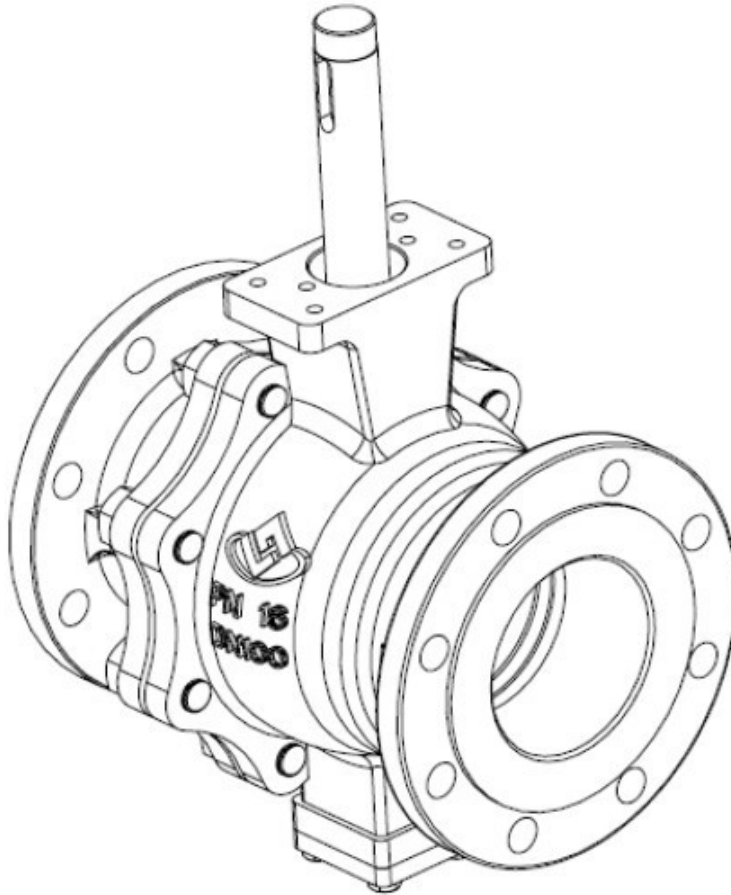




# **BALL VALVE**

## **OPERATION & MAINTENANCE MANUAL**

### **RR&RB-Series**



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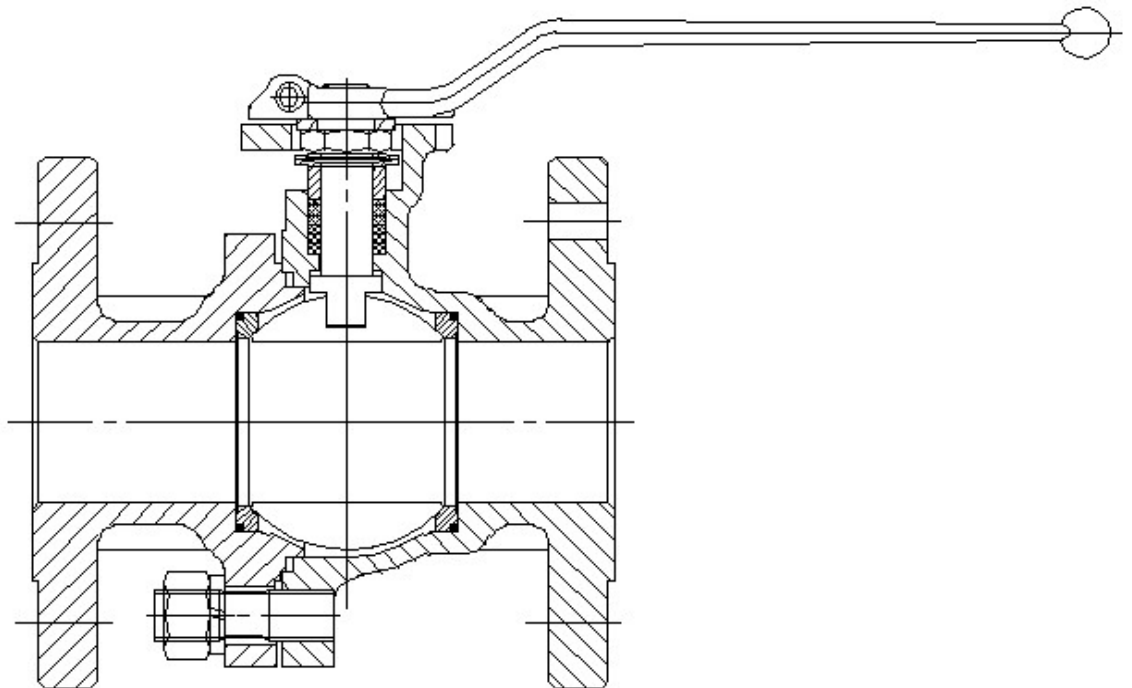
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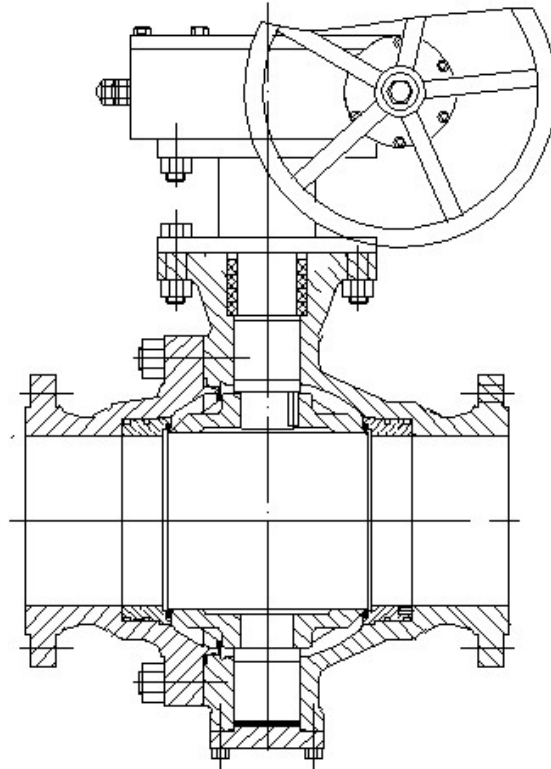
## 1 Description and Specification

### 1.1 Description

RR and RB series trunnion mounted ball valve is in two-piece body, mainly intended for shut off or isolating service. When it is actuated, the torque is transmitted to the stem down to drive ball bore to be parallel with valve flow path at full open position or cross with valve flow path at full closed position. It is with bidirectional tightness allowing for shut off at both sides. Spring loaded metal and soft seated designs are available for various applications.



RR series floating ball valve



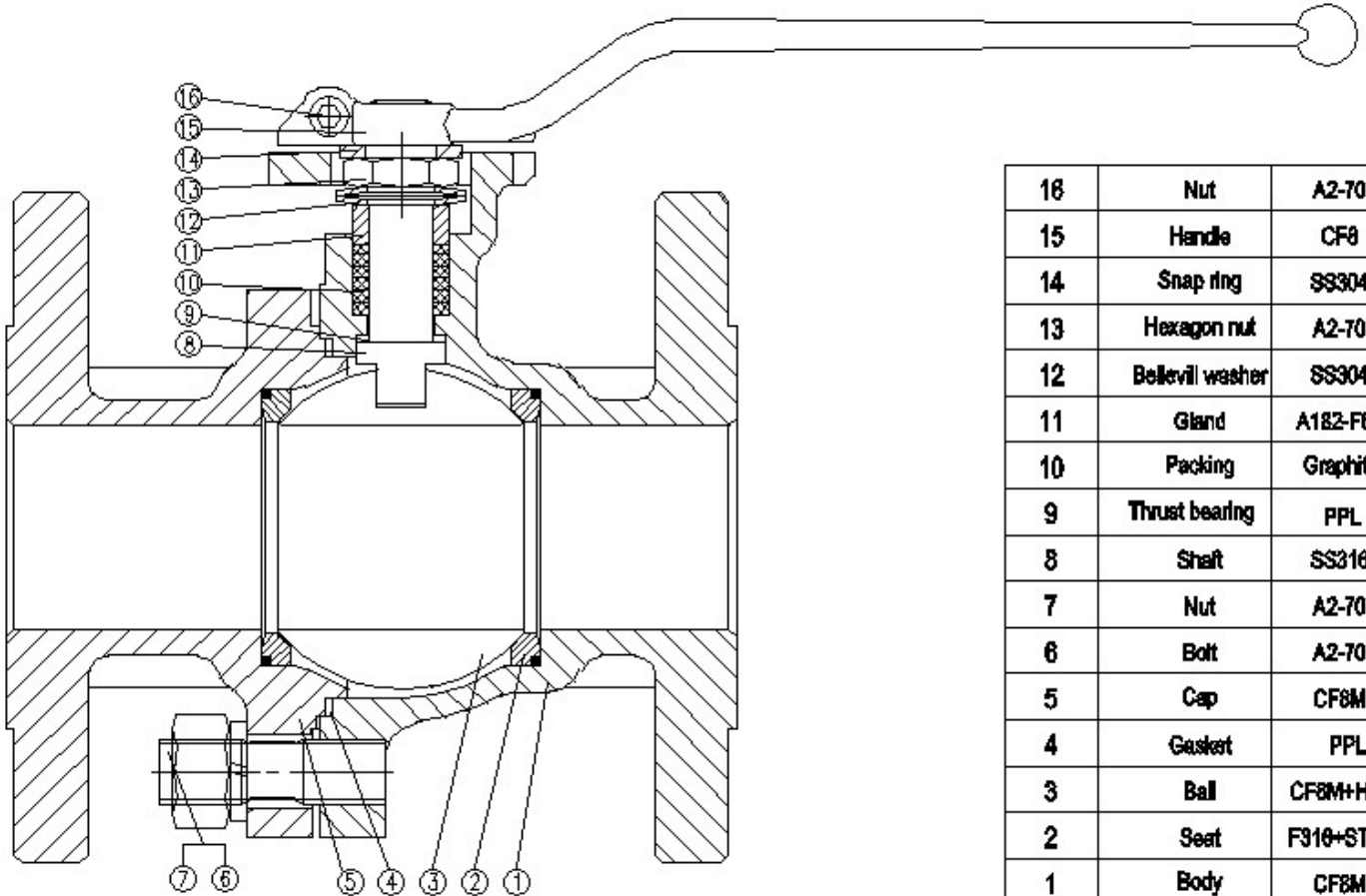
RB series trunnion mounted ball valve

**1.2 Performance Specification**

Size range	DN15-DN500 (1/2"~20")
Pressure rating	10-40 Bar/ANSI150-ANSI300
Testing pressure for shell	1.5 X PN
Testing pressure for seat	1.1 X PN
Air testing pressure	0.6MPa /6 Bar
Applicable temperature	-29~230 °C / -20 to 445 °F , -29-425 °C / -20 to 842 °F
Tightness	Bidirectional or unidirectional
Leakage class	ISO 5208 class D for metal seated / ISO 5208 class A for soft seated

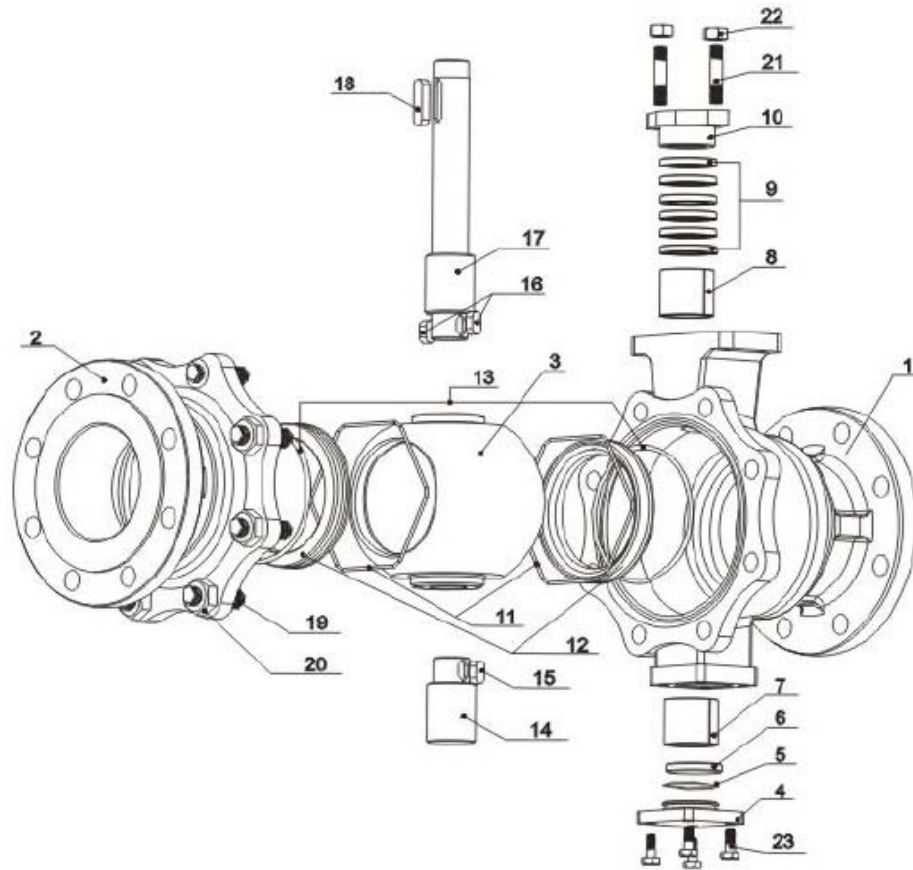
## 2. Construction and Dimensions

### 2.1 Construction



16	Nut	A2-70
15	Handle	CF8
14	Snap ring	SS304
13	Hexagon nut	A2-70
12	Bellevill washer	SS304
11	Gland	A182-F6a
10	Packing	Graphite
9	Thrust bearing	PPL
8	Shaft	SS316
7	Nut	A2-70
6	Bolt	A2-70
5	Cap	CF8M
4	Gasket	PPL
3	Ball	CF8M+HCr
2	Seat	F316+STL8
1	Body	CF8M
NO	PARTS	MATERIAL

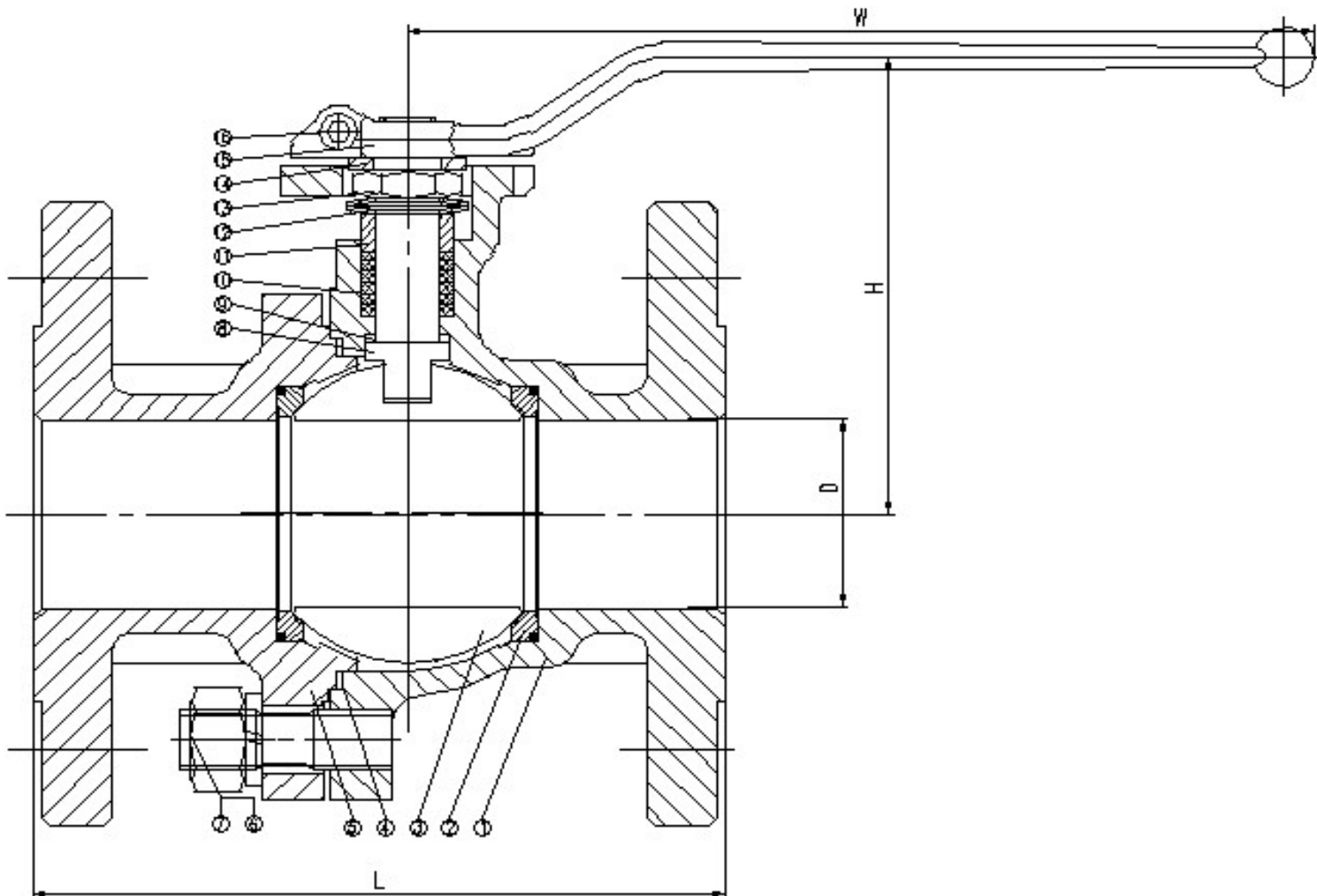
□ EXPLODED VIEW



**PARTS LIST**

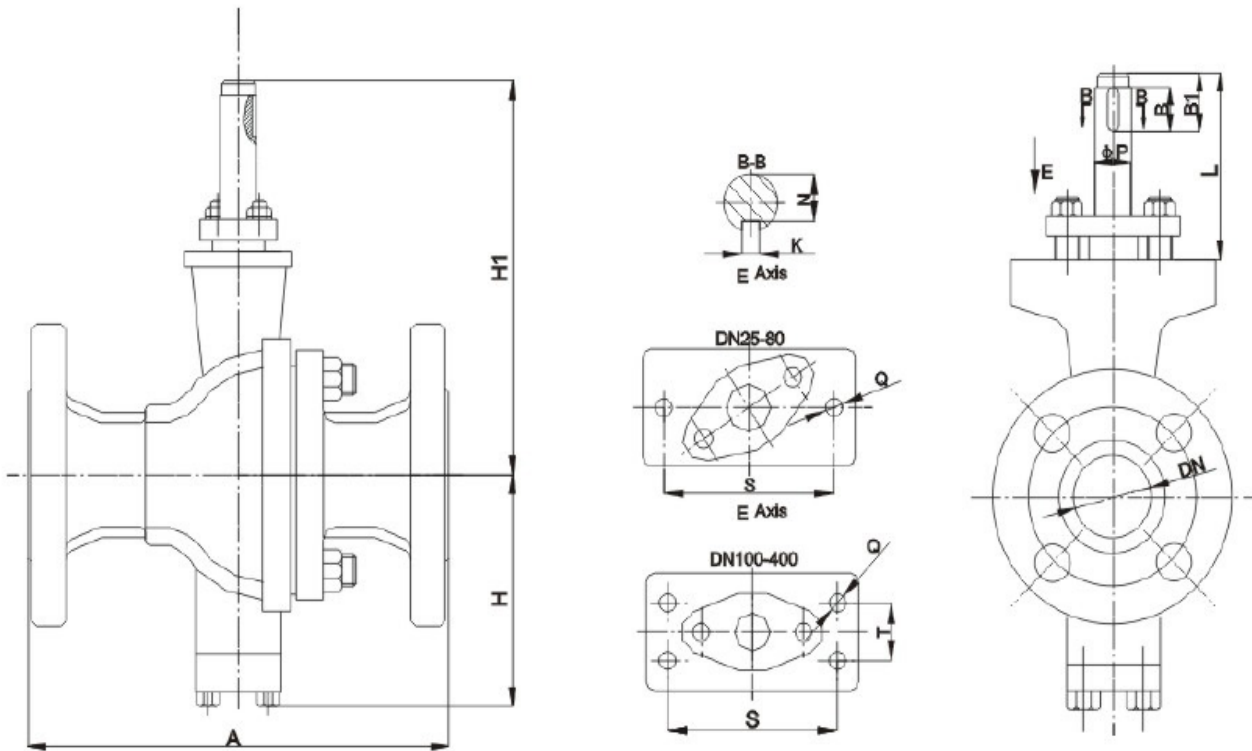
NO.	Name	Quantity(Pcs)	Material
1	Lower Body	1	WCB、CF8、CF8M
2	Upper Body	1	WCB、CF8、CF8M
3	Ball	1	CF8,CF8M Hard chromium plating or stellite surfacing
4	Blind flange	1	WCB、CF8、CF8M
5	O-ring	1	Viton
6	Gasket	1	PTFE
7	Self-lubricating bearing	1	Composite material
8	Self-lubricating bearing	1	Composite material
9	V-ring packing	1 group	PTFE
10	Gland	1	CF8
11	Wavy spring	2	SS316
12	Seat	2	SS304,SS316 Hard chromium plating or stellite surfacing
13	O-ring	2	Viton
14	Lower shaft	1	17-4PH SS316
15	Fiat key	1	SS304、SS316
16	Fiat key	2	SS304、SS316
17	Upper shaft	1	17-4PH SS316
18	Fiat key	1	SS304
19	Stud	as per requirement	SS304
20	Hexagon nut	as per requirement	SS304
21	Stud	2	SS304
22	Hexagon nut	2	SS304
23	Hexagon screw	4	SS304

2.2 Dimensions mm



Dimensions mm

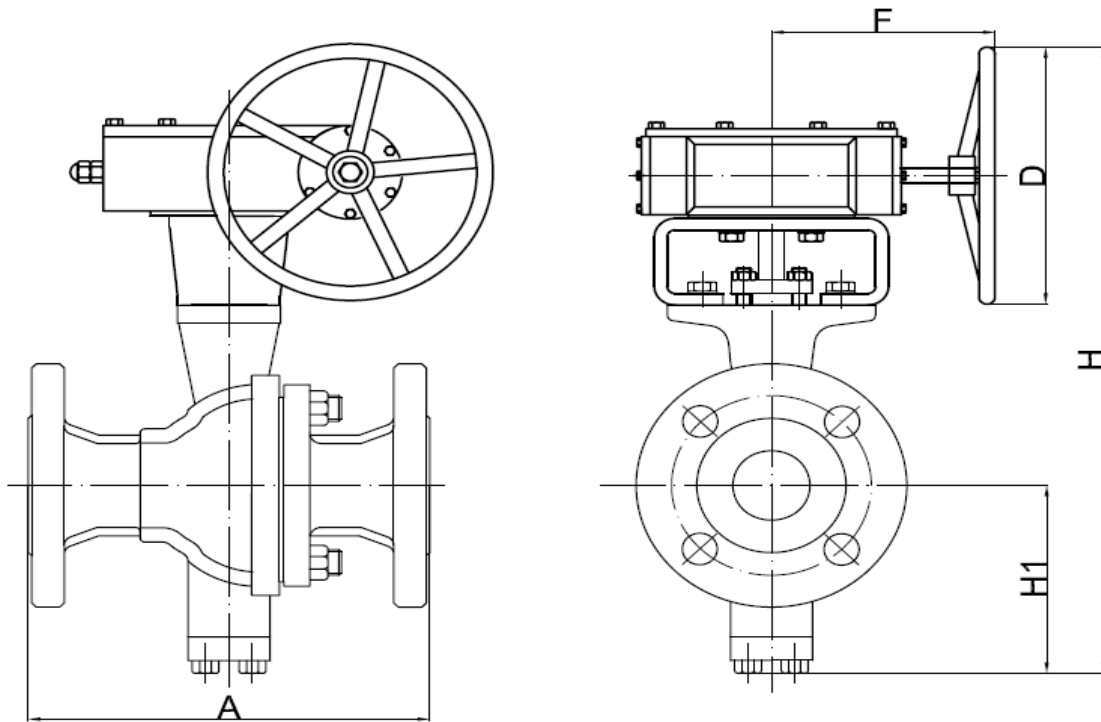
SIZE (inch)	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
L	117	127	140	165	178	190	203	229
D	20	25	32	40	50	65	80	100
H	75	92	103	115	130	165	193	224
W	137	172	172	234	234	253	288	323



**OUTLINE DIMENSIONS AND CONNECTION DIMENSIONS OF O TYPE BALL VALVE**

DN (mm)	Outline dimensions				Connection dimensions								
	A	H1	H	L	B	B1	K	N	ΦP	Q	S	T	
25	170	202	90	116	35	50	5	13	16	M10	65	/	
32	170	205	94	115	35	50	5	13	16	M10	65	/	
40	170	209	97	116	35	50	5	13	16	M10	65	/	
50	178	233	112	125	35	50	6	16.5	20	M12	80	/	
65	220	248	124	128	35	50	6	16.5	20	M12	80	/	
80	250	260	130	130	35	50	8	21	25	M12	75	/	
100	280	295	156	132	40	55	10	25	30	M10	90	40	
125	320	370	173	133	40	55	10	25	30	M10	90	40	
150	350	313	209	139	50	65	12	35	40	M12	110	50	
200	396	405	244	155	60	75	12	35	40	M12	110	50	
250	530	495	293	190	60	75	14	39.5	45	M16	134	64	
300	600	539	375	210	60	75	16	44	50	M16	134	64	
350	670	650	397	243	80	100	16	44	50	M20	175	70	
400	680	705	448	257	80	100	18	53	60	M20	215	96	





Dimensions

DN	A	H1	H	F	D
25	170	90	390	143	160
32	170	94	432	143	160
40	170	97	440	143	160
50	178	112	450	143	160
65	220	124	490	162	240
80	250	130	500	162	240
100	280	156	588	182	280
125	320	173	632	182	280
150	350	209	705	214	300
200	396	245	815	234	350
250	530	293	920	275	350
300	600	375	1025	275	350
350	670	397	1125	360	400
400	680	448	1250	435	500
450	750	490	1375	435	500
500	760	510	1500	580	500

### **3 Transportation and Storage**

#### **3.1 Transportation**

- 3.1.1 Check and make sure the valves and accompany accessories will not be subject to any impurities during transportation.
- 3.1.2 Check and make sure the valves and accompany accessories will not be subject to any external stress during loading.
- 3.1.3 Lifting device shall be used for big size valve and handling with carefulness.

#### **3.2 Storage**

- 3.2.1 Check and make sure the valves and accompany accessories will not be subject to any external stress during storage.
- 3.2.2 Check and make sure the valves and accompany accessories will not be subject to any impurities during storage.
- 3.2.3 Check and make sure the valves and accompany accessories will not be subject to exposing under sunshine and they shall be kept in a dry room with fresh air for uncertain storage term. Do not remove the flow port and flange sealing face protection cover. Valves are delivered and shall be remaining at full open position for storage.
- 3.2.4 Valves shall be double checked and cleaned and tested after a long term storage. Particular attention shall be paid to make sure of cleanness of the seating face.

### **4. Installation**

- 4.1 Check the marking of valve to make sure it is the one required before installation.
- 4.2 Remove the port protector and check if the valve is clean inside. Clean the valve if necessary.
- 4.3 Check the manual operation actuation device to make sure it works smoothly.
- 4.4 When fitting valve between flanged, center the flange gaskets carefully.
- 4.5 Valve shall be prohibited from installation while or immediately after the welding of pipe flanges.
- 4.6 Operating valve by device other than actuator original with shall be prohibited.
- 4.7 Fasten the nuts to until it is tight enough,
- 4.8 Prevent the installed valve from being squeezed.
- 4.9 Check and make sure space for overhaul and maintenance is reserved.
- 4.10 Valve should be at either full open or full closed position. RB series ball valve is not recommended for partial stroke for throttle service.
- 4.11 Flush and clean the valve regularly to keep dust, oil or residual medium from accumulated, causing abrasion and corrosion.

## 5. Dismantle and Assembly

Please follow the following steps for dismantle.

### 5.1 Dismantle

#### 5.1.1 Gear dismantle:

- a) Dismantle the fasteners of gear
- b) Remove the gear
- c) Dismantle the fasteners of bracket
- d) Remove the bracket
- e) Steps following are the same as gland dismantle

#### 5.1.2 Lever dismantle:

- a) Dismantle the fasteners of lever
- b) Remove the lever
- c) Dismounting retainer ring and positioning plate
- d) Steps following are the same as gland dismantle

#### 5.1.3 Gland(10) dismantle:

- a) Dismantle the fasteners of gland(22,21)
- b) Remove the gland
- c) Remove the bearing(8)
- d) Remove the packing(9)
- e) Check the status of the packing
- f) Steps following are the same as Upper body dismantle

#### 5.1.4 Blind flange(4) dismantle:

- a) Dismantle the fasteners of blind flange (4)
- b) Remove the blind flange
- d) Remove the o ring(5)
- f) Steps following are the same as Upper body dismantle

#### 5.1.5 Upper body(2) dismantle:

- a) Dismantle the fasteners of upper body
- b) Remove the upper body
- c) Remove the seat from upper body
- d) Check the status of the seat
- e) Steps following are the same as Ball dismantle

#### 5.1.6 Shaft(14,17) dismantle:

- a) Take the upper shaft out from the body
- b) Take the lower shaft out from the body
- c) Check the status of the shaft

#### 5.1.7 Ball(14,17) dismantle:

- a) Take the ball(3) out from the body
- b) Check the status of the ball

**NOTE: The valve parts number is corresponding to part list drawing on Page 5&6, unless otherwise stated.**

## 5.2 Assembly

Clean all parts and arrange parts and assemble accordingly as per the sequence shown in the parts list. The assembly sequence is reverse to that of dismantle.

## 6. Operation and Maintenance

- 6.1 Regular overhaul shall be done to make sure if the seating face is damaged or packing is worn out or body is corroded. Do maintenance or repair if necessary.
- 6.2 Anticlockwise rotation by 90° for full open and clockwise rotation by 90° for full close
- 6.3 Valve shall be stopped for service until the problem is solved.
- 6.4 Be careful with the hands. The valve may be at extreme high or low temperature. Warning must be shown.
- 6.5 Regularly remove dust, oil and medium staying on valve surface to prevent abrasion and corrosion, even explosive gas caused by heat from friction.
- 6.6 Valve must not be dismantled when it is pressurized.
- 6.7 Spares needed for replacement are available for order.
- 6.8 Nonmetal parts shall be handled with particular carefulness during assembly and dismantle. Special tools must be used to prevent damage.
- 6.9 Single part dismantled can be cleaned by immersion. Soft parts staying on valve can be done by using fibre free silk to scrub off oil, dirt, grease and dust staying on the wall.
- 6.10 When soft material parts are immersed in the detergent for cleaning, it shall be done quickly. Make sure long enough time given to the cleaned parts to dry for assembly and short enough time to avoid being dirtied again.
- 6.11 Use lubricants compatible with metal material, rubber parts, plastic parts and medium and give a layer of lubricant for sealing parts groove and rubber sealing parts and shaft sealing and friction face.
- 6.12 Be careful to avoid any metal scraps, fibre, grease, unless permitted ones, and other impurities staying on the surface of the parts or entering into valve cavity.
- 6.13 No in line maintenance for welding is allowed

## 7. Trouble Shooting

Symptom	Possible fault	Action
Leakage through packing gland	<ol style="list-style-type: none"> <li>1. Loose packing</li> <li>2. Worn out or damaged packing</li> <li>3. Too high operation torque</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the nuts</li> <li>2. Replace the packing</li> <li>3. Operation without exerting excessive torque</li> </ol>
Leakage through seat	<ol style="list-style-type: none"> <li>1. Wrong stop screw adjustment of actuator</li> <li>2. Damaged ball surface</li> <li>3. Damaged seat</li> <li>4. Worn out or damaged o ring</li> <li>5. Ball can not move freely</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the stop screw for the closed position</li> <li>2. Turn the ball 180 degree</li> <li>3. Replace the seat</li> <li>4. Replace the o ring</li> <li>5. Clean the seating face and seat</li> </ol>

Leakage through connection flange	<ol style="list-style-type: none"> <li>1. Loose nuts</li> <li>2. Worn out or aged gasket</li> <li>3. Inproper selection of gasket</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the nuts</li> <li>2. Replace the gasket</li> <li>3. Reselection and replace the gasket as per application conditions.</li> </ol>
No valve movement	<ol style="list-style-type: none"> <li>1. Valve or actuator is freezed</li> <li>2. Damaged actuator</li> <li>3. Lacking of lubricants</li> <li>4. Damaged shaft</li> </ol>	<ol style="list-style-type: none"> <li>1. Heat valve or actuator or inject freeze proof solution.</li> <li>2. Check and repair the actuator.</li> <li>3. Inject lubricants onto the surface of seat and drivers</li> <li>4. Replace the shaft</li> </ol>

## 8. Quality Assurance and Service

### 8.1 Quality Assurance

- 8.1.1 The valves supplied by us is quality guaranteed for 12 months, covering the deficiencies in material and workmanship. Malfunction caused by improper operation, installation and maintenance will be out of guarantee.
- 8.1.2 Immediately inform us once valve with deficiencies or with such potential are found. We would manage to give the quickest response while the right to check the truth of deficiencies is reserved.
- 8.1.3 The quality guarantee duration and scope can be extended as per agreement reached.

### 8.2 Service

- 8.2.1 On site installation and commissioning can be provided as stipulated in the order.
- 8.2.2 Regularly quality tracing will be done for valve delivered and service can be offered upon request.

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