.
* For integral valve flange of class 150, the dimension "B" is 0.62 for 2", 0.69 for 2 1/2" and 0.75 for 3".

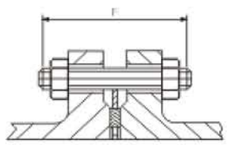
CARILO BALL VALVES

FLANGED SIZE

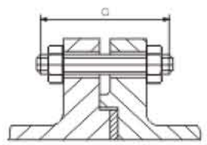


600LB and 900LB Steel

2" to 24":ASME B16.5
>24" ASME B16.47



Length of Stud Bolt
Male to Male
1/4–inch Raised Face Flanged Joint



Length of Stud Bolt
Male to Female
Flanged Joint

CLASS 600.RF

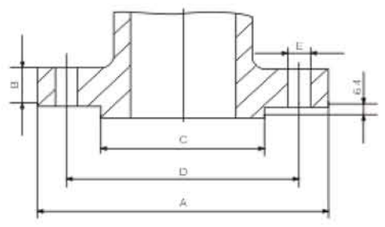
Nominal Size		A		B		C		D		E		Bolt		F		G	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	No.	Diam	in	mm	in	mm
2	50	6.50	165	1.00	25.4	3.62	92.1	5.00	127.0	0.75	19	8	5/8	4.25	110	4	100
2 1/2	65	7.50	190	1.12	28.6	4.12	104.8	5.88	149.2	0.88	22	8	3/4	4.75	120	4 1/4	115
3	80	8.25	210	1.25	31.8	5.00	127.0	6.62	168.3	0.88	22	8	3/4	5.00	125	4 1/2	120
4	100	10.75	275	1.50	38.1	6.19	157.2	8.50	215.9	1.00	26	8	7/8	5.75	145	5 1/2	140
5	125	13.00	330	1.75	44.5	7.31	185.7	10.50	266.7	1.12	29	8	1	6.50	165	6 1/4	160
6	150	14.00	355	1.88	47.7	8.50	215.9	11.50	292.1	1.12	29	12	1	6.75	170	6 1/2	165
8	200	16.50	420	2.19	55.6	10.62	269.9	13.75	349.2	1.25	32	12	1 1/8	7.50	190	7 1/4	185
10	250	20.00	510	2.50	63.5	12.75	323.8	17.00	431.8	1.38	35	16	1 1/4	8.50	215	8 1/4	210
12	300	22.00	560	2.62	66.7	15.00	381.0	19.25	489.0	1.38	35	20	1 1/4	8.75	220	8 1/2	215
14	350	23.75	605	2.75	69.9	16.25	412.8	20.75	527.0	1.50	38	20	1 3/8	9.25	235	9	230
16	400	27.00	685	3.00	76.2	18.50	469.9	23.75	603.2	1.62	41	20	1 1/2	10.00	255	9 3/4	250
18	450	29.25	745	3.25	82.6	21.00	533.4	25.75	654.0	1.75	45	20	1 5/8	10.75	275	10 1/2	265
20	500	32.00	815	3.50	88.9	23.00	584.2	28.50	723.9	1.75	45	24	1 5/8	11.25	285	11	280
24	600	37.00	940	4.00	101.6	27.25	692.2	33.00	838.20	2.00	51	24	1 7/8	13.00	330	12 3/4	325
26	650	40.00	1015	4.25	108.0	29.50	749	360	914.4	2.00	51	28	1-5/8	13.50	345	13.25	335
28	700	42.25	1075	4.38	111.2	31.50	800	380	965.2	2.12	54	28	1-5/8	14.00	355	14.50	350
32	800	47.00	1195	4.62	117.5	36.00	914	42.5	1079.5	2.38	60.5	28	1-7/8	15.00	380	14.50	370
34	850	49.00	1245	4.75	120.7	38.00	965	44.5	1130.2	2.38	60.5	28	1-7/8	15.25	390	15.00	380
36	900	51.75	1315	4.88	124.0	40.25	1022	47	1193.8	2.62	66.5	28	2	16.00	405	15.75	400
40	1000	52.00	1320	6.25	158.8	43.75	1111	47.75	1212.8	2.38	66.5	32	1-5/8	18.75	475	18.50	470
42	1050	55.25	1405	6.62	168.3	46.00	1168	50.5	1282.7	2.62	66.5	28	1-5/8	19.25	490	19.00	485
44	1100	57.25	1455	6.81	173.1	48.25	1226	52.5	1333.5	2.62	66.5	32	1-3/4	19.75	500	19.50	490
48	1200	62.75	1595	7.44	189.0	52.50	1334	57.5	1460.5	2.88	73.2	32	1-7/8	21.50	545	21.25	540

CLASS 900.RF

Nominal Size		A		B		C		D		E		Bolt		F		G	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	No.	Diam	in	mm	in	mm
2	50	8.50	215	1.50	38.1	3.62	91.9	6.50	165.1	1.00	26	8	7/8	5.75	145	5 1/2	140
2 1/2	65	9.62	245	1.62	41.3	4.12	104.6	7.50	190.5	1.12	29	8	1	6.25	160	6	150
3	80	9.50	240	1.50	38.1	5	127.0	7.50	190.5	1.00	26	8	7/8	5.75	145	5 1/2	140
4	100	11.50	290	1.75	44.5	6.19	157.2	9.25	235.0	1.25	32	8	1 1/8	6.75	170	6 1/2	165
5	125	13.75	350	2.00	50.8	7.31	185.7	11.00	279.4	1.38	35	8	1 1/4	7.50	190	7 1/4	185
6	150	15.00	380	2.19	55.6	8.5	215.9	12.50	317.5	1.25	32	12	1 1/8	7.50	190	7 1/4	185
8	200	18.50	470	2.50	63.5	10.62	268.7	15.50	393.7	1.50	38	12	1-3/8	8.75	220	8 1/2	215
10	250	21.50	545	2.75	69.9	12.75	323.9	18.50	469.9	1.50	38	16	1-3/8	9.25	235	9	230
12	300	24.00	610	3.12	79.4	15.0	381.0	21.00	533.4	1.50	38	20	1-3/8	10.00	255	9 3/4	280
14	350	25.25	640	3.38	85.8	16.25	412.8	22.00	558.8	1.62	41	20	1 1/2	10.75	275	10 1/2	265
16	400	27.75	705	3.50	88.9	18.5	469.9	24.25	616.0	1.75	45	20	1 5/8	11.25	285	11	280
18	450	31.00	785	4.00	101.6	21	533.4	27.00	685.8	2.00	51	20	1 7/8	12.75	325	12 1/2	320
20	500	33.75	855	4.25	108.0	23	584.2	29.50	749.3	2.12	54	20	2	13.75	350	13 1/2	345
24	600	41.00	1040	5.50	139.7	27.25	692.2	35.50	901.7	2.62	66.5	20	2 1/2	17.25	440	17	430
28	700	46.00	1170	5.62	142.9	31.50	800	41.25	1022.4	3.12	79.5	20	3	18.5	470	18.25	465
32	800	51.75	1315	6.25	158.8	36.00	914	45.5	1155.7	3.38	86	20	3-1/4	20.25	515	20.00	510
36	900	57.50	1460	6.75	171.5	40.25	1022	50.75	1289	3.62	92	20	3-1/2	21.75	555	21.50	545

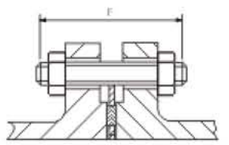
(1) The regular 1/4 inch (mm) raised face of 600, 900, 1500 and 2500 lb flanges is not included in the minimum flange thickness given above. The addition of any facing is beyond outside edge of the flange.
(2) Stud bolts length "G" also applies for tongue to groove flanged joint.

FLANGED SIZE

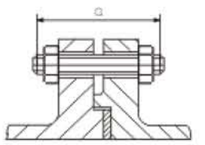


600LB and 900LB Steel

2" to 24":ASME B16.5



Length of Stud Bolt
Male to Male
1/4–inch Raised Face Flanged Joint



Length of Stud Bolt
Male to Female
Flanged Joint

CLASS 1500.RF

Nominal Size		A		B		C		D		E		Bolt		F		G	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	No.	Diam	in	mm	in	mm
2	50	8.50	215	1.50	38.1	3.62	92.1	6.50	165.1	1.00	26	8	7/8	5.75	145	5 1/2	140
2 1/2	65	9.62	245	1.62	41.3	4.12	104.8	7.50	190.5	1.12	29	8	1	6.25	160	6	150
3	80	10.50	265	1.88	47.7	5.00	127.0	8.00	203.2	1.25	32	8	1 1/8	7.00	180	6 3/4	170
4	100	12.25	310	2.12	54	6.19	157.2	9.50	241.3	1.38	35	8	1 1/4	7.75	195	7 1/2	190
5	125	14.75	375	2.88	73.1	7.31	185.7	11.50	292.1	1.62	41	8	1 1/2	9.75	250	9 1/2	240
6	150	15.50	395	3.25	82.6	8.50	215.9	12.50	317.5	1.50	38	12	1 3/8	10.25	260	10	255
8	200	19.00	485	3.62	92.1	10.62	269.9	15.50	393.7	1.75	45	12	1 5/8	11.50	290	11 1/4	285
10	250	23.00	585	4.25	108.0	12.75	323.8	19.00	482.6	2.00	51	12	1 7/8	13.25	335	13	330
12	300	26.50	675	4.88	124.0	15.00	381.0	22.50	571.5	2.12	54	16	2	14.75	375	14 1/2	370
14	350	29.50	750	5.25	133.4	16.25	412.8	25.00	635	2.38	60.5	16	2 1/4	16.00	405	15 3/4	400
16	400	32.50	825	5.75	146.1	18.50	469.9	27.75	704.8	2.62	66.5	16	2 1/2	17.50	445	17 1/4	440
18	450	35.00	915	6.38	162.1	21.00	533.4	30.50	774.7	2.88	73	16	2 3/4	19.50	495	19 1/4	490
20	500	38.75	985	7.00	177.8	23.00	584.2	32.75	831.8	3.12	79	16	3	21.25	540	21	535
24	600	46.00	1170	8.00	203.2	27.25	692.2	39.00	990.6	3.62	91.9	16	3 1/2	24.25	615	24	610

CLASS 2500.RF

Nominal Size		A		B		C		D		E		Bolt		F		G	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	No.	Diam	in	mm	in	mm
2	50	9.25	235.0	2.00	50.9	3.62	92.1	6.75	171.4	1.12	29	8	7/8	7.00	180	6 3/4	170
2 1/2	65	10.50	265	2.25	57.2	4.12	104.8	7.75	196.8	1.25	32	8	1	7.75	101.5	7 1/2	190
3	80	12.00	305	2.62	66.7	5.00	127.0	9.00	228.6	1.38	35	8	1 1/4	8.75	220	8 1/2	215
4	100	14.00	355	3.00	76.2	6.19	157.2	10.75	273.0	1.62	41	8	1 1/2	10.00	255	9 3/4	250
5	125	16.50	420	3.62	92.1	7.31	185.7	12.75	323.8	1.88	48	8	1 3/4	11.75	300	11 1/2	290
6	150	19.00	485	4.25	108.0	8.50	215.9	14.50	368.3	2.12	54	8	2	13.50	345	13 1/2	335
8	200	21.75	550	5.00	127.0	10.62	269.9	17.25	438.2	2.12	54	12	2	15.00	380	14 3/4	375
10	250	26.50	675	6.50	165.1	12.75	323.8	21.25	539.8	2.62	66.5	12	2 1/2	19.25	490	19	485
12	300	30.00	760	7.25	184.2	15.00	381.0	24.38	619.1	2.88	73	12	2 3/4	21.25	540	21	535

(1) The regular 1/4 inch (mm) raised face of 600, 900, 1500 and 2500 lb flanges is not included in the minimum flange thickness given above. The addition of any facing is beyond outside edge of the flange.
(2) Stud bolts length "G" also applies for tongue to groove flanged joint.

CARILO BALL VALVES

Impact Test

Chemical Analyze

Mechanical Test

These advanced software applications are combined in Carilo with extensive experience of more than 15 years in critical applications in the chemical, oil, gas and refining industries to design superior quality valves that meet the most demanding performance requirements of our customers. All main components of CARILO valves are designed in accordance with the applicable international standards. Prediction by Finite Element analysis of stress levels and deflection is part of our standard procedures to design and verify the components and the valve assembly. Stress tests by strain gauges are also carried out to validate FE models. In the case of new products a prototype is checked by extensive physical testing using research & development department internal facilities and procedures.

Spectro Test

Fire Safe Test

Low Temperature Test

According to customer's requirements valves can be designed, manufactured and tested to the following international standards:

- API: 6A, 6D, 607, 598
- ASME: B16.5, B16.10, B16.25, B16.34, B31.3, B31.4, B31.8
- MSS: SP25, SP44, SP53, SP54, SP55, SP61, SP72, SP82
- BS: 1503, 1504, 1560, 2080, 4504, 5146, 5351, 6755
- ISO: 14313, 14723, 15156
- ASME: Section V, Section VIII Div.1 and 2 Section IX
- ASTM: E94, E142, E165, E280, E446, E709
- NACE: MR 01-75
- EN: 558, 1503, 1626, 1983, 5211, 12266, 12516, 12567, 12570, 12627, 12982

CARILO BALL VALVES