KLINGER Portugal

LINED VALVES

High Corrosion Resistance

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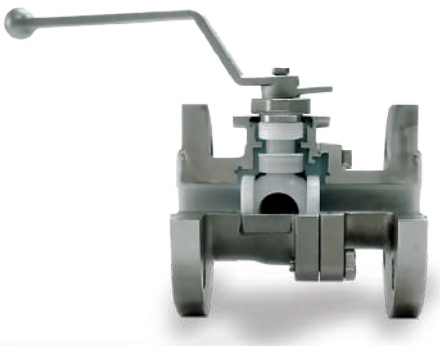
PRODUCT OVERVIEW
Lined Valves

LINED BALL VALVE
KHD-LB | LBTB

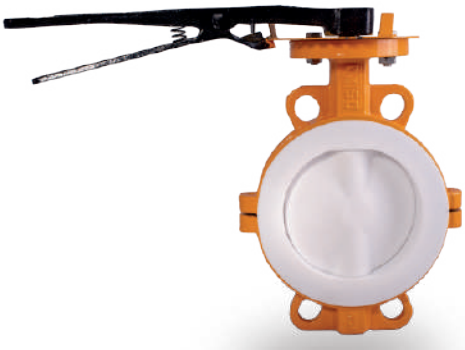


LINED BALL VALVE
KHY-LB | LBTB | LB3W

LINED PLUG VALVE
KPY-LPV | LPV3W

LINED CHECK VALVE
KRY-LBC | LLC | LSC

LINED BUTTERFLY VALVE
KKY-L81 | 81HP



SAUNDERS® DIAPHRAGM VALVE
LINED A TYPE

AREAS OF APPLICATION

General Manufacturing | Oil & Gas | Pulp & Paper | Pharma | Chemical

LINED VALVES
Fluorine Plastic Performance

KLINGER Portugal

PERFORMANCE	ITEM		PTFE F4	PVDF F2	FEP F46	PFA PFA	PO PO	PE PE	PP PP
Physical Performance	Specifc Gravity	g/cm3	2.1-2.2	1.76	2.1-2.2	2.1-2.2	0.92	0.92	0.92
	Water absorpion	%	0.001~0.005	0.04	≤0.01	≤0.01	0.005	0.005	0.005
	Shrinkage rate of finished product	%	1~5	2.0	2~5	1~5	1~2	1~2	1~2
	Embrittlement coefficient	10-5/K	10~12	8.5~15.3	8.3~10.5	8.3~12	-	-	-
	Embrittlement temperature T1	°C	-180~-195	-62	-260	-180~-195	-40	-40	-20
	Hot resistance T2	°C	260	150	204	260	100	100	100
Mechanical Performace	Hardness	SOSIXO	D50-65	D80	(R45)	D50-65	D40	D40	D40
	Friction coeffi cient f	-	0.06	0.14-0.17	0.06-0.11	0.06-0.11	-	-	-
	Tensile strength σ b	MPa	13.7-24.5	45-48.3	20.0-24.5	14-28	≥10	6.9-14	7.5-14
	Bending strength σ w	MPa	10.7-13.7	-	-	15-28	-	-	-
	Compression strength σ y	MPa	111	68.6	-	111	-	-	-
	Impact strength σ k	KJ/m2	16	19.7	Continuous	1 +	-55	45	50
	Ultimate elongation △λ	%	250-350	30-300	250-270	300-500	480	300-600	600-700
	Breakdown voltage v	KV/mm	25~40	10.2	40	25~40	-	-	-
Processing Performace	Compression molding		Good	Good	Good	Good	Good	Good	Good
	Injection molding		-	Good	Good	Good	Good	Good	Good
	Lamination		Good	Good	Good	Good	Good	Good	Good
	Lamination		Good	Good	Good	Good	Good	Good	Good

» CORROSION RESISTANCE PERFORMANCE (THEORETICAL REFERENCE)

MEDIUM	CONCEN-TRATION(%)	TEMPERATURE (°C)	PTFE	PVDF	FEP	PFA	PO	PE	PP
Sulfuric acid	10~98	Normal temp.-100	A	A~B	A	A	Concentration≤50%	Concentration≤60%	A
Nitric acid	5~98	Normal temp.~100	A	A	A	A	Concentration≤30%	Concentration≤60%	A
Hydrochloric acid	10~38	Normal temp.~100	A	A	A	A	Concentration≤38%	Concentration≤60%	A~B
Acetic acid	10~100	Normal temp.~100	A	A~B	A	A	Concentration≤10%	Concentration≤60%	A
Chromic acid	50~100	Normal temp.~70	A	A~B	A	A	Concentration≤30%	Concentration 20%	A
Phosphoric acid	50~85	Normal temp.~100	A~B	D	A~B	A~B	Concentration≤85%	Concentration≤80%	A
Trichloro-methane	100	Normal temperature	C	B	C	C	X	X	X
Coppersulfate	15	Normal temperature	A	C	A	A	Concentration≤90%	Concentration≤80%	A
Diethyl ether	100	Normal temperature	B	C	B	B	X	X	X
Ethyl acetate	100	Normal temperature	B	A	B	B	X	X	X
Petrol	100	Normal temperature	A	A~B	A	A	X	X	X
Hydrogen peroxide	3~30	Normal temperature	A	A	A	A	Concentration≤30%	Concentration≤60%	A
Nitrobenzene	100	Normal temperature	A	A~B	A	A	X	X	X
Superalkali	10-50	Normal temp.~100	A	A	A	A	Concentration≤80%	Concentration≤60%	A
Sodium Hypochlorite	-	70	A	B	A	A	Concentration≤80%	Concentration≤60%	A~B
Hydroxyl acid	40~99	-10~30	A~B	B	A~B	A~B	Concentration≤80%	Concentration≤60%	A~B
Oleum	20	Normal temperature	A	B	A	A	X	X	X
Acrylonitrile	-	Normal temperature	B	C	B	B	-	-	-
Aniline	100	Normal temperature	B	B	B	B	Concentration≤60%	Concentration≤20%	B
Benzene	100	Normal temperature	B	C	B	B	X	X	X
Butyl acetate	100	Normal temperature	B	C	B	B	Concentration≤60%	Concentration≤20%	B
Tetrachloromethane	Reagent grade	Normal temperature	B	C	B	B	X	X	X

Data indicated are theoretical value for reference. Depending on valve type and DN size, temperature limitation may be reduced accordingly.
A = Excellent, B = Good, C = OK, D = Poor. Many factors influence corrosion rating such as temperature fluctuation, concentration and aeration of fluids, high velocity or abrasions in the fluid steam, etc. The physical properties of material are affected differently by each corrosive media and sometimes it is inevitable one property is sacrificed for gain in another property. The corrosion data is provided as a comprehensive theoretical guide indicating the possible range, user must consider all parameters and exercise sound engineering judgment in material selection.

PFA LINED BALL VALVE KLINGER KHD-LB | LBTB PN16

Flanged connection

GENERAL FEATURES

- PFA lining offers highest corrosion resistances.
- Full bore offers high KV value equal to the pipeline.
- One piece ball-stem design, no possibility of damaging PFA lining on ball due to stem movement.
- All lining parts must pass spark test with 15KV high voltage, to ensure no air pathway within lining parts.
- Integral mounting pad design ensure no external force exerted on packing or valve top cap position, which might lead to enlargement and inconsistency of valve output torque.

AUTOMATION

- Flange connection in accordance with ISO 5211, allows for assembly of an actuator by means of brackets. Pneumatic and electrical actuators utilizable.

CONNECTIONS

- Flange in acc. with EN 1092-1

DIMENSIONS

- LB: Face to Face Dimension in acc. with EN 558-1 Series 1
- LBTB: Face to Face Dimension in acc. with manufacturer´s standard

ACCEPTANCE TESTING

- Shell strength:
  LB: EN 12266-1 P10
  LBTB: API 598
- Shell tightness:
  LB: EN 12266-1 P11
  LBTB: API 598
- Seat leak tightness: ISO 5208 Rate A
- Spark Test: Tested by electrostatic spark at 15K volts, scanning along the surface of the liner at a speed of 50mm/s. Charge breakdown is not allowed.

TEMPERATURE

- PFA-lined: -20 °C to +200 °C
- FEP-lined: -20 °C to +150 °C

STANDARD

- Steel casting 1.0619 (Material code VIII)
- Stainless steel casting 1.4308 (Material code Xc)

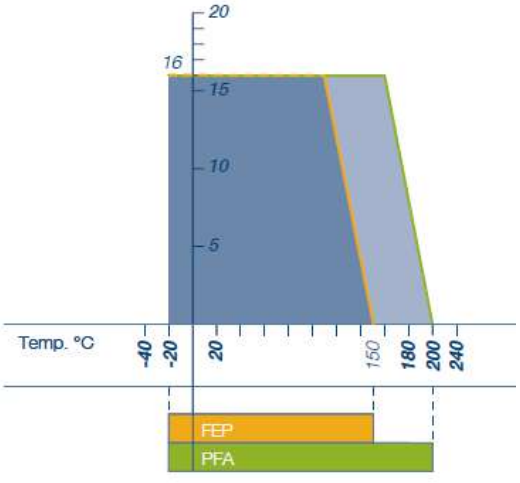
PRESSURE AND TEMPERATURE CHART

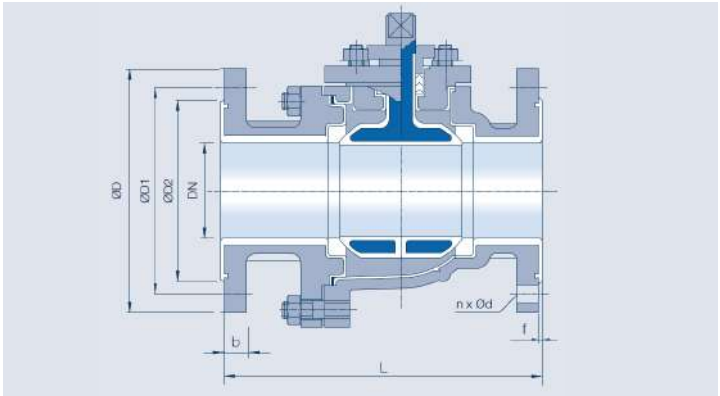
- Material code Xc/VIII

Maximum for PFA

Maximum for FEP

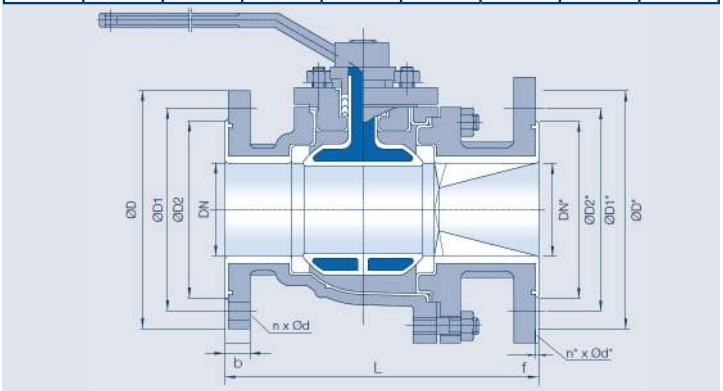
PN - Pressure (bar)
(1 bar = 0.1 MPa)





KHD-LB PN16 DIMENSIONS

DN	L	D	D1	D2	n x ø d	b	f	kg
15	130	95	65	45	4x14	16	2	3.5
20	150	105	75	58	4x14	18	2	4
25	160	115	85	68	4x14	18	2	5.5
32	180	140	100	78	4x18	18	2	7
40	200	150	110	88	4x18	18	2	9
50	230	165	125	102	4x18	18	2	15.5
65	290	185	145	122	8x18	18	2	19.5
80	310	200	160	138	8x18	20	2	30
100	350	220	180	158	8x18	20	2	40
150	480	285	240	215	8x22	27	2	57
200	600	340	295	265	12x22	29	2	73.5



KHD-LBTB PN16 DIMENSIONS

DN	L	D	D1	D2	n x ø d	b	f
25/40*	140	115/130*	85/100*	68/80*	4 x 14/4* x 14*	18/18*	2/2
25/50*	140	115/140*	85/110*	68/90*	4 x 14/4* x 14*	18/18*	2/2
32/50*	165	140/140*	100/110*	78/80*	4 x 18/4* x 14*	18/18*	2/2
32/65*	165	140/160*	100/130*	78/110*	4 x 18/4* x 14*	18/18*	2/2
40/80*	170	150/190*	110/150*	88/128*	4 x 18/4* x 14*	18/18*	2/2
40/100*	170	150/210*	110/170*	88/148*	4 x 18/4* x 18*	18/18*	2/2
40/125*	170	150/240*	110/200*	88/178*	4 x 18/8* x 18*	18/18*	2/2
50/80*	190	165/190*	125/150*	102/128*	4 x 18/4* x 18*	18/20*	2/2
50/100*	190	165/210*	125/170*	102/148*	4 x 18/4* x 18*	18/20*	2/2
50/125*	190	165/240*	125/200*	102/178*	4 x 18/8* x 18*	18/20*	2/2
50/150*	190	165/265*	125/225*	102/202*	4 x 18/8* x 18*	18/20*	2/2
65/100*	220	185/210*	145/170*	122/148*	4 / 8 x 18/8* x 18*	18/20*	2/2
65/125*	220	185/240*	145/200*	122/178*	4 / 8 x 18/8* x 18*	18/20*	2/2
80/100*	245	200/210*	160/170*	138/148*	8 x 18/4* x 18*	20/20*	2/2
80/125*	245	200/240*	160/200*	138/178*	8 x 18/8 *x 18*	20/20*	2/2
80/150*	245	200/265*	160/225*	138/202*	8 x 18/8* x 18*	20/20*	2/2

* Note: Dimensions of Tank bottom side are in accordant with manufacturer's standard.

PFA LINED BALL VALVE
KLINGER KHD-LB | CL150 / CL300

Flanged connection

GENERAL FEATURES

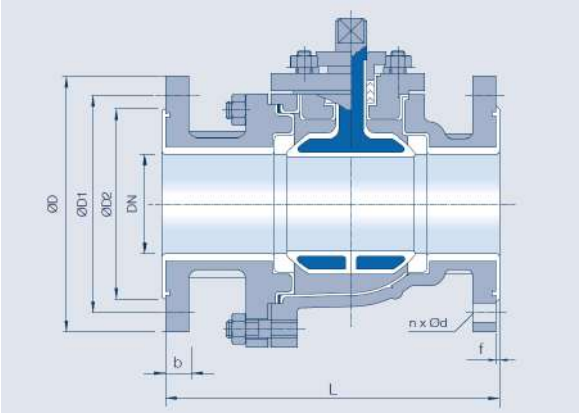
- PFA lining offers highest corrosion resistances.
- Full bore offers high KV value equal to the pipeline.
- One piece ball-stem design, no possibility of damaging PFA lining on ball due to stem movement.
- All lining parts must pass spark test with 15KV high voltage, to ensure no air pathway within lining parts.
- Integral mounting pad design ensure no external force exerted on packing or valve top cap position, which might lead to enlargement and inconsistency of valve output torque.

AUTOMATION

- Flange connection in accordance with ISO 5211, allows for assembly of an actuator by means of brackets. Pneumatic and electrical actuators utilizable.

CONNECTIONS

- Flange in acc. with ASME B16.5



CL150 DIMENSIONS								
NPS	L	D	D1	D2	n x ø d	b	f	kg
1/2	108	90	60.5	35	4x15	12.5	2	3.5
3/4	117	100	70.0	43	4x15	13	2	4
1	127	110	79.5	51	4x15	13	2	5.5
1 1/4	140	115	89.0	63.5	4x15	15	2	7
1 1/2	165	125	98.5	73	4x15	17	2	9
2	178	150	120.5	92	4x19	18.5	2	15.5
2 1/2	190	180	140	105	4x19	20	2	19.5
3	203	190	152.5	127	4x19	21.5	2	30
4	229	230	190.5	157	8x19	26.5	2	40
6	267	280	241.5	216	8x22	27	2	57
8	292	345	298.5	270	8x22	29	2	73.5

CL300 DIMENSIONS							
DN	L	D	D1	D2	n x ø d	b	f
1/2	140	95	66.7	35	4 x15.9	14.7	2
3/4	152	115	82.6	43	4x19	16.3	2
1	165	125	88.9	51	4x19	17.9	2
1 1/4	178	135	98.4	63.5	4x19	19.5	2
1 1/2	190	155	114.3	73	4x22	21.1	2
2	216	165	127	92	8x19	22.7	2
2 1/2	241	190	149.2	104.8	8x22	25.9	2
3	282	210	168.3	127	8x22	29.0	2
4	305	255	200	157.2	8x22	32.2	2
6	403	320	235	216	12x22	37.0	2
8	502	380	269.9	270	12x25.4	41.7	2

DIMENSIONS

- Face to Face Dimension in acc. with ASME B16.10

ACCEPTANCE TESTING

- Shell strength:
- Shell tightness:
- Seat leak tightness: ISO 5208 Rate A
- Spark Test: Tested by electrostatic spark at 15K volts, scanning along the surface of the liner at a speed of 50mm/s. Charge breakdown is not allowed.

TEMPERATURE

- PFA-lined: -20 °C to +200 °C
- FEP-lined: -20 °C to +150 °C

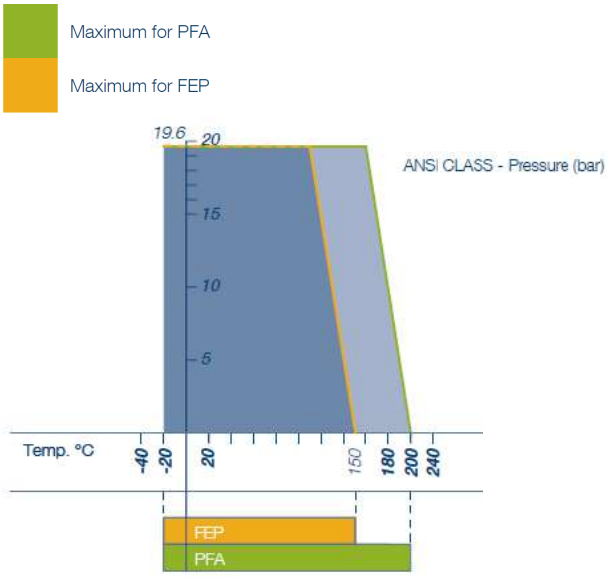
STANDARD

- Steel casting WCB (Material code VIII)
- Stainless steel casting CF8 (Material code Xc)

CL150

PRESSURE AND TEMPERATURE CHART

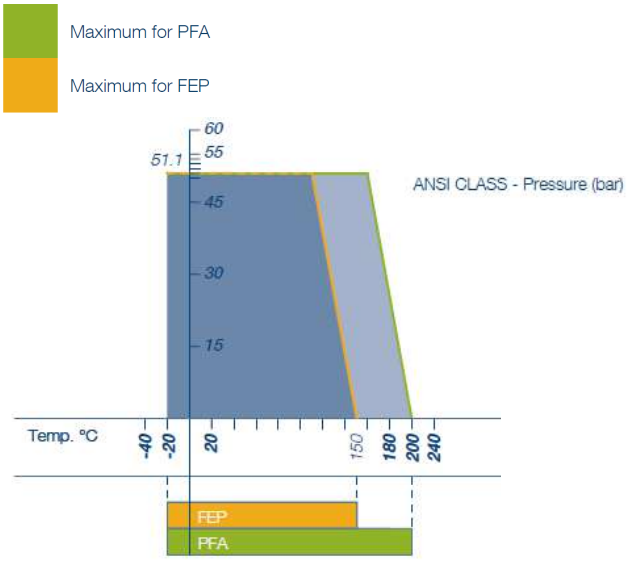
- Material code Xc/VIII



CL300

PRESSURE AND TEMPERATURE CHART

- Material code Xc/VIII



LINED BALL VALVE
KLINGER KHY-LB

2-Piece Lined Flanged Ball Valve DN15-DN350 | 1/2”-14”

» **BODY MATERIAL**
ASTM CF8M, CF8, CF3,CF3M, WCB

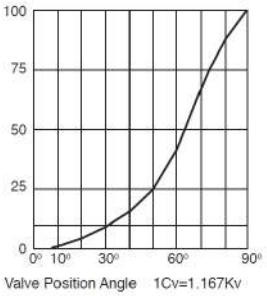
» **SIZE RANGE**
DN: 15 - 350 | NPS: 1/2“ - 14“

» **PRESSURE RATING**
PN6*, PN10*, PN16*, PN25*, CL150, JIS10K

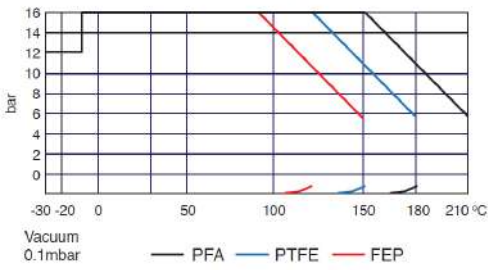
» **END CONNECTION**
Flanged

» **LINING MATERIAL**
PFA, FEP, PO

Flow Characteristic

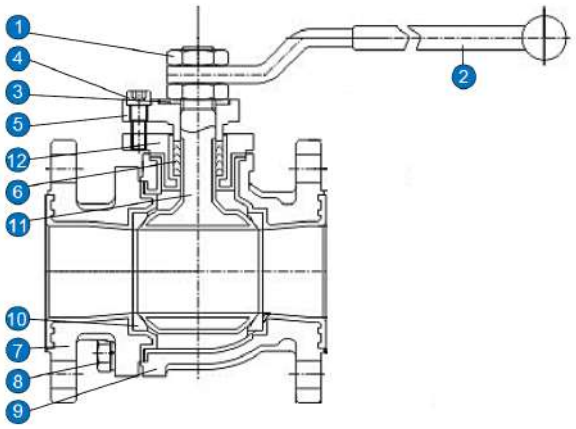


Pressure Temperature Curve



» **MATERIAL LIST**

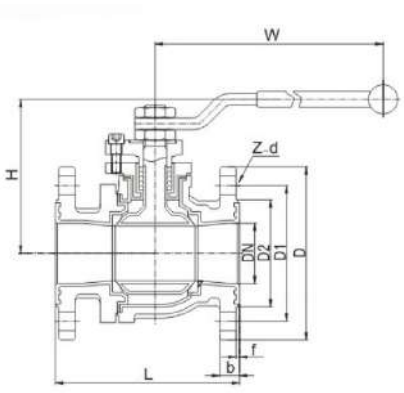
N°	NAME	MATERIAL		
1	Nut	A194 2H	A194 8	A194 8M
2	Lever	A216 WCB	A351 CF8/A351 CF8M	A351 CF3 / A351 CF3M
3	Locating Plate	25#, SS304		
4	Gland bolt	A193 B7	A320 B8	A193 B8M
5	Gland	A216 WCB	A351 CF8/A351 CF8M	A351 CF3 / A351 CF3M
6	Packing	PTFE		
7	Cap	A216 WCB+Lining	A351 CF8 CF8M+Lining	A351 CF3 CF3M+Lining
8	Body bolt	A193 B7	A320 B8	A193 B8M
9	Body	A216 WCB+Lining	A351 CF8 CF8M+Lining	A351 CF3 CF3M+Lining
10	Seat	PTFE, RPTFE, PEEK		
11	Ball/stem	A216 WCB+Lining	A351 CF8 CF8M+Lining	A351 CF3 CF3M+Lining
12	Bonnet	A216 WCB+Lining	A351 CF8 CF8M+Lining	A351 CF3 CF3M+Lining

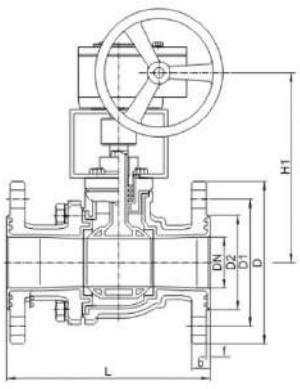


» **TECHNICAL SPECIFICATION:**

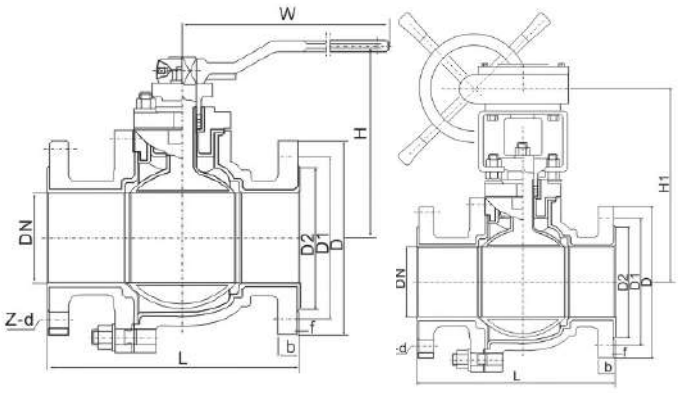
Design & Manufacture Standard		Manufacturer Std.		Manufacturer Std.
Face-to-face Dimension Standard		Manufacturer Std.		ASME B16.10
Flange Standard		EN 1092-1		ASME B16.5, JIS B2220
Inspection and Test Standard		See below*		
Nominal Diameter		DN15-DN350		1/2”-14”
Nominal Pressure (MPa)		1.0	1.6	CLASS 150
Hressure Test (MPa)	**Shell Test**	1.5	1.5	1.5
	High Pressure Sealing	1.1	1.1	1.1
	Low Pressure Sealing	0.6	0.6	0.6
Temperature Range (°C)		PFA: -30~200, FEP:-30~150, PO:-10~80		
Applicable Medium		Strong corrosive medium i.e. hydrochloric acid, nitric acid, hydrofluoric acid, liquid chlorine, Sulfuric acid and aqua regia etc.		

Note: Standards indicated are general standard used as reference, some variations exist. Other standard or tests may be available on request for fee.





» KHY-LB CL150, 1/2"-10"



» KHY-LB PN10, DN15-DN350
PN16, DN15-DN350
PN16, DN15-DN300

CL 150 DIMENSIONS (mm)											
IN	L	D	D1	D2	Z-d	f	b	w	H	H1	Wt (Kg)
1/2"	110	89	60.5	35	4 -16	2	12	140	100	-	3.5
3/4"	117	98	70	43	4 -16	2	12	160	105	-	4
1"	127	108	79.5	51	4 -16	2	12	200	110	-	5.5
1¼"	140	117	89	64	4 -16	2	13	200	130	-	7
1½"	165	127	98.5	73	4 -16	2	15	220	135	-	9
2"	178	152	120.5	92	4 -19	2	16	220	145	-	15.5
2½"	190	178	139.5	105	4 -19	2	18	350	155	-	19.5
3"	203	190	152.5	127	4 -19	2	19	400	210	340	30
4"	229	229	190.5	157	8 -19	2	24	400	235	360	40
5"	254	254	216	186	8 - 22	3	24	550	255	405	57
6"	267	267	241.5	216	8 - 22	3	26	550	285	425	73.5
8"	292	292	298.5	270	8 - 22	3	29	-	328	505	121
10"	330	330	362	324	12 - 25	4	31	-	370	540	159

PN10* DIMENSIONS (mm)											
DN	L	D	D1	D2	Z-d	f	b	w	H	H1	Wt (Kg)
15	132	95	65	45	4 -14	2	14	140	100	-	3.5
20	142	105	75	55	4 -14	2	14	160	105	-	4
25	150	115	85	65	4 -14	2	14	200	110	-	5.5
32	165	140	100	78	4 -18	3	16	200	130	-	7
40	180	150	110	85	4 -18	3	16	220	135	-	9
50	200	165	125	100	4 -18	3	16	220	145	-	15.5
65	220	185	145	120	4 -18	3	18	350	155	-	19.5
80	250	200	160	135	8 -18	3	20	400	210	340	30
100	280	220	180	155	8 -18	3	20	400	235	360	40
125	320	250	210	185	8 - 18	3	22	550	255	405	56
150	360	285	240	210	8 - 23	3	24	550	285	425	72
200	400	340	295	265	8 - 23	3	26	-	328	505	119
250	450	395	350	320	12 - 23	4	28	-	370	540	155
300	500	445	400	368	12 - 23	4	29	-	-	-	202
350	610	505	460	428	16 - 23	5	29	-	-	-	245

PN16* DIMENSIONS (mm)											
DN	L	D	D1	D2	Z-d	f	b	w	H	H1	Wt (Kg)
15	132	95	65	45	4 -14	2	15	140	100	-	3.5
20	142	105	75	55	4 -14	2	16	160	105	-	4
25	150	115	85	65	4 -14	2	16	200	110	-	5.5
32	165	140	100	78	4 -18	3	16	200	130	-	7
40	180	150	110	85	4 -18	3	17	220	135	-	9
50	200	165	125	100	4 -18	3	18	220	145	-	15.5
65	220	185	145	120	4 -18	3	20	350	155	-	19.5
80	250	200	160	135	8 -18	3	22	400	210	340	30
100	280	220	180	155	8 -18	3	24	400	235	360	40
125	320	250	210	185	8 - 18	3	26	550	255	405	57
150	360	285	240	210	8 - 23	3	28	550	285	425	73.5
200	400	340	295	265	12 - 23	3	30	-	328	505	121
250	450	405	355	320	12 - 25	4	30	-	370	540	159
300	500	460	410	375	12 - 25	4	30	-	-	-	202
350	610	520	470	435	16 - 25	5	34	-	-	-	250

PN25* DIMENSIONS (mm)											
DN	L	D	D1	D2	Z-d	f	b	w	H	H1	Wt (Kg)
15	140	95	65	45	4 -14	2	16	140	100	-	3.5
20	152	105	75	55	4 -14	2	16	160	105	-	4
25	165	115	85	65	4 -14	2	16	200	110	-	5.5
32	178	140	100	78	4 -18	3	18	200	130	-	7
40	190	150	110	85	4 -18	3	18	220	135	-	9
50	216	165	125	100	4 -18	3	20	220	145	-	15.5
65	241	185	145	120	8 -18	3	22	350	155	-	19.5
80	283	200	160	135	8 -18	3	22	400	210	340	30
100	305	235	190	160	8 -23	3	24	400	235	360	44
125	381	270	220	188	8 - 25	3	28	550	255	405	63
150	403	300	250	218	8 - 25	3	30	550	285	425	79
200	419	360	310	278	12 - 25	3	34	-	328	505	124
250	457	425	370	332	12 - 30	4	36	-	370	540	162
300	500	485	490	390	16 - 30	4	42	-	510	-	220

*Note: Some dimensions do not fully conform to EU standards, please be sure to confirm.

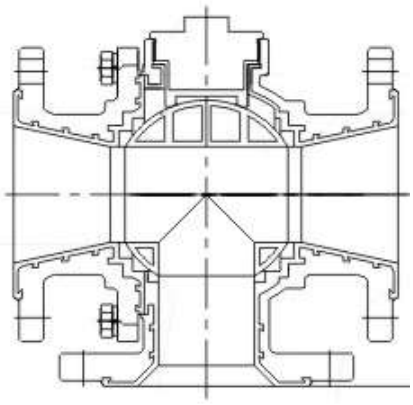
LINED BALL VALVE
KLINGER KHY-LB3W

Lined Three-Way Flanged Ball Valve DN25-DN150 | 1”-6”

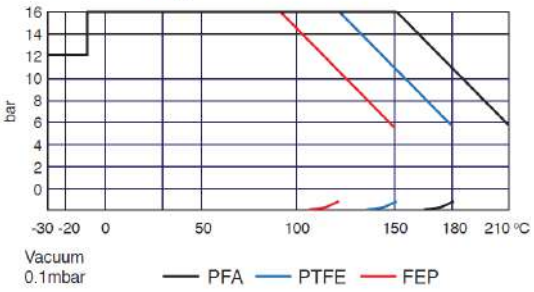
» TECHNICAL SPECIFICATION:

Design & Manufacture Standard		Manufacturer Std.		Manufacturer Std.
Face-to-face Dimension Standard		Manufacturer Std.		Manufacturer Std.
Flange Standard		EN 1092-1		ASME B16.5
Inspection and Test Standard		See below*		
Nominal Diameter		DN25-DN150		1”-6”
Nominal Pressure (MPa)		1.0	1.6	CLASS 150
Hressure Test (MPa)	Shell Test	1.5	1.5	1.5
	High Pressure Sealing	1.1	1.1	1.1
	Low Pressure Sealing	0.6	0.6	0.6
Temperature Range (°C)		PFA: -30~200, FEP:-30~150, PO:-10~80		
Applicable Medium		Strong corrosive medium i.e. hydrochloric acid, nitric acid, hydrofluoric acid, liquid chlorine, sulfuric acid and aqua regia etc.		

*Note: Standards indicated are general standard used as reference, some variations exist. Other standard or tests may be available on request for fee.

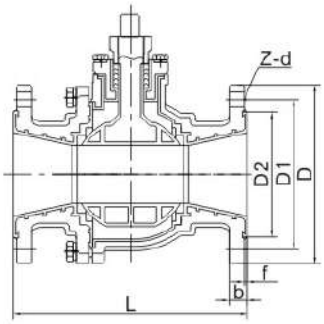


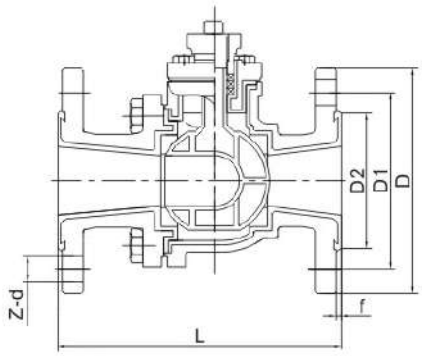
Pressure Temperature Curve



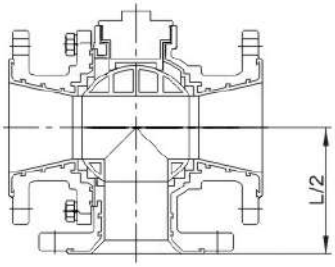
PN10* / PN16*DIMENSIONS (mm)							
DN	L	D	D1	D2	Z-d	f	b
25	165	120	85	65	4 -14	2	14
32	180	140	100	78	4 -18	3	16
40	200	150	110	85	4 -18	3	16
50	200	165	125	100	4 -18	3	16
65	240	185	145	120	4 -18	3	18
80	250	200	160	135	8 -18	3	20
100	280	220	180	155	8 -18	3	20
125	360	250	210	185	8 -18	3	22
150	370	285	240	210	8 -23	3	24

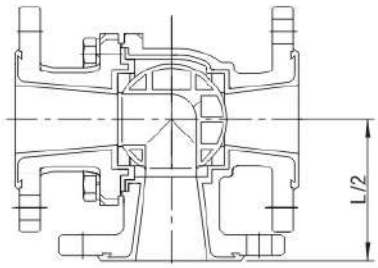
*Note: Some dimensions do not fully conform to EU standards, please be sure to confirm.

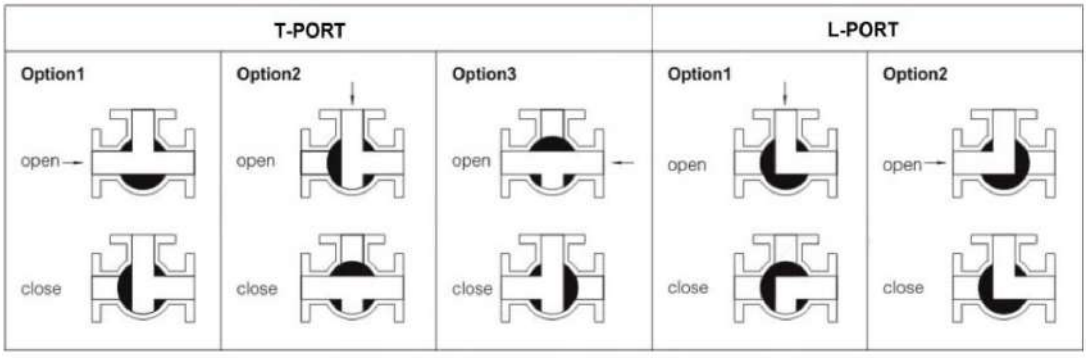




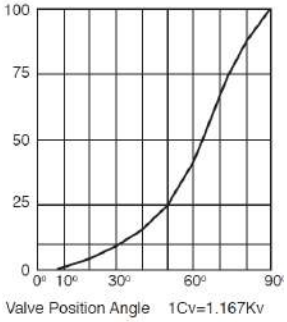
CL150 DIMENSIONS (mm)							
IN	L	D	D1	D2	Z-d	f	b
1”	165	108	79.5	51	4 -16	2	12
1¼”	180	117	89	64	4 -16	2	13
1½”	200	127	98.5	73	4 -16	2	15
2”	200	152	120.5	92	4 -19	2	16
2½”	240	178	138.5	105	4 -19	2	18
3”	250	190	152.5	127	4 -19	2	19
4”	280	229	190.5	157	8 -19	2	24
5”	360	254	216	186	8 -22	3	24
6”	370	279	241.5	216	8 -22	3	26







Flow Characteristic



LINED BALL VALVE
KLINGER KHY-LBTB

Lined Tank Bottom Flanged Ball Valve PN10* DN25-DN200

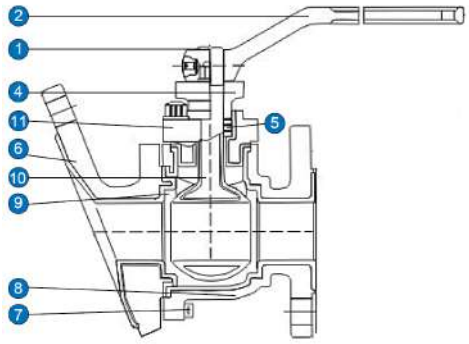
» **BODY MATERIAL**
ASTM CF8M, CF8, CF3,CF3M, WCB

» **SIZE RANGE**
DN: 25 - 200

» **PRESSURE RATING**
PN6, PN10

» **END CONNECTION**
Flanged

» **LINING MATERIAL**
PFA, FEP, PO



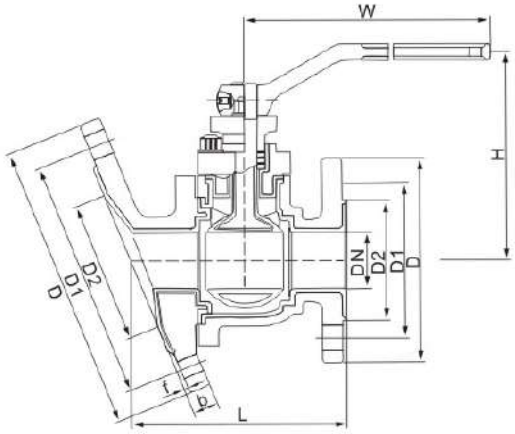
» **TECHNICAL SPECIFICATION:**

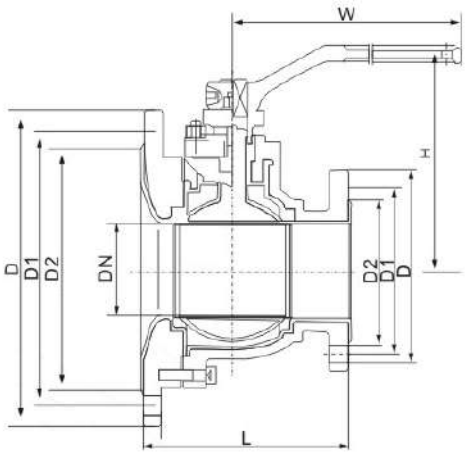
Design & Manufacture Standard		Manufacturer Std.		Manufacturer Std.
Face-to-face Dimension Standard		Manufacturer Std.		Manufacturer Std.
Flange Standard		EN 1092-1		ASME B16.5
Inspection and Test Standard		See below*		
Nominal Diameter		DN25-DN200		1"-8"
Nominal Pressure (MPa)		1.0	1.6	CLASS 150
Hressure Test (MPa)	Shell Test	1.5	1.5	1.5
	High Pressure Sealing	1.1	1.1	1.1
	Low Pressure Sealing	0.6	0.6	0.6
Temperature Range (°C)		PFA: -30~200, FEP:-30~150, PO:-10~80		
Applicable Medium		Strong corrosive medium i.e. hydrochloric acid, Nitric acid, Hydrofluoric acid, Liquid chlorine, Sulfuric Acid and Aqua regia etc.		

*Note: Standards indicated are general standard used as reference, some variations exist. Other standard or tests may be available on request for fee.

» **MATERIAL LIST**

N°	NAME	MATERIAL		
1	Nut	A194 2H	A194 8	A194 8M
2	Lever	A216 WCB	A351 CF8 A351 CF8M	A351 CF3 A351 CF3M
3	Locating Plate	1025, SS304		
4	Gland	A216 WCB	A351 CF8 | A351 CF8M	A351 CF3 | A351 CF3M
5	Packing	PTFE		
6	Cap	A216 WCB + Lining	A351 CF8 CF8M + Lining	A351 CF3 CF3M + Lining
7	Body bolt	A193 B7	A320 B8	A193 B8M
8	Body	A216 WCB + Lining	A351 CF8 CF8M + Lining	A351 CF3 CF3M + Lining
9	Seat	PTFE, RPTFE, PEEK		
10	Ball/stem	A216 WCB + Lining	A351 CF8 CF8M + Lining	A351 CF3 CF3M + Lining
11	Bonnet	A216 WCB + Lining	A351 CF8 CF8M + Lining	A351 CF3 CF3M + Lining





PN10* DIMENSIONS (mm)									
DN	L	D	D1	D2	Z-d	f	b	H	w
25/50	130	115/140	85/110	65/90	4-14/4-14	2/3	14/16	110	140
32/65	140	140/160	100/130	78/110	4-18/4-14	3/3	16/16	130	200
40/65	150	150/160	110/130	85/110	4-18/4-14	3/3	16/16	135	200
40/80	150	150/190	110/150	85/125	4-18/4-18	3/3	16/18	135	200
50/80	165	165/190	125/150	100/125	4-18/4-18	3/3	16/18	145	250
50/100	165	165/210	125/170	100/145	4-18/4-18	3/3	16/18	145	250
65/100	175	185/210	145/170	120/145	4-18/4-18	3/3	18/18	155	250
65/125	175	185/240	145/200	120/175	4-18/8-18	3/3	18/20	155	250
80/125	250	200/240	160/200	135/175	4-18/8-18	3/3	20/20	210	350
80/150	250	200/265	160/225	135/200	4-18/8-18	3/3	20/20	210	350
80/150	280	220/265	180/225	155/200	8-18/8-18	3/3	20/20	235	350
100/200	280	220/320	180/280	155/255	8-18/8-18	3/4	20/22	235	350

*Note: Some dimensions do not fully conform to EU standards, please be sure to confirm.

LINED CHECK VALVE KLINGER KRY

Lined Ball Check Valve
Lined Swing Check Valve
DN15-DN350 | 1/2”-14”

» **BODY MATERIAL**

ASTM CF8M, CF8, CF3,CF3M, WCB

» **SIZE RANGE**

Ball Check: DN: 15 - 150 | NPS: 1/2“ - 6“
Lift Check: DN: 15 - 350 | NPS: 1/2“ - 14“
Swing Check: DN: 15 - 350 | NPS: 1/2“ - 14“

» **PRESSURE RATING**

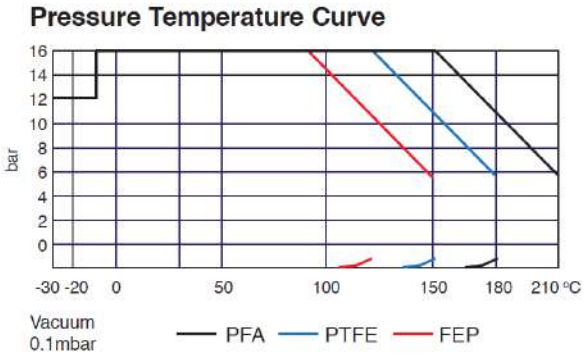
PN10*, PN16*, PN25*, CL150

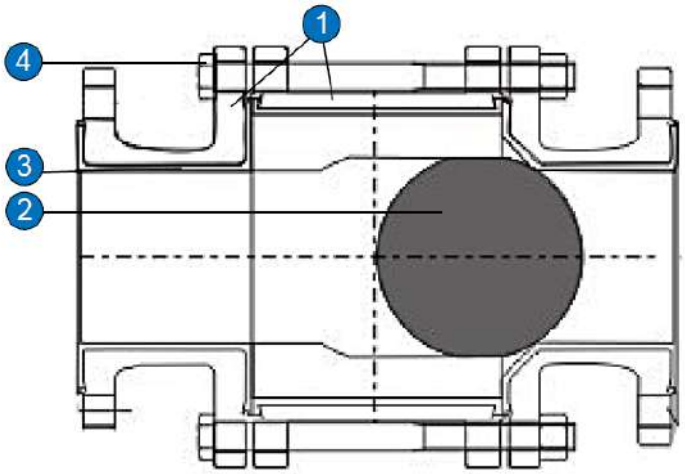
» **END CONNECTION**

Flanged, Wafer

» **LINING MATERIAL**

PFA, FEP, PO





» **MATERIAL LIST:**

N°	NAME	MATERIAL		
1	Body, disc, bonnet	A216 WCB+Lining	A351 CF8 / A351 CF8M + Lining	A351 CF3 / A351 CF3M + Lining
2	Ball	PTFE		
3	Lining material	FEP, PFA, PO		
4	Bolt	A193 B7	A320 B8	A193 B8M

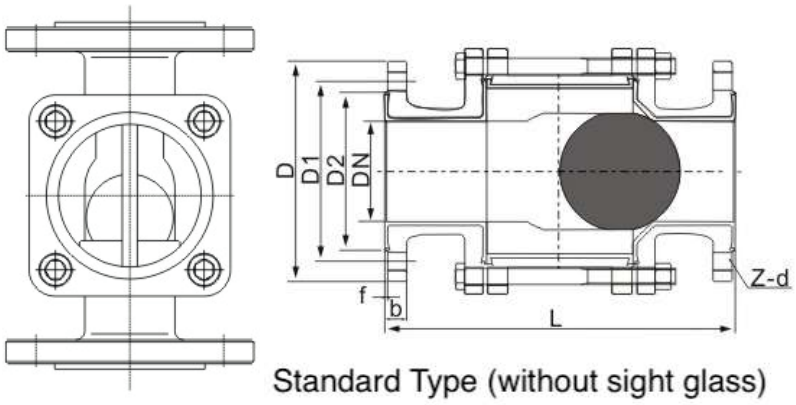
» **TECHNICAL SPECIFICATION:**

Design & Manufacture Standard		Manufacturer Std.		Manufacturer
Face-to-face Dimension Standard		EN 558 / MFG Std.		ASME B16.10
Flange Standard		EN 1092-1		ASME B16.5
Inspection and Test Standard		See below*		
Nominal Diameter		DN15-DN350		1/2”-14”
Nominal Pressure (MPa)		1.0	1.6	CLASS 150
Hressure Test (MPa)	**Shell Test**	1.5	1.5	1.5
	High Pressure Sealing	1.1	1.1	1.1
	Low Pressure Sealing	0.6	0.6	0.6
Temperature Range (°C)		PFA: -30~200, FEP:-30~150, PO:-10~80		
Applicable Medium		Strong corrosive medium i.e. hydrochloric acid, Nitric acid, Hydrofluoric acid, Liquid chlorine, Sulfuric Acid and Aqua regia etc.		

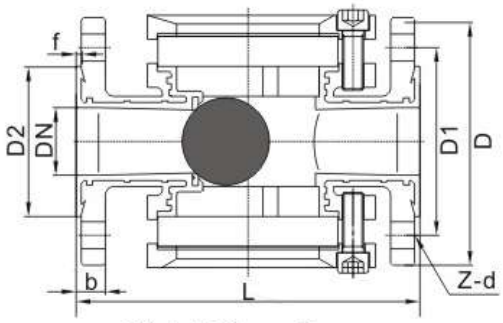
*Note: Standards indicated are general standard used as reference, some variations exist.
Other standard or tests may be available on request for fee.

LINED CHECK VALVE
KLINGER KRY-LBC

Lined Ball Check Valve
PN10*, DN15-DN150 | PN16*, DN15-DN150
PN25*, DN15-DN150 | CL150, 1/2”-6”



Standard Type (without sight glass)



Sight Glass Type

PN10* DIMENSIONS (mm)							
DN	L	D	D1	D2	Z-d	f	b
15	130	95	65	45	4 -14	2	14
20	150	105	75	55	4 -14	2	14
25	160	115	85	65	4 -14	2	14
32	180	140	100	78	4 -18	3	16
40	200	150	110	85	4 -18	3	16
50	230	165	125	100	4 -18	3	16
65	290	185	145	120	4 -18	3	18
80	310	200	160	135	8 -18	3	20
100	350	220	180	155	8 -18	3	20
125	400	250	210	185	8 -18	3	22
150	480	285	240	210	8 -23	3	24

PN16* DIMENSIONS (mm)							
DN	L	D	D1	D2	Z-d	f	b
15	130	95	65	45	4 -14	2	14
20	150	105	75	55	4 -14	2	14
25	160	115	85	65	4 -14	2	14
32	180	140	100	78	4 -18	3	16
40	200	150	110	85	4 -18	3	16
50	230	165	125	100	4 -18	3	16
65	290	185	145	120	4 -18	3	18
80	310	200	160	135	8 -18	3	20
100	350	220	180	155	8 -18	3	20
125	400	250	210	185	8 -18	3	22
150	480	285	240	210	8 -23	3	24

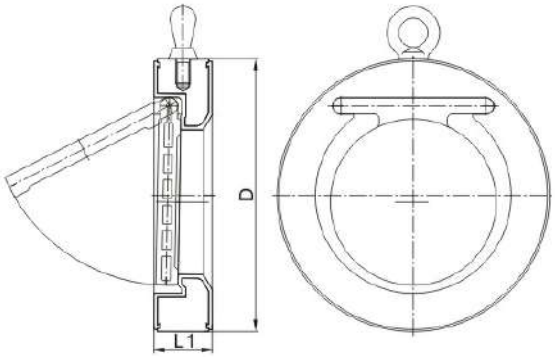
PN25* DIMENSIONS (mm)							
DN	L	D	D1	D2	Z-d	f	b
15	130	95	65	45	4 -14	2	16
20	150	105	75	55	4 -14	2	16
25	160	115	85	65	4 -14	2	16
32	180	140	100	78	4 -18	3	18
40	200	150	110	85	4 -18	3	18
50	230	165	125	100	4 -18	3	20
65	290	185	145	120	8 -18	3	22
80	310	200	160	135	8 -18	3	22
100	350	235	190	160	8 -23	3	24
125	400	270	220	188	8 -25	3	28
150	480	300	250	218	8 -25	3	30

CL150 DIMENSIONS (mm)							
IN	L	D	D1	D2	Z-d	f	b
1/2”	130	89	60.5	35	4 -16	2	12
3/4”	150	98	70.0	43	4 -16	2	12
1”	160	108	79.5	51	4 -16	2	12
1¼”	180	117	89.0	64	4 -16	2	13
1½”	200	127	98.5	73	4 -16	2	15
2”	230	152	120.5	92	4 -19	2	16
2½”	290	178	139.5	105	4 -19	2	18
3”	310	190	152.5	127	4 -19	2	19
4”	350	229	190.5	157	8 -19	2	24
5”	400	254	216.0	186	8 - 22	3	24
6”	480	279	241.5	216	8 - 22	3	26

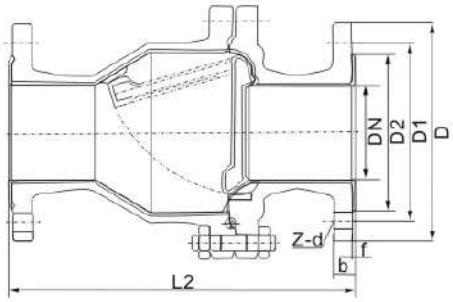
*Note: Some dimensions do not fully conform to EU standards, please be sure to confirm.

LINED CHECK VALVE
KLINGER KRY-LSC

Lined Swing Check Valve, Wafer/Flanged
PN10*, DN15-DN350 | PN16*, DN15-DN350 | PN25*, DN15-DN350 | CL150, 1/2”-14”



Wafer



Flanged

PN10* DIMENSIONS (mm)								
DN	L1	L2	D	D1	D2	Z-d	f	b
15	/	130	95	65	45	4 -14	2	14
20	/	150	105	75	55	4 -14	2	14
25	/	160	115	85	65	4 -14	2	14
32	/	180	140	100	78	4 -18	3	16
40	/	200	150	110	85	4 -18	3	16
50	43	230	165	125	100	4 -18	3	16
65	46	290	185	145	120	4 -18	3	18
80	46	310	200	160	135	4 -18	3	20
100	52	350	220	180	155	8 -18	3	20
125	56	400	250	210	185	8 -18	3	22
150	56	480	285	240	210	8 -23	3	24
200	60	495	340	295	265	8 -23	3	26
250	68	550	395	350	320	12 -23	4	28
300	78	620	445	400	368	12 -23	4	28
350	78	720	505	460	428	16 -23	5	28

PN25* DIMENSIONS (mm)								
DN	L1	L2	D	D1	D2	Z-d	f	b
15	/	130	95	65	45	4 -14	2	16
20	/	150	105	75	55	4 -14	2	16
25	/	160	115	85	65	4 -14	2	16
32	/	180	140	100	78	4 -18	3	18
40	/	200	150	110	85	4 -18	3	18
50	43	230	165	125	100	4 -18	3	20
65	46	290	185	145	120	8 -18	3	22
80	46	310	200	160	135	8 -18	3	22
100	52	350	230	190	160	8 -23	3	24
125	56	400	270	220	188	8 -25	3	28
150	56	480	300	250	218	8 -25	3	30
200	60	495	360	310	278	12 -25	3	34
250	68	550	425	370	332	12 -30	4	36
300	78	620	485	410	375	16 -30	4	39
350	78	720	550	490	448	16 -34	5	44

PN16* DIMENSIONS (mm)								
DN	L1	L2	D	D1	D2	Z-d	f	b
15	/	130	95	65	45	4 -14	2	14
20	/	150	105	75	55	4 -14	2	14
25	/	160	115	85	65	4 -14	2	14
32	/	180	140	100	78	4 -18	3	16
40	/	200	150	110	85	4 -18	3	16
50	43	230	165	125	100	4 -18	3	16
65	46	290	185	145	120	4 -18	3	18
80	46	310	200	160	135	8 -18	3	20
100	52	350	220	180	155	8 -18	3	20
125	56	400	250	210	185	8 -18	3	22
150	56	480	285	240	210	8 -23	3	24
200	60	495	340	295	265	12 -23	3	26
250	68	550	405	355	320	12 -25	4	28
300	78	620	460	410	375	12 -25	4	29
350	78	720	520	470	435	16 -25	5	34

CL150 DIMENSIONS (mm)								
IN	L1	L2	D	D1	D2	Z-d	f	b
1/2”	/	130	89	60.5	35	4-16	2	12
3/4”	/	150	98	70.0	43	4-16	2	12
1”	/	160	108	79.5	51	4-16	2	12
1¼”	/	180	117	89.0	64	4-16	2	13
1½”	/	200	127	98.5	73	4-16	2	15
2”	43	230	152	120.5	92	4-19	2	16
2½”	46	290	178	139.5	105	4-19	2	18
3”	46	310	190	152.5	127	4-19	2	19
4”	52	350	229	190.5	157	8-19	2	24
5”	56	400	254	216.0	186	8-22	3	24
6”	56	480	279	241.5	216	8-22	3	26
8”	60	495	343	298.5	270	8-22	3	29
10”	68	550	406	362.0	324	12-25	3	31
12”	78	620	482.6	431.8	381	12-25	4	34.7
14”	78	720	533.4	476.2	412.7	12-29	5	39

*Note: Some dimensions do not fully conform to EU standards, please be sure to confirm.

LINED PLUG VALVE KLINGER KPY-LPV

Lined 2-way & 3-way Plug Valve DN15~DN250 | 1/2”~10”

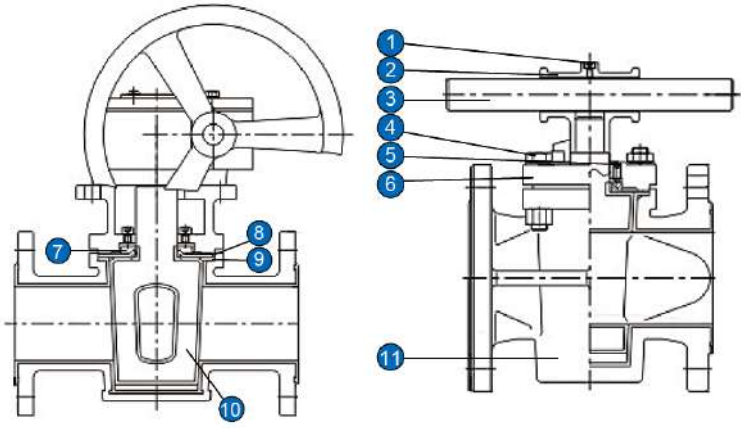
» **BODY MATERIAL**
ASTM CF8M, CF8, WCB

» **SIZE RANGE**
DN: 15 - 250
NPS: 1/2“ - 10“

» **PRESSURE RATING**
PN10*, PN16*, CL150, CL300

» **END CONNECTION**
Flanged

» **LINING MATERIAL**
PFA, FEP, PO



» **MATERIAL LIST**

N°	NAME	MATERIAL		
1	Body bolt	A193 B7	A320 B8	A193 B8M
2	Handle seat	A216 WCB	A351 CF8	A351 CF8M
3	Operation rod	1025 SS304		
4	Top cap bolt	A193 B7	A320 B8	A193 B8
5	Adjusting screw	A193 B7	A320 B8	A193 B8M
6	Bonnet	A216 WCB	A351 CF8	A351 CF8M
7	Metal gasket	SS304		
8	V-shape gasket	PTFE		
9	Wedge ring	PTFE		
10	Plug	A216WCB +Lining	A351 CF8+ Lining	A351 CF8M +Lining
11	Body	A216 WCB +Lining	A351 CF8+ Lining	A351 CF8M +Lining

» **TECHNICAL SPECIFICATION:**

Design & Manufacture Standard		Manufacturer Std.		API 6D
Face-to-face Dimension Standard		EN 558 Series 1/3		ASMEB16.10
Flange Standard		EN 1092-1		ASMEB16.5
Inspection and Test Standard		See below*		
Nominal Diameter		DN15-DN250		1/2”-10”
Nominal Pressure (MPa)		1.0	1.6	CLASS 150
Hressure Test (MPa)	Shell Test	1.5	1.5	1.5
	High Pressure Sealing	1.1	1.1	1.1
	Low Pressure Sealing	0.6	0.6	0.6
Temperature Range (℃)		PFA: -30~200, FEP:-30~150		
Applicable Medium		Strong corrosive medium i.e. hydrochloric acid, Nitric acid, Hydrofluoric acid, Liquid chlorine, Sulfuric Acid and Aqua regia etc.		

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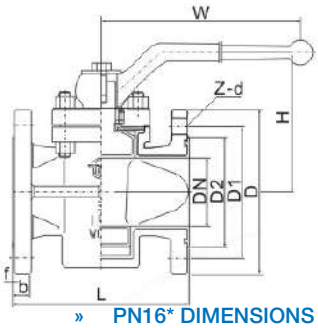
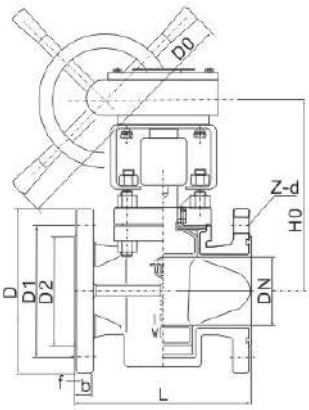
Lined 2-way Plug Valve PN10*, DN15-DN250 PN16*, DN15-DN250





» **PN10* DIMENSIONS (MM):**

DN	L	D	D1	D2	Z-d	f	b	H	W	H0
15	110	95	65	45	4-14	2	14	85	180	-
20	117	105	75	55	4-14	2	14	88	180	-
25	127	115	85	65	4-14	2	14	98	260	-
32	140	140	100	78	4-18	3	16	101	260	-
40	165	150	110	85	4-18	3	16	128	320	-
50	178	165	125	100	4-18	3	16	128	320	-
65	190	185	145	120	4-18	3	18	135	320	-
80	203	200	160	135	8-18	3	20	164	400	322
100	229	220	180	155	8-18	3	20	178	400	332
125	254	250	210	185	8-18	3	22	205	-	385
150	267	285	240	210	8-23	3	24	220	-	405
200	292	340	295	265	8-23	3	26	-	-	455
250	330	395	350	320	12-23	4	28	-	-	490

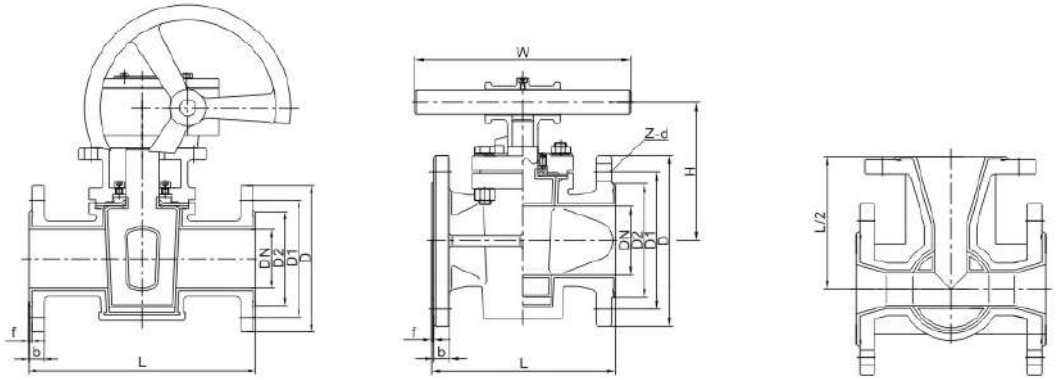
» **PN16* DIMENSIONS (MM):**

DN	L	D	D1	D2	Z-d	f	b	H	W	H0
15	110	95	65	45	4-14	2	14	85	180	-
20	117	105	75	55	4-14	2	14	88	180	-
25	127	115	85	65	4-14	2	14	98	260	-
32	140	140	100	78	4-18	3	16	101	260	-
40	165	150	110	85	4-18	3	16	128	320	-
50	178	165	125	100	4-18	3	16	128	320	-
65	190	185	145	120	4-18	3	18	135	320	-
80	203	200	160	135	8-18	3	20	164	400	322
100	229	220	180	155	8-18	3	20	178	400	332
125	254	250	210	185	8-18	3	22	205	-	385
150	267	285	240	210	8-23	3	24	220	-	405
200	292	340	295	265	12-23	3	26	-	-	455
250	330	405	355	320	12-26	4	28	-	-	490

*Note: Some dimensions do not fully conform to EU standards. Please be sure to confirm.

LINED PLUG VALVE
KLINGER KPY-LPV3W

Lined 3-way Plug Valve
PN10*, DN25-DN150 | PN16*, DN25-DN150



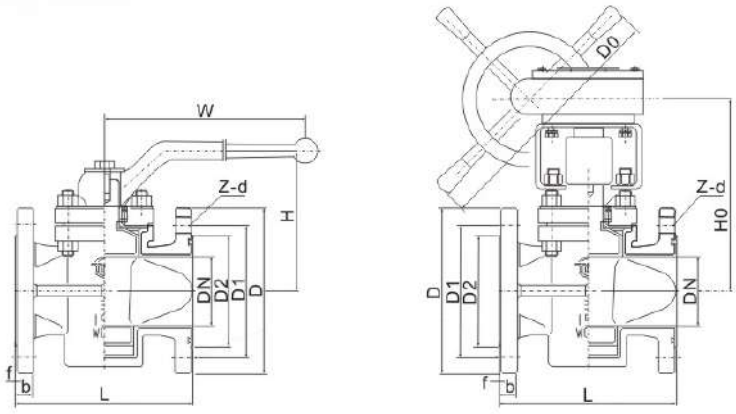
» PN10* Dimensions (mm):

DN	L	D	D1	D2	Z-d	f	b	H	W	H0
25	160	115	85	65	4 - 14	2	14	98	260	-
32	180	140	100	78	4 - 18	3	16	101	260	-
40	200	150	110	85	4 - 18	3	16	128	320	-
50	230	165	125	100	4 - 18	3	16	128	320	-
65	290	185	145	120	4 - 18	3	18	135	320	-
80	310	200	160	135	8 - 18	3	20	164	400	322
100	350	220	180	155	8 - 18	3	20	178	400	332
125	400	250	210	185	8 - 18	3	22	205	-	385
150	480	285	240	210	8 - 23	3	24	220	-	405

» PN16* Dimensions (mm):

DN	L	D	D1	D2	Z-d	f	b	H	W	H0
25	160	115	85	65	4 - 14	2	14	98	260	-
32	180	140	100	78	4 - 18	3	16	101	260	-
40	200	150	110	85	4 - 18	3	16	128	320	-
50	230	165	125	100	4 - 18	3	16	128	320	-
65	290	185	145	120	4 - 18	3	18	135	320	-
80	310	200	160	135	8 - 18	3	20	164	400	322
100	350	220	180	155	8 - 18	3	20	178	400	332
125	400	250	210	185	8 - 18	3	22	205	-	385
150	480	285	240	210	8 - 23	3	24	220	-	405

*Note: Some dimensions do not fully conform to EU standards, please be sure to confirm.



» CL150 Dimensions (mm):

IN	DN	L	D	D1	D2	Z-d	f	b	H	w	H0
1/2"	15	110	89	60.5	35	4-16	2	11	85	180	-
3/4"	20	117	98	70.0	43	4-16	2	13	88	180	-
1"	25	127	108	79.5	51	4-16	2	14	98	260	-
1¼"	32	140	117	89.0	64	4-16	2	15.7	101	260	-
1½"	40	165	127	98.5	73	4-16	2	17.5	128	320	-
2"	50	178	152	120.5	92	4-19	2	19	128	320	-
2½"	65	190	178	139.5	105	4-19	2	22	135	320	-
3"	80	203	190	152.5	127	4-19	2	24	164	400	322
4"	100	229	229	190.5	157	8-19	2	24	178	400	332
5"	125	254	254	216.0	186	8-22	3	24	205	-	385
6"	150	267	279	241.5	216	8-22	3	25.4	220	-	405
8"	200	292	343	298.5	270	8-22	3	28.5	-	-	455
10"	250	330	406	362.0	324	12-25	3	30	-	-	490

» CL300 Dimensions (mm):

IN	DN	L	D	D1	D2	Z-d	f	b	H	w	H0
1/2"	15	140	95	66.5	35	4 -16	2	14	85	180	-
3/4"	20	152	117	82.5	43	4 -19	2	15.7	88	180	-
1"	25	165	124	89.0	51	4 -19	2	17.5	98	260	-
1¼"	32	178	133	98.5	64	4 -19	2	19	101	260	-
1½"	40	190	156	114.5	73	4 -22	2	20.5	128	320	-
2"	50	216	165	127.0	92	8 -19	2	22.4	128	320	-
2½"	65	241	190	149.0	105	8 -22	2	25.4	135	320	-
3"	80	283	210	168.5	127	8 -22	2	28.4	164	400	322
4"	100	305	254	200.0	157	8 -22	2	32	178	400	332
5"	125	381	279	235.0	186	8 -22	3	35	205	-	385
6"	150	403	318	270.0	216	12 - 22	3	36.6	220	-	405
8"	200	419	381	330.0	270	12 - 25	3	41	-	-	455
10"	250	457	445	387.5	324	16 - 29	3	47.8	-	-	490

LINED BUTTERFLY VALVE KLINGER KKY-L81

PTFE-Lined Butterfly Valve
DN40-DN500 | 1½”-20”

» **BODY MATERIAL:**
ASTM CF8M, CF8, CF3,CF3M, WCB

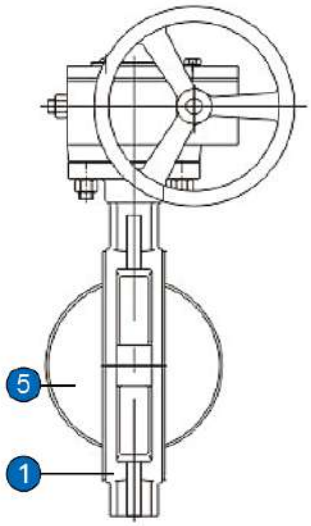
» **SIZE RANGE:**
DN: 40 - 500
NPS: 1½“ - 20“

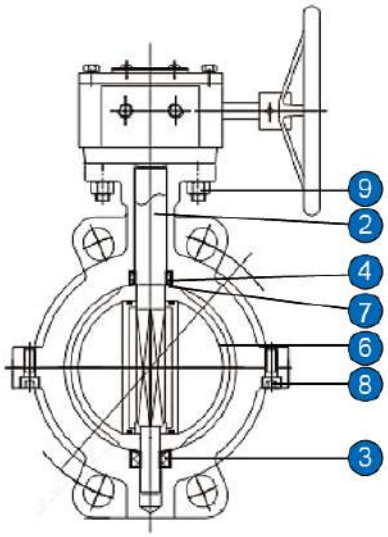
» **PRESSURE RATING:**
PN10*, PN16*, CL150, JIS10K

» **END CONNECTION:**
Wafer, Double Flanged, Lug

» **LINING MATERIAL:**

» PTFE, PFA, FEP, PO

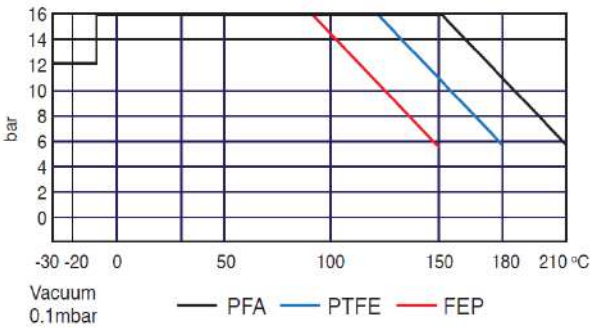




» MATERIAL LIST

N°	NAME	MATERIAL		
1	Body	A216 WCB	A351 CF8 / A351 CF8M	A351 CF3 / A351 CF3M
2	Stem	2Cr13(SS420), SS410, 17-4PH		
3	Shaft sleeve	SS304		
4	O-ring	VITON, VITON+FEP, VITON+PFA		
5	Disc	A216 WCB+Lining	CF8, CF8M+Lining	CF3, CF3M+Lining
6	Seat	PTFE, RPTFE, PFA, FEP, PO		
7	Elastomer Backing	Silicone rubber, VITON		
8	Body bolt	A193 B7	A320 B8	A193 B8M
9	Bolt	A193 B7	A320 B8	A193 B8M

Pressure Temperature Curve

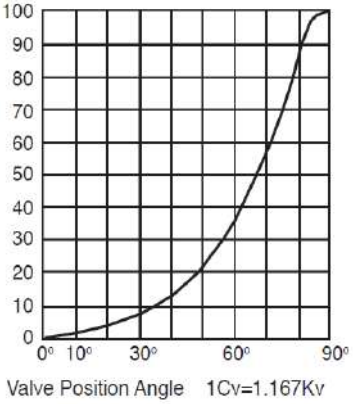


» TECHNICAL SPECIFICATION:

Design & Manufacture Standard		Manufacturer Std.		API 609
Face-to-face Dimension Standard		EN 558 S20/S13		ASME B16.10
Flange Standard		EN 1092-1		ASME B16.5, JIS B2220
Inspection and Test Standard		See below*		
Nominal Diameter		DN40-DN500		1½”-20”
Nominal Pressure (MPa)		1.0	1.6	CLASS 150
Hressure Test (MPa)	Shell Test	1.5	1.5	1.5
	High Pressure Sealing	1.1	1.1	1.1
	Low Pressure Sealing	0.6	0.6	0.6
Temperature Range (°C)		PTFE: -30~180, PFA: -30~200, FEP:-30~150, PO:-10~80		
Applicable Medium		Strong corrosive medium i.e. hydrochloric acid, Nitric acid, Hydrofl uoric acid, Liquid chlorine, Sulfuric Acid and Aqua regia etc.		

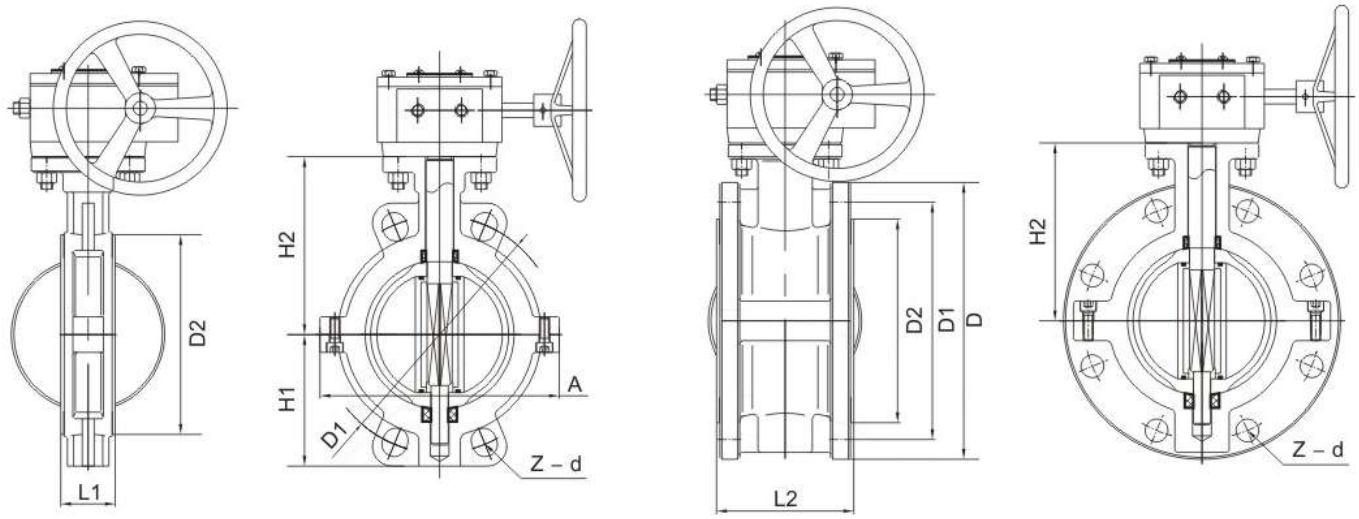
*Note: Standards indicated are general standard used as reference, some variations exist.
Other standard or tests may be available on request for fee.

Flow Characteristic



LINED BUTTERFLY VALVE KLINGER KKY-L81

PTFE-Lined Butterfly Valve, Wafer/Double Flanged PN10*, DN40-DN500 | PN16*, DN40-DN500 | CL150, 1½”-20” | JIS10K, DN40-DN500



» **PN10*/PN16* Dimensions (mm):**

SIZE		L1	L2	PN10*			PN16*			D2	H1	H2	A
DN	IN	Wafer	Flange	D	D1	Z-d	D	D1	Z-d				
40	1½”	40	106	150	110	4-18	150	110	4-18	70	60	90	78
50	2”	43	108	165	125	4-18	165	125	4-18	90	70	112	96
65	2½”	46	112	185	145	4-18	185	145	4-18	110	80	125	112
80	3”	46	114	200	160	8-18	200	160	8-18	130	89	135	130
100	4”	52	127	220	180	8-18	220	180	8-18	148	105.5	142	150
125	5”	56	140	250	210	8-18	250	210	8-18	181	121	165	178
150	6”	56	140	285	240	8-22	285	240	8-22	202	145	180	206
200	8”	60	152	340	295	8-22	340	295	12-22	263	177	228	260
250	10”	68	165	395	350	12-22	405	355	12-26	313	205	278	317
300	12”	78	178	445	400	12-22	460	410	12-26	368	235	295	367
350	14”	78	190	505	460	16-22	520	470	16-26	415	260	341	466
400	16”	102	216	565	515	16-26	580	525	16-30	484	299	390	495
450	18”	114	222	615	565	20-26	640	585	20-30	519	320	442	630
500	20”	127	229	670	620	20-26	715	650	20-33	569	352.5	470	694

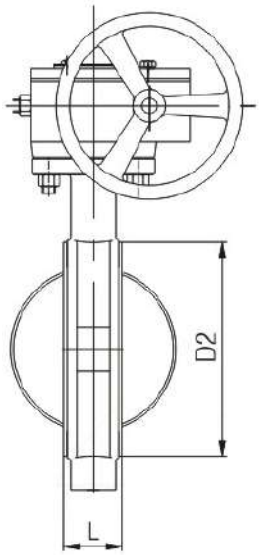
*Note: Some dimensions do not fully conform to EU standards, please be sure to confirm.

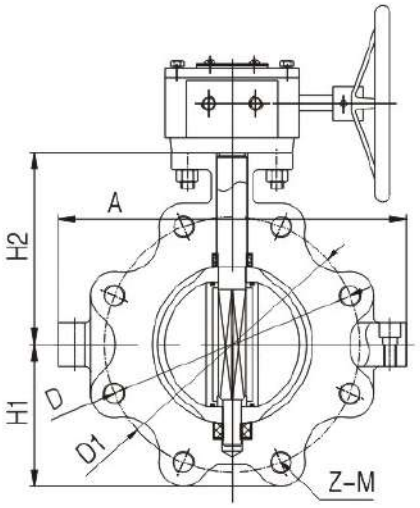
» **CL150 / JIS10K Dimensions (mm):**

SIZE		L1	L2	CL150			JIS10K			D2	H1	H2	A
DN	IN	Wafer	Flange	D	D1	Z-d	D	D1	Z-d				
40	1½”	40	106	125	98.5	4-16	140	105	4-19	70	60	90	78
50	2”	43	108	150	120.5	4-19	155	120	4-19	90	70	112	96
65	2½”	46	112	180	139.5	4-19	175	140	4-19	110	80	125	112
80	3”	46	114	190	152.5	4-19	185	150	8-19	130	89	135	130
100	4”	52	127	230	190.5	8-19	210	175	8-19	148	105.5	142	150
125	5”	56	140	255	216	8-22	250	210	8-23	181	121	165	178
150	6”	56	140	280	241.5	8-22	280	240	8-23	202	145	180	206
200	8”	60	152	345	298.5	8-22	330	290	12-23	263	177	228	260
250	10”	68	165	405	362	12-25	400	355	12-25	313	205	278	317
300	12”	78	178	485	432	12-25	445	400	16-25	368	235	295	367
350	14”	78	190	535	476	12-29	490	445	16-25	415	260	341	466
400	16”	102	216	595	540	16-29	560	510	16-27	484	299	390	495
450	18”	114	222	635	578	16-32	620	565	20-27	519	320	442	630
500	20”	127	229	700	635	20-32	675	620	20-27	569	352.5	470	694

LINED BUTTERFLY VALVE KLINGER KKY-L81

PTFE-Lined Butterfly Valve, Lug
PN10*, DN50-DN500 | PN16*, DN50-DN500
CL150, 2”-20” | JIS10K, DN50-DN500





» PN10*/PN16* Dimensions (mm):

SIZE		L1	PN10*			PN16*			D2	H1	H2	A
DN	IN		D	D1	Z-M	D	D1	Z-M				
50	2”	43	165	125	4-M16	165	125	4-M16	90	70	112	96
65	2½”	46	185	145	4-M16	185	145	4-M16	110	80	125	112
80	3”	46	200	160	8-M16	200	160	8-M16	130	89	135	130
100	4”	52	220	180	8-M16	220	180	8-M16	148	105.5	142	150
125	5”	56	250	210	8-M16	250	210	8-M16	181	121	165	178
150	6”	56	285	240	8-M20	285	240	8-M20	202	145	180	206
200	8”	60	340	295	8-M20	340	295	12-M20	263	177	228	260
250	10”	68	395	350	12-M20	405	355	12-M24	313	205	278	317
300	12”	78	445	400	12-M20	460	410	12-M24	368	235	295	367
350	14”	78	505	460	16-M20	520	470	16-M24	415	260	341	466
400	16”	102	565	515	16-M24	580	525	16-M27	484	299	390	495
450	18”	114	615	565	20-M24	640	585	20-M27	519	320	442	630
500	20”	127	670	620	20-M24	715	650	20-M30	569	352.5	470	694

*Note: Some dimensions do not fully conform to EU standards, please be sure to confirm.

» CL150 / JIS10K Dimensions (mm):

SIZE		L1	CL150			JIS10K			D2	H1	H2	A
DN	IN		D	D1	Z-M	D	D1	Z-M				
50	2”	43	150	120.5	4-M16	155	120	4-M16	90	70	112	96
65	2½”	46	180	139.5	4-M16	175	140	4-M16	110	80	125	112
80	3”	46	190	152.5	4-M16	185	150	8-M16	130	89	135	130
100	4”	52	230	190.5	8-M16	210	175	8-M16	148	105.5	142	150
125	5”	56	255	216	8-M20	250	210	8-M20	181	121	165	178
150	6”	56	280	241.5	8-M20	280	240	8-M20	202	145	180	206
200	8”	60	345	298.5	8-M20	330	290	12-M20	263	177	228	260
250	10”	68	405	362	12-M24	400	355	12-M22	313	205	278	317
300	12”	78	485	432	12-M24	445	400	16-M22	368	235	295	367
350	14”	78	535	476	12-M27	490	445	16-M22	415	260	341	466
400	16”	102	595	540	16-M27	560	510	16-M24	484	299	390	495
450	18”	114	635	578	16-M30	620	565	20-M24	519	320	442	630
500	20”	127	700	635	20-M30	675	620	20-M24	569	352.5	470	694

LINED BUTTERFLY VALVE
KLINGER KKY-81HP

High Performance PFA-Lined Butterfly Valve, Wafer/Double Flanged
DN50-DN2000 | 2”-56”

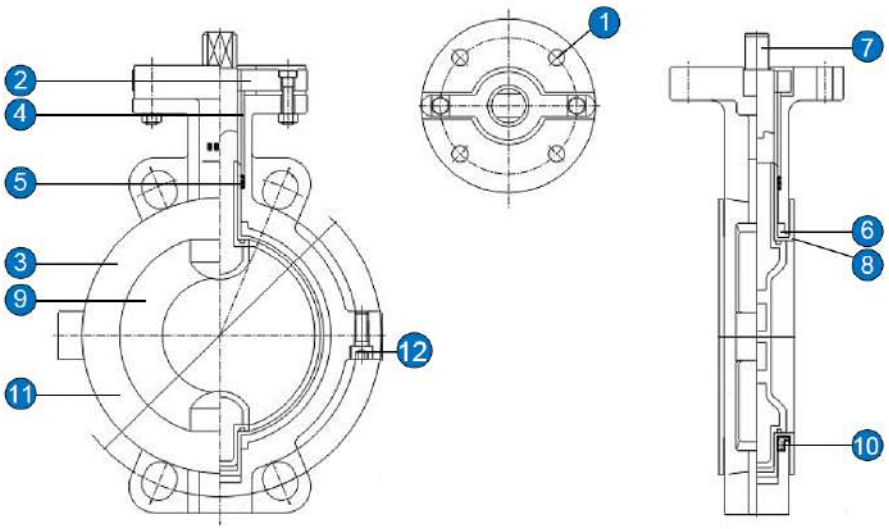
» **BODY MATERIAL**
ASTM CF8M, CF8, CF3,CF3M, WCB

» **SIZE RANGE**
DN: 50-2000 | NPS: 2“ - 56“

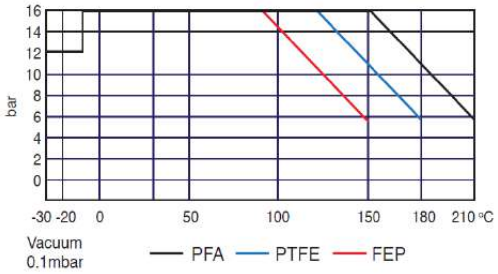
» **PRESSURE RATING**
PN10*, PN16*, CL150, JIS10K

» **END CONNECTION**
Wafer, Double Flanged, Lug

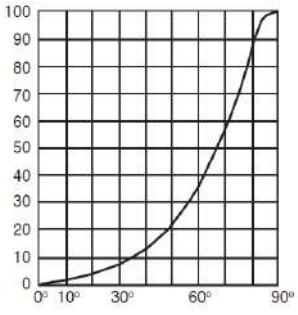
» **LINING MATERIAL**
PTFE, PFA, FEP, PO

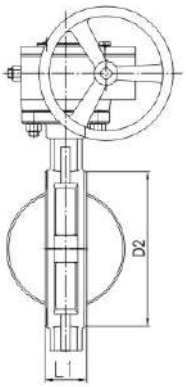


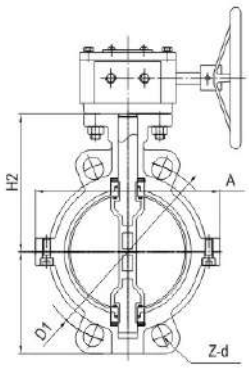
Pressure Temperature Curve

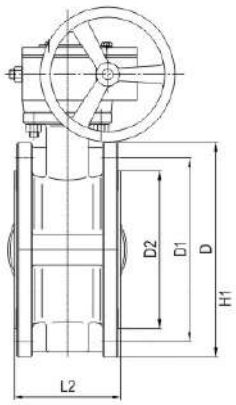


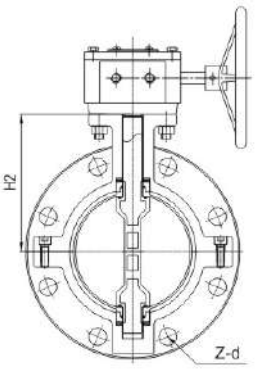
Flow Characteristic











» MATERIAL LIST

N°	NAME	MATERIAL		
1	Body	A193 B7	A320 BB	A193 B8M
2	Gland	A351 CF8		
3	Upper body	A216 WCB	A351 CF8/ A351 CF8M	A351 CF3/ A351 CF3M
4	Steel sleeve	SS304		
5	O-ring	VITON, VITON+PFA		
6	Elastomer backing	Silicone rubber, VITON		
7	Stem	SS410, SS420, 17-4PH		
8	Seat	PFA, FEP		
9	Disc	SS304/SS316+Lining		
10	Elastomer backing	Silicone rubber, VITON		
11	Downside body	A216 WCB	A351 CF8/ A351 CF8M	A351 CF3/ A351CF3M
12	Body bolt	A193 B7	A320 BB	A193 B8M

» TECHNICAL SPECIFICATION:

Design & Manufacture Standard		Manufacturer Std.	API 609
Face-to-face Dimension Standard		EN 558 S20/S13	ASMEB16.10
Flange Standard		EN 1092-1	ASMEB16.5, JIS B2220
Inspection and Test Standard		See below*	
Nominal Diameter		DN50-DN2000	2”-56”
Nominal Pressure (MPa)		1.0 / 1.6	CLASS 150
Hressure Test (MPa)	**Shell Test**	1.5 / 1.5	1.5
	High Pressure Sealing	1.1 / 1.1	1.1
	Low Pressure Sealing	0.6 / 0.6	0.6
Temperature Range (°C)		PFA: -30~200, FEP:-30~150	
Applicable Medium		Strong corrosive medium i.e. hydrochloric acid, Nitric acid, Hydrofluoric acid, Liquid chlorine, Sulfuric Acid and Aqua regia etc.	

*Note: Standards indicated are general standard used as reference, some variations exist.
Other standard or tests may be available on request for fee.

LINED BUTTERFLY VALVE
KLINGER KKY-81HP

High Performance PFA-Lined Butterfly Valve, Wafer/Double Flanged
PN10*/PN16*, DN50-DN2000 | CL150, 2”-56” | JIS10K, DN50-DN900

» PN10*/PN16* Dimensions (mm):

SIZE		L1	L2	PN10*			PN16*			D2	H1	H2	A
DN	IN	Wafer	Flange	D	D1	Z-d	D	D1	Z-d				
50	2”	43	108	165	125	4-18	165	125	4-18	94	70	112	130
65	2½”	46	112	185	145	4-18	185	145	4-18	110	80	125	150
80	3”	46	114	200	160	8-18	200	160	8-18	128	90	135	160
100	4”	52	127	220	180	8-18	220	180	8-18	150	105	142	180
125	5”	56	140	250	210	8-18	250	210	8-18	180	120	165	215
150	6”	56	140	285	240	8-22	285	240	8-22	205	133	180	242
200	8”	60	152	340	295	8-22	340	295	12-22	260	172	228	295
250	10”	68	165	395	350	12-22	405	355	12-26	310	205	278	356
300	12”	78	178	445	400	12-22	460	410	12-26	365	235	295	405
350	14”	78	190	505	460	16-22	520	470	16-26	425	260	341	466
400	16”	102	216	565	515	16-26	580	525	16-30	476	290	390	4995
450	18”	114	222	615	565	20-26	640	585	20-30	520	320	442	630
500	20”	127	229	670	620	20-26	715	650	20-33	566	355	470	670
600	24”	154	267	780	725	20-30	840	770	20-36	685	420	520	825
700	28”	165	292	895	840	24-30	910	840	24-36	770	500	590	895
800	32”	190	318	1015	950	24-33	1025	950	24-39	875	550	650	1015
900	36”	203	330	1115	1050	28-33	1125	1050	28-39	980	580	645	1115
1000	40”	216	410	1230	1160	28-36	1255	1170	28-42	1080	780	670	1230
1200	48”	254	470	1455	1380	32-39	1485	1390	32-48	1280	870	775	1455
1400	56”	279	530	1675	1590	36-42	1685	1590	36-48	1480	980	875	1675
1600	64”	318	600	1915	1820	40-48	1930	1820	40-56	1690	1100	980	1915
1800	72”	356	670	2115	2020	44-48	2130	2020	44-56	1890	-	-	2115
2000	80”	406	760	2325	2230	48-48	2345	2230	48-62	2090	-	-	2325

*Note: Some dimensions do not fully conform to EU standards, please be sure to confirm.

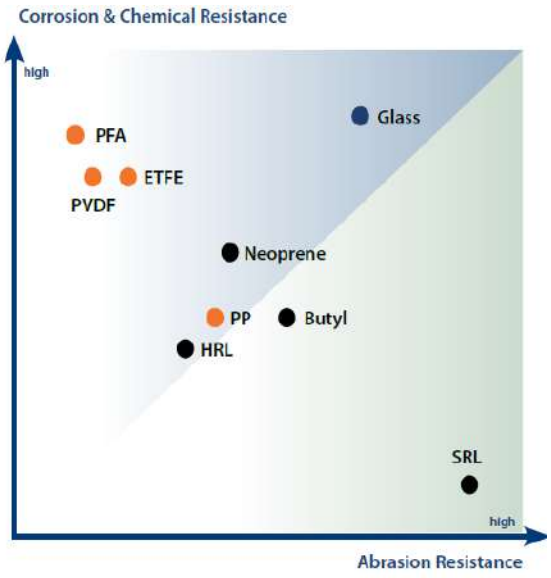
» CL150/ JIS10K Dimensions (mm):

SIZE		L1	L2	CL150			JIS10K			D2	H1	H2	A
DN	IN	Wafer	Flange	D	D1	Z-d	D	D1	Z-d				
50	2”	43	108	150	120.5	4-19	155	120	4-19	94	70	112	130
65	2½”	46	112	180	139.5	4-19	175	140	4-19	110	80	125	150
80	3”	46	114	190	152.5	4-19	185	150	8-19	128	90	135	160
100	4”	52	127	230	190.5	8-19	210	175	8-19	150	105	142	180
125	5”	56	140	255	216	8-22	250	210	8-23	180	120	165	215
150	6”	56	140	280	241.5	8-22	280	240	8-23	205	133	180	242
200	8”	60	152	345	298.5	8-22	330	290	12-23	260	172	228	295
250	10”	68	165	405	362	12-25	400	355	12-25	310	205	278	356
300	12”	78	178	485	432	12-25	445	400	16-25	365	235	295	405
350	14”	78	190	535	476	12-29	490	445	16-25	425	260	341	466
400	16”	102	216	595	540	16-29	560	510	16-27	476	290	390	495
450	18”	114	222	635	578	16-32	620	565	20-27	520	320	442	630
500	20”	127	229	700	635	20-32	675	620	20-27	566	355	470	670
600	24”	154	267	815	749.5	20-35	795	730	24-33	685	420	520	825
700	28”	165	292	927	864	24-35	905	840	24-33	770	500	590	927
800	32”	190	318	1060	978	26-35	1020	950	28-33	875	550	650	1060
900	36”	203	330	1168	1086	28-35	1120	1050	28-33	980	580	645	1168
1000	40”	216	410	1289	1200	28-41	-	-	-	1080	780	670	1289
1200	48”	254	470	1500	1422	32-41	-	-	-	1280	870	775	1500
1400	56”	279	530	1746	1651	36-41	-	-	-	1480	980	875	1746

SAUNDERS® DIAPHRAGM LINED VALVE A TYPE
Lined Diaphragm Valve

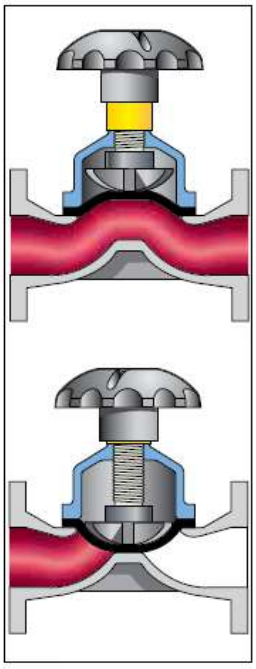
"A TYPE" WEIR DESIGN FOR CORROSIVE MEDIA AND UTILITIES

» Versatile and extensively used in industrial applications
» Can handle up to 15% solids (depending on process conditions)
» Perfect valve for on/off or control applications on corrosive processes



» LINED OPTIONS - FLANGED BODIES ONLY

	LINING	BODY MATERIAL	SIZE	TEMPERATURE
Plastic Lining	PFA	SG Iron	½"-8" DN15-DN200	14°F to 347°F -10°C to 175°C
	ETFE	SG Iron	½"-6" DN15-DN150	14°F to 302°F -10°C to 150°C
	PVDF	SG Iron	¾"-6" DN20-DN150	14°F to 257°F -10°C to 125°C
	PP	SG Iron	¾"-6" DN20-DN150	14°F to 185°F -10°C to 85°C
Glass Lining	Glass	Cast Iron	½"-8" DN15-DN200	14°F to 347°F -10°C to 175°C
Rubber Lining	Butyl (Isobutylene Isoprene)	Cast Iron	¾"-20" DN20-DN500	14°F to 230°F -10°C to 110°C
		SG Iron		-22°F to 230°F -30°C to 110°C
		Cast Steel		
	Neoprene (Polychloroprene)	Cast Iron	¾"-20" DN20-DN500	14°F to 221°F -10°C to 105°C
		SG Iron		-22°F to 221°F -30°C to 105°C
		Cast Steel		
	HRL (Hard Natural Rubber)	Cast Iron	¾"-20" DN20-DN500	14°F to 185°F -10°C to 85°C
		SG Iron		-22°F to 185°F -30°C to 85°C
		Cast Steel		



Saunders® the science inside

PLASTIC LINING

PFA PERFLUOROALKOXY SG IRON (WHITE): Excellent suitability for concentrated strong acids at high temperature, aromatics, aliphatic and chlorinated solvents.

PFA PERFLUOROALKOXY STAINLESS STEEL (WHITE): Demonstrates the highest chemical resistance of all Saunders linings and is ideal for high purity applications.

ETFE ETHYLENE TETRAFLUOROETHYLENE (RED): Suitable for strong acids, salts in water, solvents at medium temperature. ETFE has the highest abrasion resistance of all the fluorocarbon linings.

PP POLYPROPYLENE (LIGHT GREY): Economic solution for mineral acids, salts in water, de-ionised water and effluent treatment chemicals.

PVDF POLYVINYLIDENE FLUORIDE (BLACK): Suitable for mineral acids, salts in water, water and effluent treatment, additionally it is the best solution for wet chlorine gas or chlorine in water.

PLASTIC LINING OPTIONS			
LINING	BODY MATERIAL	SIZE	TEMPERATURE
PFA	SG Iron	½"-8" DN15-DN200	14°F to 347°F -10°C to 175°C
PFA	Stainless Steel	1/2" – 6" DN15 – DN150	14°F to 347°F -10 °C to 175 °C
ETFE	SG Iron	½"-6" DN15-DN150	14°F to 302°F -10°C to 150°C
PVDF	SG Iron	¾"-6" DN20-DN150	14°F to 257°F -10°C to 125°C
PP	SG Iron	¾"-6" DN20-DN150	14°F to 185°F -10°C to 85°C

GLASS LINING (BLUE)

Used in many different applications, including strong acids. Very high corrosion and abrasion resistance within a wide range of temperature. Note that glass is not suitable for applications where thermal cycling occurs.

GLASS LINING OPTIONS			
LINING	BODY MATERIAL	SIZE	TEMPERATURE
GLASS	Cast Iron	½"-8" DN15-DN200	14°F to 347°F -10°C to 175°C

RUBBER LINING (BLACK)

HRL HARD NATURAL RUBBER (EBONITE): Used for salts in water, diluted acids, de-ionised water, plating solutions and potable water. HRL has better chemical resistance than SRL.

BUTYL ISOBUTYLENE ISOPRENE: Great for corrosive & abrasive slurries, and acidic slurries. Additional applications are salts in water, dilute acids and alkalis, and lime.

NEOPRENE POLYCHLOROPRENE: Perfect solution for a combination of abrasive slurries containing hydrocarbons, sludge oils and also sea water.

RUBBER LINING OPTIONS			
LINING	BODY MATERIAL	SIZE	TEMPERATURE
Butyl (Isobutylene Isoprene)	Cast Iron	¾"-20" DN20-DN500	14°F to 230°F 10°C to 110°C
	SG Iron		
	Cast Steel		-22°F to 230°F -30°C to 110°C
Neoprene (Polychloroprene)	Cast Iron	¾"-20" DN20-DN500	14°F to 221°F 10°C to 105°C
	SG Iron		
	Cast Steel		-22°F to 221°F -30°C to 105°C
HRL (Hard Natural Rubber)	Cast Iron	¾"-20" DN20-DN500	14°F to 185°F 10°C to 85°C
	SG Iron		
	Cast Steel		-22°F to 185°F -30°C to 85°C

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