

High - Performance Butterfly valve Series 74b

Application:

Tight-closing, double-eccentric butterfly control valve produced from anti-corrosive material especially for the chemical industry where aggressive media's are used, for example in steam pipelines

- Nominal sizes DN 80 to 500 and 4" to 20",
- Nominal pressure PN10 to 40 as well as ANSI 150 and 300 lbs,
- Temperatures -10°C to 250°C

Our newly developed high performance shut-off and control butterfly valve, which has its own patent, can also be modified and combined in many ways. Some of it's special features are as follows:

- **Valve body made of**
 - ASTM A240 Gr. 316L
 - ASTM A516 Gr. 70
- **Body style**
 - Lug-Type
 - Wafer-Type
- **Sealing**
 - **Type WTD**, soft sealing with PTFE V-ring packing, pre-loaded with Belleville washers.
 - **Type MTD**, metallic sealing with PTFE V-ring packing, pre-loaded with Belleville washers.
- **Further features**
 - Low breakaway torque and low amount of wear due to the double eccentric bearing design of the shaft.
 - „Long neck“ versions which allows an easier installation in pipelines with insulation.
 - A continuous raised face is assured through our patent protected screwless fastening ring.
 - Valve shaft sealing through live-loadet PTFE V-ring packing.
 - Blow out safe valve shaft.
 - Soft seat rings can be replaced with metal seat rings on site.
 - Face-to face dimensions, series 20, 25 and 16 acc. to DIN EN 558-1.
 - Attachment options acc. to DIN ISO 5211.

Versions:

High-performance butterfly control valve in the following versions:

- Hand lever / grid plate.
- Manual gear actuator.
- Pneumatic rotary actuator.

Special versions:

- Nominal size > DN 500.
- Adjustable stuffing box flange.
- Double stuffing box.
- Primary seal.
- Groove in raised face.
- Low temperature version.
- High temperature version.

Note:
**This series of butterfly valves
are no longer in the current
product range !**

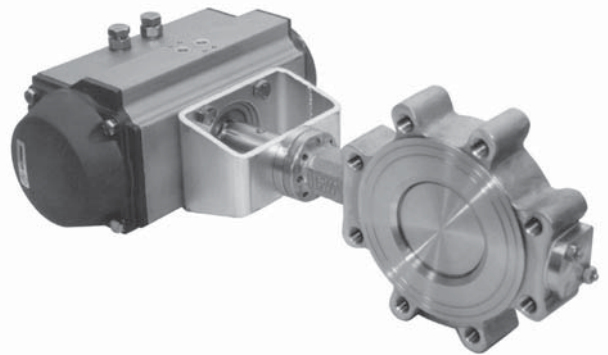


Fig. 1 - Butterfly valve with pneumatic rotary actuator



Fig. 2 - Butterfly valve with hand lever

Butterfly valve Series 74b

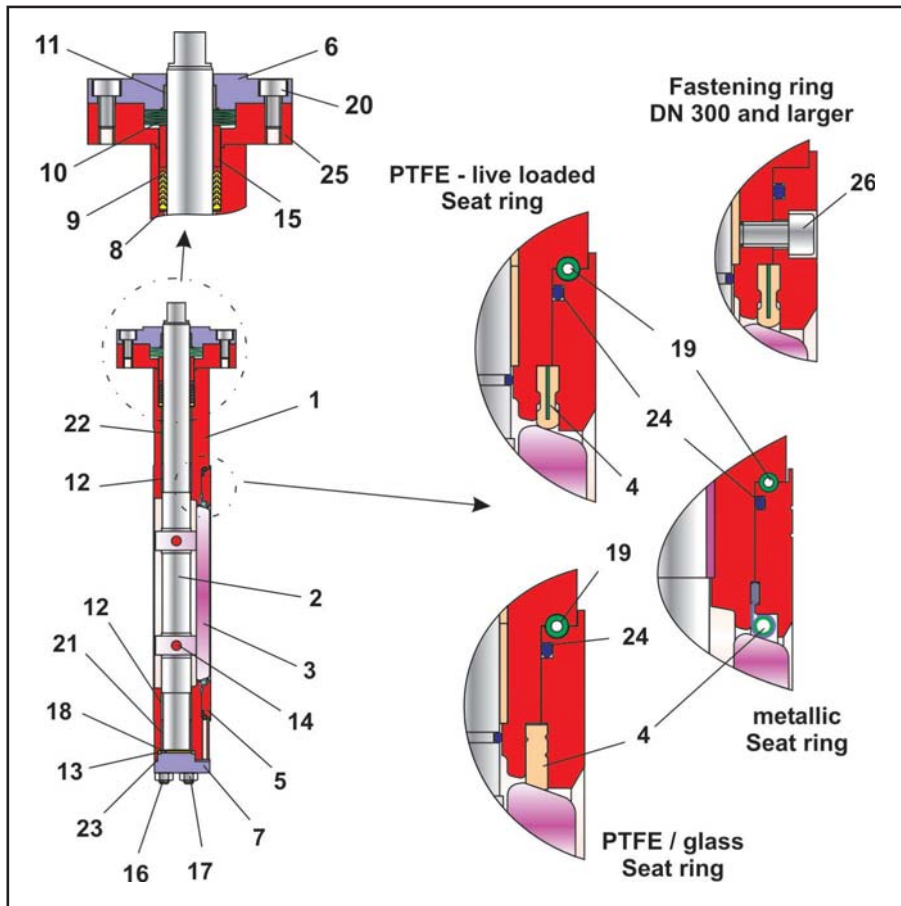


Fig. 3 - Butterfly valve Series 74b

Item	Description
1	Valve body
2	Valve shaft
3	Valve disc
4	Seat ring
5	Fastening ring
6	Packing box flange
7	Bonnet
8	Washer
9	V-ring packing
10	Belleville spring washer
11	Bushing
12	Bushing
13	Body seal
14	Grooved pin
15	Spacer bushing
16	Stud bolt
17	Nut
18	Lower disc
19	Tension spring
20	Screw
21	Bushing
22	Bushing
23	Bonnet seal
24	O-ring
25	Intermediate flange
26	Screw

Table 1 - List of parts

Additional accessories:

The control valves are also available without any accessories or in combination with the following parts:

- Positioner
- Limit switch
- Solenoid valve
- Air sets
- Gauge block

Other special accessories are available on request.
ANSI connections are also available on request.

Principle of operation:

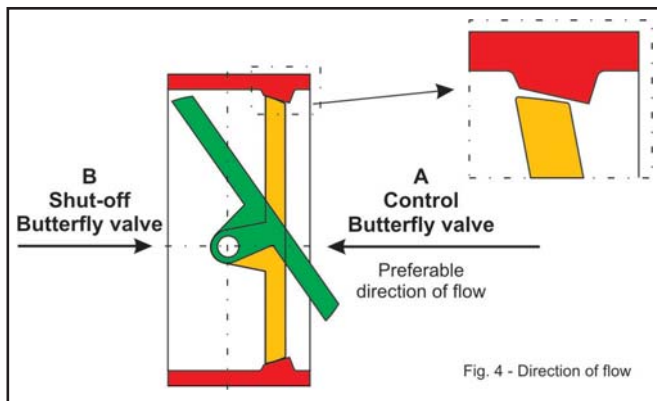


Fig. 4 - Direction of flow

The process medium can flow through the butterfly valve in either direction. The butterfly disc (3) determines the flow through the free area between disc and seat. Butterfly valves are sealed between the butterfly disc (3) and the seat. The shaft (2) is sealed by a V-ring packing (9).

The direction of flow and the differential pressure determine the breakaway torque to open the butterfly valve. The double eccentric bearing design of the shaft causes the disc on opening and closing to remain in contact with the seat only over a very small angle of rotation (Fig. 4). This reduces wear and increases the service life of the valve. In addition, it reduces the breakaway torque.

When the process medium flows through the valve in direction **A** (Fig. 4), the butterfly disc is slightly lifted out of the seat from a certain differential pressure onwards. This reduces the breakaway torque. When the process medium flows through the valve in direction **B**, the butterfly disc is pressed firmly into the seat as the differential pressure rises. This results in a better tightness as achieved, however, the breakaway torque increases as well.



Failure position: In dependence of mounting position of the actuator there are two failure positions, which take place by pressure relieving or on failure of air supply:

- **Butterfly valve with actuator “ on failure closing “**
on failure of air supply the butterfly valve closes.
- **Butterfly valve with actuator “ on failure opening “**
on failure of air supply the butterfly valve opens.



Note: Before using the butterfly valve in hazardous areas, check whether this is possible according to ATEX 94/9/EC. See Operating Instructions <BA 14b>.

General technical data:

Nominal size	DN 80 to 500 and 3" to 20"
Nominal pressure	PN10 to 40 as well as Class 150 and 300
End connection	can be mounted between PN 10, ANSI 150 lbs or 300 lbs
Temperature range	see Pressure-Temperature diagram
Rangeability	50 : 1
Leakage rate	Leakage rate A acc. to DIN EN 12266-1, P12

Table 2 - technical data

Materials:

Valve type	Type MTD	Type WTD
Valve body	ASTM A240 Gr. 316L / ASTM A516 Gr.70	
Butterfly disc	1.4581	1.4408
Shaft	1.4462	
Fastening ring	1.4571 / 1.4581	
Stuffing box flange	1.4571	
Seat ring	Nickel	PTFE with 20% glass
Packing	Live-loadet PTFE V-ring packing	

Table 3 - Materials

Terms for noise level calculation:

φ	10°	20°	30°	40°	50°	60°	70°	80°	90°
Z	0.35	0.30	0.25	0.20	0.17	0.14	0.12	0.11	0.10
FL	0.95	0.95	0.92	0.82	0.74	0.67	0.61	0.57	0.54
xT	0.75	0.75	0.73	0.57	0.47	0.38	0.31	0.28	0.25

Table 4 - noise level calculation and terms for control valve sizing

z-values for noise level calculation acc. to VDMA 24422 and Terms for control valve sizing acc. to DIN EN 60534.

Correction terms:

with liquids

$$\Delta LF = 0,$$

with gases and vapors

$$\Delta LG = 0$$

Torque and breakaway torques:

• for metal sealed Butterfly valves:

Differential pressure Δp in bar	0	5	10	15	20	25	30	40	
DN	Mdmax. in Nm	Breakaway torque Mdl in Nm							
80	805	32	32	46	56	73	79	103	125
100	805	43	51	73	89	116	126	164	199
150	1450	60	127	183	222	290	316	410	500
200	2260	82	241	348	422	551	600	779	950
250	2260	189	473	683	857	1224			
300	4584	357	609	893	1301				
400	9265	523	1024	1638					

Table 5 - Torques for metal sealed Butterfly valves

• for soft sealed Butterfly valves:

Differential pressure Δp in bar	0	3,5	10	
DN	Mdmax. in Nm	Breakaway torque Mdl in Nm		
80	280	18	22	25
100	280	20	25	50
150	505	30	62	124
200	785	59	118	246
250	785	101	202	420
300	1591	158	316	607
400	3215	328	655	1359

Table 6 - Torques for soft sealed Butterfly valves

The breakaway torques specified are average values which were measured with air at 20°C with the corresponding differential pressures. Operating temperature, process medium and long operating times may affect the permissible torques and breakaway torques considerably.

Pressure-Temperature diagram:

The area of application is determined by the pressure-temperature diagram. Process data and the process medium can affect the values in the diagram. Operating data exceeding the limit ranges are possible on agreement.

• for metal sealed Butterfly valves:

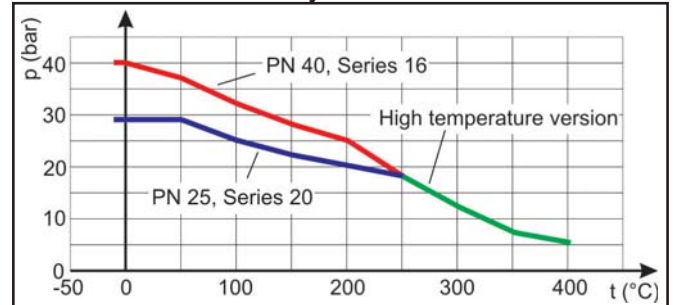


Fig. 5 - Pressure-Temperature diagram for metallic sealed Butterfly valves

• for soft sealed Butterfly valves:

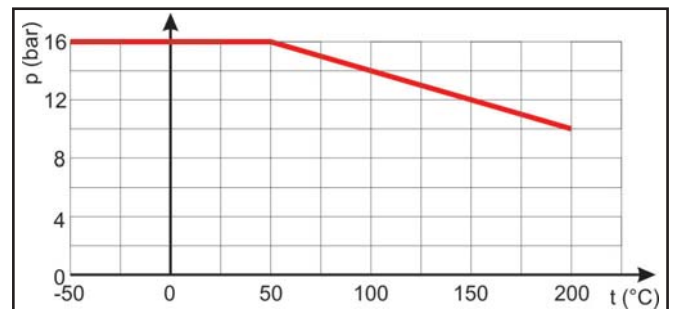


Fig. 6 - Pressure-Temperature diagram for soft sealed Butterfly valves

kv values and associated opening angles:

DN	Opening angle φ								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
80	4.5	23	45	68	93	118	133	147	150
100	7	36	72	108	149	190	214	235	240
150	21	105	210	315	434	553	623	686	700
200	42	208	417	625	862	1098	1237	1362	1390
250	68	341	681	1022	1407	1793	2020	2224	2270
300	100	501	1002	1503	2071	2639	2973	3273	3340
400	183	915	1830	2745	3782	4819	5429	5978	6100
500	289	1443	2886	4329	5964	7600	8562	9427	9620

Table 7 - kv values

Functional diagram with opening angles:

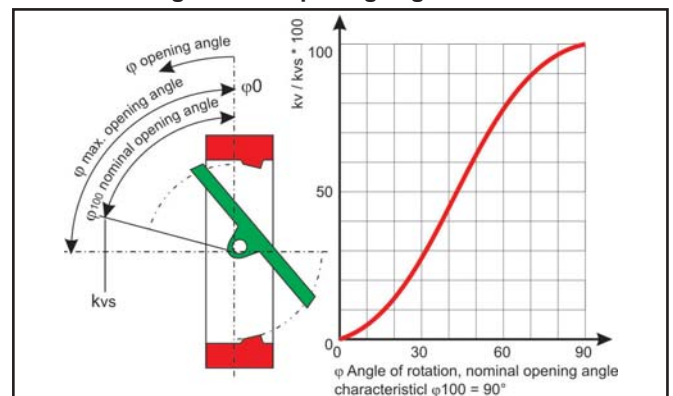


Fig. 7 - Functional diagram and characteristic curve

Dimensions and weights:

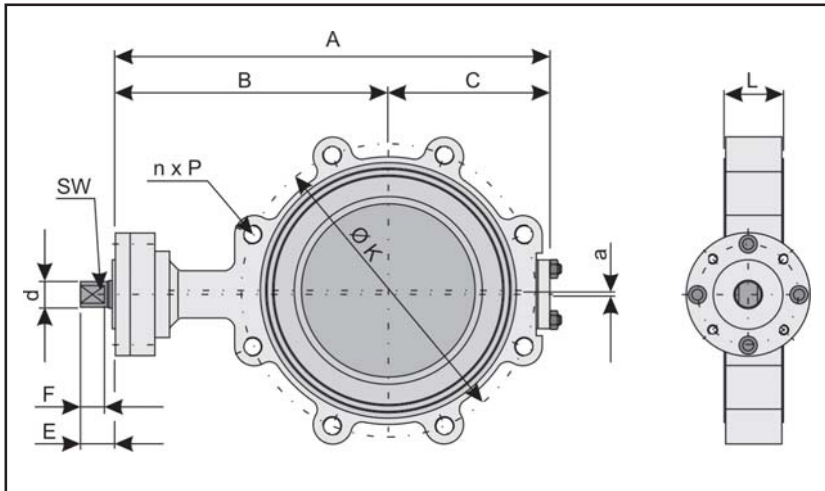


Fig. 8 - Dimensional diagram

DN	Lug - Type with Long neck				Lug -Type with Short neck				
	80	100	150	200	250	300	400	500	
L	Series 20	46	52	56	60	68	78	102	127
	Series 25	49	56	70	71	76	83	102	127
	Series 16	64	64	76	89	114	114	140	152
A	255	278	366	441	468	554	676	824	
B	160	170	225	277	262	299	376	445	
C	95	108	141	164	206	255	300	379	
a	1.6	2	3	4	5	6	8	10	
ØK	PN 10	160	180	240	295	350	400	515	620
	Class 150	152.4	190.5	241.3	298.4	361.9	431.8	539.7	635
n	PN 10	8	8	8	8	12	12	16	20
	Class 150	4	8	8	8	12	12	16	20
P	PN 10	M 16	M 16	M 20	M 20	M 20	M 20	M 24	M 24
	Class 150	5/8"	5/8"	3/4"	3/4"	7/8"	7/8"	1"	1 1/8"
E	19	19	22	26	26	31	37	43	
F	14	14	17	19	19	24	30	34	
Ød	18	18	22	26	26	33	42	54	
SW	14	14	17	19	19	24	30	34	
DIN ISO Connection	F05	F05	F07	F10	F10	F12	F14	F16	
Weight in kg	7	10	18	28	42	66	120	220	

Table 8 - Dimensions in mm

Selecting and sizing the butterfly valve:

1. Calculate the appropriate kv value.
2. Select the nominal size and the kvs value from Table 7.
3. Comparing the operation conditions in accordance to the pressure-temperature diagram.
4. Select a suitable actuator.

Ordering text:

High-Performance butterfly valve Series 74b,
DN / PN ,
optional special version

Manual gear actuator or
actuator (brand name):
Supply pressure: bar,
fail-safe position:

Limit switch (brand name):
Solenoid valve (brand name):
Positioner:

Others:



Note: All relevant details regarding the version ordered, which deviate from the specified version in this technical description data, can be taken if required, from the corresponding order confirm.

For your special requirements please contact our technical sales department.

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Values subject to change