

## BUTTERFLY VALVES



# BROEN Butterfly valves

## Triple eccentric butterfly valves



BROEN Butterfly valves

### Application

Butterfly valves type BROEN are used as a shut-off valves and regulating valves in many different applications:

- district heating and district cooling systems
- energetic systems
- machine oil installations
- steam pipelines and installations
- corrosive media installations

**Nominal pressure:** PN 6 ... PN 25

**Nominal diameters:** DN 80 ... DN 2000

**Seal:** metal/metal

**Standard version:** PN 25, Tmax: 350°C  
(version PN40 and Tmax 425 on request)  
body: cast steel WCB  
disc: cast steel WCB  
lamella sealing:  
stainless steel + graphite

**Actuators:** worm gearbox as a standard  
electric-, pneumatic-  
and hydraulic actuators  
available on a request

### Connections

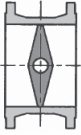
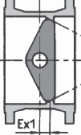
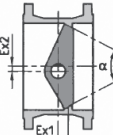
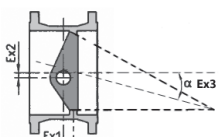
Type	Version
AKW	Interflanged „Wafer“
AKFL	Flanged
AKBW	Welded

### Tightness:

- Leakage Class A according to PN EN 12266-1
- Lamellar metal/metal seal + graphite

- certified  0062

## The overview of butterfly valves' types available on the market

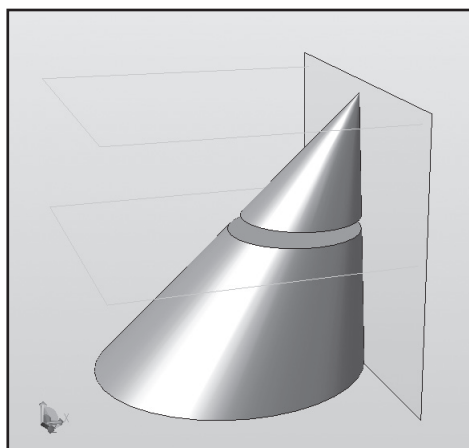
Construction type	Scheme	Available working conditions	Description
Centric butterfly valves		PN 6 – PN 16 -10°C – +120°C	Soft seal: NBR, EPDM, PTFE, Silicone, Viton or without sealing. Leakage about 1% Kv for hard seated version. During the opening and closing there is a strong traffic friction between disc and seal over the entire range (around bearing) which with the participation of impurities significantly shortens the life of such a seal.
Single eccentric butterfly valves		PN 6 – PN 25 -10°C – +120°C	Only soft seal available: NBR, EPDM, PTFE, Viton. There is a traffic friction between disc and seal during opening and closing of butterfly valve. The disc loses contact with the sealing after about 10% open, which significantly shortens the life of the seal.
Double eccentric butterfly valves		PN 6 – PN 40 -30°C – +120°C	Soft seal: NBR, EPDM, PTFE, Viton. Metal/metal sealing. During the opening or closing of butterfly valve the disc loses contact with the sealing after about 3-4% open, which may cause damage to the seal. In addition, there is a risk for jamming of the metal/metal seated butterfly valves used for fluids, which precipitate the "rock" limescale.
Triple eccentric butterfly valves		PN 6 – PN 100 -200°C – +600°C	Only metal/metal sealing available. There is no traffic friction during opening and closing of the butterfly valve. The disc loses contact with the seat immediately after the start of opening. This construction minimizes the torque value, guarantees 100% tightness and long life of the seal.

### Technical specification

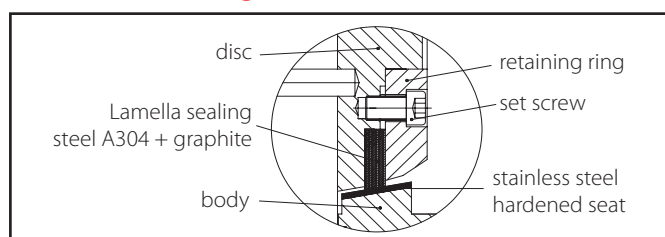
BROEN Butterfly valves can be applicable in pipelines as a shut-off and regulating valves, available in interflanged version ("wafer" type), with welding ends and in flanged version.

The triple eccentric construction reflects on the highest tightness class at the low closing torque and also enables efficient opening of the disc at the maximal differential pressure.

BROEN Butterfly valves' seal structure is elliptical and the contour of the seal is a part of the surface of the cone whose axis is inclined relative to the axis perpendicular to the disk and passing through its center (see the figure below).



### Metal/metal sealing scheme



The butterfly valve's disc is mounted rigidly on a single shaft by pins. Self-centering seat is mounted either on the butterfly valve's body or on the disc. The sealing surface is hardened with the stainless steel overlay (see detailed scheme below). Stellite hardened sealing surface is also available upon a request. The shaft is sealed by graphite inserts and may be sealed additionally. The shaft's mounting is resistant to temperature changes of flowing medium.

BROEN Butterfly valves are resistant to the contamination of the pipeline network water and present class A tightness in both flow directions. The butterfly valve's construction is resistant to mechanical stress (pressure, internal and external stress, erosion, cavitation), as well as non-mechanical stress conditions (temperature, corrosion). The solid and robust construction of butterfly valve has no parts that require periodic service, ie elements that need lubrication or any additional sealing, accessible only after removing the valve from the pipeline.

BROEN Butterfly valves are standard equipped with the self-locking mechanical gearboxes, which closing is provided by turning the handwheel to the right. The repair of gearbox or replacement for the electric actuator can be performed without removing the valve from the pipeline, provided that it is in the closed position. Butterfly valves can be mounted anywhere in the heating network, both in vertical pipelines as well as horizontal.

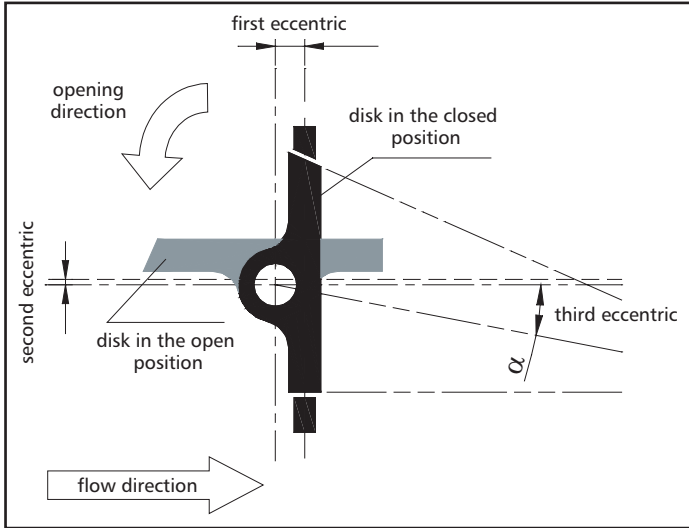
### Construction details

The package of lamellar metal/metal seal is mounted on the butterfly valve's disc, however in AKW version of „104“ series in diameters up to DN 500 is mounted on the body of butterfly valve. Stainless steel rings are arranged lamellar with thin graphite layers, which provide the minimal move ability of the individual rings between each other during the closing of the butterfly valve providing the 100% tightness in both flow directions.

In butterfly valves of standard WCB cast steel version the seat surface is hardened with the 304 stainless steel overlay. In this construction stainless steel rings of lamellar sealing stay in direct contact with the hardened seat surfaces so there is no corrosion process and long-term durability of the seal is ensured. Moreover, this construction solution eliminates the need of using discs of stainless steel.

On a special request the stellite hardened seat surface is also available.

## Triple eccentric construction scheme



## Description

BROEN Butterfly valves are proudly built using the achievements of the 21st century in the development of high pressure valve technology. The triple eccentric design ensures zero leakage using the smallest possible torque value. Frictionless triple eccentric metal/metal sealing of BROEN Butterfly valves enables efficient opening of the disc at the maximum pressure difference. At the same time triple eccentric construction is protecting against jamming of the disc. The low torque is a factor influencing on the selection of preferably smaller mechanical gearboxes, moreover determines the selection of the smaller (cheaper) dimensions of electric-, pneumatic- or hydraulic actuators .

- 1st - eccentric - moving the shaft axis relative to the sealing surface axis.
- 2nd - eccentric - moving the shaft axis relative to the valve axis.
- 3rd - eccentric - the conical shaped sealing surface with the cone axis shifted by the „α” angle.

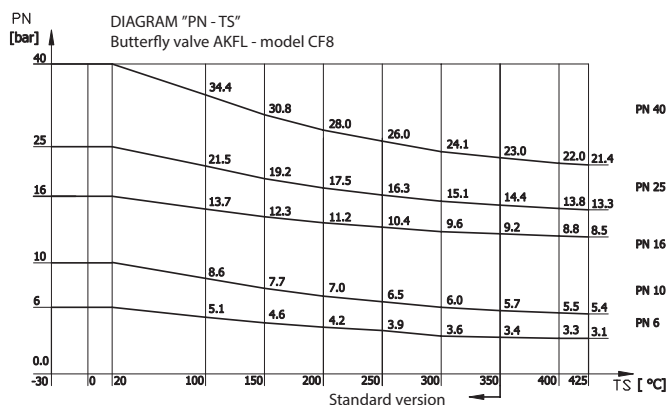
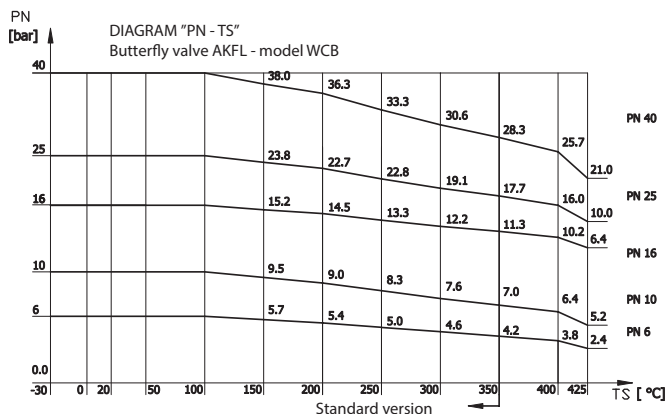
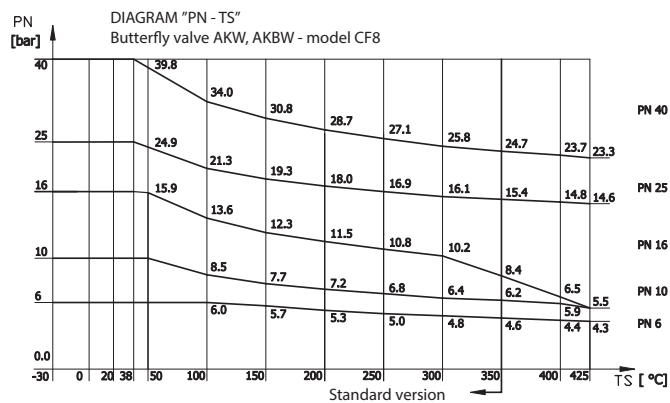
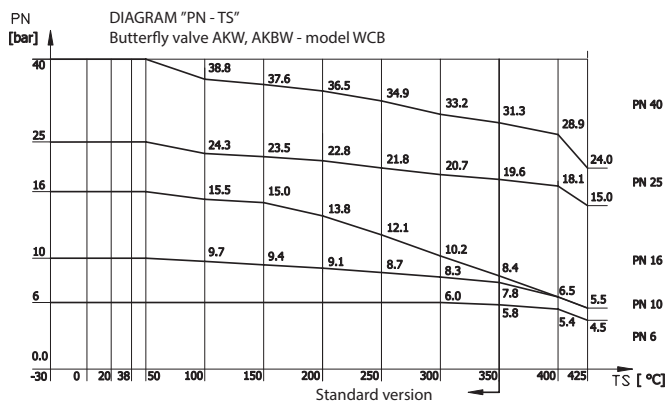
## Construction scheme

Lp.	Description	Material		
		Standard	On request	
1	Body	A216 WCB	A351 CF8	A351 CF8M
2	Sealing seat	D507Mo (stellit*)	A304 (stellit*)	A316 (stellit*)
3	Seat (lamela)	A304+Grafit	A304+Grafit	A316+Grafit
4	Ring	A105	A304	A316
5	Disc	A216 WCB	A351 CF8	A351 CF8M
6	Shaft	A564 630/ A182 XM-19**	A564 630/ A182 XM-19**	A564 630/ A182 XM-19**
7	Gland inserts	Grafit	Grafit	Grafit
8. Shaft cover (≥DN150), 9. Screws, 10. Mounting/spiral sealing A304+grafit, 11. Distance ring, 12. Bolt, 13. Screws,		14. Slide bearing, 15. Choke, 16, 17. Screw and nut for choke, 18, 19. Screw and Actuator mounting base, 20. Actuator mounting base, 21, 22. Worm gearbox,		
		* Material version available on request, ** Material version available on request, T max 425 °C		

## Available material versions

Nominal pressure: Nominal diameter:		DN80 – DN2000 PN6 – PN40	
Materials	Standard version	Version on request	
	Cast carbon steel A216 WCB	Alloy cast steel A351 CF8	Alloy cast steel A351 CF8M
Media gr. 2 wg 2014/68/EU	Water, steam, oil itp.	Steam, corrosive media, chemicals etc.	
Maximal work temperature	-30 ÷ +350° C (+ 425 °C)		
Realization standard	EN 593		
Connections	flanged (interflanged) acc. EN 1092-1; Welded acc. EN 12627		
Body dimensions	flanged acc. EN 558 (S13); Interflanged acc. EN 558 (S16); Welded acc. EN 12982 (S14)		
Pressure test and inspection	EN 12266-1 tests P10, P11, P12		
Body strength Pressure test P10, P11	PN x 1,5 MPa		
Body strength tightness closing P12	PN x 1,1 MPa		

## Available maximal working pressure regarding to the temperature for different material versions and types of butterfly valves



### Flow regulation

BROEN Butterfly valves in addition to cut-off function may be used as a regulating (control) valves. The mechanical worm gearboxes mounted on the butterfly valves are fitted with disc opening angle indicator. While opening the butterfly valve's disc for a given angle, we're using the graph (on the right) and the table (underneath) to determine the approximate percentage of maximal Kv flow coefficient indicated for the appropriate diameter, taking it as a  $Kv_m$ . In this way, knowing the measured pressure difference  $\Delta P$  [bar] at the valve and substituting calculated  $Kv_m$  flow ratio into the formula below, we can calculate the actual model-based flow rate  $Q$  [m<sup>3</sup>/h]:

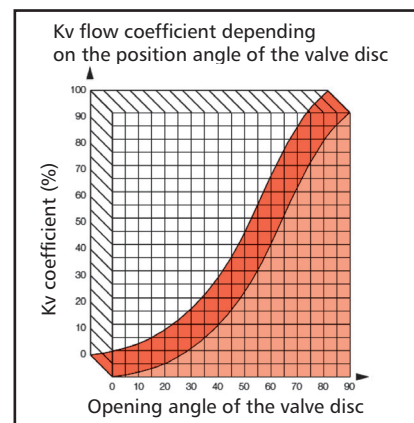
$$Q = Kv_m \times \sqrt{\Delta P}$$

### Kv flow coefficients for the butterfly valves

DN mm	80	100	125	150	200	250	300
Kv 90°	164	250	414	682	1300	2200	3370
DN mm	350	400	450	500	600	700	800
Kv 90°	4432	6411	8660	10320	16012	25235	31771
DN mm	900	1000	1200	1400	1600	1800	2000
Kv 90°	37594	54201	76724	100862	138000	179000	223000

$Cv [Cv=1,16Kv]$

### Regulation curve



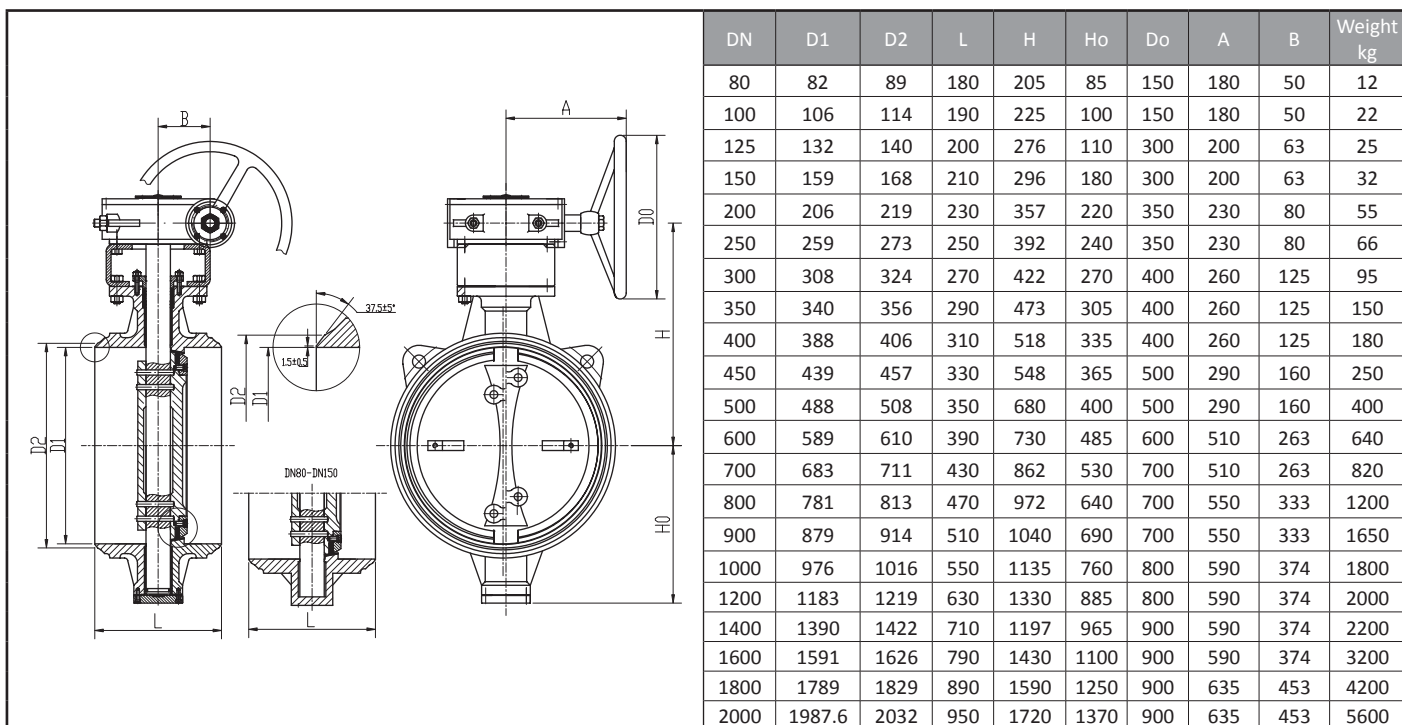
Suggested area of effective flow regulation is achieved between the opening angle of 25° and the angle of 65°. In some cases it is acceptable to extend the range of angles between 20° and 70°.

## Butterfly valves type AKBW with the welded connection



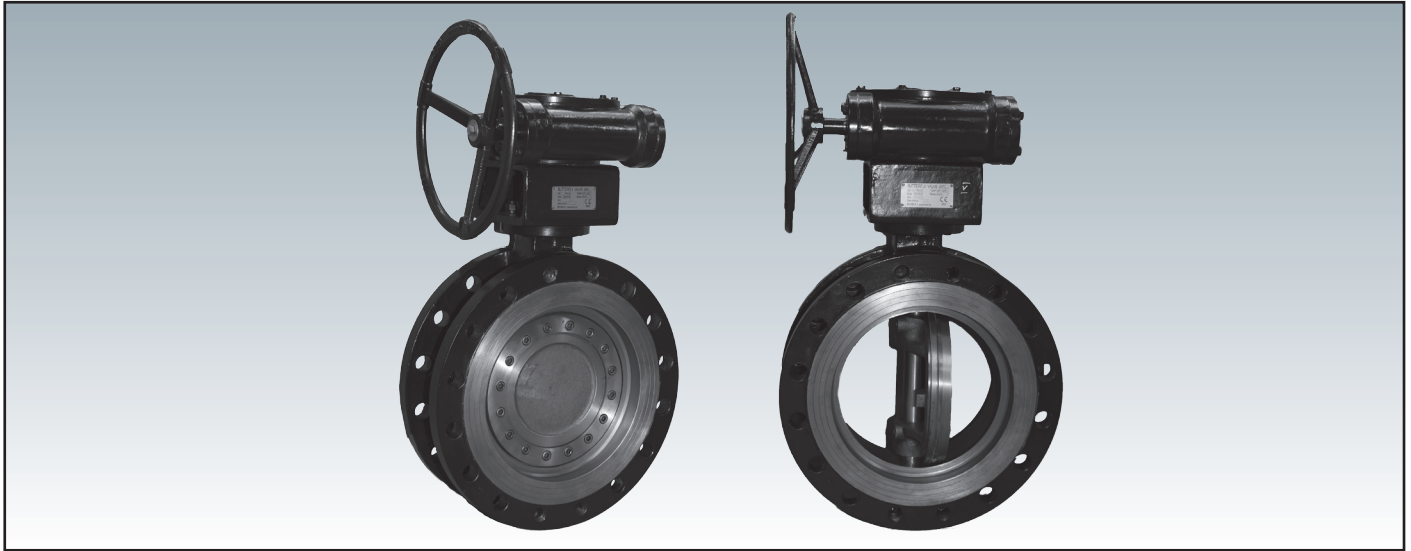
DN400 type AKBW with the welded connection

## Triple eccentric butterfly valve type AKBW PN25 with the welded connection



Main dimensions are applicable also for version PN 10 and PN16; \*weight for PN25 with worm gearbox

## Butterfly valves type AKFL with the flanged connection



Butterfly valve DN 350 type AKFL with the flanged connection

## Triple eccentric butterfly valve type AKFL PN16 with flanged connection

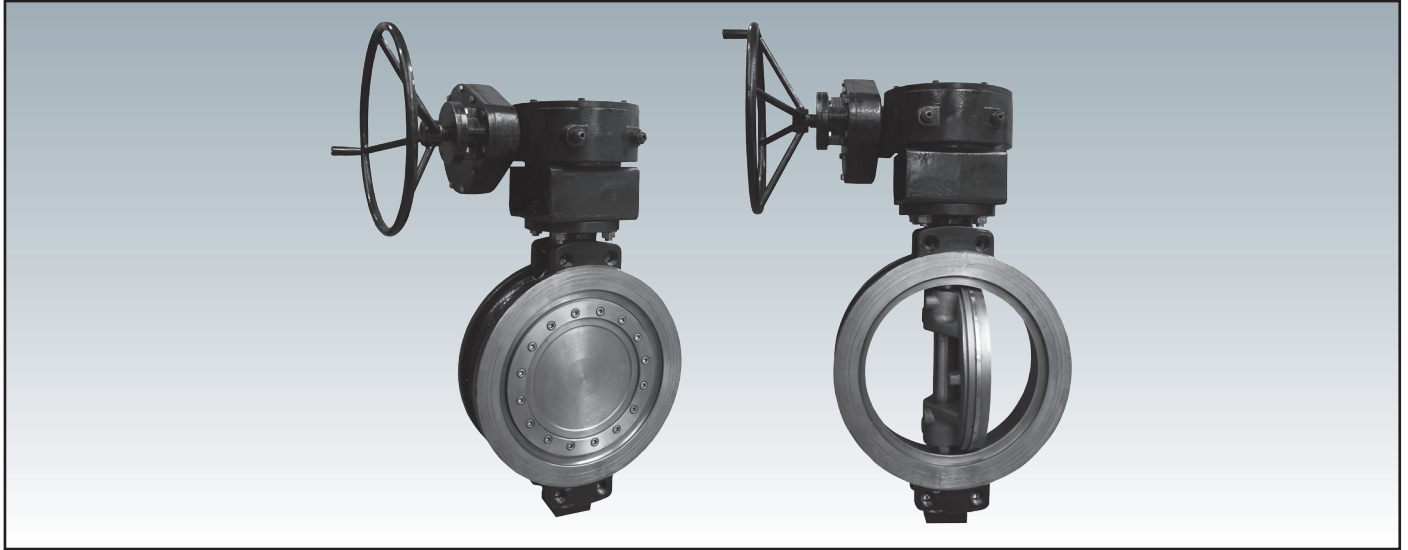
DN	L	H	H0	Do	A	B	D	D1	D2	Z-d	4-M	Weight kg
80	114	215	100	150	180	50	200	160	138	8-ø18	-	
100	127	245	118	150	180	50	220	180	158	8-ø18	-	20
125	140	285	135	300	180	50	250	210	188	8-ø18	-	23
150	140	305	175	300	185	63	285	240	212	8-ø22	-	30
200	152	370	185	350	185	63	340	295	268	12-ø22	-	65
250	165	410	220	350	215	80	405	355	320	12-ø26	-	85
300	178	450	250	400	215	80	460	410	378	12-ø26	-	110
350	190	515	285	400	215	80	520	470	438	16-ø26	-	170
400	216	540	325	400	245	125	580	525	490	16-ø30	-	255
450	222	570	345	500	245	125	640	585	550	20-ø30	-	300
500	229	690	375	500	245	125	715	650	610	20-ø33	-	325
600	267	750	435	600	390	242	840	770	725	16-ø36	4-M33	490
700	292	905	545	700	390	242	910	840	795	24-ø36	-	850
800	318	975	625	700	420	262	1025	950	900	24-ø39	-	950
900	330	1020	645	700	420	262	1125	1050	1000	28-ø39	-	1130
1000	410	1130	725	800	550	325	1255	1170	1115	28-ø42	-	1600
1200	470	1330	856	800	550	325	1485	1390	1330	32-ø48	-	1800
1400	530	1450	960	900	590	374	1685	1590	1530	32-ø48	4-M45	2200
1600	600	1590	1090	900	590	374	1930	1820	1750	36-ø56	4-M52	3100
1800	670	1710	1235	900	590	374	2130	2020	1950	40-ø56	4-M52	4500
2000	760	1920	1395	900	635	453	2345	2230	2150	44-ø62	4-M56	6100

## Triple eccentric butterfly valve type AKFL PN25 with flanged connection

DN	L	H	H0	Do	A	B	D	D1	D2	Z-d	4-M	Weight kg
80	114	215	100	150	180	50	200	160	138	8-ø18	-	22
100	127	245	118	150	180	50	235	190	162	8-ø22	-	32
125	140	285	135	300	180	50	270	220	188	8-ø26	-	39
150	140	305	175	300	185	63	300	250	218	8-ø26	-	45
200	152	370	185	350	185	63	360	310	278	8-ø26	4-M24	77
250	165	410	220	350	215	80	425	370	335	8-ø30	4-M27	100
300	178	450	250	400	215	80	485	430	395	12-ø30	4-M27	156
350	190	515	285	400	215	80	555	490	450	12-ø33	4-M30	200
400	216	540	325	400	245	125	620	550	505	12-ø36	4-M33	290
450	222	570	345	500	245	125	670	600	555	16-ø36	4-M33	350
500	229	690	375	500	245	125	730	660	615	16-ø36	4-M33	370
600	267	750	435	600	390	242	845	770	720	16-ø39	4-M36	530
700	292	905	545	700	390	242	960	875	820	20-ø42	4-M39	900
800	318	975	625	700	420	262	1085	990	930	20-ø48	4-M45	1100
900	330	1020	645	700	420	262	1185	1090	1030	24-ø48	4-M45	1250
1000	410	1130	725	800	550	325	1320	1210	1140	24-ø56	4-M52	1900
1200	470	1330	856	800	550	325	1530	1420	1350	28-ø56	4-M52	2150
1400	530	1520	960	900	590	374	1755	1640	1560	32-ø56	4-M52	2600
1600	600	1680	1090	900	590	374	1975	1860	1780	36-ø62	4-M56	3550
1800	670	1790	1235	900	635	453	2195	2070	1985	40-ø70	4-M64	5100
2000	760	2035	1395	900	635	453	2425	2300	2210	44-ø70	4-M64	6700



## Butterfly valves type AKW with the interflanged connection



Butterfly valve DN 350 type AKW with the interflanged connection

## Triple eccentric butterfly valve type AKW PN16 with the interflanged connection

DN	L	H	H0	Do	A	B	D	D1	D2	Z-M	a°	Weight kg
80	64	195	100	150	180	50	200	160	138	8x ø 18	22,5	10
100	64	215	110	150	180	50	220	180	158	8x ø 18	22,5	13
125	70	270	135	300	180	50	250	210	188	8x ø 18	22,5	23
150	76	290	175	300	185	63	285	240	212	8x ø 22	22,5	26
200	89	330	185	350	185	63	340	295	268	12x ø 22	15,0	30
250	114	375	215	350	215	80	405	355	320	12x ø 26	15,0	55
300	114	440	250	400	215	80	460	410	378	12x ø 26	15,0	70
350	127	455	285	400	215	80	520	470	438	16xM24	11,25	115
400	140	510	325	400	245	125	580	525	490	16xM27	11,25	155
450	152	550	345	500	245	125	640	585	550	20xM27	9,0	200
500	152	635	375	500	245	125	715	650	610	20xM30	9,0	240
600	178	685	430	600	390	242	840	770	725	20xM33	9,0	300
700	229	735	540	700	390	242	910	840	795	24xM33	7,5	370
800	241	850	710	700	420	262	1025	950	900	24xM36	7,5	570
900	241	890	650	700	420	262	1125	1050	1000	28xM36	6,45	750
1000	300	920	720	800	550	325	1255	1170	1115	28xM39	6,45	930
1200	350	1120	850	800	550	325	1485	1390	1330	32xM45	5,62	1180

## Triple eccentric butterfly valve type AKW PN25 with the interflanged connection

DN	L	H	H0	Do	A	B	D	D1	D2	Z-M	a°	Weight kg
80	64	230	100	150	180	50	200	160	138	8x ø 18	22,5	10
100	64	250	110	150	180	50	235	190	162	8x ø 22	22,5	18
125	70	295	135	300	180	50	270	220	188	8x ø 26	22,5	25
150	76	315	175	300	185	63	300	250	218	8x ø 26	22,5	30
200	89	390	215	350	185	63	360	310	278	12x ø 26	15,0	38
250	114	500	260	350	215	80	425	370	335	12x ø 30	15,0	60
300	114	520	300	400	215	80	485	430	395	16xM27	11,25	88
350	127	540	310	400	215	80	555	490	450	16xM30	11,25	140
400	140	650	335	400	245	125	620	550	505	16xM33	11,25	185
450	152	680	415	500	245	125	670	600	555	20xM33	9,0	240
500	152	635	375	500	245	125	730	660	615	20xM33	9,0	295
600	178	685	430	600	390	242	845	770	720	20xM36	9,0	395
700	229	735	540	700	390	242	960	875	820	24xM39	7,5	470
800	241	850	710	700	420	262	1085	990	930	24xM45	7,5	710
900	241	890	650	700	420	262	1185	1090	1030	28xM45	6,45	840
1000	300	920	720	800	550	325	1320	1210	1140	28xM52	6,45	1200
1200	350	1120	850	800	550	325	1530	1420	1350	32xM52	5,62	1600

## Connection dimensions for BROEN Butterfly valves PN25 acc. ISO5211 - connection scheme

DN	ISO F	d1	d2	N-d3	d4	d5	d6	n*t	F	E	h1	h2	Torque value Nm
									(1 groove)	(2 grooves)			
80	F07	90	70	4-ø10	55	16	18	1*6	20,5	-	3	40	90
100	F07	90	70	4-ø10	55	18	18	1*6	20,5	-	3	40	160
125	F10	125	102	4-ø12	70	22	22	1*6	24,5	-	3	50	230
150	F10	125	102	4-ø12	70	26	25	1*8	28,0	-	3	50	335
200	F12	150	125	4-ø14	85	30	30	1*8	33,0	-	3	60	650
250	F12	150	125	4-ø14	85	36	35	2*10	-	41	3	70	1010
300	F14	175	140	4-ø18	100	40	40	2*12	-	46	4	80	1860
350	F16	210	165	4-ø22	130	45	45	2*14	-	52	5	90	2720
400	F16	210	165	4-ø22	130	55	50	2*14	-	57	5	100	3810
450	F25	300	254	8-ø18	200	60	60	2*18	-	68	5	110	4570
500	F25	300	254	8-ø18	200	65	60	2*18	-	68	5	110	6480
600	F30	350	298	8-ø22	230	80	80	2*22	-	90	5	118	11980
700	F30	350	298	8-ø22	230	100	100	2*28	-	112	5	160	15680
800	F35	415	356	8-ø33	260	110	110	2*28	-	122	5	165	23700
900	F35	415	356	8-ø33	260	120	120	2*28	-	122	5	170	29199
1000	F40	475	406	8-ø39	300	130	130	4*32	-	144	8	200	35100
1200	F40	475	406	8-ø39	300	150	150	4*36	-	166	8	200	62070
1400	F48	560	483	12-ø39	370	170	170	4x40	-	188	8	230	107480
1600	F48	560	483	12-ø39	370	210	200	4x45	-	220	8	230	131800
1800	F60	686	603	20-ø39	470	240	240	4x56	-	264	10	250	181600
2000	F60	686	603	20-ø39	470	260	240	4x56	-	264	10	250	242300

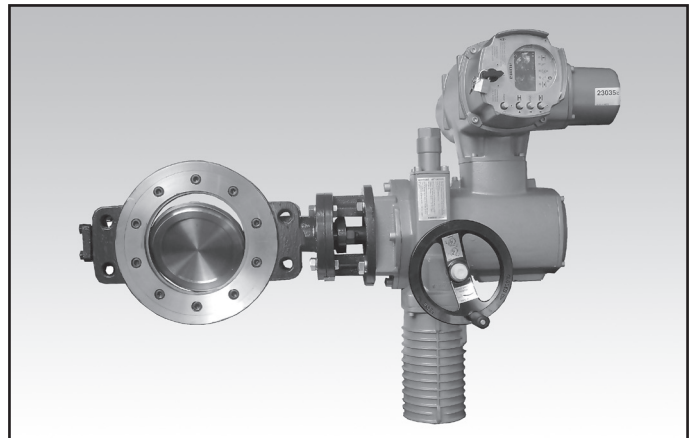
## Selection of AUMA electric actuators for BROEN Butterfly valves

DN	Electric actuator
80	SQ05.2
100	SQ07.2
125	SQ07.2
150	SQ10.2
200	SQ12.2
250	SQ12.2
300	SQ14.2
350	SA07.6-GS 100.3/VZ 4.3
400	SA07.6-GS 125.3/VZ 4.3
450	SA10.2-GS 125.3/VZ4.3
500	SA10.2-GS 125.3/VZ4.3
600	SA10.2-GS 160.3/GZ 160.3
700	SA10.2-GS 200.3/GZ 200.3
800	SA10.2-GS 200.3/GZ 200.3
900	SA10.2-GS 250.3/GZ 250.3
1000	SA14.2-GS 250.3/GZ 250.3

For dimensions above DN 1000 selection of actuators available upon a request

Wiring on the AUMA plug, work duty: S2 - 15 min, AUMA 3-phase engine, class F insulation, thermal motor protection (other voltages at extra cost), 1 micro switch for each opening and closing positions, 1 limit microswitch for each end position OPEN / CLOSED, anticondens. heater, mechanical position indicator, manual wheel drive, the valve connection according to EN ISO 5211, the rotation angle of 90° (swivels from 82° to 98°), operating temperature - 25 °C to + 80 °C (70 °C for 1-phase voltage), the protection class IP 67 according to EN 60 529 (IP 55 for DC motor), KN corrosion protection, paint silver-gray (DB 701, similar to RAL 9007), electric scheme: KMS TP100/001.

Selection of regulating actuators AUMA type SGR and SAR with MATIC and AUMATIC modules available upon a request.



Butterfly valve type AKW DN200 with electric actuator AUMA

## Selection of REGADA electric actuators for BROEN Butterfly valves

DN	Actuator type + gear box	Connection		Shut-off torque	Operation time
		ISO F	øA	Nm	S/90°
80	SP 2.3	F07/F10	18	290	10-80
100	SP 2.3	F07/F10	18	290	20-160
125	SP 2.4	F10/F12	22	590	40-160
150	SP 2.4	F10/F12	25	590	40-160
200	SP 3.5	F12	30	1200	40-160
250	SP 3.5	F12	35	1200	40-160
300	MO 3 52000.0-1F2AC/06 + MF14/F14/F10	F16	40	1620	57
350	MO 3 52000.0-1F2AC/06 + MF15/F16/F10	F16	45	2460	64
400	MO 3 52000.0-1W2AC/06 + MF16/F25/F10	F16	50	3485	41
500	MO 3 52000.0-1M2AC/06 + MF20/F25/F10	F25	60	4180	69
600	MO 3 52000.0-1M2AC/06 + MF30/F25/F10	F25	80	9900	116
700	MO 3 52000.0-1V2AC/06 + MF40/F30/F10	F30	100	15096	154
800	MO 3 52000.0-122AC/06 + MF40/F35/F10	F30	110	18870	154

Selection of actuators for dimensions above DN800 available upon a request

## Selection of pneumatic actuators for BROEN Butterfly valves (drive air pressure 6 bar)

DN	REMOTE CONTROL
80	RC230DA
100	RC240DA
125	RC240DA
150	RC250DA
200	RC260DA
250	RC265DA
300	RC280DA
350	RC280DA
400	RC 88 DA
450	RC 88 DA
500	RC 88 DA
600	RCG 100DA

Selection of actuators for dimensions above DN600 available upon a request

Drive air pressure 6 bar

# OPERATION MANUAL OF THE BROEN BUTTERFLY VALVES

## CONSTRUCTION AND APPLICATION

The triple eccentric BROEN butterfly valves are used as regulatory and shut-off valves. Wide range of applications is possible thanks to various types of construction materials. The triple eccentric design allows high tightness class. The disc is mounted rigidly on a single shaft by pins. Lamella seat can be embedded in the valve body or on the disc. The sealing surface is hardened. The shaft is sealed by graphite inserts and may be sealed additionally. In standard valves are equipped with a worm gearbox. An electric, pneumatic or hydraulic actuator is available on request.

## PACKING, STORAGE

Valves should be transported on the pallets or in the boxes protecting from possible damage. Valves should be kept in closed rooms with the air humidity below 70%. Surfaces mechanically machined are coated with an anti-corrosion substance protection. At long periods of storage, all steel and not painted surfaces should be at least once a year re-covered with the protecting anti-corrosion substance. Valves should be protected from sand, dust and other contaminants. Valves should not be lifted grabbing by the drive.

## INSTALLATION

Before mounting the valve, the pipeline should be thoroughly rinsed. Residues from welding and other contaminants remaining in the pipeline could damage the seals. It is also important to check if the valves has not been contaminated during the transport and storage. Wash off the protective substance right before installing the valve.

**The butterfly valves should be installed so that the main flow direction matches the arrow on the body**

**It is recommended to install the valves so that the rotation axis of the spindle is set in a horizontal position.** Thoroughly center the axis of the valve and the seals, so that nothing prevents the movement of the disc.

Before the installation set the disc in the closed position to avoid the damaging of the valve sealing elements. The butterfly valve cannot be used to support the pipeline.

During the installation:

- check the alignment of the pipeline and the valve
- place the supports near the valve
- check if the pipeline is adequately protected from the effects of the temperature changes

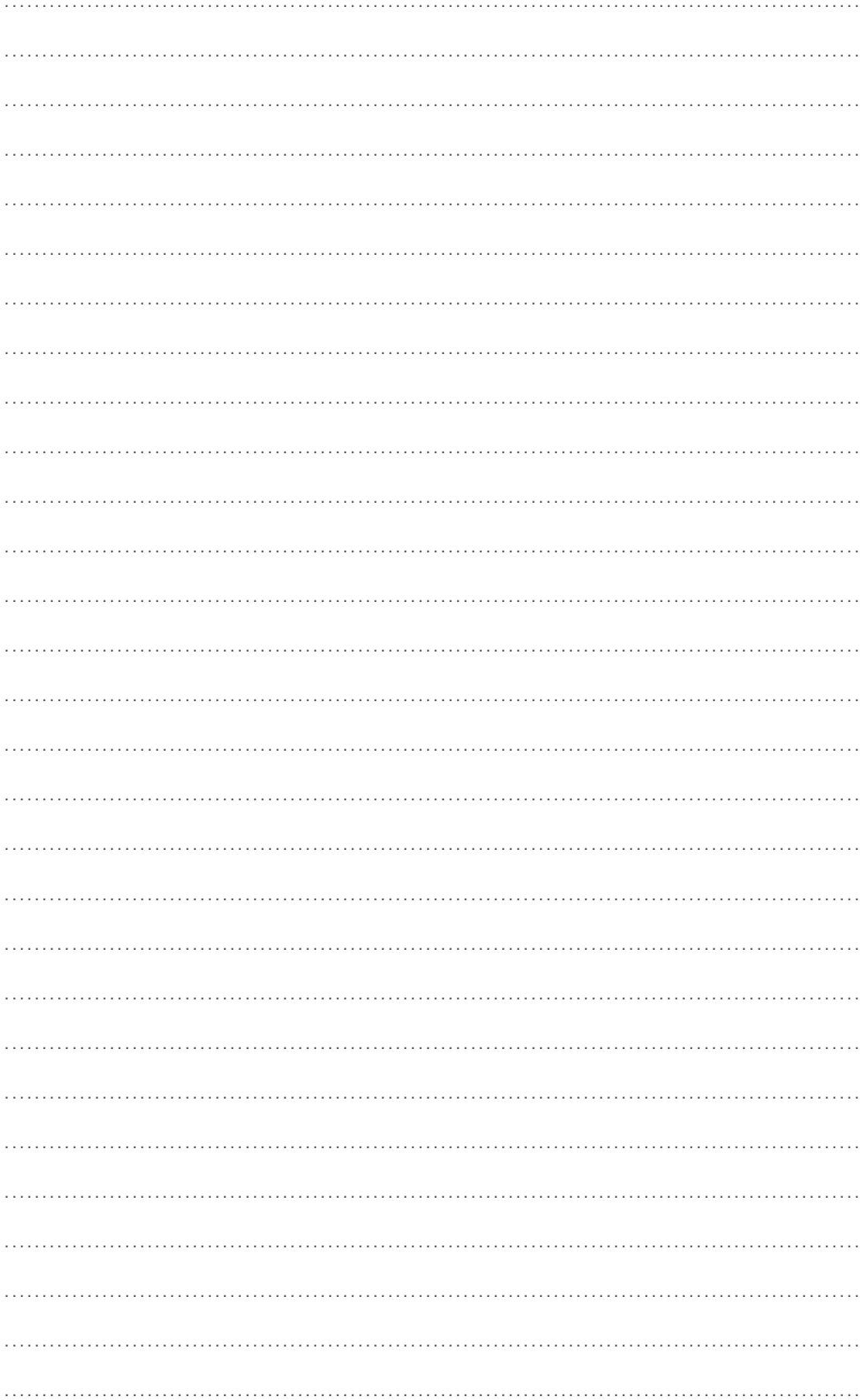
The pipeline must be adequately supported. With insufficient support the butterfly valve is exposed to additional stress which may result in joint leaks or noisy operation and vibrations. Temperature changes cause thermal elongations which must be adequately compensated (eg by installing bellows compensators between the network fixed points). The lack of adequate compensation may result in the increased stress on the joints between the valve and the pipeline and may cause damage and leakage.

## OPERATION AND MAINTENANCE

Butterfly valves are designed to long maintenance-free operation. The need of later maintenance can be reduced by the precision kept during the installation. Glands require regular checking. Do not loosen the glands because it may result in leaks. Do not exchange the glands and sealing inserts when the installation is under pressure.

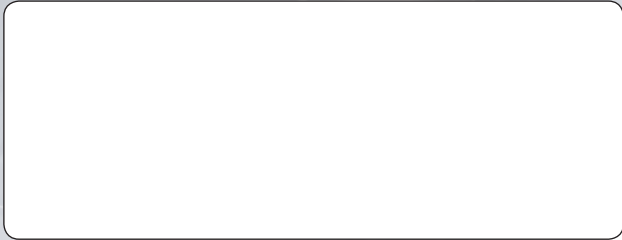
The leakage in the closed valve may be caused by the dirt on the sealing surfaces. If the valve is equipped with an actuator, check if the switches has worked at the right time. Contamination can be removed by a light valve opening and rinsing it off from the sealing. In case of no result, check the condition of the sealing rings and possibly replace them.

In the working conditions including a maximum temperature of 425°C and the maximum allowable working pressure, due to the creep of the material, the life of the valve is expected to 100,000 working hours.



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