

Butterfly Valve Technical Information

Valve Installation Procedure - For Lug & Wafer Style Rubber Seated Butterfly Valves LD/WD 1000/2000/3000/7000 and N150/N200 Series

Always position the connecting pipe flanges accurately in-line, allowing sufficient space between the flanges for the valve. Make sure the pipe flange faces are clean of any foreign materials such as scale, metal savings, welding slag, oils, grease, or dirt. Valves should be installed with the disc in the closed position to prevent damage to sealing surfaces. Do not apply any lubricants to the seat faces as this may damage the rubber. For LUG STYLE VALVES – Extra care should be used when installing valves with raised face flanges. Over-tightening of bolts can result in broken lugs.

- Carefully insert the valve between the flanges.
- Line-up, center, and secure the valve between flanges using desired bolts or studs as shown in Table 1 below. **DO NOT TIGHTEN BOLTS AT THIS TIME.**
- Carefully fully open the valve to assure free unobstructed disc movement. Disc interference may result when valves are installed in pipelines having smaller than normal inside diameters, such as heavy wall pipe, plastic-lined pipe, as-cast flanges, or reducing flanges. Interference can also occur when connecting directly to a swing check or silent check. Suitable corrective measures must be taken to remove these obstructions, such as taper boring the pipe/flange, installing a spacer or spool piece.
- After proper operation is verified, tighten bolts to the MINIMUM recommended bolt torques as shown in Table 2 below. NOTE that the torques are different for lubricated and non-lubricated bolts.
- A multi-stepped process utilizing the cross-over pattern should be used to draw the flanges against the valve from both sides of the valve at the same rate, ensuring the rubber seal face surfaces are compressed evenly. See Drawing below. This should be followed by 2 sets of Chase patterns, alternating from one side of the valve to the other.
- Refer to ASME PCC-1 GUIDELINES FOR PRESSURE BOUNDARY BOLTED FLANGE JOINT ASSEMBLY for bolt tightening methodology.
- Pressurize piping to valve and inspect for leakage. If leakage is observed, tighten bolts using cross-over pattern, increasing torque until leakage stops. All bolts must be tightened to the same torque. **DO NOT EXCEED MAXIMUM TORQUES** shown in Table 2.
- Recommended torques are made without warranty. Installer must verify proper strength bolts for application.

Caution

- Class 250 cast iron and Class 300 steel flanges **cannot** be used with these valves.
- Rubber faces of mechanical flanges are **not recommended**.
- Rubber seated butterfly valves are **not recommended** for steam service.
- Valves should **not** be assembled to flanges and then welded in to the piping system.
- Do not install valves with EPDM seats in compressed air lines.
- Lever-lock handles are **not recommended** for 8" and larger valves due to torque loads.

VALVE SIZE (RUBBER SEATED BFVs ONLY)	REFERENCE VALVE BODY WIDTH	FLANGE THICKNESS			BOLT LENGTH		BOLT QTY/SIZE	
		ASME B16.1 CLASS 125 CAST IRON	ASME B16.5 CLASS 150 STEEL	ASME B16.47 (SERIES A) CLASS 150 STEEL	LUG STYLE VALVES DIMENSION "V"	WAFFER STYLE VALVES DIMENSION "X"	LD LUG / WD WAFFER (MOUNTING 2 FLANGES)	BOLT SIZE
2"	1.75	0.63	-	-	1.25	4.00	8/4	5/8"-11 UNC
		-	0.75	-	1.50			
2½"	1.88	0.69	-	-	1.50	5.00	8/4	5/8"-11 UNC
		-	0.88	-	1.50			
3"	1.88	0.75	-	-	1.50	5.00	8/4	5/8"-11 UNC
		-	0.94	-	1.75			
4"	2.13	0.94	0.94	-	1.75	5.00	16/8	5/8"-11 UNC
5"	2.25	0.94	0.94	-	1.75	5.00	16/8	3/4"-10 UNC
6"	2.25	1.00	1.00	-	2.00	6.00	16/8	3/4"-10 UNC
8"	2.44	1.13	1.13	-	2.25	6.00	16/8	3/4"-10 UNC
10"	2.75	1.19	1.19	-	2.25	7.00	24/12	7/8" - 9 UNC
12"	3.06	1.25	1.25	-	2.50	7.00	24/12	7/8" - 9 UNC
14"	3.50	1.38	1.38	-	2.50	-	24	1"-8 UNC
16"	3.75	1.44	1.44	-	3.00	-	32	1"-8 UNC
18"	4.50	1.56	1.56	-	3.00	-	32	1½" - 7 UNC
20"	5.25	1.69	1.69	-	3.50	-	40	1½" - 7 UNC
24"	6.13	1.88	1.88	-	4.00	-	40	1½"-7 UNC
26"	6.75	-	-	2.69	5.00	-	48	1¼"-7 UNC
28"	6.75	-	-	2.81	5.00	-	56	1¼"-7 UNC
30"	6.75	2.13	-	-	4.50	-	56	1¼"-7 UNC
		-	-	2.94	5.00	-		
32"	7.50	-	-	3.19	6.00	-	56	1½"-6 UNC
		-	-	-	5.00	-		
36"	8.25	2.38	-	-	6.00	-	64	1½"-6 UNC
		-	-	3.56	6.00	-		
42"	10.00	2.63	-	-	5.00	-	72	1½"-6 UNC
		-	-	3.81	7.00	-		
48"	11.00	2.75	-	-	6.00	-	88	1½"-6 UNC
		-	-	4.25	7.00	-		
52"	15.00	-	-	4.56	8.00	-	88	1½"-6UNC
54"	15.00	-	-	4.75	8.00	-	88	1½"-6UNC
60"	15.00	-	-	5.19	8.00	-	104	1½"-6UNC

Suggested Bolting Methods



Bolt Tightening Cross Over Pattern

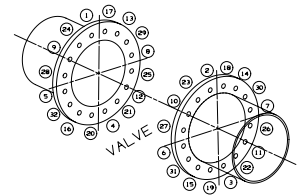


Fig. 3

Table 2 Recommended Bolt Tightening Torques

NON-LUBRICATED BOLTS			
Valve Size	Bolt Size	Minimum Ft/Ls	Maximum Ft/Lbs
2" - 4"	5/8"	20	60
5" - 8"	3/4"	35	110
10" - 12"	7/8"	50	160
14" - 16"	1"	75	240
18" - 20"	1"	100	350
24" - 32"	1¼"	150	500
36" - 48"	1½"	240	800
LUBRICATED BOLTS			
Valve Size	Bolt Size	Minimum Ft/Lbs	Maximum Ft/Lbs
2" - 4"	5/8"	15	40
5" - 8"	3/4"	20	60
10" - 12"	7/8"	30	90
14" - 16"	1"	45	140
18" - 20"	1"	70	200
24" - 32"	1¼"	100	300
36" - 48"	1½"	170	500

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