



TRIAD



INSTALLATION & MAINTENANCE MANUAL

SERIES 30/36/40/46

3 & 4 WAY BALL VALVES

1. USE:

- 1.1 Maximum results and long life of the valves can be maintained under normal working conditions and according with pressure/temperature rating and corrosion data chart.

2. MANUAL OPERATION:

- 2.1 To change flow pattern of the valve, turn the handle 1/4" (90 degree)
- 2.2 Both T port, L port and X port are available.
- 2.3 Both Full port and Reduced Port are available.

3. AUTOMATION OPERATION

- 3.1 Direct Mount of Pneumatic or Electric Actuator to Valves, No Brackets and Couplings are required.

4. GENERAL INFORMATION FOR ON-SITE INSTALLATION:

- 4.1 The valve may be fitted in any position on the pipeline
- 4.2 Before installation of the valves, the pipe line must be flushed clean of dirt, burrs and welding residues, or the seats and ball surface will be damaged.
- 4.3 The pipe must be free from tension.
- 4.4 When rebuilding, a standard repair kit designated for each size and style valve is available, each repair kit to contain all the soft parts.
- 4.5 When ordering, be sure to specify size, valve code, valve seat, seal and stem packing materials. Optional components such as ball, stem and handle are also available.
- 4.6 After installation, cycle valve several times before putting into service.

5. DISASSEMBLING AND CLEANING THE VALVE:

Caution: Ball valve can trap fluids in the ball cavity when closed.

- 5.1 If the valve has been used in hazardous media, it must be decontaminated before disassembly.
- 5.2 As shipped from the factory, valves contain no lubricants.
- 5.3 Before disassembly, be sure to discharge any hazardous media that might be entrapped in any valve cavity.

It is recommended that the following steps are taken for safe removal and reassembly.

A. Relief the line pressure.

B. All persons involved in the removal and disassembly of the valve should wear the proper protective clothing, such as face shield, gloves, etc.

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6. REPLACING THE THRUST WASHER, PACKING, AND SEATS

- 6.1 Before replacing the thrust washer and packing, the pipeline must be de-pressurized.
- 6.2 Stem leakage may be corrected without replacing the stem packing. Tighten the stem gland nut until leakage stops, if leakage continues or valve's operating torque becomes excessive, The stem seal is worn and must be replaced.
- 6.3 Remove valve from pipeline.
- 6.4 Remove end caps, body seal, seats, and ball.
- 6.5 Remove stem nut, gland, stop, etc. and push stem into valve cavity. Remove stem seats and thrust washer.

7. ASSEMBLY

- 7.1 All Components have been cleaned, inspected, and replaced as necessary; the valve can be rebuilt using the factory repair kit recommended.
- 7.2 Put new Stem Seal and O-ring on stem, insert the stem through body cavity into stem hole, install ball in the position. Assemble new stem packing, gland, Belleville washer, and stem nut. Tighten stem nut so that stem will feel snug and firm. **DO NOT OVERTIGHTEN.**
- 7.3 Assemble the back seat into body, insert body gasket on seal surface. Assemble second, third, and fourth seats into cavity of end caps and insert the same into body.
- 7.4 Apply wrench on the hexagonal ends of the valve only. Tightening using the valve body or handle can seriously damage the valve.

BREAK AWAY TORQUE IN IN-LB. AND NM (Break Torque at 0 psi)

Valve Size	Full Port		Reduced Port	
	In-Lb	Nm	In-Lb	Nm
¼"	92	10		
3/8"	92	10		
½"	140	16	92	10
¾"	175	20	140	16
1"	290	33	175	20
1 ¼"	323	36	290	33
1 ½"	485	55	323	36
2"	645	73	485	55
2.1/2"	1,215	137	645	73
3"	1,382	156	1,215	137

4"	2,995	338	1,382	156
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30% Safety factor included.

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Torque of Body Bolts (Full Bore) (Red. Bore)

In-Lbs		Nm		In-Lbs		Nm	
1/4"	106	1/4"	12	1/4"	106	1/4"	12
3/8"	106	3/8"	12	3/8"	106	3/8"	12
1/2"	150	1/2"	17	1/2"	106	1/2"	12
3/4"	150	3/4"	17	3/4"	150	3/4"	17
1"	150	1"	17	1"	150	1"	17
1.1/4"	195	1.1/4"	22	1.1/4"	150	1.1/4"	17
1.1/2"	195	1.1/2"	22	1.1/2"	195	1.1/2"	22
2"	355	2"	40	2"	195	2"	22
2.1/2"	355	2.1/2"	40	2.1/2"	-	2.1/2"	-
3"	355	3"	40	3"	-	3"	-
4"	665	4"	75	4"	-	4"	-

Torque of Stem nut(Full Bore) (Red. Bore)

SIZE	In-lbs	Nm	In-lbs	Nm
1/4"	71	8	71	8
3/8"	71	8	71	8
1/2"	71	8	71	8
3/4"	106	12	71	8
1"	106	12	106	12
1.1/4"	133	15	106	12
1.1/2"	133	15	133	15
2"	168	19	133	15

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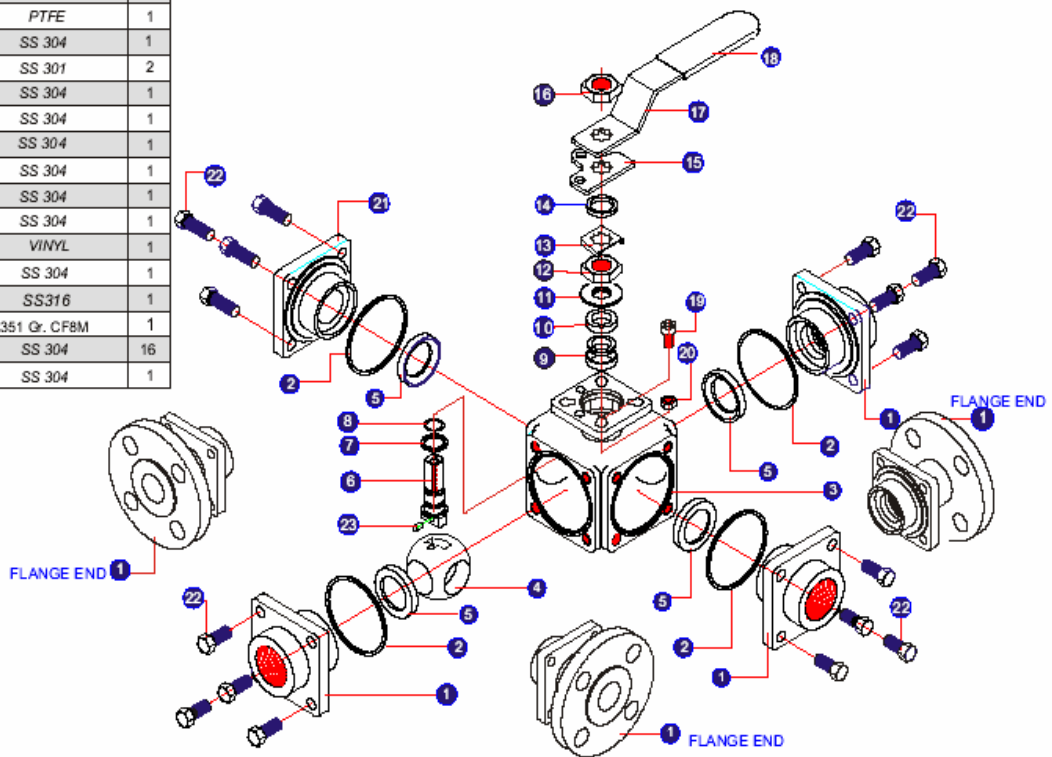
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1/4"~2"

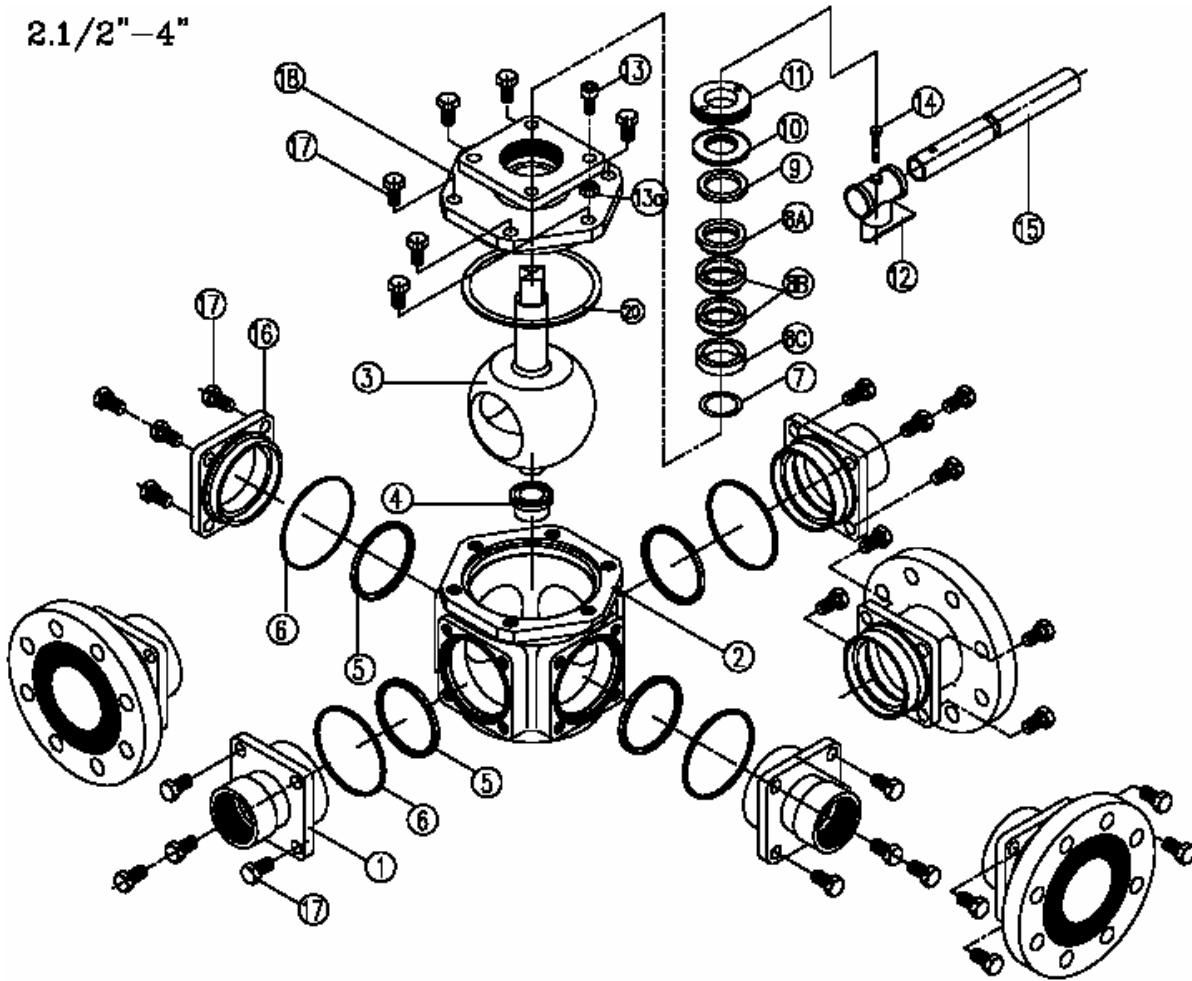
MATERIALS LIST

NO.	PART NAME	MATERIAL	QTY
1	End Cap	A351 Gr. CF8M / A216 Gr. WCB	3
2	Gasket	PTFE	4
3	Body	A351 Gr. CF8M / A216 Gr. WCB	1
4	Ball	SS 316	1
5	Seat	PTFE/RPTFE	4
6	Stem	SS 316	1
7	Stem Seal	RPTFE	1
8	O-Ring	VITON	1
9	Stem Packing	PTFE	1
10	Gland	SS 304	1
11	Belleville Washer	SS 304	2
12	Stem Nut	SS 304	1
13	Nut Stop	SS 304	1
14	Space Washer	SS 304	1
15	Lock Saddle	SS 304	1
16	Handle Nut	SS 304	1
17	Handle	SS 304	1
18	Handle Sleeve	VINYL	1
19	Stop Pin	SS 304	1
20	INSERT PIN	SS316	1
21	BLANK END	A351 Gr. CF8M	1
22	Bolt	SS 304	16
23	Pin Nut	SS 304	1

SERIES 36
(THREAD, SOCKET WELD, BUTT WELD)
& FLANGE ENDS



2.1/2"-4"



NO.	NAME OF PARTS	MATERIALS	QTY
1	END CAPS	A351 Gr. CF8M	3
2	BODY	A351 Gr. CF8M	1
3	TRUNNION BALL	A351 Gr. CF8M	1
4	HOUSING	PTFE+STAINLESS	1
5	SEATS	PTFE+15%CF	4
6	GASKETS	PTFE	4
7	O-RING	VITON	1
8A	STEM PACKINGS	PTFE	1
8B	STEM PACKING	PTFE	2
8C	STEM PACKING	PTFE	1
9	GLAND WASHER	SS 304	1
10	DISK WASHERS	SS 301	2
11	GLAND	SS 304	1
12	HANDLE HEAD	A351 Gr. CF8	1
13	STOP BOLT	SS 304	1
13a	NUT	SS 304	1
14	BOLT	SS 304	1
15	LEVER	CARBON STEEL	1
16	BLIND END	A351 Gr. CF8M	1
17	CONNECTION BOLTS	SS 304	22-24
18	TOP BONNET	A351 Gr. CF8M	1
19	BONNET BOLTS	SS 304	6-8
20	BONNET GASKET	PTFE	1