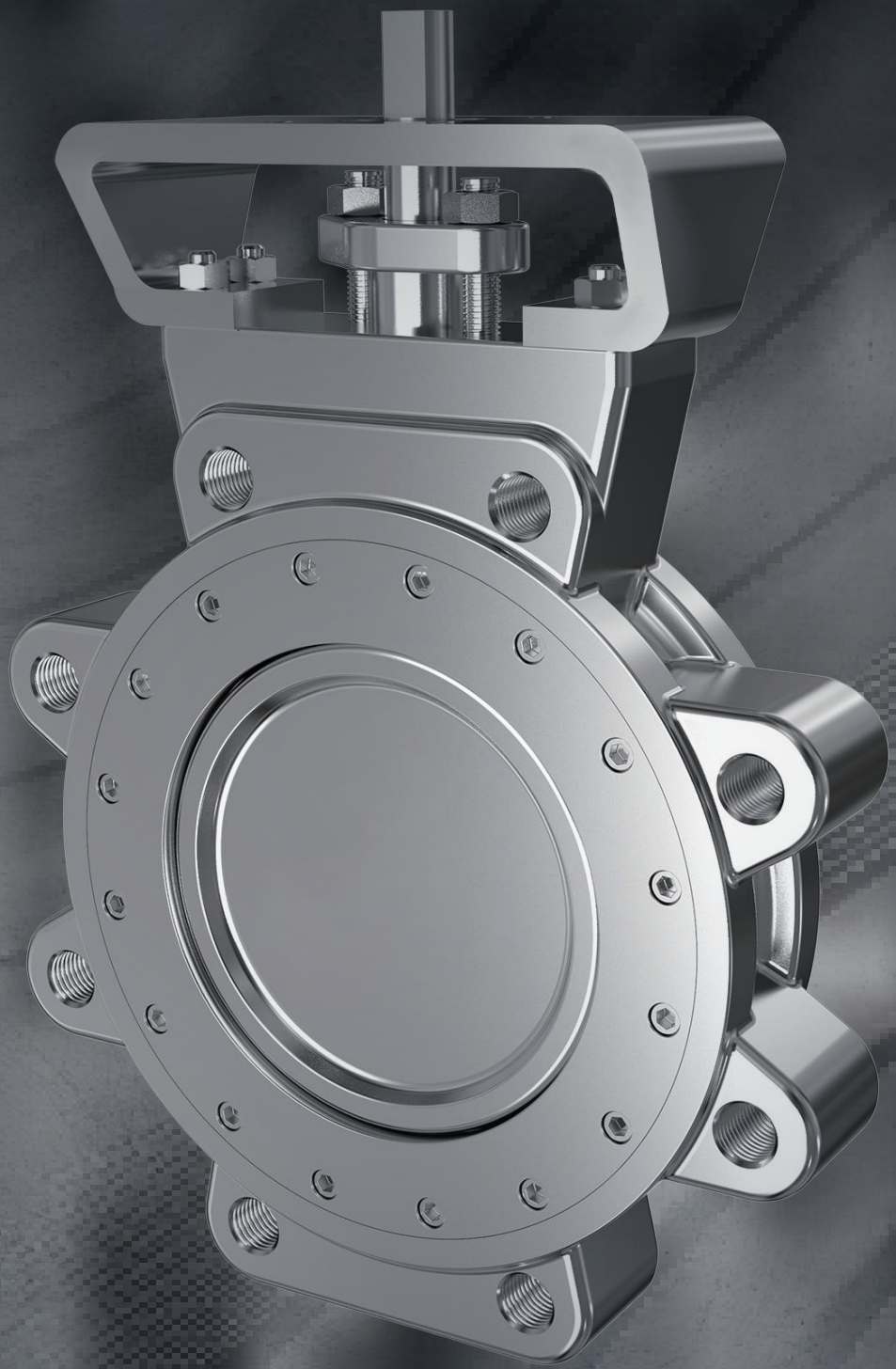
Flöriner

APPENDICES

BUTTERFLY VALVES

HIGH PERFORMANCE DOUBLE ECCENTRIC



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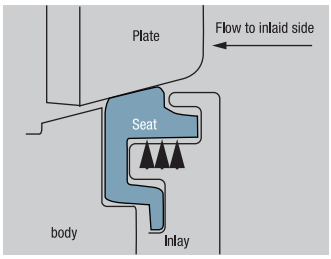
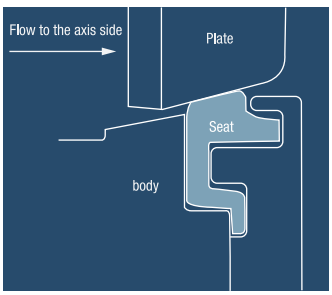
WHY CHOOSE FLOERINER?

Floeriner is a global valves manufacturer with innovative designed and advanced technology in marine and offshore, industries, petrochemical market.
Floeriner high-performance butterfly valveadopts a special double offset design and patented floating seat structure to ensure low torque values and 100% bi-directional disc sealing, meeting the high demanding application where the valve performance is critical.
This in turn improves plant safety, increases the mechanical integrity of equipment and empower customers to gain a competitive advantage in the market .



When pressure is on the insert side, pressure is applied under the seat lip. This further amplifies the sealing force between the disc and the seat.



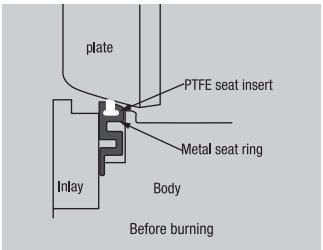
When pressure is on the non-insert side, the disc moves into the seat. Due to the spherical profile of the disc, the more the disc moves into the seat, the tighter the shut-off.
Excessive movement of the seat is limited by the flexible lip which contacts the bottom of the groove in the insert.

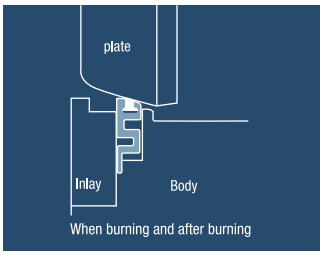
100% Bi-directional sealing:

Floeriner butterfly valve standard seat seal is constructed by PTFE or RPTFE, filled PTFE and UHMW Polyethylene, untilizes a flexible lip, which, when distorted, will always attempt to return to its original shape and maintain seal against the disc regardless of flow direction.

Zero leakage:

Leakage rate according to API 598 or EN1266-1 class A





Fire safe design:

The fire-tight seat (FOV series) was developed for applications where effective shut off during a fire is a concern.
The primary sealing element is PTFE with back up metal seat ring. In the event that the PTFE is destroyed, the secondary metal seat provides effective shut off.
Fire test according to API 607-6th edition and ISO 10497. LR fire safety certificate can be supplied if needed.

FD Series

Product Selection Guide

Floeriner double eccentric butterfly valve(FD series) are designed to DIN, EN, ASME and JIS standard, normal size ranges are DN50 to DN1200(48"), maximum size can be customized up to DN1500(60"), widely used in shipbuilding, offshore, industries, petrochemical applications etc.
Manual, hydraulic, electrical, pneumatic operations to be supplied, other operation type such as electrical-hydraulic are available according to customer's requirements.

FDW

Wafer type

Pressure class: 6bar, 10bar, 16bar, 25bar, 150lb, 300lb.
Size: DN50 - DN1200(48")
Design standard: EN 593 / API 609
Face to face acc.: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239 & 2220, etc.
Top flange acc.: ISO 5211
Materials: Nodular cast iron, Cast steel, Al.Bronze, Stainless steel and other exotic material.
Seats: PTFE(-60~190 ˚C), RPTFE(-60~230 ˚C)
Paint: Akzo Nobel, Epoxy coated, RAL5011, 150μm

FDD

Double flange type

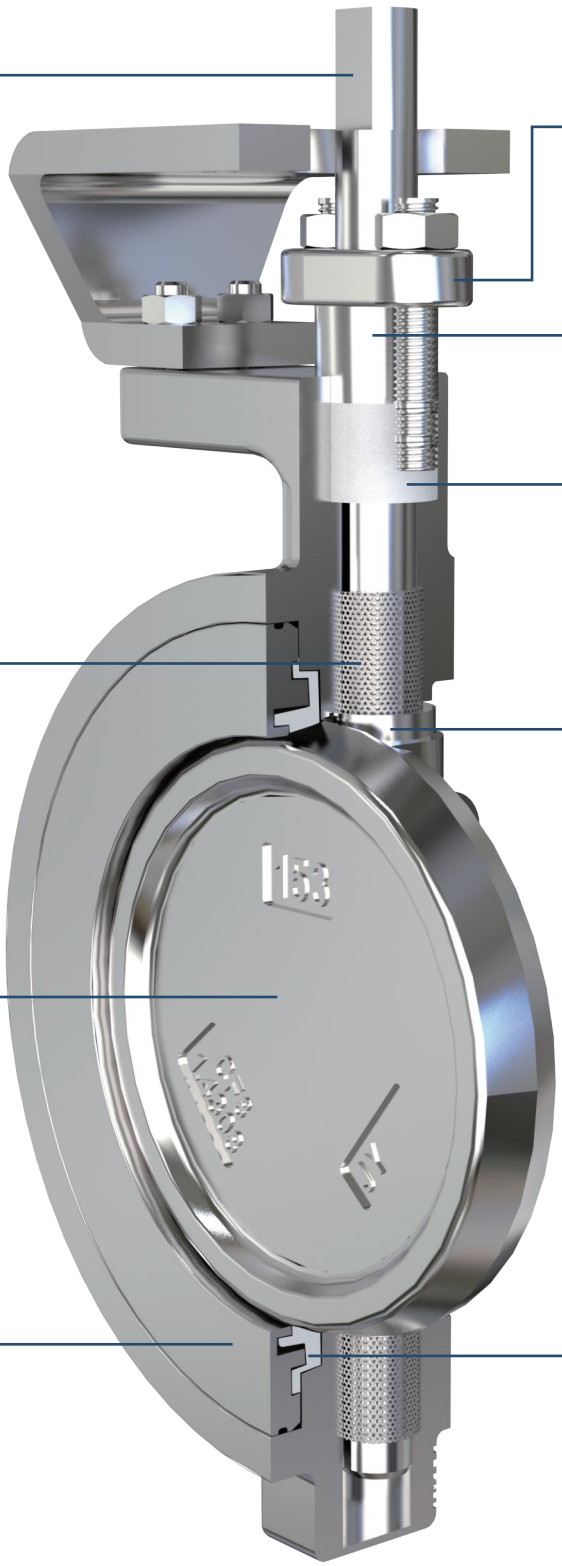
Pressure class: 6bar, 10bar, 16bar, 25bar, 150lb, 300lb
Size: DN50 - DN900(36")
Design standard: EN 593 / API 609
Face to face acc.: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239 & 2220, etc.
Top flange acc.: ISO 5211
Materials: Nodular cast iron, Cast steel, Al.Bronze, Stainless steel and other exotic material.
Seats: PTFE(-60~190 ˚C), RPTFE(-60~230 ˚C)
Paint: Akzo Nobel, Epoxy coated, RAL5011, 150μm

FDL

Lug type

Pressure class: 6bar, 10bar, 16bar, 25bar, 150lb, 300lb
Size: DN50 - DN1200(48")
Design standard: EN 593 / API 609
Face to face acc.: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239 & 2220, etc.
Top flange acc.: ISO 5211
Materials: Nodular cast iron, Cast steel, Al.Bronze, Stainless steel and other exotic material.
Seats: PTFE(-60~190 ˚C), RPTFE(-60~230 ˚C)
Paint: Akzo Nobel, Epoxy coated, RAL5011, 150μm

FD Series product advantages at a glance



Top shaft

The top flat shaft displays the correct position of the valve disc.

Clamp

Reliable shaft retaining rings in manual valves.

Adjusting packing

Adjust packing without loading seats.

Packing

PTFE V-shaped packing, graphite packing is also available.

Bearing

PTFE-lined stainless steel bearings have high corrosion resistance and can be automatically lubricated.

Thrust washer

Thrust washer can maintain the center position of the valve plate.

Disc

The rotation of the eccentric valve plate does not use the valve seat as a fulcrum, reducing torque and valve seat wear.

Body insert

Body inserts prevent seat wear and corrosion.

Seat

Flexible lip-shaped seat ensures safe closure and automatically compensates for wear,without the need to disassemble shaft and disc to remove the valve seat.

FDW Series

FDWN type double eccentric wafer type butterfly valve, is specially designed as a high performance butterfly valve, which has two stems offset from the center. FDWN type are available in higher pressure than centric disc type. It is designed up to 16bar in Nodular cast iron, carbon steel, stainless steel, and other exotic body materials, with variation of PTFE or RPTFE seats.
FDWN type can be widely used in power generation, pulp and paper, HAVC, chemical, oil and gas, water, wastewater & corrosive treatment, shipbuilding and offshore.

Operation

Type	Material	DN
Bare shaft		DN50(2") - DN1200(48")
Lever	Aluminum alloy	DN50(2") - DN150(6")
Worm gearbox	Aluminum alloy	DN50(2") - DN1200(48")

Pneumatic, electric or hydraulic actuator, hydraulic-electric see actuator section.

Pressure and temperature range

Nominal pressure	DN	Temp.	Max.p
☐ PN10	DN50(2") - DN1200(48")	PTFE -60℃-190℃ RPTFE -60℃-230℃	10bar
☐ PN16	DN50(2") - DN1200(48")	PTFE -60℃-190℃ RPTFE -60℃-230℃	16bar
☐ CL150	DN50(2") - DN1200(48")	PTFE -60℃-190℃ RPTFE -60℃-230℃	150LB

For the flange, see the flange matching dimension table.

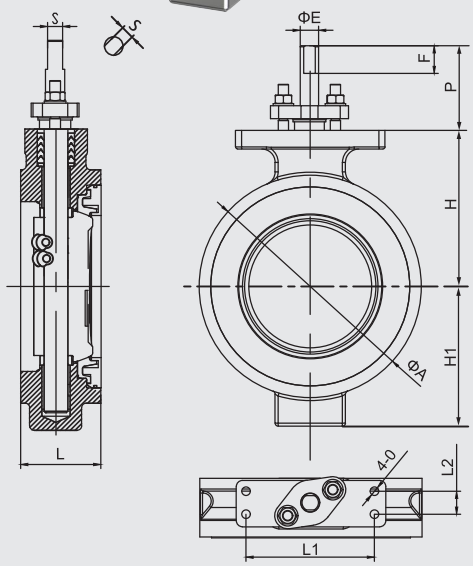
Material specification

Body	Disc	Shaft	Liner
☐ Nodular cast iron	☐ Cast steel	☐ Al-bronze	☐ PTFE
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ RPTFE
☐ Stainless steel	☐ Al-Bronze	☐ Duplex steel	
☐ Bronze	☐ Monel alloy	☐ Hastelloy alloy	
☐ Duplex steel	☐ Duplex steel	☐ Monel alloy	

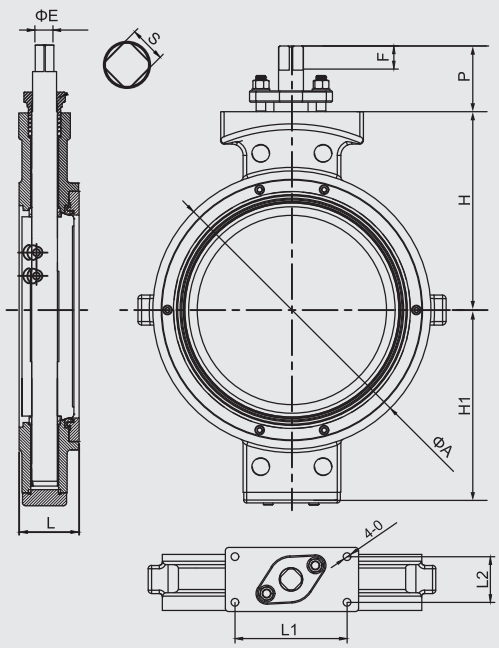
Dimension

DN	H	H1	P	L	ΦA	F	ΦE	S	L1	L2	4-O	Torque (N·m)		
												PN10	PN16	150LB
DN50(2")	81	62	44	43	96	14	12	9	126	22	M10	23	24	23
DN65(2.5")	111	83	82	49	118	27	16	11	126	22	M10	29	31	29
DN80(3")	121	91	82	49	132	27	16	11	126	22	M10	34	37	35
DN100(4")	133	111	82	54	157	27	16	11	126	22	M10	47	53	50
DN125(5")	135	191	82	57	186	27	16	11	126	22	M10	65	76	72
DN150(6")	153	133	82	57	217	27	19	14	126	22	M10	97	113	107
DN200(8")	188	173	82	64	274	27	22	16	126	22	M10	164	193	183
DN250(10")	233	227	93	71	330	28	28	21	143	37	M12	222	274	260
DN300(12")	265	266	97	81	386	33	35	24	143	37	M12	290	390	371
DN350(14")	309	274	87	92	425	35	35	29	143	37	M12	491	684	650
DN400(16")	331	300	89	102	470	41	46	41	203	83	M16	628	876	832
DN450(18")	356	345	92	114	533	41	47	41	203	83	M16	816	1144	1087
DN500(20")	377	373	89	127	590	41	54	41	203	83	M16	1098	1546	1469
DN600(24")	490	454	116	154	692	51	67	51	254	83	M20	1673	2384	2265
DN700(28")	570	550	127	165	800	51	67	51	254	83	M20	2942	3986	3787
DN800(32")	570	550	127	190	905	51	67	51	254	83	M20	2942	3986	3787
DN900(36")	660	601	134	184	1014	51	67	51	254	83	M20	4786	6589	6260
DN1000(40")	737	664	330	222	1185	63	102	a	330	178	M20	7837	10928	10382
DN1200(48")	845	833	285	254	1350	63	127	a	381	178	M20	12433	17409	16539

a: Shaft is the key axis.
Note: There is no safety factor included for the torque list above table.



DN50–DN300



DN350–DN1200

FDW Series

FDWH type double eccentric wafer type butterfly valve, is specially designed as a high performance butterfly valve, which has two stems offset from the center. FDWH type are available in more higher pressure than FDWN type. It is designed up to 25bar in Nodular cast iron, carbon steel, stainless steel, and other exotic body materials, with variation of PTFE or RPTFE seats.
FDWH type can be widely used in power generation, pulp and paper, HAVC, chemical, oil and gas, water, wastewater & corrosive treatment, shipbuilding and offshore.

Operation

Type	Material	DN
Bare shaft		DN50(2") - DN600(24")
Lever	Aluminum alloy	DN50(2") - DN150(6")
Worm gearbox	Aluminum alloy	DN50(2") - DN600(24")

Pneumatic, electric or hydraulic actuator, hydraulic-electric see actuator section.

Pressure and temperature range

Nominal pressure	DN	Temp.	Max.p
☐ CL300	DN50(2") - DN600(24")	PTFE -60℃-190℃ RPTFE -60℃-230℃	300lb
☐ PN25	DN50(2") - DN600(24")	PTFE -60℃-190℃ RPTFE -60℃-230℃	25bar

For the flange, see the flange matching dimension table.

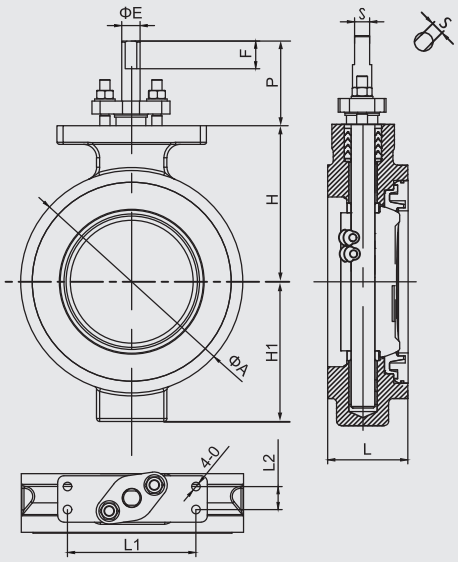
Material specification

Body	Disc	Shaft	Liner
☐ Nodular cast iron	☐ Cast steel	☐ Al-bronze	☐ PTFE
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ RPTFE
☐ Stainless steel	☐ Al-Bronze	☐ Duplex steel	
☐ Bronze	☐ Monel alloy	☐ Hastelloy alloy	
☐ Duplex steel	☐ Duplex steel	☐ Monel alloy	

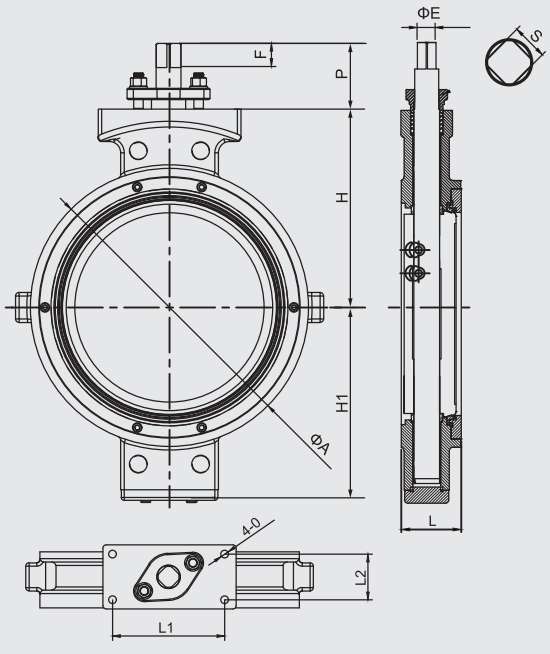
Dimension

DN	H	H1	P	L	ΦA	F	ΦE	S	L1	L2	4-O	Torque (N·m)	
												300LB	PN25
DN50(2")	81	62	44	43	96	14	12	9	126	22	M10	25	26
DN65(2.5")	111	83	82	49	118	27	16	11	126	22	M10	31	33
DN80(3")	121	91	82	49	132	27	16	11	126	22	M10	37	39
DN100(4")	133	111	82	54	157	27	16	11	126	22	M10	55	58
DN125(5")	135	191	82	57	186	27	16	11	126	22	M10	82	86
DN150(6")	175	153	82	59	217	27	22	16	126	22	M10	120	126
DN200(8")	213	180	99	73	273	28	28	21	143	37	M12	206	217
DN250(10")	254	238	99	83	327	33	35	24	143	37	M12	302	318
DN300(12")	283	292	105	92	386	35	35	29	143	37	M12	451	475
DN350(14")	325	300	102	117	445	41	46	41	203	83	M16	807	849
DN400(16")	351	343	89	133	505	41	54	41	203	83	M16	1033	1087
DN450(18")	425	377	117	149	550	41	54	41	203	83	M16	1352	1423
DN500(20")	447	447	127	159	610	51	67	51	254	83	M20	1830	1926
DN600(24")	501	496	133	181	718	51	67	51	254	83	M20	2834	2983

Note: There is no safety factor included for the torque list above table.



DN50–DN300



DN350–DN600

FDD Series

FDDN type double eccentric double flange type butterfly valve, is specially designed as a high performance butterfly valve, which has two stems offset from the center.
FDDN type are available in higher pressure than centric disc type. It is designed up to 16bar in Nodular cast iron, carbon steel, stainless steel, and other exotic body materials, with variation of PTFE or RPTFE seats.
FDDN type can be widely used in power generation, pulp and paper, HAVC, chemical, oil and gas, water, wastewater & corrosive treatment, shipbuilding and offshore.

Operation

Type	Material	DN
Bare shaft		DN50(2") - DN900(36")
Lever	Aluminum alloy	DN50(2") - DN150(6")
Worm gearbox	Aluminum alloy	DN50(2") - DN900(36")

Pneumatic, electric or hydraulic actuator, hydraulic-electric see actuator section.

Pressure and temperature range

Nominal pressure	DN	Temp.	Max.p
☐ PN10	DN50(2") - DN900(36")	PTFE -60℃-190℃ RPTFE -60℃-230℃	10bar
☐ PN16	DN50(2") - DN900(36")	PTFE -60℃-190℃ RPTFE -60℃-230℃	16bar
☐ CL150	DN50(2") - DN900(36")	PTFE -60℃-190℃ RPTFE -60℃-230℃	150LB

For the flange, see the flange matching dimension table.

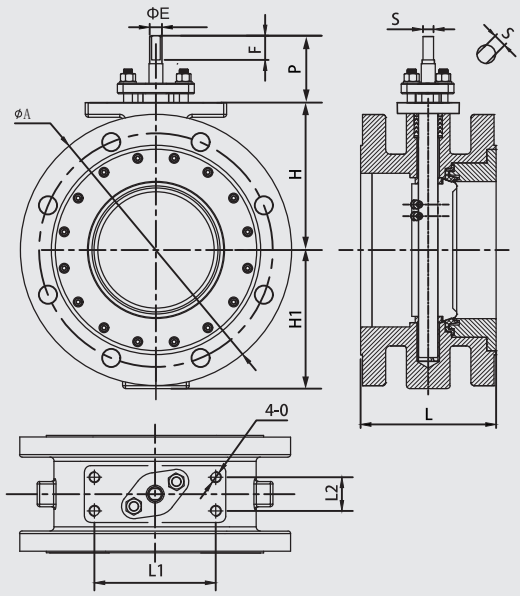
Material specification

Body	Disc	Shaft	Liner
☐ Nodular cast iron	☐ Cast steel	☐ Al-bronze	☐ PTFE
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ RPTFE
☐ Stainless steel	☐ Al-Bronze	☐ Duplex steel	
☐ Bronze	☐ Monel alloy	☐Hastelloy alloy	
☐ Duplex steel	☐ Duplex steel	☐ Monel alloy	

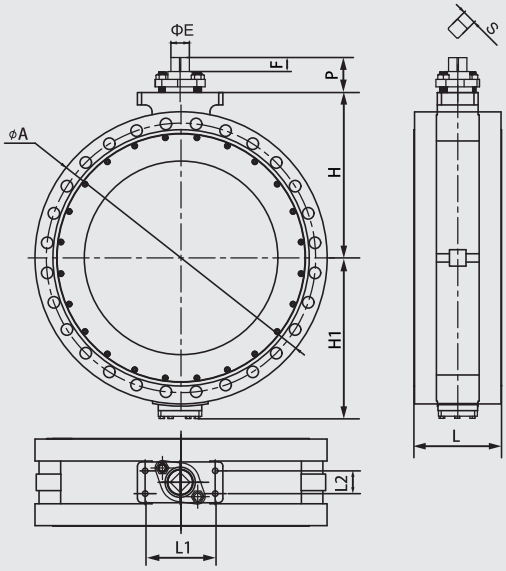
Dimension

DN	H	H1	P	L	ΦA	F	ΦE	S	L1	L2	4-O	Torque (N·m)		
												PN10	PN16	150LB
DN50(2")	108	91	65	108	165	14	12	9	126	22	M10	22	24	23
DN80(3")	121	103	82	114	190	27	16	11	126	22	M10	34	37	35
DN100(4")	133	115	82	127	230	27	16	11	126	22	M10	47	53	50
DN125(5")	135	127	82	140	255	27	16	11	126	22	M10	65	76	72
DN150(6")	153	140	82	140	280	27	19	14	126	22	M10	97	113	107
DN200(8")	188	172	82	152	345	27	22	16	126	22	M10	164	193	183
DN250(10")	233	203	93	165	405	28	28	21	143	37	M12	222	274	260
DN300(12")	265	243	97	178	485	33	35	24	143	37	M12	290	390	371
DN350(14")	309	293	87	190	535	35	35	29	143	37	M12	491	684	650
DN400(16")	331	333	89	216	595	41	46	41	203	83	M16	628	876	832
DN450(18")	360	341	92	222	635	41	47	41	203	83	M16	816	1144	1087
DN500(20")	377	380	89	229	700	41	54	41	203	83	M16	1098	1546	1469
DN600(24")	490	462	116	267	815	51	67	51	254	83	M20	1673	2384	2265
DN700(28")	550	528	127	292	925	51	67	51	254	83	M20	2516	3216	2960
DN800(32")	600	580	127	318	1060	51	67	51	254	83	M20	3946	5130	4650
DN900(36")	685	626	133	330	1170	51	67	51	254	83	M20	5249	7026	6589

Note: There is no safety factor included for the torque list above table.



DN50–DN350



DN350–DN900

FDD Series

FDDH type double eccentric double flange type butterfly valve, is specially designed as a high performance butterfly valve, which has two stems offset from the center.
FDDH type are available in higher pressure than FDDN type. It is designed up to 25bar in Nodular cast iron, carbon steel, stainless steel, and other exotic body materials, with variation of PTFE or RPTFE seats.
FDDH type can be widely used in power generation, pulp and paper, HAVC, chemical, oil and gas, water, wastewater & corrosive treatment, shipbuilding and offshore.

Operation

Type	Material	DN
Bare shaft		DN50(2") - DN900(36")
Lever	Aluminum alloy	DN50(2") - DN150(6")
Worm gearbox	Aluminum alloy	DN50(2") - DN900(36")

Pneumatic, electric or hydraulic actuator, hydraulic-electric see actuator section.

Pressure and temperature range

Nominal pressure	DN	Temp.	Max.p
☐ CL300	DN50(2") - DN900(36")	PTFE -60℃-190℃ RPTFE -60℃-230℃	300lb
☐ PN25	DN50(2") - DN900(36")	PTFE -60℃-190℃ RPTFE -60℃-230℃	25bar

For the flange, see the flange matching dimension table.

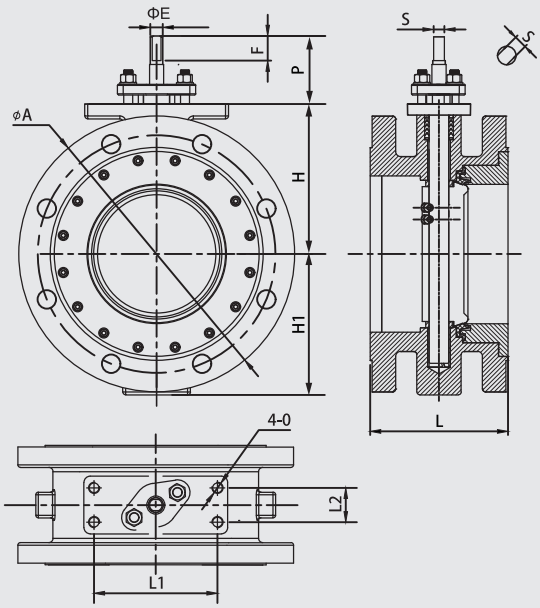
Material specification

Body	Disc	Shaft	Liner
☐ Nodular cast iron	☐ Cast steel	☐ Al-bronze	☐ PTFE
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ RPTFE
☐ Stainless steel	☐ Al-Bronze	☐ Duplex steel	
☐ Bronze	☐ Monel alloy	☐ Hastelloy alloy	
☐ Duplex steel	☐ Duplex steel	☐ Monel alloy	

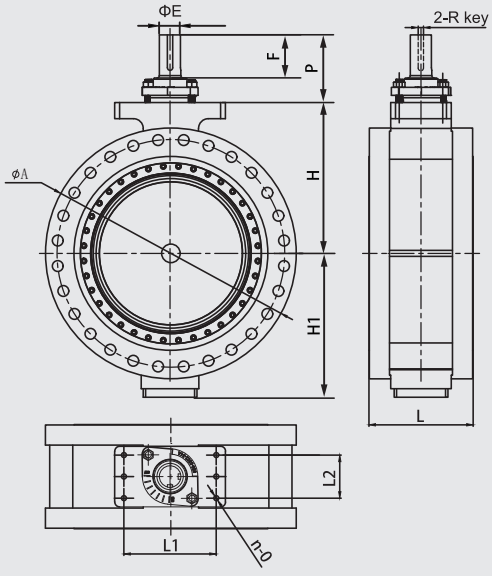
Dimension

DN	H	H1	P	L	ΦA	F	φE	S	R	L1	L2	n-O	Torque (N·m) 300LB	Torque (N·m) PN25
DN50(2")	108	91	65	108	165	14	12	9	126	22	M10	22	24	23
DN80(3")	121	105	82	114	168	27	16	11	-	126	22	4-M10	37	39
DN100(4")	133	128	82	127	255	27	16	11	-	126	22	4-M10	55	58
DN125(5")	135	140	82	140	280	27	16	11	-	126	22	4-M10	82	86
DN150(6")	175	160	82	140	320	27	22	16	-	126	22	4-M10	120	126
DN200(8")	213	190	93	152	380	28	28	21	-	143	37	4-M12	206	217
DN250(10")	254	223	91	165	445	33	35	24	-	143	37	4-M12	302	318
DN300(12")	283	292	105	178	520	35	35	29	-	143	37	4-M12	451	475
DN350(14")	367	320	102	190	585	41	46	41	-	203	83	4-M16	807	849
DN400(16")	410	355	89	216	650	41	47	41	-	203	83	4-M14	1033	1087
DN450(18")	424	460	93	222	685	41	54	41	-	254	83	4-M16	1352	1423
DN500(20")	447	512	93	229	755	51	70	51	-	254	83	4-M20	1830	1926
DN600(24")	501	545	114	267	890	51	83	51	-	254	83	4-M20	2834	2983
DN700(28")	623	594	279	430	1035	178	89	-	22*14	381	178	6-M20	4322	4549
DN800(32")	680	667	280	470	1150	178	89	-	22*14	381	178	6-M20	7612	8013
DN900(36")	783	769	270	510	1270	165	101	-	28*16	381	178	6-M20	12101	13965

Note: There is no safety factor included for the torque list above table.



DN50–DN300



DN350–DN900

FDL Series

FDLN type double eccentric full lug type butterfly valve, is specially designed as a high performance butterfly valve, which has two stems offset from the center. FDLN type are available in higher pressure than centric disc type. It is designed up to 16bar in Nodular cast iron, carbon steel, stainless steel, and other exotic body materials, with variation of PTFE or RPTFE seats.
FDLN type can be widely used in power generation, pulp and paper, HAVC, chemical, oil and gas, water, wastewater & corrosive treatment, shipbuilding and offshore.

Operation

Type	Material	DN
Bare shaft		DN50(2") - DN1200(48")
Lever	Aluminum alloy	DN50(2") - DN150(6")
Worm gearbox	Aluminum alloy	DN50(2") - DN1200(48")

Pneumatic, electric or hydraulic actuator, hydraulic-electric see actuator section.

Pressure and temperature range

Nominal pressure	DN	Temp.	Max.p
☐ PN10	DN50(2") - DN1200(48")	PTFE -60℃-190℃ RPTFE -60℃-230℃	10bar
☐ PN16	DN50(2") - DN1200(48")	PTFE -60℃-190℃ RPTFE -60℃-230℃	16bar
☐ CL150	DN50(2") - DN1200(48")	PTFE -60℃-190℃ RPTFE -60℃-230℃	150LB

For the flange, see the flange matching dimension table.

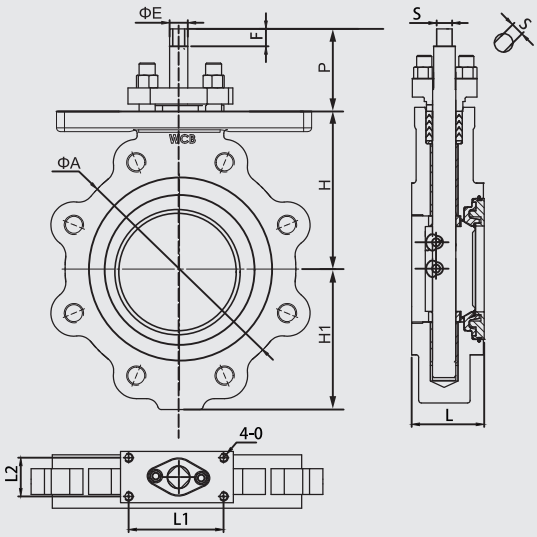
Material specification

Body	Disc	Shaft	Liner
☐ Nodular cast iron	☐ Cast steel	☐ Al-bronze	☐ PTFE
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ RPTFE
☐ Stainless steel	☐ Al-Bronze	☐ Duplex steel	
☐ Bronze	☐ Monel alloy	☐ Hastelloy alloy	
☐ Duplex steel	☐ Duplex steel	☐ Monel alloy	

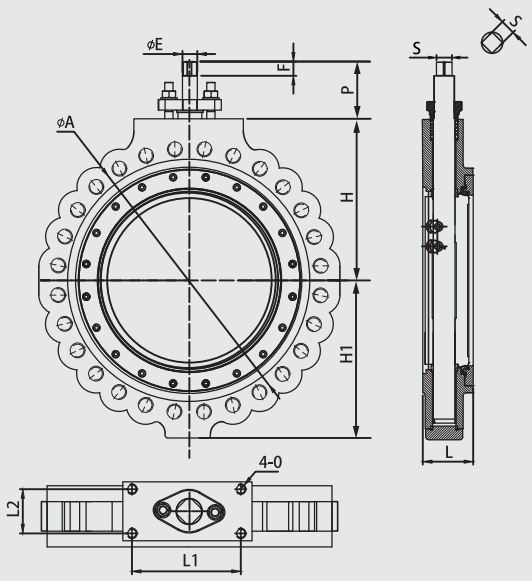
Dimension

DN	H	H1	P	L	ΦA	F	ΦE	S	L1	L2	4-O	Torque (N·m)		
												PN10	PN16	150LB
DN50(2")	80	62	44	43	121	14	12	9	126	22	M10	23	24	23
DN65(2.5")	111	83	82	49	140	27	16	11	126	22	M10	29	31	29
DN80(3")	121	94	82	49	152	27	16	11	126	22	M10	34	37	35
DN100(4")	133	110	82	54	191	27	16	11	126	22	M10	47	53	50
DN125(5")	135	127	82	57	216	27	16	11	126	22	M10	65	76	72
DN150(6")	152	143	82	57	241	27	19	14	126	22	M10	97	113	107
DN200(8")	187	172	82	64	299	27	22	16	126	22	M10	164	193	183
DN250(10")	232	202	93	71	362	28	28	21	143	37	M12	222	274	260
DN300(12")	260	238	97	81	432	33	35	24	143	37	M12	290	390	371
DN350(14")	309	273	88	92	476	35	35	29	143	37	M14	491	684	650
DN400(16")	331	300	88	102	540	41	46	41	203	83	M16	628	876	832
DN450(18")	356	323	93	114	578	41	47	41	203	83	M14	816	1144	1087
DN500(20")	377	363	93	127	635	41	54	41	203	83	M14	1098	1546	1469
DN600(24")	490	454	114	154	749	51	70	51	254	83	M20	1673	2384	2265
DN700(28")	570	525	213	165	914	82	55	a	254	83	M20	2942	3986	3787
DN800(32")	570	525	213	190	914	82	55	a	254	83	M20	2942	3986	3787
DN900(36")	660	601	134	184	1086	51	95	51	254	107	M20	4786	6589	6260
DN1000(40")	737	738	330	222	1257	63	102	a	330	178	M20	7837	10928	10382
DN1200(48")	845	823	285	254	1422	63	127	a	381	178	M20	12433	17409	16539

a: Shaft is the key axis.
Note: There is no safety factor included for the torque list above table.



DN50–DN300



DN350–DN1200

FDL Series

FDLH type double eccentric full lug type butterfly valve, is specially designed as a high performance butterfly valve, which has two stems offset from the center. FDLH type are available in more higher pressure than FDLN type. It is designed up to 25bar in Nodular cast iron, carbon steel, stainless steel, and other exotic body materials, with variation of PTFE or RPTFE seats.
FDLH type can be widely used in power generation, pulp and paper, HAVC, chemical, oil and gas, water, wastewater & corrosive treatment, shipbuilding and offshore.

Operation

Type	Material	DN
Bare shaft		DN50(2") - DN900(36")
Lever	Aluminum alloy	DN50(2") - DN150(6")
Worm gearbox	Aluminum alloy	DN50(2") - DN900(36")

Pneumatic, electric or hydraulic actuator, hydraulic-electric see actuator section.

Pressure and temperature range

Nominal pressure	DN	Temp.	Max.p
☐ CL300	DN50(2") - DN900(36")	PTFE -60℃-190℃ RPTFE -60℃-230℃	300lb
☐ PN25	DN50(2") - DN900(36")	PTFE -60℃-190℃ RPTFE -60℃-230℃	25bar

For the flange, see the flange matching dimension table.

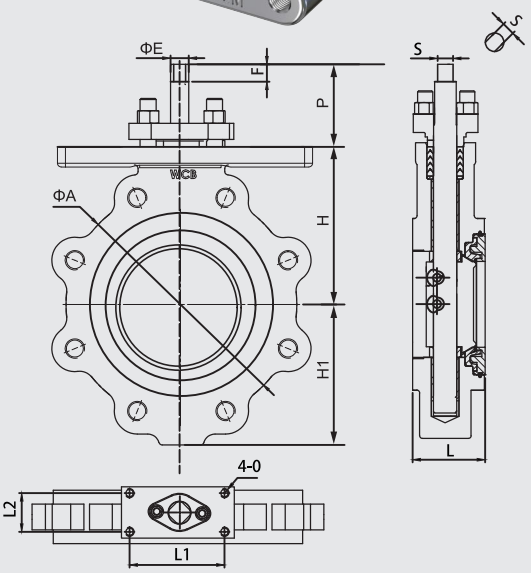
Material specification

Body	Disc	Shaft	Liner
☐ Nodular cast iron	☐ Cast steel	☐ Al-bronze	☐ PTFE
☐ Cast steel	☐ Stainless steel	☐ Stainless steel	☐ RPTFE
☐ Stainless steel	☐ Al-Bronze	☐ Duplex steel	
☐ Bronze	☐ Monel alloy	☐ Hastelloy alloy	
☐ Duplex steel	☐ Duplex steel	☐ Monel alloy	

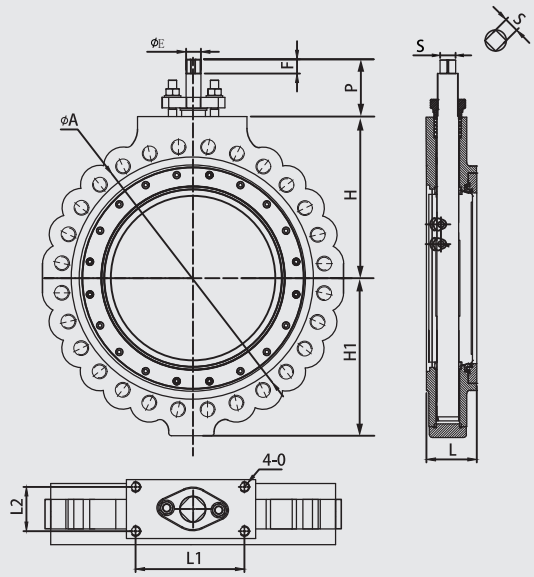
Dimension

DN	H	H1	P	L	ΦA	F	ΦE	S	L1	L2	4-O	Torque (N·m)	
												300LB	PN25
DN50(2")	80	62	44	43	121	27	12	9	126	22	M10	25	26
DN65(2.5")	111	83	82	49	140	27	16	11	126	22	M10	31	33
DN80(3")	121	94	82	49	152	27	16	11	126	22	M10	37	39
DN100(4")	133	110	82	54	191	27	16	11	126	22	M10	55	58
DN125(5")	135	127	82	57	216	27	16	11	126	22	M10	82	86
DN150(6")	175	153	82	59	270	27	22	16	126	22	M10	120	126
DN200(8")	213	180	82	73	330	28	28	21	143	37	M12	206	217
DN250(10")	254	222	93	83	387	33	35	24	143	37	M12	302	318
DN300(12")	283	284	97	92	451	35	35	29	143	37	M12	451	475
DN350(14")	325	286	88	118	514	41	46	41	203	83	M12	807	849
DN400(16")	351	335	88	133	572	41	47	41	203	83	M14	1033	1087
DN450(18")	424	367	93	149	629	41	54	41	254	83	M16	1352	1423
DN500(20")	447	419	93	159	686	51	70	51	254	83	M20	1830	1926
DN600(24")	501	431	114	181	813	51	83	51	254	83	M20	2834	2983
DN700(28")	642	627	280	273	997	51	95	51	254	83	M20	4322	4549
DN800(32")	642	627	280	273	997	51	95	51	254	178	M20	7612	8013
DN900(36")	783	771	270	286	1168	51	102	a	254	178	M20	12101	13965

a: Shaft is the key axis.
Note: There is no safety factor included for the torque list above table.



DN50–DN300



DN350–DN900

FOV Series——Fire safe type

Floeriner double eccentric butterfly (FOV series) are designed to DIN, EN, ASME and JIS standard, normal size ranges are DN50(2") to DN1200(48"), widely used in fire protection pipes for shipbuilding, offshore, industries, petrochemical applications etc.
FOV series (fire safe type) valves with PTFE (RPTFE)&Metallic or Metallic seat were covered by the fire test complying with API 607-2016/ ISO 10497-2010.
Manual, hydraulic, electrical, pneumatic operations to be supplied, other operation type such as electrical-hydraulic are available according to customer's requirements.

FOVW

Wafer type

Pressure class: 6bar, 10bar, 16bar, 25bar, 150lb, 300lb
Size: DN50 - DN1200(48")
Design standard: EN 593 / API 609
Face to face acc.: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239 & 2220 , etc.
Top flange acc.: ISO 5211
Materials: Nodular cast iron, Cast steel, Al.Bronze, Stainless steel and other exotic material.
Seats: PTFE (RPTFE) + Metallic, Metallic
Paint: Akzo Nobel, Epoxy coated, RAL3000, 150μm
Fire test: API 607-2016, ISO 10497-2010

FOVD

Double flange type

Pressure class: 6bar, 10bar, 16bar, 25bar, 150lb, 300lb
Size: DN50 - DN900(36")
Design standard: EN 593 / API 609
Face to face acc.: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239 & 2220 , etc.
Top flange acc.: ISO 5211
Materials: Nodular cast iron, Cast steel, Al.Bronze, Stainless steel and other exotic material.
Seats: PTFE (RPTFE) + Metallic, Metallic
Paint: Akzo Nobel, Epoxy coated, RAL3000, 150μm
Fire test: API 607-2016, ISO 10497-2010

FOVL

Lug type

Pressure class: 6bar, 10bar, 16bar, 25bar, 150lb, 300lb
Size: DN50 - DN1200(48")
Design standard: EN 593 / API 609
Face to face acc.: DIN 3202, EN558, ISO 5752, BS 2080, JIS 2002, API609, etc.
Connection: EN1092, ASME B16.5, JIS B2239 & 2220 , etc.
Top flange acc.: ISO 5211
Materials: Nodular cast iron, Cast steel, Al.Bronze, Stainless steel and other exotic material.
Seats: PTFE (RPTFE) + Metallic, Metallic
Paint: Akzo Nobel, Epoxy coated, RAL3000, 150μm
Fire test: API 607-2016, ISO 10497-2010

FOV Series product advantages at a glance

Top shaft

Top shaft flat shows the correct position of butterfly disc.

Clamp

Reliable shaft retaining rings in manual valves.

Adjusting packing

Adjust packing without loading seats

Packing

PTFE V-shaped packing, graphite packing is also available.

Bearing

PTFE-lined stainless steel bearings have high corrosion resistance and can be automatically lubricated.

Thrust washer

Thrust washer can maintain the center position of the valve plate.

Disc

The rotation of the eccentric valve plate does not use the valve seat as a fulcrum, reducing torque and valve seat wear.

Body insert

Body inserts prevent seat wear and corrosion.

Seat

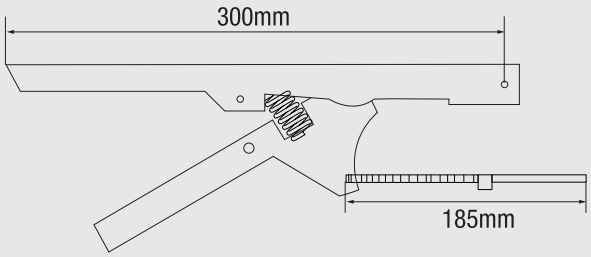
PTFE (RPTFE) + Metallic seat, widely used in fire protection pipes. Disassemble seat without disassemble shaft and disc.

FDL Series

Handlevers

- material is cast iron.
- Open and closed positions are adjustable.
- Can be locked to prevent misuse.

DN50-DN150(6")

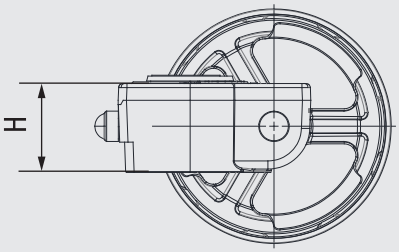


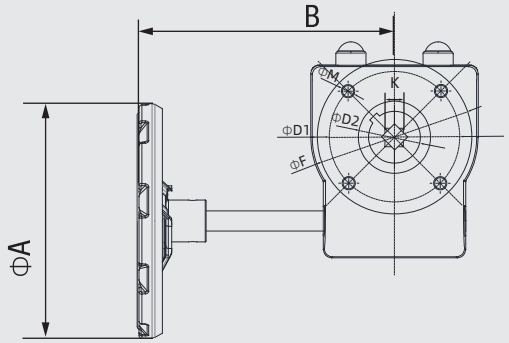
Gear box

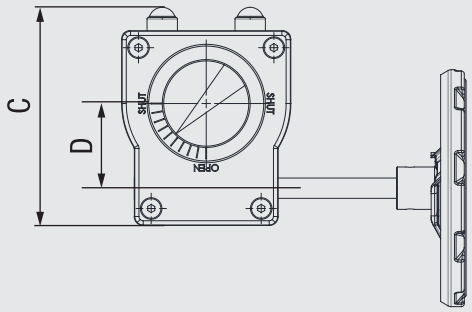
- Robust ductile iron or diecasted Al-alloy gear box.
- Protection class IP65/IP67.
- Visual position indicator.
- Stainless steel shaft and bolt.

DN200(8")-DN250(10")

DN300(12")-DN1200(48")



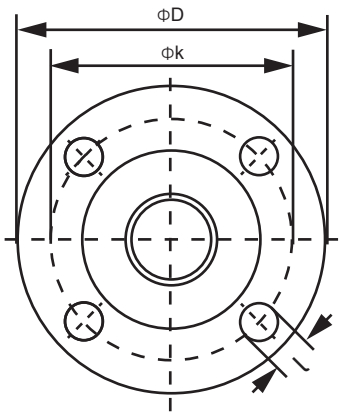




DN	ISO 5211	K (max. value)	Output Torque (Nm)(Max)	Gear /Ratio	H	ΦA	B	C	D
DN200(8")	F07	17*17	180	1:40	48	140	160	115	42
DN250(10")	F10	17*17	300	1:36	69	300	225	180	160
DN300(12")-DN350(14")	F12	27*27	850	1:38	74	300	142	162	62
DN400(16")-DN450(18")	F14	36*36	1350	1:40	85	350	160	202	79
DN500(20")	F14	36*36	2000	1:47	91	400	163	223	89
DN600(24")	F16	46*46	3000	1:61	105	500	192	267	112
DN700(28")-DN800(32")	F16	46*46	4500	1:167	105	500	269	276	112
DN900(36")	F16	46*46	6500	1:167	117	600	281	307	129
DN100(4")0(40")	F25	55*55	11000	1:348	145	600	351	385	157
DN1200(48")	F25	55*55	23500	1:627	193	600	398	465	200

Flange

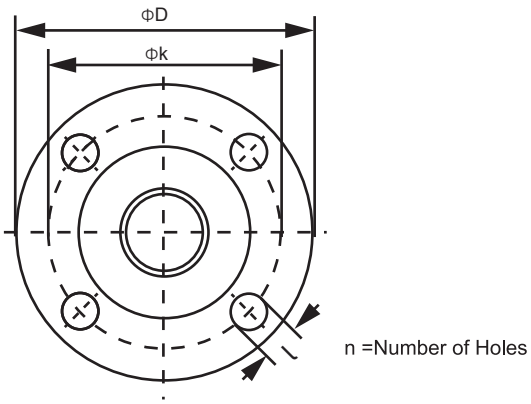
Flange Standard		DIN 1092 PN 6				DIN 1092 PN 10				DIN 1092 PN 16				DIN 1092 PN 25			
DN		D	k	n	l	D	k	n	l	D	k	n	l	ΦD	Φk	n	l
mm	in.	mm	mm		mm	mm	mm		mm	mm	mm		mm	mm	mm		mm
25	1"	100	75	4	11	identical with PN 16				115	85	4	14	115	85	4	14
32	1 1/4"	120	90	4	14					140	100	4	18	140	100	4	18
40	1 1/2"	130	100	4	14					150	110	4	18	150	110	4	18
50	2"	140	110	4	14					165	125	4	18	165	125	4	18
65	2 1/2"	160	130	4	14					185	145	4	18	185	145	8	18
80	3"	190	150	4	18					200	160	8	18	200	160	8	18
100	4"	210	170	4	18					220	180	8	18	235	190	8	22
125	5"	240	200	8	18					250	210	8	18	270	220	8	26
150	6"	265	225	8	18					285	240	8	22	300	250	8	26
200	8"	320	280	8	18	340	295	8	22	340	295	12	22	360	310	12	26
250	10"	375	335	12	18	395	350	12	22	405	355	12	26	425	370	12	30
300	12"	440	395	12	22	445	400	12	22	460	410	12	26	485	430	16	30
350	14"	490	445	12	22	505	460	16	22	520	470	16	26	555	490	16	33
400	16"	540	495	16	22	565	515	16	26	580	525	16	30	620	550	16	36
450	18"	595	550	16	22	615	565	20	26	640	585	20	30	670	600	20	36
500	20"	645	600	20	22	670	620	20	26	715	650	20	33	730	660	20	36
600	24"	755	705	20	26	780	725	20	30	840	770	20	36	845	770	20	39
700	28"	860	810	24	26	895	840	24	30	910	840	24	36	960	875	24	42
800	32"	975	920	24	30	1015	950	24	33	1025	950	24	39	1085	990	24	48
900	36"	1075	1020	24	30	1115	1050	28	33	1125	1050	28	39	1185	1090	28	48
1000	40"	1175	1120	28	30	1230	1160	28	36	1255	1170	28	42	1320	1210	28	56
1200	48"	1450	1340	32	33	1455	1380	32	39	1485	1390	32	48	1530	1420	32	56



Flange Standard		GB/T9119 PN 6				GB/T9119 PN 10				GB/T9119 PN 16				GB/T9119 PN 25			
DN		D	k	n	l	D	k	n	l	D	k	n	l	D	k	n	l
mm	in.	mm	mm		mm	mm	mm		mm	mm	mm		mm	mm	mm		mm
25	1"	100	75	4	11	identical with PN 16				115	85	4	14	115	85	4	14
32	1 1/4"	120	90	4	14					140	100	4	18	140	100	4	18
40	1 1/2"	130	100	4	14					150	110	4	18	150	110	4	18
50	2"	140	110	4	14					165	125	4	18	165	125	4	18
65	2 1/2"	160	130	4	14					185	145	4	18	185	145	8	18
80	3"	190	150	4	18					200	160	8	18	200	160	8	18
100	4"	210	170	4	18					220	180	8	18	235	190	8	22
125	5"	240	200	8	18					250	210	8	18	270	220	8	26
150	6"	265	225	8	18					285	240	8	22	300	250	8	26
200	8"	320	280	8	18	340	295	8	22	340	295	12	22	360	310	12	26
250	10"	375	335	12	18	395	350	12	22	405	355	12	26	425	370	12	30
300	12"	440	395	12	22	445	400	12	22	460	410	12	26	485	430	16	30
350	14"	490	445	12	22	505	460	16	22	520	470	16	26	555	490	16	33
400	16"	540	495	16	22	565	515	16	26	580	525	16	30	620	550	16	36
450	18"	595	550	16	22	615	565	20	26	640	585	20	30	670	600	20	36
500	20"	645	600	20	22	670	620	20	26	715	650	20	33	730	660	20	36
600	24"	755	705	20	26	780	725	20	30	840	770	20	36	845	770	20	39
700	28"	860	810	24	26	895	840	24	30	910	840	24	36	960	875	24	42
800	32"	975	920	24	30	1015	950	24	33	1025	950	24	39	1085	330	24	48
900	36"	1075	1020	24	30	1115	1050	28	33	1125	1050	28	39				
1000	40"	1175	1120	28	30	1230	1150	28	36	1255	1170	28	42				
1200	48"	1405	1340	32	33	1455	1380	32	39	1485	1390	32	48				

Flange

Flange Standard		ANSI B 16.5 150 lb/sq. in						ANSI B 16.5 300 lb/sq. in.						
DN		D		k		n	l	ΦD		Φk		n	l	
mm	in.	mm	in.	mm	in.		mm in.	mm	in.	mm	in.		mm	in.
25	1"	108	4 1/2"	79.4	3 1/8"	4	15.9 5/8"	123.8	4 7/8"	88.9	3 1/2"	4	19	3/4"
32	1 1/4"	117.5	4 5/8"	88.9	3 1/2"	4	15.9 5/8"	133.4	5 1/4"	98.4	3 7/8"	4	19	3/4"
40	1 1/2"	127	5"	98.4	3 ⅞"	4	15.9 5/8"	155.6	6 1/8"	114.3	4 3/4"	4	22.2	3/4"
50	2"	152.4	6"	120.7	4 3/4"	4	19 3/4"	165.1	6 1/2"	127	5"	8	19	3/4"
65	2 1/2"	177.8	7"	139.7	5 1/2"	4	19 3/4"	190.5	7 1/2"	149.2	5 7/8"	8	22.2	7/8"
80	3"	190.5	7 1/2"	152.4	6"	4	19 3/4"	209.6	8 1/4"	168.3	6 5/8"	8	22.2	7/8"
100	4"	228.6	9"	190.5	7 1/2"	8	19 3/4"	254	10"	200	7 8/8"	8	22.2	7/8"
125	5"	254	10"	215.9	8 1/2"	8	22.2 7/8"	279.4	11"	235	9 1/4"	8	22.2	7/8"
150	6"	279.4	11"	241.3	9 1/2"	8	22.2 7/8"	317.5	12 1/2"	269.9	10 5/8"	12	22.2	7/8"
200	8"	342.9	13 1/2"	298.5	11 3/4"	8	22.2 7/8"	381	15"	330.2	13"	12	25.4	1"
250	10"	406.4	16"	361.9	14 1/4"	12	25.4 1"	444.5	17 1/2"	387.3	15 1/4"	16	28.6	1 1/8"
300	12"	482.6	19"	431.8	17"	12	25.4 1"	520.7	20 1/2"	450.8	17 3/4"	16	31.7	1 1/4"
350	14"	533.4	21"	476.2	18 3/4"	12	28.6 1 1/8"	584.2	23"	514.3	20 1/4"	20	31.7	1 1/4"
400	16"	596.9	23 1/2"	539.7	21 1/4"	16	28.6 1 1/8"	647.7	25 1/2"	571.5	22 1/2"	20	34.9	1 3/8"
450	18"	635	25"	577.9	22 3/4"	16	31.7 1 1/4"	711.2	28"	628.7	24 3/4"	24	34.9	1 3/8"
500	20"	698.5	27 1/2"	635	25	20	31.7 1 1/4"	774.7	30 1/2"	685.8	27"	24	34.9	1 3/8"
600	24"	812.8	32"	749.3	29 1/2"	20	34.9 1 3/8"	914.4	36"	812.8	32"	24	41.3	1 5/8"



Flange Standard		JIS 5K				JIS 10K				JIS 16K			
DN		D	k	n	l	D	k	n	l	D	k	n	l
mm	in.	mm	mm		mm	mm	mm		mm	mm	mm		mm
25	1"					125	90	4	19	125	90	4	19
32	1 1/4"	115	90	4	15	135	100	4	19	135	100	4	19
40	1 1/2"	120	95	4	15	140	105	4	19	140	105	4	19
50	2"	130	105	4	15	155	120	4	19	155	120	8	19
65	2 1/2"	155	130	4	15	175	140	4	19	175	140	8	19
80	3"	180	145	4	19	185	150	8	19	200	160	8	23
100	4"	200	165	8	19	210	175	8	19	225	185	8	23
125	5"	235	200	8	19	250	210	8	23	270	225	8	25
150	6"	265	230	8	19	280	240	8	23	305	260	12	25
200	8"	320	280	8	23	330	290	12	23	350	305	12	25
250	10"	385	345	12	23	400	355	12	25	430	380	12	27
300	12"	430	390	12	23	445	400	16	25	480	430	16	27
350	14"	480	435	12	25	490	445	16	25	540	480	16	33
400	16"	540	495	16	25	560	510	16	27	605	540	16	33
450	18"	605	555	16	25	620	565	20	27	675	605	20	27
500	20"	655	605	20	25	675	620	20	27	730	660	20	33
600	24"	770	715	20	27	795	730	24	33	845	770	24	39

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APPENDICES