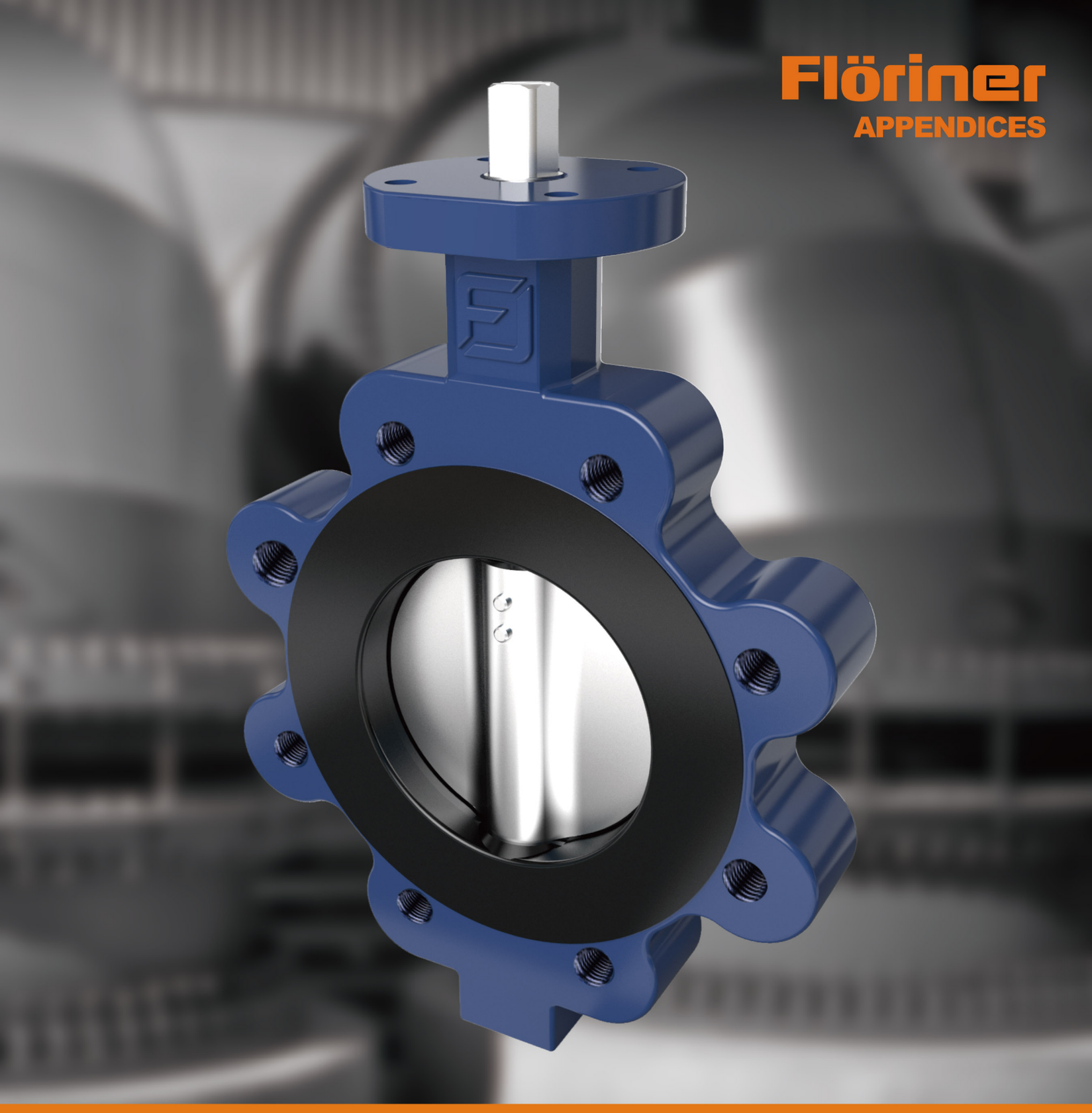
Flöriner

APPENDICES



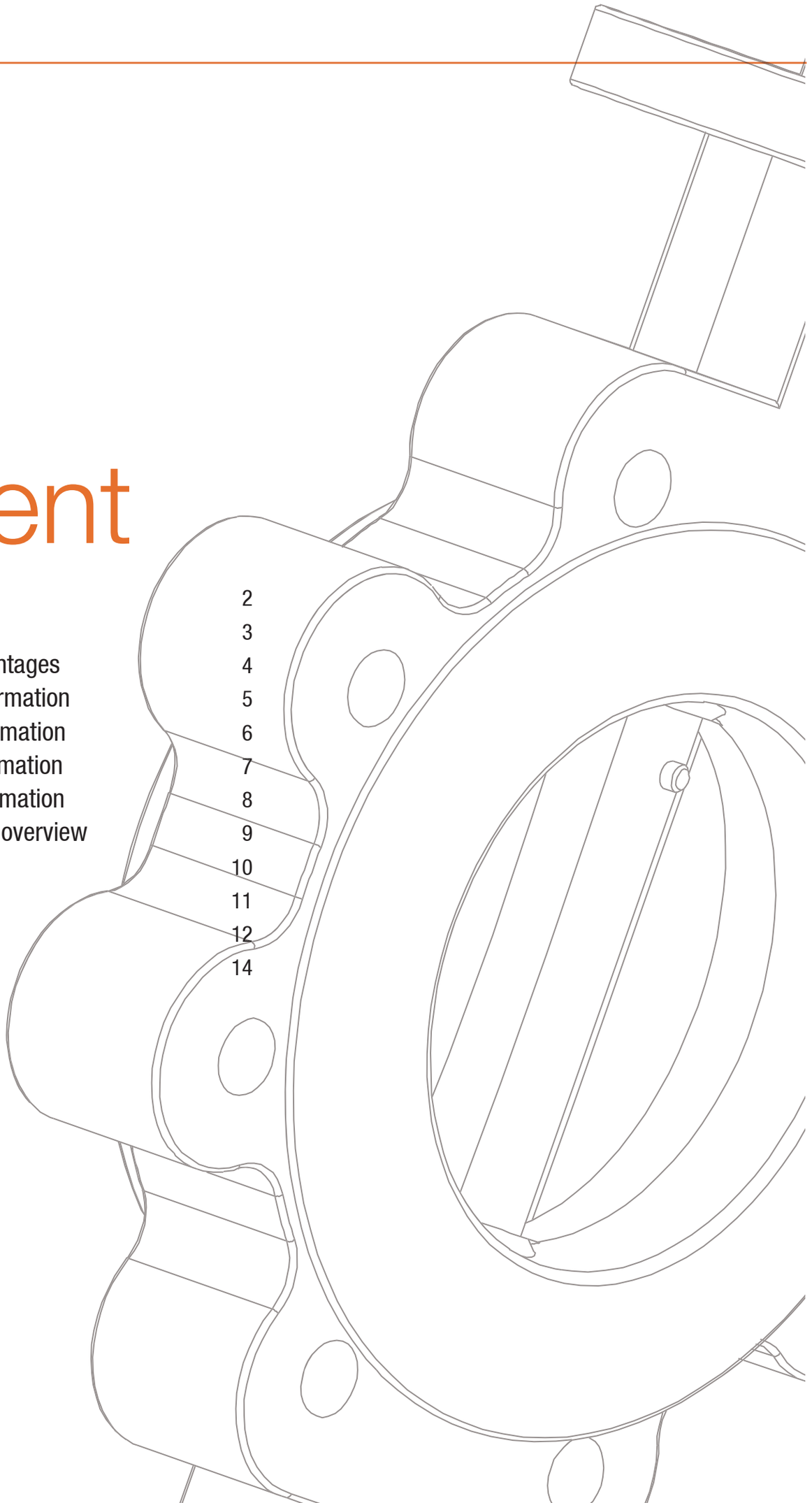
2020 version

LOWER TORQUE CONCENTRIC BUTTERFLY VALVE

APPROVED TYPE APPROVAL SCHEME

BUREAU VERITAS

Content

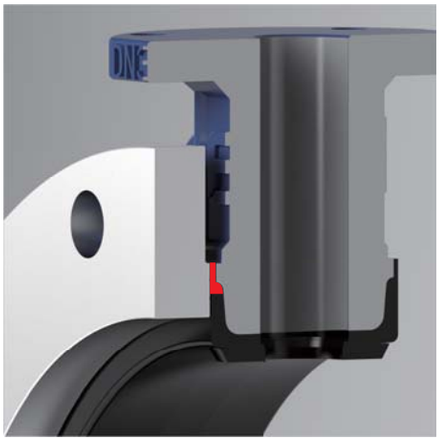


Why choose Floeriner?

Floeriner is a global producer with innovative designed and technologically advanced valves in marine and offshore, industries, petrochemical market. This in turn improves plant safety, increases the mechanical integrity of equipment and allows customers to gain a competitive advantage in the market place.

Low Torque: Special design for internal structure & shaft, to be greatly reduced valves' torque. Lower torque not only means operated more easily, but also leads to a more compact electric, hydraulic, pneumatic actuator. So lower torque means save more money and energy.

Fire safe design: Special designed for sealing capabilities, which passed the fire test according to ISO 19921–2005 & GB/T 22218–2008. LR fire safety certificate to be supplied if needed.
The fire safe feature of butterfly valves is an important factor in ensuring safety and security in facilities.
When butterfly valves without fire safe sealing fail during a fire incident, it can cause further damage to the pipework or the entire flow system, putting not only the environment in danger but also people's lives.
This is the reason why fire safe butterfly valves units are highly suitable forhandling fire fighting, hazardous and flammable fluids.



Widen flanging rubber liner: Widening design for flanging rubber liner, ensure sufficient touch with flange sealing surface, no need to add any gaskets, zero leakage.

FC SERIES

Floeriner Concentric butterfly valves (FC series) are suitable for mounting between flanges according to DIN, EN, ISO PN6~25, ASME 150#~300# and JIS 5K~16K. Face to face dimensions are according to ISO5752/EN558 basic series 20 and 13, API609, DIN 3032 K1 and F16, BS 5155 and JIS series 46 and 42. Size ranges are DN40 to DN1200, widely used in shipbuilding, offshore, industries, petrochemical applications etc.
We are manufactured in many kinds of versions and materials and for working pressure from 6 to 25bar.
Manual, hydraulic, electrical, pneumatic operations to be supplied, other operation type such as electrical–hydraulic are available according to customer's requirement.

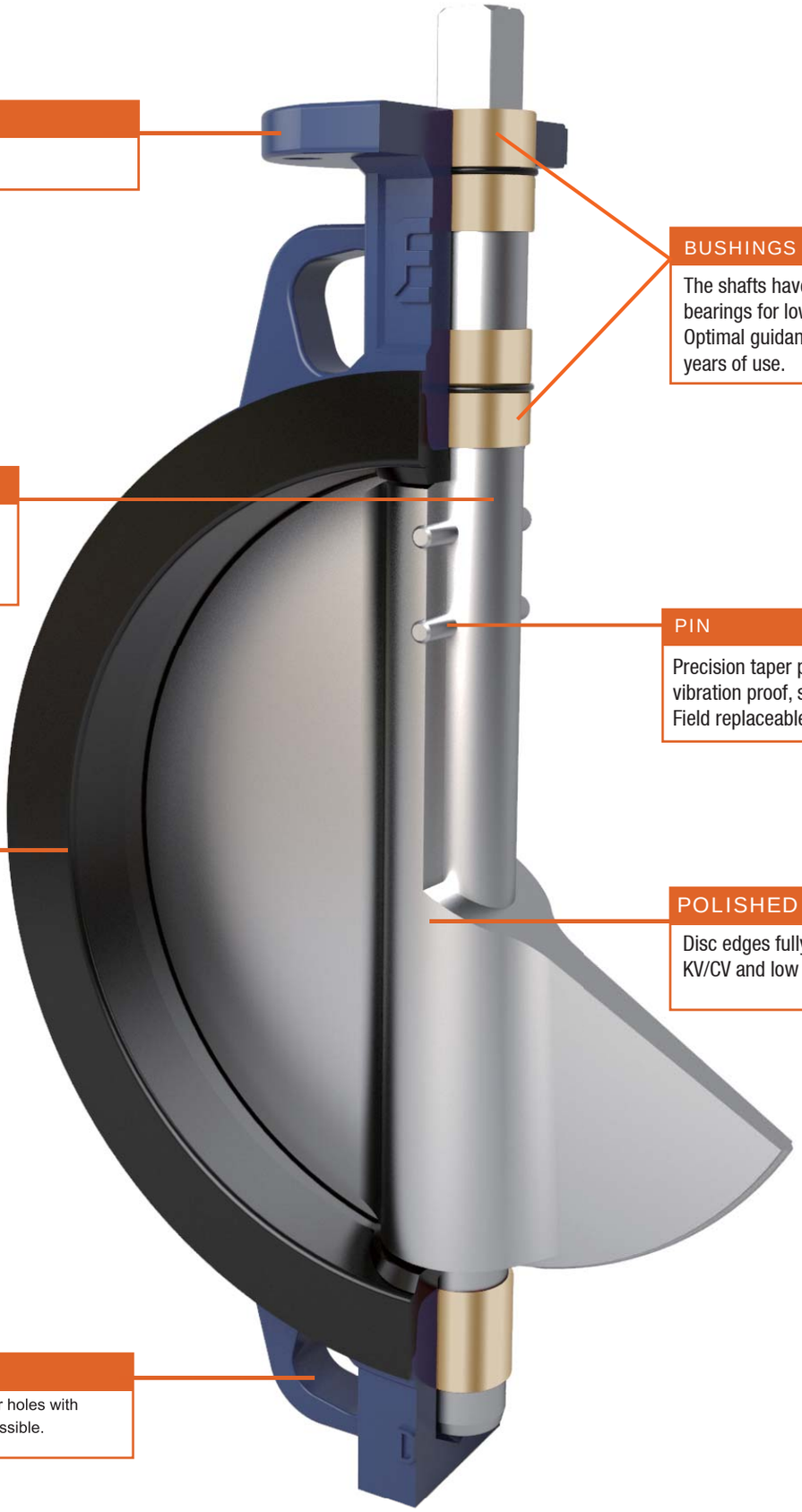
Concentric butterfly valve
VULCANISED LINER
WAFER TYPE
SERIES: FCW
Nominal size: DN40~DN1200
Face to face: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239&2220, etc.
Temperature range: –35℃ to 200℃
Top flange acc.: EN ISO 5211
To be used also with vacuum environment

Concentric butterfly valve
VULCANISED LINER
DOUBLE FLANGE TYPE
SERIES: FCD
Nominal size: DN40~DN1200
Face to face: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239&2220, etc.
Temperature range: –35℃ to 200℃
Top flange acc.: EN ISO 5211
To be used also with vacuum environment

Concentric butterfly valve
VULCANISED LINER
LUG TYPE
SERIES: FCL
Nominal size: DN40~DN1200
Face to face: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239&2220, etc.
Temperature range: –35℃ to 200℃
Top flange acc.: EN ISO 5211
To be used also with vacuum environment

Concentric butterfly valve
VULCANISED LINER
U–FLANGE TYPE
SERIES: FCU
Nominal size: DN40~DN1200
Face to face: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239&2220
Temperature range: –35℃ to 200℃
Top flange acc.: EN ISO 5211
To be used also with vacuum environment

FCW Series product advantages at a glance



TOP FLANGE

Acc. to ISO 5211

BUSHINGS

The shafts have multiple support bearings for lower valve torque. Optimal guidance even after many years of use.

TIGHT TOLERANCES

Precision machines bodies form the basis for perfect sealing of the liner and precise positioning of the shaft. All working surfaces fully machined.

PIN

Precision taper pin ensure positive, vibration proof, shaft to disc connection. Field replaceable

VULCANIZED LINER

Vulcanized liner, large touch surface between flange and liner, ensure no corrosion& leakage, with good resi–lience, high life expectancy

POLISHED SEALING

Disc edges fully machined for high KV/CV and low pressure loss

CENTER HOLES

Easy installation by center holes with many different drillings possible.

FCW Series centric disc wafer type butterfly valve. The rubber liner is vulcanized integrally on valve body and extends along the valve faces, eliminating the use of gaskets.

FCW series can be widely used in general industrial and maritime piping systems for media such as seawater, water, gases, oil and corrosive media.

The stability of pin butterfly valve is with simple structure and definitely better than the pinless type.

Operation

Type	Material	DN
Bare shaft		DN40–DN1200
Lever	Aluminum alloy	DN40–DN150
Worm gearbox	Aluminum alloy	DN40–DN450
	cast iron	DN500–DN1200

Pneumatic, electric or hydraulic actuator, see actuator section

Pressure and temperature range

PN	DN	Temp.
☐ 6	DN40–DN1200	☐ NBR –25°C–100°C
☐ 10	DN40–DN1200	☐ EPDM –35°C–130°C
☐ 16	DN40–DN1200	☐ FPM/ FKM (Viton) –20°C–200°C
☐ 25	DN40–DN600	☐ PTFE –55°C–190°C (Body is special structure)

For the flange, see the flange matching dimension table

Material specification

Body	Disc	Shaft	Liner
☐ Ductile iron	☐ Cast steel	☐ Al–bronze	☐ NBR
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ EPDM
☐ Stainless steel	☐ Al–Bronze	☐ Duplex steel	☐ FPM
☐ Bronze	☐ Monel alloy	☐ Hastelloy alloy	☐ PTFE (Body is special structure)
☐ Duplex steel	☐ Duplex SS	☐ Monel alloy	

Dimension

DN	H1	H2	H3	L	S	M	N	Φa	Φb	4–Φc	K	Torque PN6	Torque PN10	Torque PN16	Torque PN25
DN40	73	110	24	33	19	69	41	65	50	4–7	9*9	10	11	13	19
DN50	72	144	24	43	24	88	51	65	50	4–7	9*9	10	11	13	23
DN65	84	155	24	46	40	104	63	65	50	4–7	9*9	10	12	15	31
DN80	95	162	24	46	61	120	77	65	50	4–7	9*9	15	15	20	48
DN100	105	177	24	52	88	148	103	90	70	4–9	11*11	18	25	30	64
DN125	127	190	24	56	108	173	122	90	70	4–9	14*14	28	32	42	112
DN150	139	226	24	56	144	206	154	90	70	4–9	14*14	51	58	70	180
DN200	175	236	26	60	192	257	201	125	102	4–12	17*17	96	118	136	242
DN250	203	266	26	68	240	312	249	125	102	4–12	22*22	146	169	249	610
DN300	242	320	30	78	290	368	300	150	125	4–14	22*22	200	229	350	832
DN350	269	368	30	78	323	416	332	150	125	4–14	22*22	250	300	485	1075
DN400	314	356	35	102	374	475	388	175	140	4–18	27*27	410	485	754	1954
DN450	365	387	35	114	424	531	438	175	140	4–18	27*27	566	640	1056	2441
DN500	382	424	52	127	473	582	489	175	140	4–18	36*36	678	830	1285	2416
DN600	435	524	52	154	570	685	590	210	165	4–22	36*36	1143	1360	2211	4420
DN700	502	600	80	165	675	795	692	300	254	8–18	46*46	1989	2290	3710	
DN800	581	681	80	190	772	899	793	300	254	8–18	46*46	2567	2945	4877	
DN900	639	733	120	200	840	1000	861	300	254	8–18	55*55	3588	4130	6423	
DN1000	705	820	115	251	940	1110	961	300	254	8–18	75*75	4918	5775	9265	
DN1200	846	942	115	276	1132	1320	1181	350	298	8–22	75*75	8628	10130	15827	

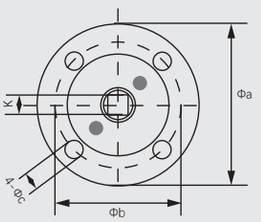
Note: the torque values list in the table above are based on NBR or EPDM material, if you're interested in other materials' torque, please kindly contact with us.

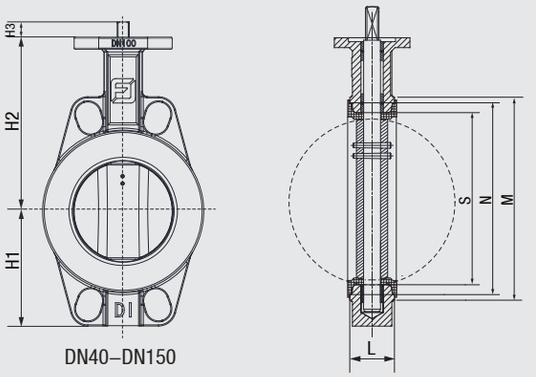
Design:
EN 593; EN 736; EN 12516; ISO 5211; DIN 3337; API 609

Face to face:
DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.

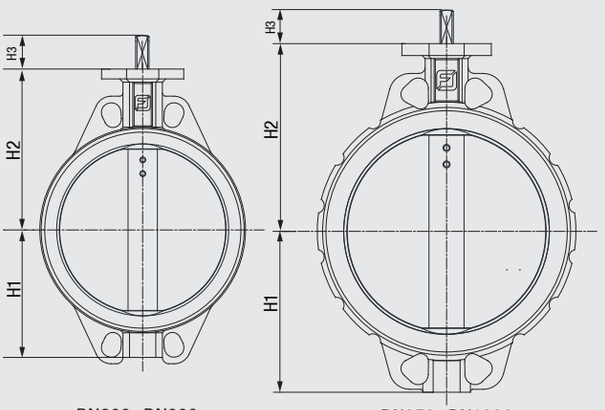
Testing:
EN 12266–1 Rate A（supersedes DIN 3230）
ISO 5208 Rate A; API 598

Paint:
Akzo Nobel, Epoxy coated, RAL5011, 150μm





DN40–DN150



DN200–DN300　　DN350–DN1200

FCD Series centric disc double flange type butterfly valve. The rubber liner is vulcanized inte–grally on valve body and extends along the valve faces, eliminating the use of gaskets.

FCD series can be widely used in general industrial and maritime piping systems for media such as seawater, water, gases, oil and corrosive media.
The stability of pin butterfly valve is with simple structure and definitely better than the pinless type.

Operation

Type	Material	DN
Bare shaft		DN40–DN1200
Lever	Aluminum alloy	DN40–DN150
Worm gearbox	Aluminum alloy	DN40–DN450
	cast iron	DN500–DN1200

Pneumatic, electric or hydraulic actuator, see actuator section

Pressure and temperature range

PN	DN	Temp.
☐ 6	DN40–DN1200	☐ NBR –25°C–100°C
☐ 10	DN40–DN1200	☐ EPDM –35°C–130°C
☐ 16	DN40–DN1200	☐ FPM/ FKM (Viton) –20°C–200°C
☐ 25	DN40–DN600	☐ PTFE –55°C–190°C (Body is special structure)

For the flange, see the flange matching dimension table

Material specification

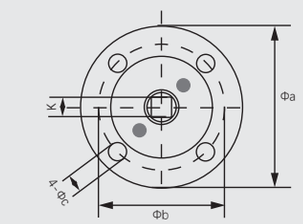
Body	Disc	Shaft	Liner
☐ Ductile iron	☐ Cast steel	☐ Al–bronze	☐ NBR
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ EPDM
☐ Stainless steel	☐ Al–Bronze	☐ Duplex steel	☐ FPM
☐ Bronze	☐ Monel alloy	☐ Hastelloy alloy	☐ PTFE (Body is special structure)
☐ Duplex steel	☐ Duplex SS	☐ Monel alloy	

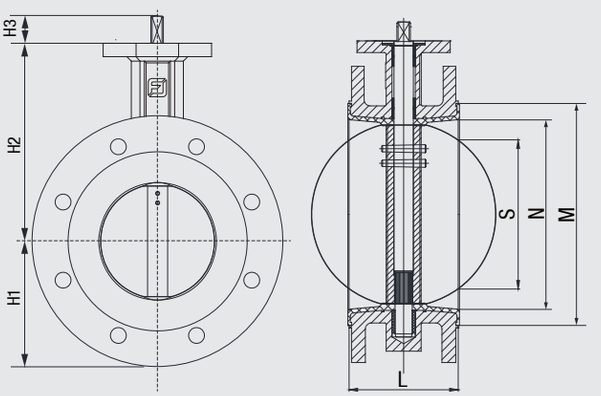
Dimension

DN	H1	H2	H3	L	S	M	N	Φa	Φb	4–Φc	K	Torque			
												PN6	PN10	PN16	PN25
DN40	58	113	24	106	0	84	41	65	50	4–7	9*9	10	11	13	19
DN50	80	112	24	108	0	101	51	65	50	4–7	9*9	10	11	13	23
DN65	85	136	24	112	0	117	63	65	50	4–7	9*9	10	12	15	31
DN80	93	135	24	114	0	130	77	65	50	4–7	9*9	15	15	20	48
DN100	105	155	24	127	0	158	103	90	70	4–9	11*11	18	25	30	64
DN125	123	171	24	140	0	186	122	90	70	4–9	14*14	28	32	42	112
DN150	140	182	24	140	53	215	154	90	70	4–9	14*14	51	58	70	180
DN200	165	212	26	152	124	268	201	125	102	4–12	17*17	96	118	136	242
DN250	200	250	26	165	181	323	249	125	102	4–12	22*22	146	169	249	610
DN300	237	269	30	178	237	374	300	150	125	4–14	22*22	200	229	350	832
DN350	260	315	30	190	268	434	332	150	125	4–14	22*22	250	300	485	1075
DN400	280	344	35	216	316	485	388	175	140	4–18	27*27	410	485	754	1954
DN450	345	414	35	222	373	536	438	175	140	4–18	27*27	566	640	1056	2441
DN500	335	445	52	229	428	589	489	175	140	4–18	36*36	678	830	1285	2416
DN600	420	520	52	267	522	692	590	210	165	4–22	36*36	1143	1360	2211	4420
DN700	480	560	80	292	623	794	692	300	254	8–18	46*46	1989	2290	3710	
DN800	530	620	80	318	722	900	793	300	254	8–18	46*46	2567	2945	4877	
DN900	609	689	120	330	791	1001	861	300	254	8–18	55*55	3588	4130	6423	
DN1000	670	735	115	410	867	1112	961	300	254	8–18	75*75	4918	5775	9265	
DN1200	780	917	115	420	1051	1328	1181	350	298	8–22	75*75	8628	10130	15827	

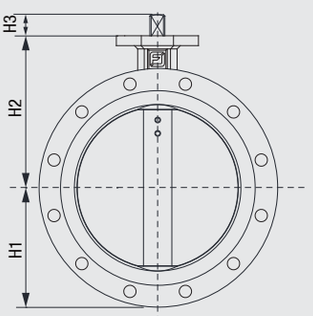
Note: the torque values list in the table above are based on NBR or EPDM material, if you're interested in other materials' torque, please kindly contact with us.

Design:
EN 593; EN 736; EN 12516; ISO 5211; DIN 3337; API 609
Face to face:
DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Testing:
EN 12266–1 Rate A（supersedes DIN 3230）
ISO 5208 Rate A; API 598
Paint:
Akzo Nobel, Epoxy coated, RAL5011, 150μm

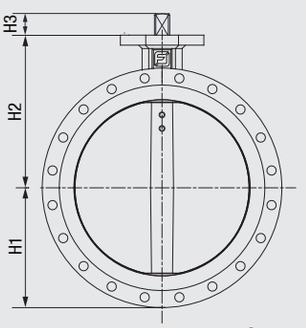




DN40–DN150



DN200–DN300



DN350–DN1200

FCL Series centric disc lug type butterfly valve. The rubber liner is vulcanized integrally on valve body and extends along the valve faces, eliminating the use of gaskets.
FCL series can be widely used in general industrial and maritime piping systems for media such as seawater, water, gases, oil and corrosive media.
The stability of pin butterfly valve is with simple structure and definitely better than the pinless type.

Operation

Type	Material	DN
Bare shaft		DN40–DN1200
Lever	Aluminum alloy	DN40–DN150
Worm gearbox	Aluminum alloy	DN40–DN450
	cast iron	DN500–DN1200

Pneumatic, electric or hydraulic actuator, see actuator section

Pressure and temperature range

PN	DN	Temp.
☐ 6	DN40–DN1200	☐ NBR –25°C–100°C
☐ 10	DN40–DN1200	☐ EPDM –35°C–130°C
☐ 16	DN40–DN1200	☐ FPM/ FKM (Viton) –20°C–200°C
☐ 25	DN40–DN600	☐ PTFE –55°C–190°C (Body is special structure)

For the flange, see the flange matching dimension table

Material specification

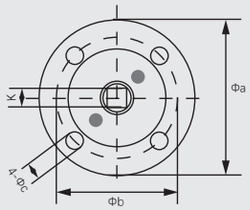
Body	Disc	Shaft	Liner
☐ Ductile iron	☐ Cast steel	☐ Al–bronze	☐ NBR
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ EPDM
☐ Stainless steel	☐ Al–Bronze	☐ Duplex steel	☐ FPM
☐ Bronze	☐ Monel alloy	☐ Hastelloy alloy	☐ PTFE (Body is special structure)
☐ Duplex steel	☐ Duplex SS	☐ Monel alloy	

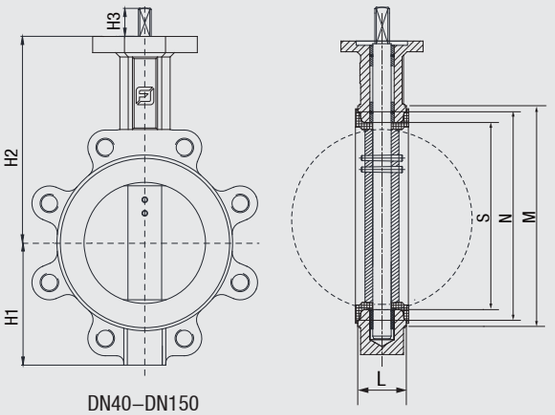
Dimension

DN	H1	H2	H3	L	S	M	N	Φa	Φb	4–Φc	K	Torque PN6	Torque PN10	Torque PN16	Torque PN25
DN40	73	110	24	33	19	69	41	90	50	4–7	9*9	10	11	13	19
DN50	85	133	24	43	24	88	51	90	50	4–7	9*9	10	11	13	23
DN65	94	143	24	46	40	104	63	90	50	4–7	9*9	10	12	15	31
DN80	105	148	24	46	61	120	77	90	70	4–9	9*9	15	15	20	48
DN100	126	161	24	52	88	148	103	90	70	4–9	11*11	18	25	30	64
DN125	140	172	24	56	108	173	122	90	70	4–9	14*14	28	32	42	112
DN150	151	192	24	56	144	206	154	90	70	4–9	14*14	51	58	70	180
DN200	183	225	26	60	192	257	201	90	70	4–9	17*17	96	118	136	242
DN250	211	264	26	68	240	312	249	125	102	4–11	22*22	146	169	249	610
DN300	255	301	30	78	290	368	300	125	102	4–11	22*22	200	229	350	832
DN350	285	324	30	78	323	416	332	175	140	4–18	22*22	250	300	485	1075
DN400	314	356	35	102	374	475	388	175	140	4–18	27*27	410	485	754	1954
DN450	365	387	35	114	424	531	438	210	165	4–22	27*27	566	640	1056	2441
DN500	382	424	52	127	473	582	489	210	165	4–22	36*36	678	830	1285	2416
DN600	435	524	52	154	570	685	590	210	165	4–22	36*36	1143	1360	2211	4420
DN700	502	600	80	165	675	795	692	300	254	8–18	46*46	1989	2290	3710	
DN800	581	681	80	190	772	899	793	300	254	8–18	46*46	2567	2945	4877	
DN900	639	733	120	200	840	1000	861	300	254	8–18	55*55	3588	4130	6423	
DN1000	705	820	115	251	940	1110	961	300	254	8–18	75*75	4918	5775	9265	
DN1200	810	924	115	276	1132	1320	1181	350	298	8–22	75*75	8628	10130	15827	

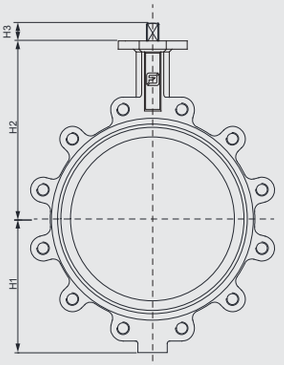
Note: the torque values list in the table above are based on NBR or EPDM material, if you're interested in other materials' torque, please kindly contact with us.

Design:
EN 593; EN 736; EN 12516; ISO 5211; DIN 3337; API 609
Face to face:
DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Testing:
EN 12266–1 Rate A（supersedes DIN 3230）
ISO 5208 Rate A; API 598
Paint:
Akzo Nobel, Epoxy coated, RAL5011, 150μm

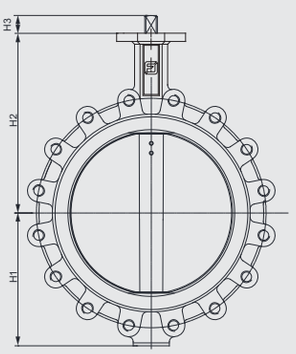




DN40–DN150



DN200–DN300



DN350–DN1200

FCU Series centric disc U–flange type butterfly valve. The rubber liner is vulcanized inte–grally on valve body and extends along the valve faces, eliminating the use of gaskets.

FCU series can be widely used in general industrial and maritime piping systems for media such as seawater, water, gases, oil and corrosive media.

The stability of pin butterfly valve is with simple structure and definitely better than the pinless type.

Operation

Type	Material	DN
Bare shaft		DN40–DN1200
Lever	Aluminum alloy	DN40–DN150
Worm gearbox	Aluminum alloy	DN40–DN450
	cast iron	DN500–DN1200

Pneumatic, electric or hydraulic actuator, see actuator section

Pressure and temperature range

PN	DN	Temp.
☐ 6	DN40–DN1200	☐ NBR –25°C–100°C
☐ 10	DN40–DN1200	☐ EPDM –35°C–130°C
☐ 16	DN40–DN1200	☐ FPM/ FKM (Viton) –20°C–200°C
☐ 25	DN40–DN600	☐ PTFE –55°C–190°C (Body is special structure)

For the flange, see the flange matching dimension table

Material specification

Body	Disc	Shaft	Liner
☐ Ductile iron	☐ Cast steel	☐ Al–bronze	☐ NBR
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ EPDM
☐ Stainless steel	☐ Al–Bronze	☐ Duplex steel	☐ FPM
☐ Bronze	☐ Monel alloy	☐ Hastelloy alloy	☐ PTFE (Body is special structure)
☐ Duplex steel	☐ Duplex SS	☐ Monel alloy	

Dimension

DN	H1	H2	H3	L	S	M	N	Φa	Φb	4–Φc	K	Torque			
												PN6	PN10	PN16	PN25
DN40	73	110	24	33	19	69	41	65	50	4–7	9*9	10	11	13	19
DN50	48	129	24	43	19	88	51	65	50	4–7	9*9	10	11	13	23
DN65	50	136	24	46	24	104	63	65	50	4–7	9*9	10	12	15	31
DN80	100	181	24	46	61	120	77	65	50	4–7	9*9	15	15	20	48
DN100	116	190	24	52	88	148	103	90	70	4–9	11*11	18	25	30	64
DN125	127	241	24	56	108	173	122	90	70	4–9	14*14	28	32	42	112
DN150	138	225	24	56	144	206	154	90	70	4–9	14*14	51	58	70	180
DN200	176	260	26	60	192	257	201	125	102	4–12	17*17	96	118	136	242
DN250	203	292	26	68	240	312	249	125	102	4–12	22*22	146	169	249	610
DN300	233	337	30	78	290	368	300	150	125	4–14	22*22	200	229	350	832
DN350	270	370	30	78	232	416	332	150	125	4–14	22*22	250	300	485	1075
DN400	297	400	35	102	374	475	388	175	140	4–18	27*27	410	485	754	1954
DN450	322	425	35	114	424	531	438	175	140	4–18	27*27	566	640	1056	2441
DN500	388	482	52	127	473	582	489	175	140	4–18	36*36	678	830	1285	2416
DN600	444	572	52	154	570	685	590	210	165	4–22	36*36	1143	1360	2211	4420
DN700	520	640	80	165	675	795	692	300	254	8–18	46*46	1989	2290	3710	
DN800	565	700	80	190	772	899	793	300	254	8–18	46*46	2567	2945	4877	
DN900	620	760	120	200	840	1000	861	300	254	8–18	55*55	3588	4130	6423	
DN1000	705	820	115	251	940	1110	961	300	254	8–18	75*75	4918	5775	9265	
DN1200	810	924	115	276	1132	1320	1181	350	298	8–22	75*75	8628	10130	15827	

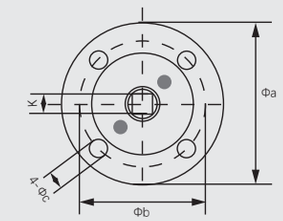
Note: the torque values list in the table above are based on NBR or EPDM material, if you're interested in other materials' torque, please kindly contact with us.

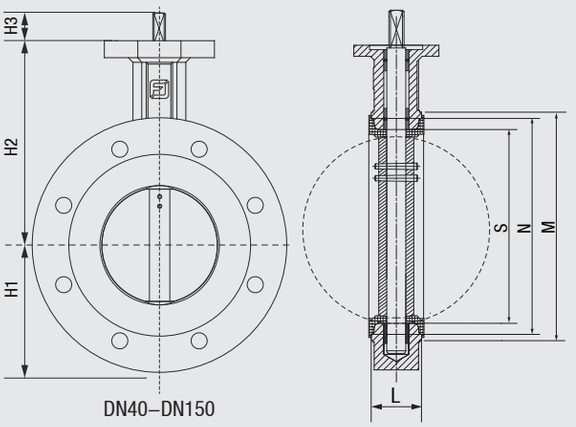
Design:
EN 593; EN 736; EN 12516; ISO 5211; DIN 3337; API 609

Face to face:
DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.

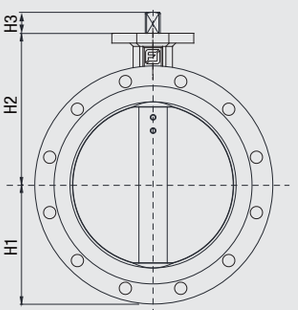
Testing:
EN 12266–1 Rate A（supersedes DIN 3230）
ISO 5208 Rate A; API 598

Paint:
Akzo Nobel, Epoxy coated, RAL5011, 150μm

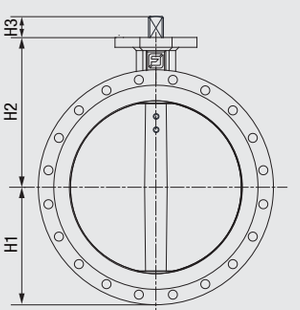




DN40–DN150



DN200–DN300



DN350–DN1200

FCV SERIES—Fire safe type

Floeriner Concentric butterfly valves (FCV series) are designed according to DIN, EN, ASME, ISO and JIS standard, size ranges are DN40 to DN1200, widely used in fire protection pipes for shipbuilding, offshore, industries, petrochemical applications etc.
FCV series (fire safe type) valves with NBR, EPDM, FPM seat were covered by the fire test complying with ISO 19921–2005/GB/T 22218–2008.
We are manufactured in many kinds of versions and materials and for working pressure from 6 to 25bar.
Manual, hydraulic, electrical, pneumatic operations to be supplied, other operation type such as electrical–hydraulic are available according to customer's standard.

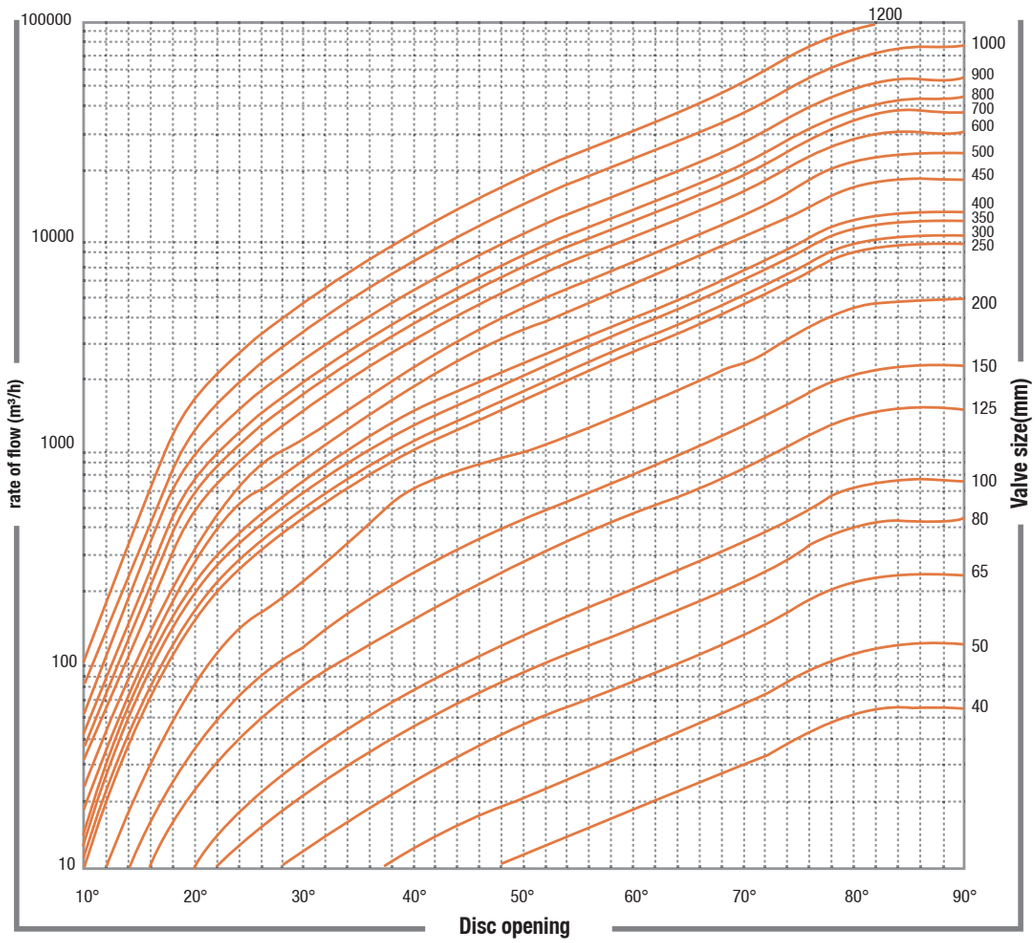
Concentric butterfly valve
VULCANISED LINER
WAFER TYPE
SERIES: FCVW
Nominal size: DN40~DN1200
Face to face: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239&2220, etc.
Temperature range: –35 to 200℃
Top flange acc.: EN ISO 5211
Fire test: ISO 19921–2005, GB/T 22218–2008.
Paint: Akzo Nobel, Epoxy coated, RAL3000, 150μm
To be used also with vacuum

Concentric butterfly valve
VULCANISED LINER
DOUBLE FLANGE TYPE
SERIES: FCVD
Nominal size: DN40~DN1200
Face to face: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239&2220, etc.
Temperature range: –35 to 200℃
Top flange acc.: EN ISO 5211
Fire test: ISO 19921–2005, GB/T 22218–2008.
Paint: Akzo Nobel, Epoxy coated, RAL3000, 150μm
To be used also with vacuum

Concentric butterfly valve
VULCANISED LINER
LUG TYPE
SERIES: FCVL
Nominal size: DN40~DN1200
Face to face: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239&2220, etc.
Temperature range: –35 to 200℃
Top flange acc.: EN ISO 5211
Fire test: ISO 19921–2005, GB/T 22218–2008.
Paint: Akzo Nobel, Epoxy coated, RAL3000, 150μm
To be used also with vacuum

Concentric butterfly valve
VULCANISED LINER
U–FLANGE TYPE
SERIES: FCVU
Nominal size: DN40~DN1200
Face to face: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239&2220, etc.
Temperature range: –35 to 200℃
Top flange acc.: EN ISO 5211
Fire test: ISO 19921–2005, GB/T 22218–2008.
Paint: Akzo Nobel, Epoxy coated, RAL3000, 150μm
To be used also with vacuum

KV value



Formulae for calculation of rate flow

Liquids:

$$Q = \frac{KV}{\sqrt{\frac{PS}{\Delta P}}}$$

Q rate of flow (m³/h)
PS specific gravity (water=1)
ΔP pressure drop (bar)

Gas:

$$Q = 28.5 \frac{KV}{\sqrt{\frac{PS}{P_2 * \Delta P}}}$$

Q rate of flow (m³/h)
PS specific gravity (air=1)
ΔP pressure drop (bar)
(less than 1/2 inlet pressure)
P_2 outlet pressure

Steam:

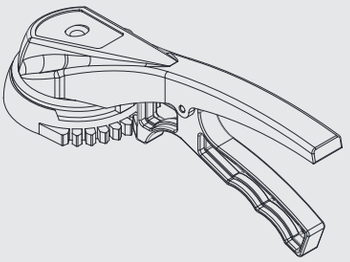
$$Q = 22.5 * KV * \sqrt{P_2 * \Delta P}$$

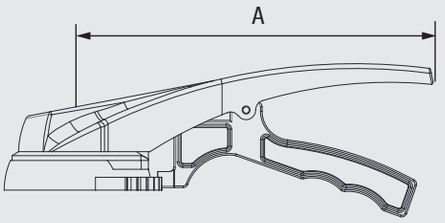
Q rate of flow (Kg/h)
ΔP pressure drop (bar)
(less than 1/2 inlet pressure)
P_2 outlet pressure

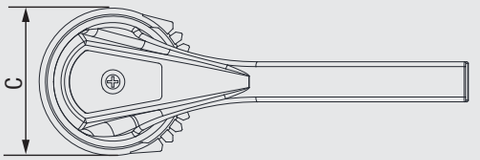
DN	inch	KV								
		10°	20°	30°	40°	50°	60°	70°	80°	90°
DN40	1 1/2"	0	2	6	12	11	23	45	68	64
DN50	2"	0	3	9	23	21	45	67	114	127
DN65	2 1/2"	0	5	24	35	46	85	136	238	260
DN80	3"	3	9	36	54	82	147	239	425	463
DN100	4"	5	15	47	86	124	215	354	639	710
DN125	5"	6	37	79	167	273	463	762	1370	1529
DN150	6"	7	48	116	258	435	735	1219	21790	2427
DN200	8"	9	86	238	592	897	1487	2473	4446	4938
DN250	10"	13	147	424	921	1675	2809	4665	8382	9318
DN300	12"	18	165	467	1023	1861	3115	5187	9318	10357
DN350	14"	20	189	555	1218	2217	3745	6239	11210	12450
DN400	16"	28	218	458	1386	2521	4258	7084	12756	14168
DN450	18"	36	287	843	1879	3423	5467	9607	17287	19206
DN500	20"	41	376	1105	2455	4471	7534	12687	22829	25359
DN600	24"	48	473	1423	3171	5782	9728	16371	29470	32747
DN700	28"	53	579	1724	3841	6996	11787	19839	35693	39651
DN800	32"	59	655	1965	4380	7975	13439	22617	4127	45690
DN900	36"	67	828	2471	5543	10094	16991	28616	52043	57826
DN1000	40"	85	1139	3434	7682	13983	23554	39659	72125	80959
DN1200	48"	116	1537	4646	10416	18965	31936	53774	97783	109780

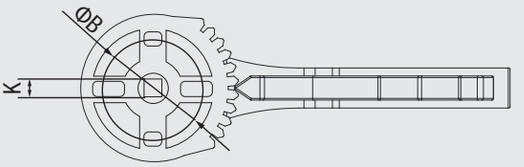
Handlevers

- Robust diecasted Al–alloy gear box
- Open and closed positions are adjustable







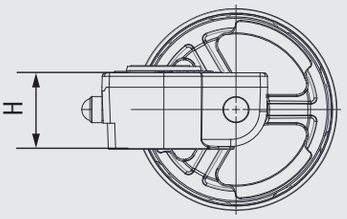


SIZE	K	A	ΦB	C
DN40–80	9x9	197	50	70
DN100	11x11	278	70	90
DN125–150	14x14	278	70	90

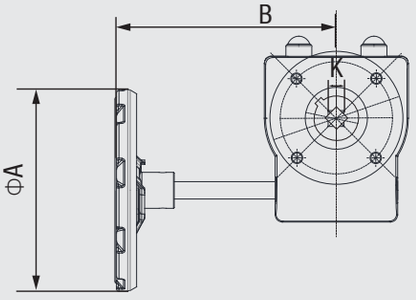
Gear box

DN40–DN450

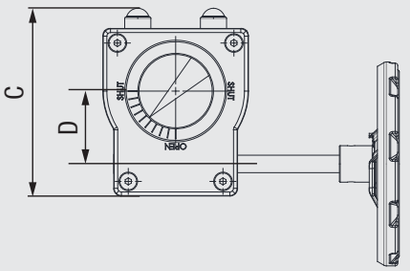
DN500–DN1200



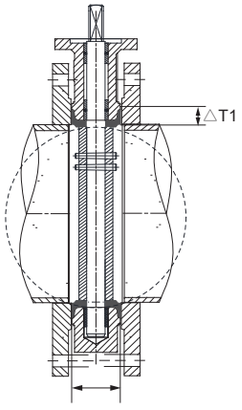
- Robust ductile iron or diecasted Al–alloy gear box
- Protection class IP65/IP67
- Visual position indicator
- Stainless steel shaft and bolt



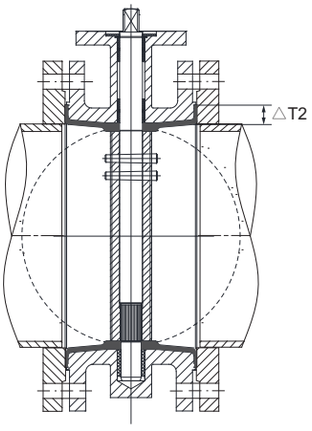
Model	DN	ISO 5211	K (max. value)	Output Torque (Nm)(Max)	Gear/Ratio	H	ΦA	B	C	D
FLW–A180	DN40–DN150	F05 F07	14*14	180	1:40	48	140	160	115	42
FLW–A540	DN200–DN250	F10	22*22	540	1:36	56	250	215	150	60
FLW–A675	DN300–DN350	F12	22*22	675	1:36	69	300	225	180	60
FLW–A1310	DN400–DN450	F14	27*27	1310	1:50	83	400	325	215	78
FLW–A1350	DN500	F16	40*40	1350	1:40	85	350	160	202	79
FLW–A2000	DN600	F16	46*46	2000	1:47	91	400	163	223	89
FLW–A3000	DN700	F25	56*56	3000	1:61	105	500	192	267	112
FLW–A4500	DN800	F25	56*56	4500	1:167	105	500	269	276	112
FLW–A6500	DN900–DN1000	F25	70*70	6500	1:167	117	600	281	307	129
FLW–A11000	DN1200	F30	80*80	11000	1:348	145	600	351	385	157



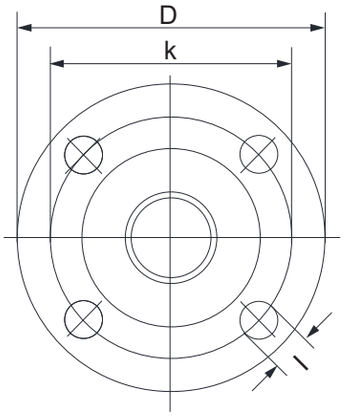
Flange Standard		DIN1092 PN 6						DIN1092 PN 10						DIN1092 PN 16						DIN1092 PN 25					
DN		D	k	n	l	△T1	△T2	D	k	n	l	△T1	△T2	D	k	n	l	△T1	△T2	D	k	n	l	△T1	△T2
mm	in.	mm	mm		mm	mm	mm	mm	mm		mm	mm	mm	mm	mm		mm	mm	mm	mm	mm		mm	mm	mm
40	1 1/2"	130	100	4	14	10	17	identical with PN 16				10	17	150	110	4	18	10	17	150	110	4	18	10	17
50	2"	140	110	4	14	13	20					13	20	165	125	4	18	13	20	165	125	4	18	13	20
65	2 1/2"	160	130	4	14	13	20					13	20	185	145	4	18	13	20	185	145	8	18	13	20
80	3"	190	150	4	18	15	20					15	20	200	160	8	18	15	20	200	160	8	18	15	20
100	4"	210	170	4	18	16	21					16	21	220	180	8	18	16	21	235	190	8	22	16	21
125	5"	240	200	8	18	16	22					16	22	250	210	8	18	16	22	270	220	8	26	16	22
150	6"	265	225	8	18	18	22					18	22	285	240	8	22	18	22	300	250	8	26	18	22
200	8"	320	280	8	18	18	23	340	295	8	22	18	23	340	295	12	22	18	23	360	310	12	26	18	23
250	10"	375	335	12	18	18	23	395	350	12	22	18	23	405	355	12	26	18	23	425	370	12	30	18	23
300	12"	440	395	12	22	20	23	445	400	12	22	20	23	460	410	12	26	20	23	485	430	16	30	20	23
350	14"	490	445	12	22	28	37	505	460	16	22	28	37	520	470	16	26	28	37	555	490	16	33	28	37
400	16"	540	495	16	22	32	37	565	515	16	26	32	37	580	525	16	30	32	37	620	550	16	36	32	37
450	18"	595	550	16	22	34	37	615	565	20	26	34	37	640	585	20	30	34	37	670	600	20	36	34	37
500	20"	645	600	20	22	34	38	670	620	20	26	34	38	715	650	20	33	34	38	730	660	20	36	34	38
600	24"	755	705	20	26	34	38	780	725	20	30	34	38	840	770	20	36	34	38	845	770	20	39	34	38
700	28"	860	810	24	26	40	40	895	840	24	30	40	40	910	840	24	36	40	40	960	875	24	42	40	40
800	32"	975	920	24	30	41	42	1015	950	24	33	41	42	1025	950	24	39	41	42	1085	990	24	48	41	42
900	36"	1075	1020	24	30	41	42	1115	1050	28	33	41	42	1125	1050	28	39	41	42	1185	1090	28	48	> 41	> 42
1000	40"	1175	1120	28	30	45	46	1230	1160	28	36	45	46	1255	1170	28	42	45	46	1320	1210	28	56	> 41	> 42
1200	48"	1450	1340	32	33	49	53	1455	1380	32	39	49	53	1485	1390	32	48	49	53	1530	1420	32	56	> 41	> 42



Wafer, lug, U–flange type



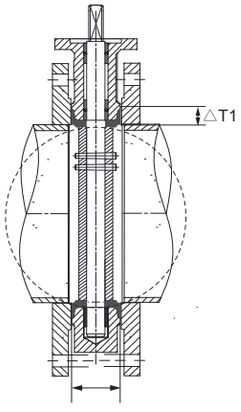
Double–flange type



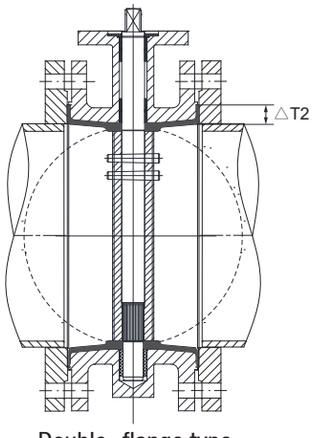
n =Number of Holes

Flange Standard		GB/T9119 PN 6						GB/T9119 PN 10						GB/T9119 PN 16						GB/T9119 PN 25					
DN		D	k	n	l	△T1	△T2	D	k	n	l	△T1	△T2	D	k	n	l	△T1	△T2	D	k	n	l	△T1	△T2
mm	in.	mm	mm		mm	mm	mm	mm	mm		mm	mm	mm	mm	mm		mm	mm	mm	mm	mm		mm	mm	mm
40	1 1/2"	130	100	4	14	10	17	identical with PN 16				10	17	150	110	4	18	10	17	150	110	4	18	10	17
50	2"	140	110	4	14	13	20					13	20	165	125	4	18	13	20	165	125	4	18	13	20
65	2 1/2"	160	130	4	14	13	20					13	20	185	145	4	18	13	20	185	145	8	18	13	20
80	3"	190	150	4	18	15	20					15	20	200	160	8	18	15	20	200	160	8	18	15	20
100	4"	210	170	4	18	16	21					16	21	220	180	8	18	16	21	235	190	8	22	16	21
125	5"	240	200	8	18	16	22					16	22	250	210	8	18	16	22	270	220	8	26	16	22
150	6"	265	225	8	18	18	22					18	22	285	240	8	22	18	22	300	250	8	26	18	22
200	8"	320	280	8	18	18	23	340	295	8	22	18	23	340	295	12	22	18	23	360	310	12	26	18	23
250	10"	375	335	12	18	18	23	395	350	12	22	18	23	405	355	12	26	18	23	425	370	12	30	18	23
300	12"	440	395	12	22	20	23	445	400	12	22	20	23	460	410	12	26	20	23	485	430	16	30	20	23
350	14"	490	445	12	22	28	37	505	460	16	22	28	37	520	470	16	26	28	37	555	490	16	33	28	37
400	16"	540	495	16	22	32	37	565	515	16	26	32	37	580	525	16	30	32	37	620	550	16	36	32	37
450	18"	595	550	16	22	34	37	615	565	20	26	34	37	640	585	20	30	34	37	670	600	20	36	34	37
500	20"	645	600	20	22	34	38	670	620	20	26	34	38	715	650	20	33	34	38	730	660	20	36	34	38
600	24"	755	705	20	26	34	38	780	725	20	30	34	38	840	770	20	36	34	38	845	770	20	39	34	38
700	28"	860	810	24	26	40	40	895	840	24	30	40	40	910	840	24	36	40	40	960	875	24	42	40	40
800	32"	975	920	24	30	41	42	1015	950	24	33	41	42	1025	950	24	39	41	42	1085	330	24	48	41	42
900	36"	1075	1020	24	30	41	42	1115	1050	28	33	41	42	1125	1050	28	39	41	42						
1000	40"	1175	1120	28	30	45	46	1230	1150	28	36	45	46	1255	1170	28	42	45	46						
1200	48"	1405	1340	32	33	49	53	1455	1380	32	39	49	53	1485	1390	32	48	49	53						

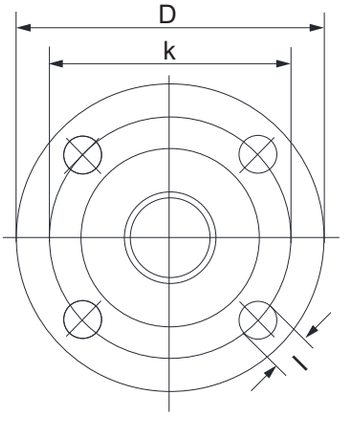
Flange Standard		ANSI B 16.5 150 lb/sq. in								ANSI B 16.5 300 lb/sq. in.							
DN		D		k		n	l		△T1	△T2	D		k		n	l		△T1	△T2
mm	in.	mm	in.	mm	in.		mm	in.	mm	mm	mm	in.	mm	in.		mm	in.	mm	mm
40	1 1/2"	127	5"	98.4	3 ⅞"	4	15.9	5/8"	14	16.075	155.6	6 1/8"	114.3	4 3/4"	4	22.2	3/4"	14	16.075
50	2"	152.4	6"	120.7	4 3/4"	4	19	3/4"	17.7	19.65	165.1	6 1/2"	127	5"	8	19	3/4"	17.7	19.65
65	2 1/2"	177.8	7"	139.7	5 1/2"	4	19	3/4"	20.65	20.9	190.5	7 1/2"	149.2	5 7/8"	8	22.2	7/8"	20.6	20.9
80	3"	190.5	7 1/2"	152.4	6"	4	19	3/4"	21	24.5	209.6	8 1/4"	168.3	6 5/8"	8	22.2	7/8"	21	24.5
100	4"	228.6	9"	190.5	7 1/2"	8	19	3/4"	22.4	27.25	254	10"	200	7 8/8"	8	22.2	7/8"	22.4	27.25
125	5"	254	10"	215.9	8 1/2"	8	22.2	7/8"	22.35	28.7	279.4	11"	235	9 1/4"	8	22.2	7/8"	22.35	28.7
150	6"	279.4	11"	241.3	9 1/2"	8	22.2	7/8"	25.9	30.85	317.5	12 1/2"	269.9	10 5/8"	12	22.2	7/8"	25.9	30.85
200	8"	342.9	13 1/2"	298.5	11 3/4"	8	22.2	7/8"	27.15	33.5	381	15"	330.2	13"	12	25.4	1"	27.15	33.5
250	10"	406.4	16"	361.9	14 1/4"	12	25.4	1"	28.75	34.65	444.5	17 1/2"	387.3	15 1/4"	16	28.6	1 1/8"	28.75	34.65
300	12"	482.6	19"	431.8	17"	12	25.4	1"	31.6	38.1	520.7	20 1/2"	450.8	17 3/4"	16	31.7	1 1/4"	31.6	38.1
350	14"	533.4	21"	476.2	18 3/4"	12	28.6	1 1/8"	> 32	> 39	584.2	23"	514.3	20 1/4"	20	31.7	1 1/4"	> 32	> 39
400	16"	596.9	23 1/2"	539.7	21 1/4"	16	28.6	1 1/8"	> 32	> 39	647.7	25 1/2"	571.5	22 1/2"	20	34.9	1 3/8"	> 32	> 39
450	18"	635	25"	577.9	22 3/4"	16	31.7	1 1/4"	> 32	> 39	711.2	28"	628.7	24 3/4"	24	34.9	1 3/8"	> 32	> 39
500	20"	698.5	27 1/2"	635	25	20	31.7	1 1/4"	> 32	> 39	774.7	30 1/2"	685.8	27"	24	34.9	1 3/8"	> 32	> 39
600	24"	812.8	32"	749.3	29 1/2"	20	34.9	1 3/8"	> 32	> 39	914.4	36"	812.8	32"	24	41.3	1 5/8"	> 32	> 39



Wafer, lug, U–flange type



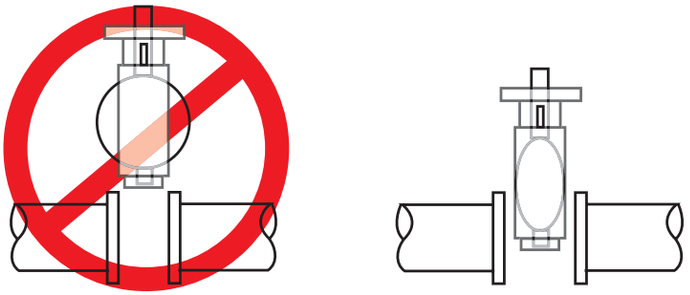
Double–flange type



n =Number of Holes

Flange Standard		JIS 5K						JIS 10K						JIS 16K					
DN		D	k	n	l	△T1	△T2	D	k	n	l	△T1	△T2	D	k	n	l	△T1	△T2
mm	in.	mm	mm		mm	mm	mm	mm	mm		mm	mm	mm	mm	mm		mm	mm	mm
40	1 1/2"	120	95	4	15	10	14	140	105	4	19	10	17	140	105	4	19	10	17
50	2"	130	105	4	15	13	13	155	120	4	19	13	19	155	120	8	19	13	20
65	2 1/2"	155	130	4	15	13	17	175	140	4	19	13	21	175	140	8	19	13	20
80	3"	180	145	4	19	15	18	185	150	8	19	15	20	200	160	8	23	15	20
100	4"	200	165	8	19	16	15	210	175	8	19	16	20	225	185	8	23	16	21
125	5"	235	200	8	19	16	19	250	210	8	23	16	22	270	225	8	25	16	22
150	6"	265	230	8	19	20	22	280	240	8	23	20	24	305	260	12	25	20	24
200	8"	320	280	8	23	20	19	330	290	12	23	20	24	350	305	12	25	20	25
250	10"	385	345	12	23	21	25	400	355	12	25	21	27	430	380	12	27	21	27
300	12"	430	390	12	23	24	22	445	400	16	25	24	27	480	430	16	27	24	27
350	14"	480	435	12	25	29	23	490	445	16	25	29	28	540	480	16	33	29	38
400	16"	540	495	16	25	33	28	560	510	16	27	33	33	605	540	16	33	33	38
450	18"	605	555	16	25	35	33	620	565	20	27	35	35	675	605	20	27	35	38
500	20"	655	605	20	25	36	32	675	620	20	27	36	37	730	660	20	33	36	39
600	24"	770	715	20	27	36	34	795	730	24	33	36	39	845	770	24	39	36	40
700	28"	875	820	24	27	40	35	905	840	24	33	40	40						
800	32"	995	930	24	33	41	37	1020	950	28	33	41	42						
900	36"	1092	1030	24	33	41	36	1120	1050	28	33	41	41						
1000	40"	1195	1130	28	33	45	35	1235	1160	28	39	45	45						
1200	48"	1420	1350	32	33	48	41	1465	1380	32	39	48	51						

Figure 1 – Insert Resilient Seated Butterfly Valve Between Flanges



INCORRECT INSTALLATION
Pipe not spread, disc opened beyond valve body face; Results; Disc edge damaged when it hits pipe flange.

CORRECT INSTALLATION
Pipe spread and aligned, disc rotated; Results; no undesirable beginning seating/ unseating torque, disc edge protected.

Figure 2 – Flange Bolt Tightening Pattern

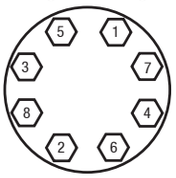
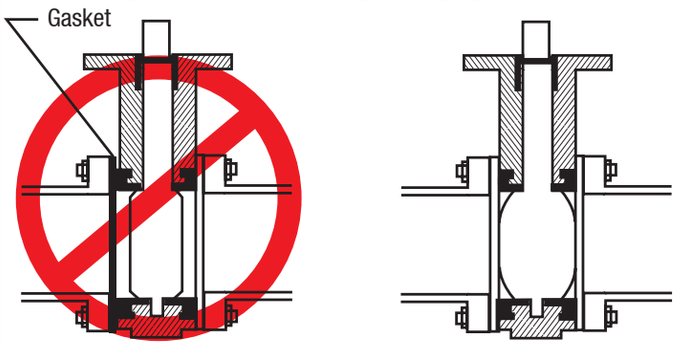


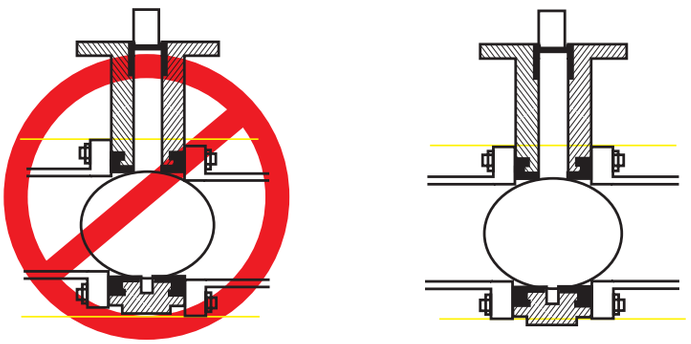
Figure 3 – Initial Centering & Flanging of Valve



INCORRECT INSTALLATION
Disc in closed position; gaskets used; Results Seat distorted and over compressed causing high initial unseating torque problems.

CORRECT INSTALLATION
Bolts snugged, not torqued tight, disc edge within body face–to–face but not fully closed, no flange gaskets; Results: No disc edge damage, proper sealing allowed.

Figure 4 – Final Aligning & Tightening of Flange Bolts



INCORRECT INSTALLATION
Piping misaligned; Results Disc O.D. strikes pipe I.D. causing disc edge damage, increased torque & leakage. Seat face o–rings will not seal properly with incorrectly aligned piping

CORRECT INSTALLATION
Piping aligned properly when bolts tightened, disc in full open position; Results – disc clears adjacent pipe I.D., seat face seals properly, no excessive initial torque

Installation Procedure

The valves shall never be installed where service conditions could exceed the valve ratings concerning pressure, tempe–rature or operating media.
Failure to comply with this warning may result in personal injury or property damage.
General Installation

a. Make sure the pipeline and pipe flange faces are clean. Any foreign material such as pipe scale, metal chips, weld–ing slag, welding rods, etc., can obstruct disc movement or damage the disc or seat.

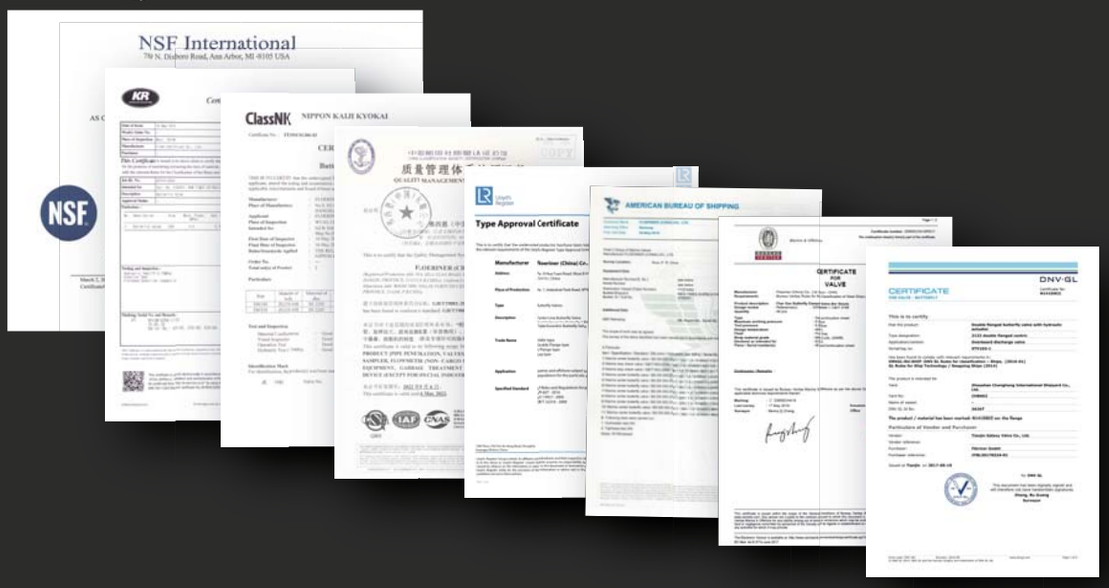
b. The Floeriner elastomer seat has molded o–rings on the face of the seat. As a result, no gaskets are required as these o–rings serve the function of a gasket.

c. Align the piping and then spread the pipe flanges a distance apart so as to permit the valve body to be easily dropped between the flanges without contacting the pipe flanges.

d. Check to see that the valve disc has been positioned to a partially open position, with the disc edge about 1/2 inch to 3/8 inch inside the face of the seat, (approximately 10° open).

e. Insert the valve between the flanges as shown in figure 1, taking care not to damage the seat faces. Always pick the valve up by the locating holes or by using a nylon sling on the neck of the body.

f. Place the valve between the flanges, center it, and then span the valve body with all flange bolts, but do not tighten the bolts.
Carefully open the disc to the full open position, making sure the disc does not hit the adjacent pipe I.D. Now system–atically remove jack bolts or other flange spreaders, and hand–tighten the flange bolts as shown in Figure 2 below.
Very slowly close the valve disc to ensure disc edge clear–ance from the adjacent pipe flange I.D.
Now open the disc to full open and tighten all flange bolts per specification as shown in Figure 2. Finally, repeat a full close to full open rotation of the disc to ensure proper clear–ances (See figures3 & 4).



Flöriner
APPENDICES

GERMANY
Rödingsmarkt 20, 20459 Hamburg, Germany.
linkman: Hans Hartmann
Mobilephone: +49 0152 0752 2303
Email: info@floeriner.de

SPAIN
Avda. Constitución 85 Portal 5 Piso 1º Oficina 828823 Coslada España
linkman: Antonio Vidal
Mobilephone: +34 722 425 109

USA
3012 via victoria, Palos Verdes Estates
linkman: benjamin jiang
Mobilephone: +1–206–498–3955

CHINA
中国 无锡 滨湖区 平安财富中心 16楼
linkman: Amy Shen
phone: +86 0510–85609386
Email: sales@floeriner.de

JAPAN
〒462–0844名古屋市北区清水1丁目22–17
linkman: 弓长龙平
phone: +81 090 1985 9372