Pietro Fiorentini

BF 31

Butterfly Valves

BF31 - Butterfly Valves

Introduction

The **BF 31** butterfly valves are interception devices for average and low pressure gas pipe networks and/or pipelines. They may be used also for intercepting líquids when hermetic seal, small pressure losses and compact construction in the flow direction are required.

The peculiar features of these valves are the following:

- Hermetic internal seal with shut valve
- Small pressure losses
- Possibility of rotating the butterfly of 360° with consequent self-cleaning of the seat without removing the body from the piping
- Not fixed assembly on the piping, since the two flow directions are possible
- Butterfly with sealing rings.
- Chromium-plated body spherical seat for ensuring:
  - a longer life with hermetic internal seal
  - low control torques
- High reliability
- Construction according to UNI 11354 standard
- Face-to-face according to UNI 11354 and ISO 5752, MSS - SP 67, BS 5155-74 standard.

Fig.1 **BF31** - Butterfly valve

Possible Constructions On Request

- With chromium-plated butterfly
- With stainless steel butterfly
- With not threaded of flanging holes
- Body and butterfly materials for low temperature Service
- For high vacuum

Features

Functional features:*

- **Maximum working pressure:** DN 300 ÷ 600 16 bar (UNI PN16)
DN 300 ÷ 600 19 bar (ANSI 150 RF)
- **Working temperature:** According to the sealing ring (see relevant tab.).
- **Fluids:** Water, gas, compressed air, hydrocarbons

Design features:

- **Nominal dimensions DN:** DN 300 ÷ 600
- **Flanged connections:** UNI PN16; class ANSI 150 RF

Materials: **

- **Body:** P355NH EN10028-3
- **Butterfly:** ASTM A350 LF2 CL.1
- **Stem:** X16CrNi16-2 EN10088-3 (AISI 431)
- **Fixing screws for sealing ring:** X5CrNi18-10 EN10088-3 (AISI 304)
- **Sleeve:** Self-Lubricating Sleeve
- **Reinforced sealing ring:** (see relevant tab.)

Sealing

Butterfly Valves			Sealing ring					
Commercial Name	Abbreviation	Usual Denomination	Intermittent Duty	Continuous duty	Abrasion Resistance	Ageing Resistance	Compression Set	Norma Field of Application
HYCAR PERBUNAM.N KRYNAC	NBR	Nitrile Rubber	- 10 °C +130 °C	- 10 °C +100 °C	B	B	B	Suitable for natural gas (methane), water, air, olis, greases, non aromatic solvents, diluited acid solution.
VITON TECNOFLON FLUOREL	FKM	Fluoridized Rubber	- 10 °C +250 °C	- 10 °C +150 °C	B	E	E	Exceptional resistance against chemical agents and at high temperatures; suitable for strong acids, aromatic and aliphnatic solvents, ethers and alcohol, town gas.

D = FAIRLY GOOD **B** = GOOD **E** = VERY GOOD

Tab.1

Pressure Losses

The pressure losses of the valve with the butterfly at a fully-open position may be calculated with the followings equations:

$$\Delta p = \frac{d \bullet q^2}{Cvm^2} \text{ for liquids [1]} \qquad \Delta p = \frac{d \bullet (273{,}16 + t)}{230782{,}6 \bullet Cvm^2} \bullet \frac{q^2}{Pm+Pb} \text{ for gas [2]}$$

where

Δp = pressure losses in mbar

d = specific gravity of liquids [1] (water = 1) and gas [2] (air = 1)

Cvm = flow coefficient (m^3/h water flow rate at 15°C which flows through the valve at fully-open position with a 1 mbar pressure difference between upstream and downstream)

q =flow rate in m^3/h for liquids in Stm^3/h for gas

Pm = gas static pressure at the valve inlet in bars

Pb = local atmospheric pressure (1,013 bars)

t = inlet temperature in °C

The equation [2] is valid for $\frac{\Delta P}{Pm + Pb} \leq 20$

Sometimes the Cv flow coefficient is used (water flow rate in USGPM at the 60° F which flows through the valve at fully-open position with a 1 psi difference between upstream and downstream).

Cvm = 0,0274 • Cv

For a rapid calculation of the pressure losses it is possible to make reference to TT 465 table.

The losses calculated is such way are referred to the valve with the butterfly at a fully-open position.
With the butterfly in chocked position, the losses may be calculated with the same above mentioned equationd, by using, however, the Cvm or the Cv percentage related to the opening angle of the butterfly itself.

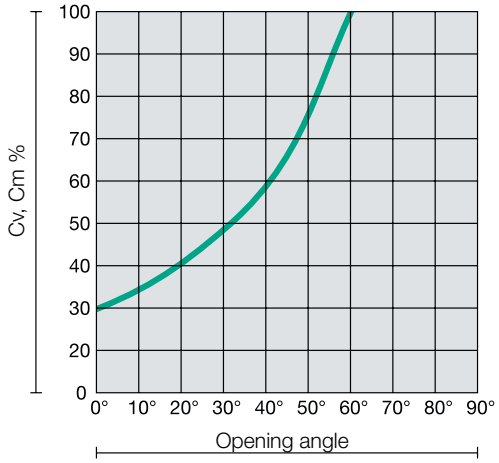


Fig.2 **BF31** - Characteristic Curve CV, CVM

CV, Cvm Values						
DN	12" 300	14" 350	16" 400	18" 450	20" 500	24" 600
CV	7.500	10.000	13.000	17.500	22.000	32.000
Cvm	203,5	274	356,2	479,5	602,8	876,8

Tab.2

Torque

Torque Nm				
DN		Pmin 0,5 bar	Pmax 10 bar	Pmax 16 bar
300	12”	92	115	260
350	14”	200	350	495
400	16”	240	350	650
450	18”	270	360	705
500	20”	480	800	1170
600	24”	520	1050	1690

Tab.3

Values measured during testing on valves assembled for at least 8 days and lubricated with grease (gasket and seals).

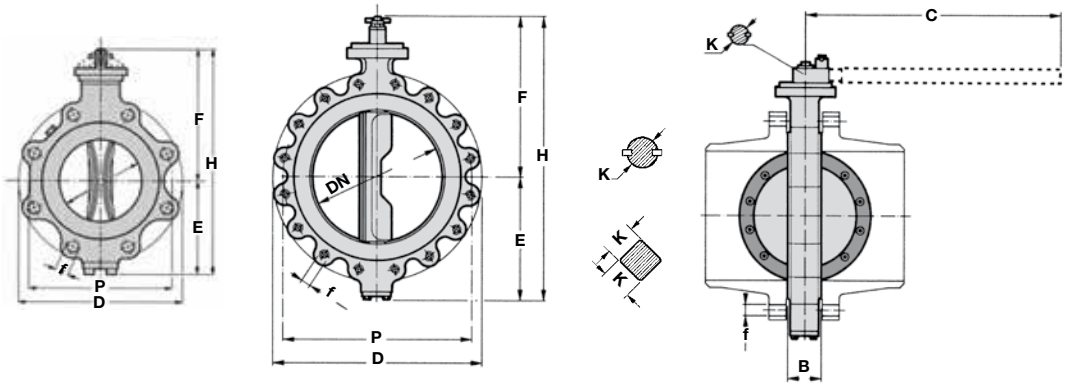
Operators

Pietro Fiorentini butterfly valves can be supplied with the following controls on request.

Controls available on request			
			
Manual lever	Adapter range	Extension	Manual handwheel
			
Double acting pneumatic actuator	Single acting pneumatic actuator	Electric actuator	

Fig.3

Overall Dimensions & Weight



Nominal dimensions ND						
Millimetres	**300**	**350**	**400**	**450**	**500**	**600**
Inches	**12”**	**14”**	**16”**	**18”**	**20”**	**24”**
B	77	77	102	114	127	154
C	660	660	-	-	-	-
E	270	285	330	355	390	475
F	365	393	452	498	525	620
H	647	704	785	866	918	1100
K	32f8	32f8	40f8	40f8	40f8	50f8
UNI PN 16						
D	460	520	580	640	715	840
P	410	470	515	585	650	770
f	25	25	30	30	33	36
N° Screw	12	16	16	20	20	20
Screw	M22	M27	M27	M27	M30	M33
ANSI 150						
D	482,6	533,4	596,9	635	698,5	812,8
P	431,8	476,2	539,7	577,8	635	749,3
f	25,4	28,6	28,6	31,7	31,7	34,9
N° Screw	12	12	16	16	20	20
Screw	M22	M27	M27	M30	M30	M33
						Tab.4

Dimmensions in mm

Weights [Kgf]						
	69	83	137	184	215	480
						Tab.5

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The data are not binding. We reserve the right to make changes without prior notice.

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