® **DPV-UK LTD**
Broadpiece, Mereside, Soham,
Cambs, CB7 5EL, England, U.K.

Tel : +44 (0)1353 725 540
Fax : +44 (0)1353 722 534
Email: Sales@dpv-uk.com

INSTALLATION, OPERATION & MAINTENANCE

INSTRUCTIONS

FOR

DPV-UK LTD

BUTTERFLY VALVES

® **DPV-UK.LTD**
Broadpiece, Mereside, Soham,
Cambs, CB7 5EL, England, U.K.

Tel : +44 (0)1353 725 540
Fax : +44 (0)1353 722 534
Email: Sales@dpv-uk.com

MOUNTING INSTRUCTIONS

1. GENERAL

The Butterfly valve is designed for fitting.

- *Between Pipe Flanges*
- *Without gasket: the flexible ring ensures leak-tightness at the flanges.*
- *Generally by tie-rods: in all cases connection between upstream and downstream pipe flanges must be positive and rigid.*
- *Without support: the valve us integral with the piping and no support is required for the valve or the actuator.*

The piping must be supported and equipped with the limit stops required to withstand hydraulic shocks

The valve mounting procedure is well known to fitters and users of piping and valves

This Data Sheet is simply intended to recall the mounting particulars of DPV valves and to draw attention to the design arrangements implemented to facilitate the work of fitters and users.

2. DIMENSIONS OF FLANGES AND CONNECTING PIPEWORK

The line flanges are the interface between the valve and the line.

Flange and pipe dimensions must ensure that the interface is correct and the following must be obtained:

- *General compatibility*
- *External leak-tightness*
- *Normal mechanical link to withstand pressure stresses.*

DPV is able to supply different types of valves complying with the various flange connection standards.

2.1. General Compatibility.

- *The flange pattern must be appropriate.*
- *The connection must allow the normal operation of the valve and mainly the sufficient clearance of the disc.*

® **DPV-UK LTD**
Broadpiece, Mereside, Soham,
Cambs, CB7 5EL, England, U.K.

Tel : +44 (0)1353 725 540
Fax : +44 (0)1353 722 534
Email: Sales@dpv-uk.com

MOUNTING INSTRUCTIONS

To obtain a good leak-tightness, the internal diameter of the pipe should be as near as possible to the optimum diameter (*1) and in any case should not exceed the following limits:

- Maximum diameter (*2)
- Minimum diameter (*3)
- If flange modification is required *4 and *5 should be observed so as to allow sufficient clearance of the disc.

2.2 External leak-tightness

Leak-tightness at the flanges is ensured by the inner lining.
This leak-tightness is only achieved by tightening until the metal-to-metal contact between the flange and the valve body is attained.
This tightening operation also ensures that the lips of the inner lining are held in their grooves.
Tightening by metal-to-metal contact between the flange and the body is only effective if the lips are gripped over a sufficient width.

To achieve this:

- Do not exceed the maximum * 2
- Otherwise it will be necessary to make one of the opposite modifications
- Flat face flanges or in case of raised-face flanges minimum * 6 so as to maintain metal-to-metal contact without excessive squeezing of the lips of inner lining.

2.3 Normal mechanical connection to absorb stresses to which the valve and pipe will be subjected.

- The proper connection between the two flanges must be ensured (see following
- section).

- The valve body-flanges contact has to be ensured in order to absorb the compressive stresses including the “end effect” when the valve is closed.

- Flat face flanges imperative for large diameters and high pressures.

- If raised face flanges minimum * 6.

® **DPV-UK LTD**
Broadpiece, Mereside, Soham,
Cambs, CB7 5EL, England, U.K.

Tel : +44 (0)1353 725 540
Fax : +44 (0)1353 722 534
Email: Sales@dpv-uk.com

MOUNTING INSTRUCTIONS

2.3 Cont/d…..

- In the particular case of fitting between loose flanges on pipe with swaged collars (applicable to small diameter valves) the face of the swaged collar must conform to all the limit dimensions indicated above and it must especially have an outside diameter larger than * 6.

All the flange and pipe dimensions to conform to are given on the dimension sheet of the different series of valves.

3. Installation between Flanges

The installation of the valve between flanges must ensure a positive and rigid connection between the upstream and downstream flanges of the pipeline. The valve body is then subjected to compressive stresses.

It should in no case participate in the transmission of tensile stresses between the pipes upstream and downstream of the valve.

3.1 Mechanical requirements to be observed in all forms of installation.

- The flanges must be flat. Lack of flatness may generate dangerous extra stresses in the valve body or in the tie-rods. An ill-placed weld bead or splash may result in a dangerous spot-contact on the valve body or an inequality of compression on the lip of the inner lining which might well impair proper leak-tightness.

- Parallelism and correct alignment have to be ensured when setting up the line to avoid causing abnormal stressing of the flanges and tie-rods.

The valve has to be fitted between pipe flanges. It must not be subjected to the extreme working conditions of the circuit if the downstream line us dismantled

- The siting of the pipes should make it possible, during both fitting and removal, to compress and decompress the lips of the inner lining (which act as flange gaskets). This can only be achieved if it is possible to have a slight withdrawal of the pipes.

MOUNTING INSTRUCTIONS

3.2 Mounting between flanges with tie -rods.

- Small diameter valves

The valve is centered by means of the tie-rods

- Large diameter valves.

In large diameter valves, the body has a U shaped section to ensure its rigidity. The plain holes in the sides of the U are used to guide the tie-rods and to center the valve.

3.3 Variations facilitating downstream dismantling:

The following arrangements are intended to allow dismantling of the line downstream without having to drain the line upstream and to facilitate assembly.

These methods are equivalent to mounting by tie-rods and allow the transmission of stresses between the upstream and downstream lines.

In case if dismantling downstream of a valve the following must be carried out:

- Stop the system or ensure that no overpressure or surge is possible during dismantling.
- Ensure that upstream pressure does not exceed the following limits.
- Operating pressure for valves with SG cast iron or steel body.
- 0.4 times the maximal working pressure of the valve if the body is made of cast iron.

To restart the general system, reassemble the downstream line (or at least a flange welded to a pipe stub a complete tapping, etc.).

The normal resistance of a valve is only obtained if it is held tight between flanges.

- Flange mounting.

Flange mounting may be allowed for the Flanged valve series. For the other valve series flange mounting is prohibited. Should this type of mounting be compulsory, please consult us.

MOUNTING INSTRUCTIONS

- Dismantling possibility in case of mounting by tie-rods. Dismantling phase (working excessively on each tie-rod).

NOTE: It is imperative to observe the conditions listed in para. 3.3 for the downstream operation.
Reassemble by operating in reverse order.
Other alternative:

For all assemblies, and especially where downstream dismantling may be frequent, the following assembly may be envisaged:

In this case, the special flange which is as thick as the standard flange with the considered diameter and drilling pattern is:
- threaded at the tie-rods level.
- drilled (plain holes) at screw level.

***NOTE**: This type of mounting may also be considered in the case of a flexible joint assembly downstream of the valve. It is less bulky than the type indicated in para. 3.1 while conforming to all mounting requirements.*

4. Valve Positioning

4.1 Optimum position = Disc axis horizontal

- This is the most favorable position because:
- The weight of the disc and shafts is borne by the two bearings
- The pivot bearing is relieved.
- It is a guarantee of long valve life, specially in the case of fluids containing solids, where solid particles tend to accumulate on the bottom of the pipe (at the moment of closing, the reduction in cross-section causes a local increase in velocity which results in a “sweeping” or “cleaning” of the flexible ring).

MOUNTING INSTRUCTIONS

4.2 Extreme position depending upon valve design:

- Small diameter valves can be mounted in all positions
-
- Valves of diameter 12" to 40" can be mounted with the axis horizontal or vertical and, in the latter case, with the actuator facing upwards or other intermediate positions, but any mode of mounting in which the actuator would face downwards must be strictly avoided).

- Valves of diameter 40" or more (MAMMOUTH valves). It is essential that these valves be mounted with the disc axis horizontal

4.3 Valve position may be dictated by circuit configuration.
(especially if the flow velocity of the fluid is substantial)

- Avoid placing a valve too close to a bend, particularly if it is to be upstream on the bend.
- If a valve is close to a bend (or a tee) position the disc axis in the plane of the bend (or tee), so as to avoid the local acceleration and stream breakdown effects caused by the bend.

5. Checking before mounting

Checking before mounting is generally limited to site work on pipes:

- Evenness of flanges (check that they have not been distorted during welding operations).

- Check that there are no excessive splashes or weld beads likely to impair normal contact between the flat face of the flange and the valve.
- Check that there are no sharp edges likely to damage the inner during assembly.
- Correct parallelism and alignment of flanges to avoid operating stress on flanges and tie-rods.

® **DPV-UK LTD**
Broadpiece, Mereside, Soham,
Cambs, CB7 5EL, England, U.K.

Tel : +44 (0)1353 725 540
Fax : +44 (0)1353 722 534
Email: Sales@dpv-uk,com

MOUNTING INSTRUCTIONS

Flange diameters should also be checked for safety reasons. General requirements concerning flange diameters are indicated in paras 2 and 3 above. The main minimum and maximum dimensions are shown on the back of the corresponding data sheet

6. Fitting the valve between the pipeline flanges

Mounting is carried out as follows:

6.1 Separate the two flanges of the pipe sufficiently far to avoid catching the pipes of the inner lining when sliding the valve between the two flanges. The disc should be as far possible away from its closed position, without exceeding the body width.

6.2 Center the valve by inserting several tie-rods.

6.3 Place the disc as near as possible to the open position. This is very important: good mounting and the proper functioning of the valve depend on this point being observed.

6.4 Tighten the tie-rods or screws progressively until metal-to-metal contact is achieved between the valve body and the flanges. Lock, but not excessively.

N.B. – Do not carry out arc or gas welding in the immediate vicinity of the valve (this might bring the inner lining to an excessively high temperature and "burn" it, or by splashing with red-hot particles).

7. **Checking after fitting**

Operate the disc several times to check that there is no hindrance to its movement.

8. Some mounting defects

8.1 Non observance of flange dimension

- Flange diameter too great: Lips of inner lining insufficiently squeezed by flanges.
  In this case you may detect one of the following defects:
- Leakage at the flanges
- Leakage upstream downstream.

This leakage may be substantial if the lips of inner lining are ripped from their grooves by an overpressure or by movement of the disc.

- Flange diameter too small: Disc blocked by flanges or pipe. Full movement of disc impossible.

® **DPV-UK LTD**
Broadpiece, Mereside, Soham,
Cambs, CB7 5EL, England, U.K.

Tel : +44 (0)1353 725 540
Fax : +44 (0)1353 722 534
Email: Sales@dpv-uk.com

MOUNTING INSTRUCTIONS

8.2 Defective mounting

Ripping of inner lining during mounting operations. This may occur when trying to force a valve between two flanges insufficiently apart.
In this case you may detect one of the following defects:

- Closing impossible.
- Leakage at the flange.

The valve must be dismantled from the pipe. If the disc is severely damaged, we advise returning the valve to the works for repair. We do not mean here mounting defects such as non observance of correct link between the two flanges (prohibited mounting para. 3.3, valve clamped upstream only, etc…
All these mounting methods must be avoided as they are very dangerous for the valve, the plant and even the staff in the vicinity.