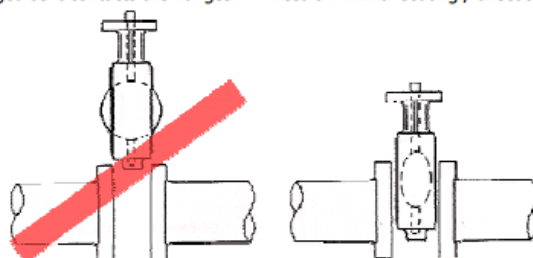


### Installation Procedures

- 1 Make sure the pipeline and flange faces are clean. Any foreign material such as metal filings, pipe scale, welding slag, welding rods, etc. can limit disc movement or damage the disc or seat.
- 2 Gaskets are not required on resilient seated valves because they extend to both faces of the valve.
- 3 Align the pipe-work, and spread the flanges enough to allow the valve body to be easily inserted between the flanges without contacting the pipe flanges.
- 4 Check that the valve disc has been set to about 10% open so it doesn't become jammed in the fully seated position.
- 5 Insert the valve between the flanges as shown, taking care not to damage the seat faces. Always lift the valve by the locating holes or by using a nylon sling on the neck or the body. Never lift the valve by the actuator or operator mounted on the valve.
- 6 Place the valve between the flanges, centre it, insert the bolts and hand-tighten them. Carefully open the disc, making sure the disc does not contact the inside of the adjacent pipes.
- 7 Very slowly close the valve disc to ensure disc edge clearance from the adjacent pipe flange.
- 8 Fully open the disc and tighten all flange bolts as shown.
- 9 Repeat a full close to full open rotation of the disc to ensure proper clearances.

Pipe not spread, disc opened beyond valve body face.  
Result: Disc edge damaged as it contacts the flanges.

Pipes aligned and spread, disc rotated 10%.  
Result: Minimal seating / unseating torque, disc edge protected.



**Installation with Flange Welding** When butterfly valves are to be installed between welding type flanges, care should be taken to ensure no damage will occur to the seat:

- 1 Place the valve between the flanges with the flanges and valve body aligned. The disc should be 10% open.
- 2 Bolt the flanges to the valve body. Ensure the valve and flanges are aligned with the pipe.
- 3 Tack-weld the flanges to the pipe.
- 4 Remove the bolts and the valve from the pipe flanges and finish welding the flanges.
- 5 Wait for the pipe and flanges to cool before installing the valve. NOTE: Never complete the welding (after tacking) with the valve between flanges as heat transfer will cause severe seat damage

Symptoms	Possible Cause	Suggested Remedy
Valve opens only a few degrees and stops (it will not open to the full angle desired)	Improper Installation. The valve is improperly aligned.	Loosen the flange bolts, realign the valve with flanges and retighten the flange bolts to correct torque per ANSI requirements
	Making pipe internal diameter or other obstruction is interfering with disc	Pipe does not meet standards and spacers may be required. Any pipeline or disc obstruction must be removed.
	Actuator not installed correctly	Refer to actuator adjustment manual
Leakage past flange face	Flange bolts are not evenly torqued	Loosen the flange bolts and tighten the flange bolts to correct torque per ANSI requirements
		Check flange suitability
Leakage in the closed position (leakage in the pipeline)	The disc is not closed fully—the actuator is not properly adjusted	Refer to actuator adjustment manual
	Damaged valve seat	Replace valve
	Line Pressure exceeds valves working pressure	Reduce line pressure to valve working pressure
	Damaged valve disc	Return valve to factory for disc/stem replacement
Leaking at the valve stem	Packing failure	Fully open and close the valve 3 times
		Refer to Valves packing removal and valve assembly instructions
Water Hammer	The valve is closing too quickly	Turn actuator slower (if possible)
Excessively high torque to operate valve	Obstruction in the pipeline	Remove valve from pipeline and remove obstruction
	Valve shaft or disc bent	Return valve to factory for replacement—check for water hammer or freezing of line material
	Scale build up on shaft or seat	Open and close the valve several times Operate the valve at least once a month Check the valve seat for deterioration

The information below should be used as a general guide for dimensions of studs to fix PN16 flanges to the different wafer pattern butterfly valve sizes, where the valve conforms to BS 5155 (Short Pattern)

Size	Face to Face BS5155	Thread Size	Slip on Flange Thickness	Stud Length	Quantity
50	43	M16	18	122	4
65	46	M16	18	125	4
80	46	M16	20	130	8
100	52	M16	20	135	8
125	56	M16	22	145	8
150	56	M20	22	150	8
200	60	M20	24	160	12
250	68	M24	26	180	12
300	78	M24	28	195	12
350	78	M24	30	200	16
400	102	M27	32	235	16
450	114	M27	34	250	20
500	127	M30	34	270	20
600	154	M33	36	305	20

### Bolting Details

Bolt lengths are established from the following criteria:-

- \* Valve face to face - BS5155 (Short, Medium, Long Pattern)
- \* Flange Thickness - slip on flange (Code 111.112 and 113) - BS4504 Section 3.1 (steel) PN 16 (to max. tolerance)
- \* Thread Size - BS4504 Section 3.1 PN16
- \* Nut thickness—BS4882 Table 14
- \* Washer thickness - BS4320 standard Black Normal Series
- \* Stud lengths shown are minimum length

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