

LINED PIPES AND PIPE FITTINGS



LINED PIPING SYSTEMS for Corrosive Applications



LINEAR POLYMER LINING
SPECIAL MANUFACTURING - INDUSTRIAL APPLICATIONS
NEW ZEALAND

LINING DATA

LINER PROPERTIES	UNIT	PTFE	PFA
Operating Temperature	°C	- 29 To 260	- 29 To 260
Specific Gravity	g/cm ³	2.14 - 2.19	2.12 - 2.17
Liner Color	NA	white	natural
Tensile Strength of Liner at Yield (minimum)	psi	3000	3800
Elongation of Liner at Yield (minimum)	%	250	300
Melt Point	°C	330	330

Lined Pipe Dimensions

FDG manufactures PTFE lined pipe in 1" to 24" sizes in various grades of metal systems, from carbon steel to stainless steel. These systems are available in ANSI class 150, class 300 and DIN flange dimensions. The lined pipe can be easily field fabricated. Options such as vent hole extensions and special paint are available.

NB (INCH)	STEEL PIPE DIMENSIONS OD		LINER THICKNESS PTFE	
	INCH	MM	INCH	MM
1"	1.315	33.4	0.125	3.2
1½"	1.900	48.3	0.125	3.2
2"	2.375	60.3	0.137	3.5
3"	3.500	88.9	0.165	4.2
4"	4.500	114.3	0.177	4.5
6"	6.625	168.3	0.216	5.5
8"	8.625	219.1	0.216	5.5
10"	10.750	273.1	0.255	6.5
12"	12.750	323.9	0.255	6.5
14"	14.000	355.6	0.255	6.5
16"	16.000	406.4	0.255	6.5
18"	18.000	457.2	0.255	6.5
20"	20.000	508.0	0.255	6.5

Notes

- Liners and fittings meet the following Specifications:
 - 1" - 8" liners and fittings are fully rated for vacuum at 200° C.
 - 10" - 12" liners are vacuum rated at 200° C with restrict on on length of pipe spools.
 - 14" - 20" lined pipe & fittings, customers will have to make special request for vacuum rated lining.
- Standard 1" - 8" fittings meet or exceed pipe liner thickness and vacuum ratings for same-sized liner.

MANUFACTURING STANDARDS

All lined pipe and fitting fully comply with the ASTM F1545 standard. Products are manufactured to the following specifications and requirements

LINER POLYMERS	STANDARDS
PTFE (polytetrafluoroethylene)	ASTM D4894, D4895
PFA (perfluoroalkoxy)	ASTM D3307
PVDF (polyvinylidene fluoride)	ASTM D3222
PPH (polypropylene homopolymer)	ASTM D4101
ETFE (ethylene tetrafluoroethylene)	ASTM D3159
FEP (fluorinated ethylene propylene)	ASTM D2116

PIPE NB (INCH)	MATERIAL	STANDARDS
1" - 6"	Schedule 40	ASTM A106 , Grade B
8" - 24"	Schedule 20	ASTM A106 , Grade B

FLANGES TYPE	SIZE (INCH)	MATERIAL	STANDARDS
Lop Joint	1" - 24"	ASTM A105	ANSI 816.5 150# ; DIN or JIS
SOFF	1" - 24"	IS 2062	ANSI 816.5 150# ; DIN or JIS
SOFF	1" - 24"	ASTM A182 F304	ANSI 816.5 150# ; DIN or JIS
SOFF	1" - 24"	ASTM A182 F316	ANSI 816.5 150# ; DIN or JIS

FITTINGS TYPE	STANDARDS
Fabricated	ASTM A106, GRADE B & A234 as per manufacturer's drawing; dimensions ANSI B16.5 class 150
Castig	ASTM A216, Grade WCB; dimensions ANSI 816.5 class 150
Flange	One side fix other side rotating

FABRICATION TOLERANCES FOR PIPE AND FITTINGS

DIMENSIONS	TOLERANCE (INCH)
Length and centreline	± 1/8
Fixed flange bolt hole alignment	± 1/16
Perpendicular of flange with centreline of pipe	3/32 per foot of pipe diameter

Venting

PTFE Lined pipe spools 500mm or less have 1 venthole of 3mm diameter in the centre of the pipe spool. Pipe spools having length more than 500mm have 2 vent holes of the 3mm diameter one near flange.

External Protective Coating and Marking

Metal surface of pipe and fitting are given a protective coating of primer prior to leaving the manufacturing facility to protect the metal surface from rust. We also provide specialized primers & paints if required by the customer.

Processes

Our performance piping systems are manufactured using innovative fluoropolymer processing technology, ensuring products are of the highest quality and will provide long term performance. Pipe liners are manufactured using the paste extrusion process to increase permeation resistance, produce a smooth interior surface & provide improved structural stability. Process of injection molding is used in manufacturing of the fittings.

QUALITY ASSURANCE

INSPECTION AND HANDLING

The performance and longevity of PTFE lined pipe system components depends on the quality control of design and fabrication processes, as well as shipping, handling and strong practice. Quality control teams inspect and test all PTFE & PFA lined pipe components to ensure they meet or exceed ASTM F1545 specifications.

Inspections performed prior to lining

- All metal pipe and fittings are visually inspected before lining. The interior will be smooth, clean and free of burrs, scale or any other deposits. Internal welds are ground smooth.
- Pipe liners are examined for pinholes, cracks, gouges, nicks or foreign objects.

Tests and Inspections Performed After Lining

- Pipe spools & Fittings are hydrotested at 29.6 kg/cm² (3min). All components are subject to an electrostatic spark test at 10kva
- The Liner forming the flange gasket sealing face is visually inspected for smoothness. The liner will be free of defects (pinholes, cracks, gouges, nicks or foreign objects).
- Lined pipe and fittings are checked for dimensional accuracy and tolerances in accordance with dimensional data listed within this catalog and ANSI specifications.
- After final inspection, a flange protector is installed on each flange prior to any further handling of the part.

Shipping, Handling and Storage

- Prior to shipment, all sealing surfaces of lined products are covered by a flange protector. Removal of the flange protector should occur only at installation. For cases in which testing is required before installation, flange protectors need to be reinstalled immediately after testing.
- Slings, chains or lifting equipment should not be placed inside lined products or otherwise come in contact with the plastic liner. Extreme care must be taken at all time when loading, transporting and unloading products to and from a truck or trailer. Use chains and slings to lift the spools rather than drag them.
- Avoid storage in direct sunlight or other severe conditions. Storage under cover is recommended.
- Protection of the flare faces is necessary during handling, sandblasting and painting. Do not plug vent holes.
- Failure to follow shipping, handling and storage instructions will void the product warranty.

INSTALLATION INSTRUCTIONS

Do not remove flange protectors prior to installations to prevent damage to the sealing surface. Flange protectors should be replaced any time the item is removed from service.

Recommended Bolt Torque

Recommended torque ratings are based on lightly lubricated A193 B7 bolts and A194 2H nuts. When bolting dissimilar liner materials, use the lower torque value.

ANSI class 150 system										
Lightly lubricated A 193 B7 bolts and A194 2H nuts.										
Use the lower torque value when bolting dissimilar liner materials.										
Size (inch)		1"	1½"	2"	3"	4"	6"	8"	10"	12"
PTFE	Nm	14	21	34	41	55	82	95	102	129
Maximum Bolt Torque	in lb	120	180	300	360	480	720	840	900	1140

Bolt Torque Sequence

Finger-tighten all nuts and bolts. With a calibrated torque wrench, tighten each flange connection in a crisscross pattern (refer to figure). Using this pattern, tighten in 20% increments up to 80% of the final bolt torque. To achieve the final torque value, tighten bolts in a sequential clockwise pattern once around the flange. Maximum recommended torque is suggested for systems that will be operating at or near the maximum pressure and temperature limits of the liner or conveying small molecular gases.



Retorquing

- After the initial installation, we recommend checking the torque of each bolt after 24 hours have elapsed or a temperature cycle or pressure cycle (hydrostatic test) has occurred. Any bolts falling below the recommended value should be retorqued. Values should only be exceeded by 10% increments when necessary to reseal. All torquing on the process system should be done when the system is ambient and cool.
- Retorquing should be performed annually, especially if the system experience elevated temperature or extreme temperature swings.

Other Installation Guidelines

- Welding should not be performed before or after the installation of lined pipe components.
- Gaskets must be used when bolting components to dissimilar products made from metal, glass, fiberglass or other materials. Otherwise, gaskets are not required for bolting together lined piping systems unless repeated connections and disconnections are made.
- Vent holes should not be plugged. Do not use sharp tools to clean plugged holes.
- Do not remove pipe spools and fittings from systems at elevated temperatures. Always install a flange protector immediately after the component is removed.

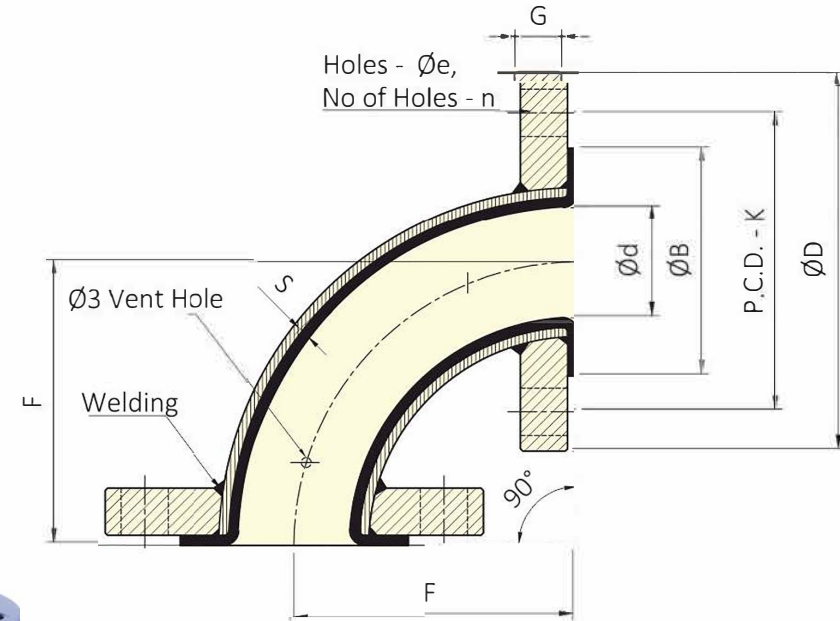
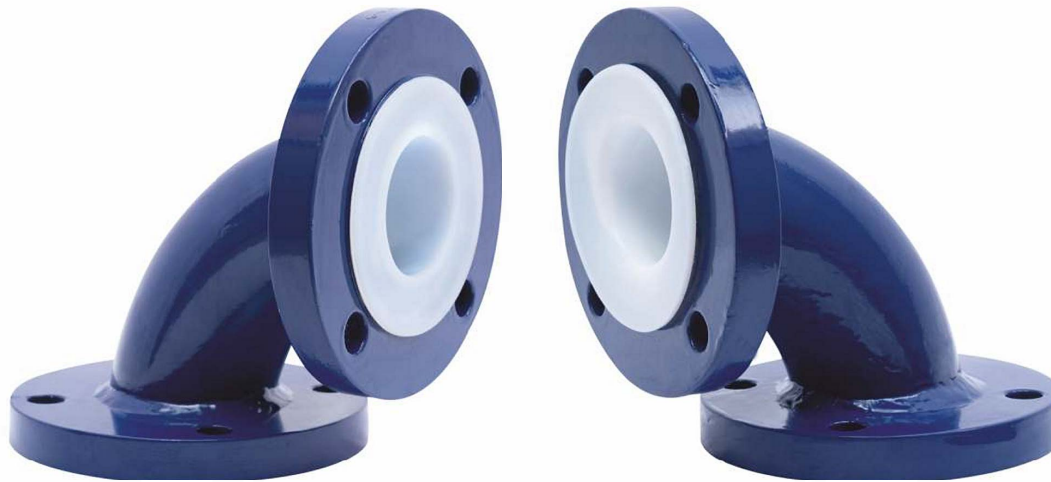
NB (INCH)	BOLT LENGTH (INCH)		STUD LENGTH (INCH)	
	FIXED	ROTATING	FIXED	ROTATING
1"	2 ½"	2 ¾"	3"	3 ¼"
1½"	2 ¾"	3"	3 ¼"	3 ½"
2"	3 ¼"	3 ½"	4"	4 ¼"
3"	3 ½"	4"	4 ¼"	4 ½"
4"	3 ½"	4"	4 ¼"	4 ½"
6"	4 ¼"	4 ½"	5"	5 ¼"
8"	4 ¼"	4 ¾"	5"	5 ½"
10"	4 ½"	5 ¼"	5 ½"	6"
12"	4 ¾"	5 ½"	5 ½"	6 ¼"



DIMENSION TABLE

Size	L - ID (∅d)		∅R/F (∅B)		F. OD (∅D)		F. THK (G)		STUB END (T)		P.C.D. (K)		H - DIA (∅e)		NH(n)	LINING THK (S)		C.S. PIPE (SCH)
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	
	0.079	±2	0.079	±2							0.06	±1.6						
1/2"	0.39	10	1.37	34.9	3.50	88.9	0.44	11.1	0.35	8.9	2.37	60.3	0.63	15.9	04	0.126	3.2	40
3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	0.40	10.2	2.75	69.8	0.63	15.9	04	0.126	3.2	40
1"	0.79	20	2.01	51	4.25	108	0.56	14.2	0.45	11.4	3.13	79.4	0.63	15.9	04	0.126	3.2	40
1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	0.55	14	3.87	98.4	0.63	15.9	04	0.126	3.2	40
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	0.60	15.2	4.75	120.6	0.75	19	04	0.138	3.5	40
3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	0.75	19.0	6.00	152.4	0.75	19	04	0.157	4	40
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	0.75	19.0	7.50	190.5	0.75	19	08	0.177	4.5	40
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	0.80	20.3	9.50	241.3	0.87	22.2	08	0.217	5.5	40
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	0.90	22.9	11.75	298.4	0.87	22.2	08	0.217	5.5	20
10"	9.72	247	12.76	324	16.00	406.4	1.19	30.2	0.95	24.2	14.25	362	1.00	25.4	12	0.256	6.5	20
12"	11.73	298	15.00	381	19.00	482.6	1.25	31.8	1.00	25.4	17.00	431.8	1.00	25.4	12	0.256	6.5	20
14"	12.83	326	16.26	413	21.00	533.4	1.37	34.9	1.10	27.9	18.75	476.3	1.13	28.6	12	0.256	6.5	20
16"	14.84	377	18.50	470	23.50	596.9	1.44	36.5	1.15	29.2	21.25	539.8	1.13	28.6	16	0.256	6.5	20
18"	16.85	428	21.00	533.4	25.00	635	1.56	39.7	1.25	31.8	22.75	577.9	1.25	31.8	16	0.256	6.5	20
20"	18.70	475	23.00	584.2	27.50	698.5	1.69	42.9	1.35	34.3	25.00	635	1.26	32	20	0.256	6.5	20

ELBOWS 90°



Material Specifications

1. 90° Bend : ASTM A 234 GR. WPB, SCH 40 (upto 6")
ASTM A 234 GR. WPB, SCH 20 (above 6")
2. Flange : ASTM A 105 - As per ASME B 16.5, 150#
3. Liner : PTFE conforming ASTM D 4895

Dimension Specifications

1. All dimensions are in mm.
2. Bend as per ANSI B36.10
3. Flange as per ANSI B16.5, 150#
4. Lining and other dimensional tolerances as per ASTM F1545
5. Lining face thickness 80% of min. liner wall Thk.

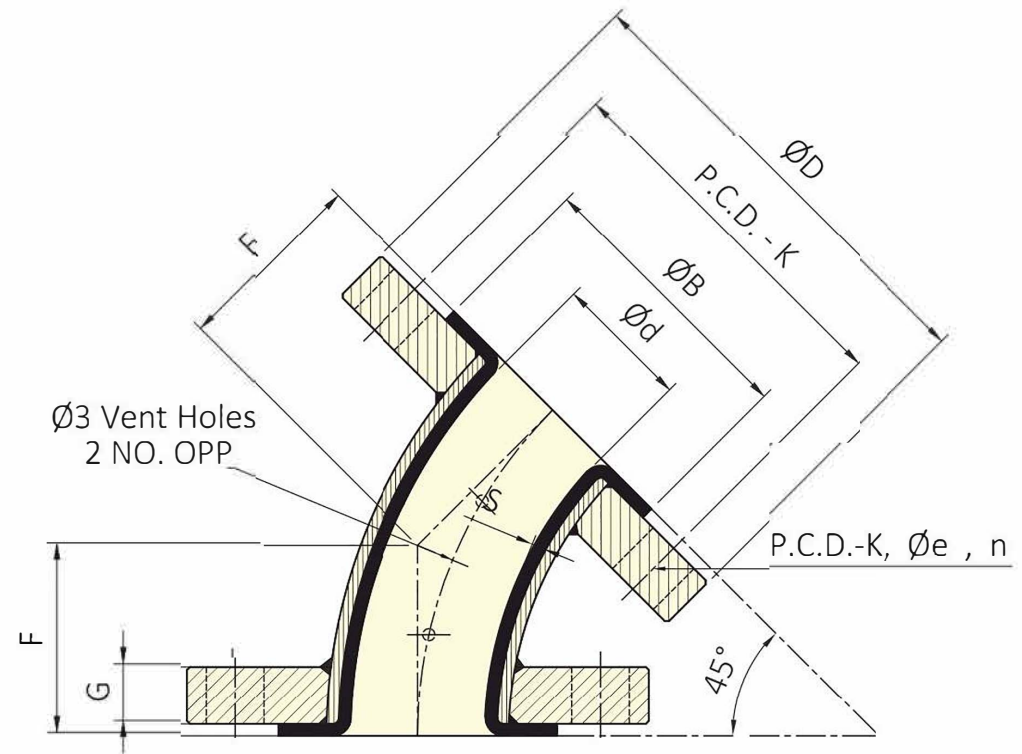
Testing

1. 100% Visual Check
2. 100% Dimensional Check
3. 100% Spark Test At 15 KVDC.
4. 100% Hydro Test At 29 kg/cm² holding time 3 min., as per ASTM F1545 (after Lining)

DIMENSION TABLE

Size	L - ID (∅d)		∅R/F (∅B)		F. OD (∅D)		F. THK (G)		P.C.D. (K)		H - DIA (∅e)		NH (n)	LINING THK (S)		F		WPB ELBOW (SCH)
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM	
	0.079	±2	0.079	±2					0.06	±1.6						0.059	±1.5	
1/2"	0.39	10	1.37	34.9	3.50	88.9	0.44	11.1	2.37	60.3	0.63	15.9	04	0.126	3.2	2.56	65	40
3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	2.95	75	40
1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.126	3.2	3.50	89	40
1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.126	3.2	4.02	102	40
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.138	3.5	4.49	114	40
3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.157	4	5.51	140	40
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	6.50	165	40
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.217	5.5	7.99	203	40
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.217	5.5	9.02	229	20
10"	9.72	247	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.256	6.5	10.98	279	20
12"	11.73	298	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.256	6.5	12.01	305	20
14"	12.83	326	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	14.02	356	20
16"	14.84	377	18.50	470	23.50	596.9	1.44	36.5	21.25	539.8	1.13	28.6	16	0.256	6.5	15.00	381	20
18"	16.85	428	21.00	533.4	25.00	635	1.56	39.7	22.75	577.9	1.25	31.8	16	0.256	6.5	16.50	419	20
20"	18.70	475	23.00	584.2	27.50	698.5	1.69	42.9	25.00	635	1.26	32	20	0.256	6.5	17.99	457	20

ELBOWS 45°



Material Specifications

1. 45° Bend : ASTM A 234 GR. WPB, SCH 40 (upto 6")
ASTM A 234 GR. WPB, SCH 20 (above 6")
2. Flange : A105 - As per ASME B 16.5, 150#
3. Liner : PTFE conforming ASTM D 4895

Dimension Specifications

1. All dimensions are in mm.
2. Bend as per ANSI B36.10
3. Flange as per ANSI B16.5, 150#
4. Lining and other dimensional tolerances as per ASTM F1545
5. Lining face thickness 80% of min. liner wall Thk.

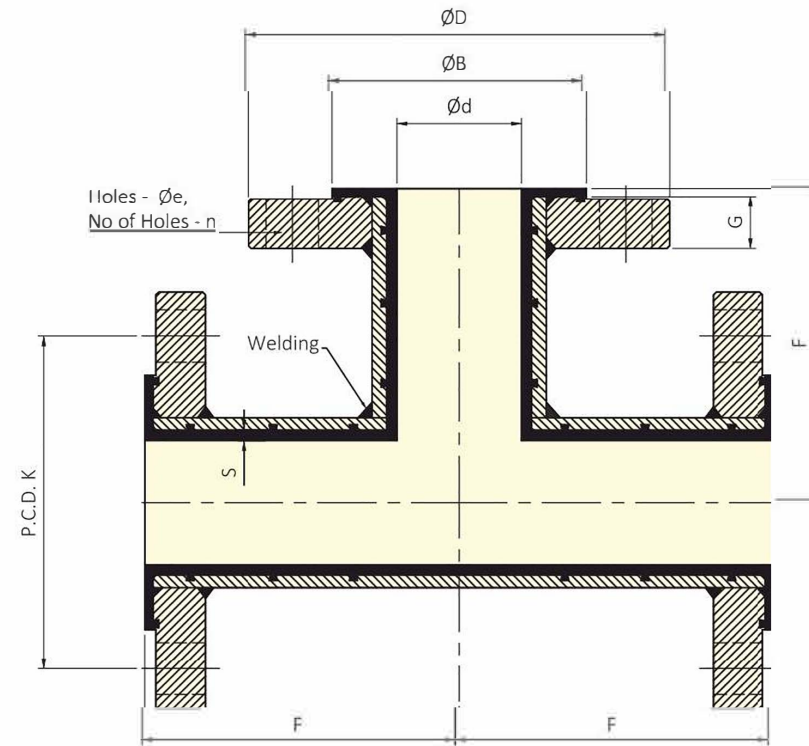
Testing

1. 100% Visual Check
2. 100% Dimensional Check
3. 100% Spark Test At 15 KVDC.
4. 100% Hydro Test At 29 kg/cm² holding time 3 min., as per ASTM F1545
(after Lining)

DIMENSION TABLE

Size	L - ID (∅d)		∅R/F (∅B)		F. OD (∅D)		F. THK (G)		P.C.D. (K)		H - DIA (∅e)		NH (n)	LINING THK (S)		F		WPS ELBOW (SCH)
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM	
	0.079	±2	0.079	±2					0.06	±1.6						0.059	±1.5	
1/2"	0.39	10	1.37	34.9	3.50	88.9	0.44	11.1	2.37	60.3	0.63	15.9	04	0.126	3.2	1.73	44	40
3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	1.73	44	40
1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.126	3.2	1.73	44	40
1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.126	3.2	2.24	57	40
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.138	3.5	2.52	64	40
3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.157	4	2.99	76	40
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	4.02	102	40
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.217	5.5	5.00	127	40
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.217	5.5	5.51	140	20
10"	9.72	247	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.256	6.5	6.50	165	20
12"	11.73	298	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.256	6.5	7.48	190	20
14"	12.83	326	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	7.48	190	20
16"	14.84	377	18.50	469.9	23.50	596.9	1.44	36.5	21.25	539.8	1.13	28.6	16	0.256	6.5	7.99	203	20
18"	16.85	428	21.00	533.4	25.00	635	1.56	39.7	22.75	577.9	1.25	31.8	16	0.256	6.5	8.50	216	20
20"	18.70	475	23.00	584.2	27.50	698.5	1.69	42.9	25.00	635	1.26	32	20	0.256	6.5	9.49	241	20

EQUAL TEES



Material Specifications

1. EQ.TEE : Made From Fabricated Seamless Carbon Steel Pipe:
As per ASTM A 106 GR.B, SCH 40 (upto 6")
As per ASTM A 106 GR.B, SCH 20 (above 6")
2. Flange : ASTM A 105 as per ANSI B 16.5, 150#
3. Liner : PFA conforming ASTM D 3307

Dimension Specifications

1. All dimensions are in mm.
2. Pipe as per ANSI B36.10
3. Flange as per ANSI B16.5, 150#
4. Lining and other dimensional tolerances as per ASTM F1545

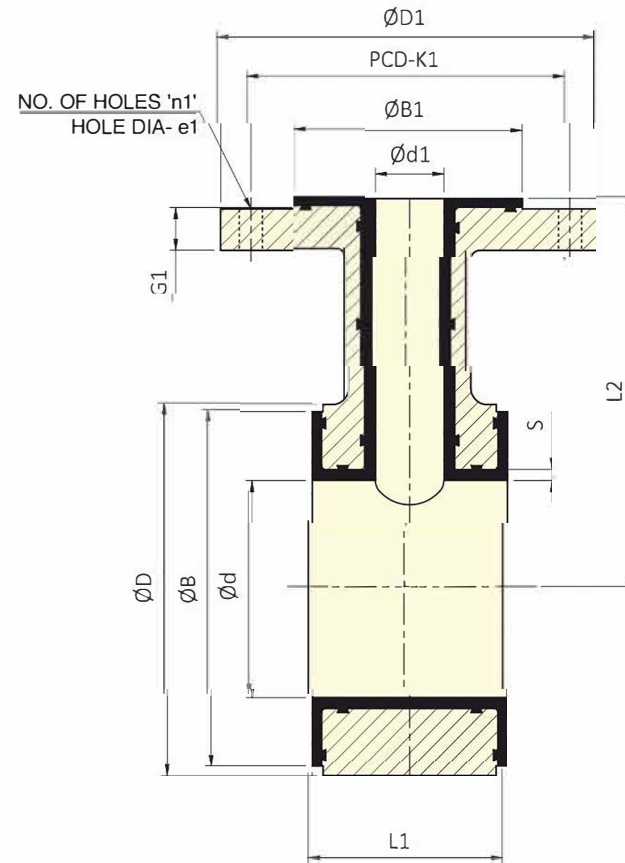
Testing

1. 100% Visual Check
2. 100% Dimensional Check
3. 100% Spark Test At 15 KVDC.
4. 100% Hydro Test At 29 kg/cm² holding time 3 min.,
as per ASTM F1545
(after Lining)

DIMENSION TABLE

Size	L - ID (Ød)		ØR/F (ØB)		F. OD (ØD)		F. THK (G)		P.C.D. (K)		H - DIA (Øe)		NH (n)	LINING THK (S)		F		C.S. PIPE (SCH)
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM	
	0.079	±2	0.079	±2					0.06	±1.6								
1/2"	0.39	10	1.37	34.9	3.50	88.9	0.44	11.1	2.37	60.3	0.63	15.9	04	0.126	3.2	2.56	65	40
3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	2.95	75	40
1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	3.50	89	40
1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	4.02	102	40
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	4.49	114	40
3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	5.51	140	40
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	6.50	165	40
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	7.99	203	40
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	9.02	229	20
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	10.98	279	20
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	12.01	305	20
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	14.02	356	20
16"	14.49	368	18.50	470	23.50	596.9	1.44	36.5	21.25	539.8	1.13	28.6	16	0.256	6.5	15.00	381	20
18"	16.34	415	21.00	533.4	25.00	635	1.56	39.7	22.75	577.9	1.25	31.8	16	0.256	6.5	16.50	419	20
20"	18.31	465	23.00	584.2	27.50	698.5	1.69	42.9	25.00	635	1.26	32	20	0.256	6.5	17.99	457	20

INSTRUMENT TEE



Material Specifications

1. Body MOC: ASTM A 216 Gr. WCB
2. Flange: As Per ANSI B 16.5, 150#
3. Lining: PFA conforming ASTM D 3307

Dimension Specifications

1. All dimensions are in mm.
2. Flange as per ANSI B16.5, 150#
3. Lining and other dimensional tolerances as per ASTM F1545

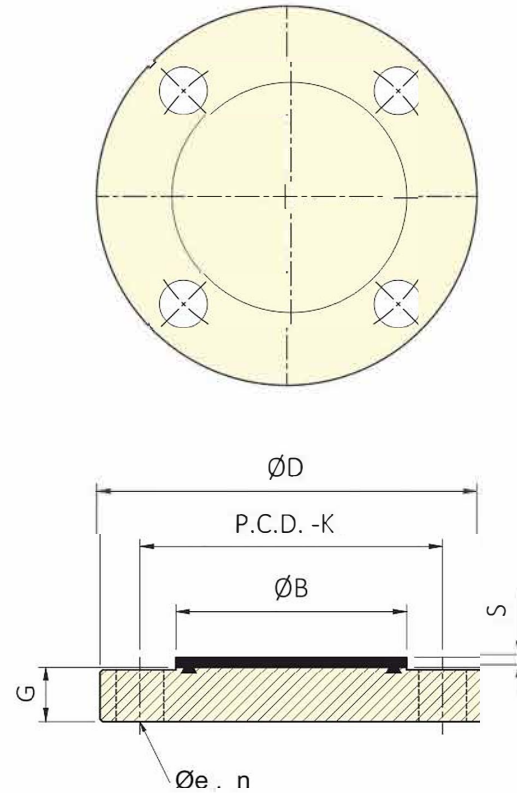
Testing

1. 100% Visual Check
2. 100% Dimensional Check
3. 100% Spark Test At 15 KVDC.
4. 100% Hydro Test At 29 kg/cm² holding time 3 min., as per ASTM F1545 (after Lining)

DIMENSION TABLE

Size	L-ID (Ød)		ØR/F (ØB)		(ØD)		Size	L-ID (Ød1)		ØR/F (ØB1)		F. OD (ØD1)		F. THK (G1)		P.C.D. (K1)		H-DIA (Øe1)		NH (n1)	LINING THK (S)		F TO F (L1)		F TO F (L2)			
	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM	INCH	MM	INCH	MM
	0.079	±2	0.079	±2				0.079	±2					0.06	±1.6										0.059	±1.5	0.059	±1.5
1"	0.98	25	2.00	50.8	2.36	60	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	16	04	0.138	3.5	1.97	50	3.50	89		
1.5"	1.57	40	2.87	73	3.15	80	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	16	04	0.138	3.5	1.97	50	4.02	102		
2"	1.97	50	3.62	92	3.86	98	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	16	04	0.138	3.5	1.97	50	4.49	114		
2"	1.97	50	3.62	92	3.86	98	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	16	04	0.138	3.5	2.95	75	4.49	114		
3"	3.15	80	5.00	127	5.28	134	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	16	04	0.138	3.5	1.97	50	5.31	135		
3"	3.15	80	5.00	127	5.28	134	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	16	04	0.138	3.5	2.95	75	5.31	135		
3"	3.15	80	5.00	127	5.28	134	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	3.54	90	5.31	135		
4"	3.94	100	6.18	157	6.46	164	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	16	04	0.138	3.5	1.97	50	6.50	165		
4"	3.94	100	6.18	157	6.46	164	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	16	04	0.138	3.5	2.95	75	6.50	165		
6"	5.91	150	8.18	208	8.50	216	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	16	04	0.138	3.5	1.97	50	7.99	203		
6"	5.91	150	8.18	208	8.50	216	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	16	04	0.138	3.5	1.97	75	7.99	203		
6"	5.91	150	8.18	208	8.50	216	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	1.97	90	7.99	203		
8"	7.87	200	10.31	262	10.70	272	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	16	04	0.138	3.5	1.97	50	9.02	229		
8"	7.87	200	10.31	262	10.70	272	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	16	04	0.138	3.5	1.97	75	9.02	229		
8"	7.87	200	10.31	262	10.70	272	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	1.97	90	9.02	229		

BLIND FLANGE



Material Specifications

1. Flange : ASTM A 105 - 150#
2. Lining : PFA conforming ASTM D3307

Dimension Specifications

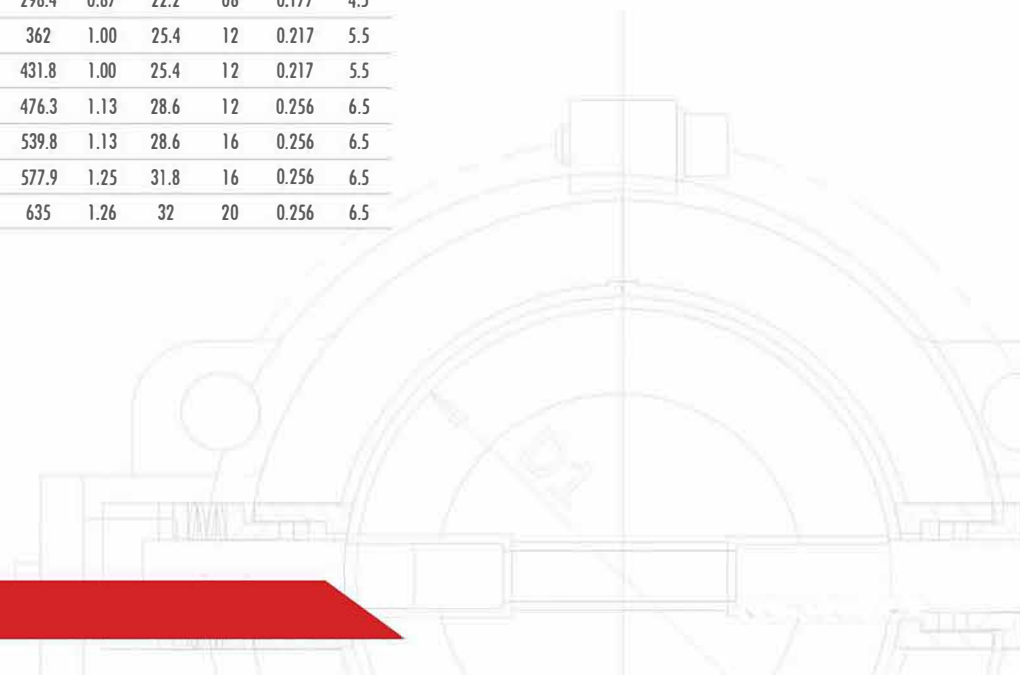
1. All dimensions are in mm.
2. Flange as per ANSI B16.5, 150#
3. Lining and other dimensional tolerances as per ASTM F1545

Testing

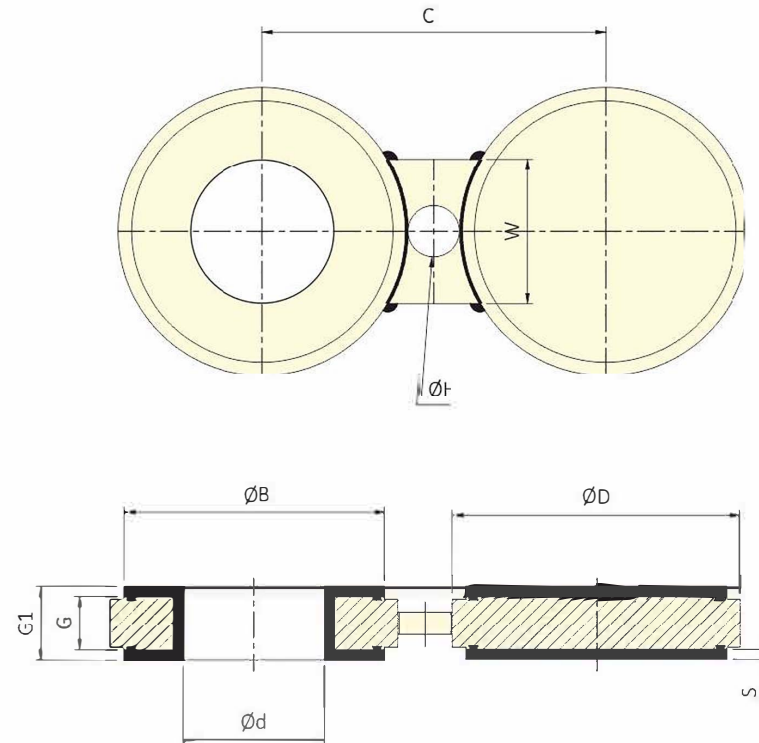
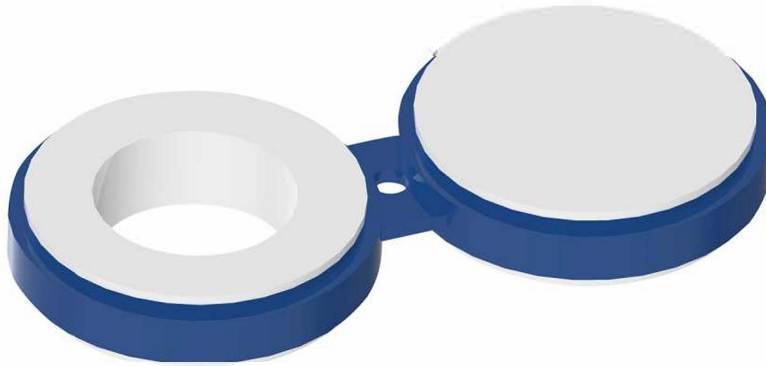
1. 100% Visual Check
2. 100% Dimensional Check
3. 100% Spark Test At 15 KVDC.
(after Lining)

DIMENSION TABLE

Size	ØR/F (ØB)		F. OD (ØD)		F. THK (G)		P.C.D. (K)		H - DIA (Øe)		NH (n)	LINING THK (S)	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM
	0.079	±2					0.06	±1.6					
1/2"	1.37	34.9	3.50	88.9	0.44	11.1	2.37	60.3	0.63	15.9	04	0.126	3.2
3/4"	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2
1"	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5
1.5"	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5
2"	3.62	92	6.00	152.4	0.75	19.1	4.75	120.6	0.75	19	04	0.157	4
3"	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5
4"	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5
6"	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5
8"	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5
10"	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5
12"	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5
14"	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5
16"	18.50	470	23.50	596.9	1.44	36.5	21.25	539.8	1.13	28.6	16	0.256	6.5
18"	21.00	533.4	25.00	635	1.56	39.7	22.75	577.9	1.25	31.8	16	0.256	6.5
20"	23.00	584.2	27.50	698.5	1.69	42.9	25.00	635	1.26	32	20	0.256	6.5



SPECTACLE BLIND FLANGE



Material Specifications

1. Flange : ASTM A 105 - 150#
2. Lining : PFA conforming ASTM D3307

Dimension Specifications

1. All dimensions are in mm.
2. Flange as per ANSI B16.5, 150#
3. Lining and other dimensional tolerances as per ASTM F1545

Testing

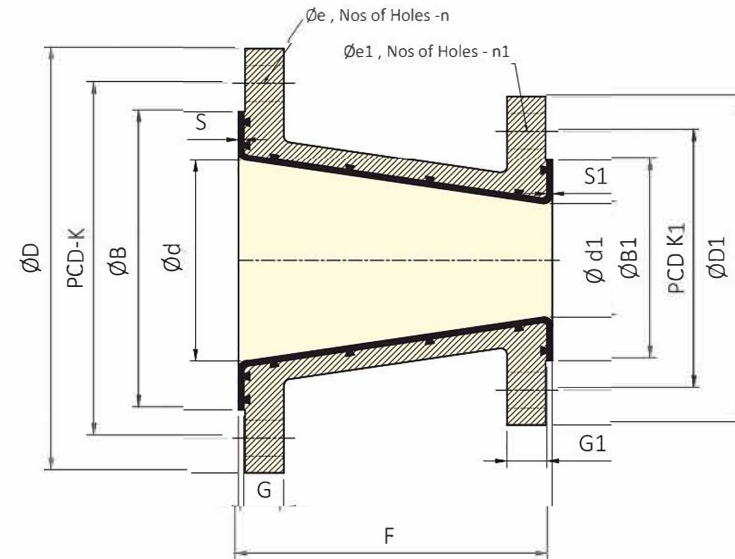
1. 100% Visual Check
2. 100% Dimensional Check
3. 100% Spark Test At 15 KVDC.
(after Lining)

DIMENSION TABLE

Size	ØD		ØB		Ød		G		G1		C		W		ØH		S	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
			0.079	±2	0.079	±2			0.079	±2	0.079	±2						
1"	2.5	63.5	2.01	51	0.79	20	0.56	14.3	0.33	21	3.13	79.4	1.50	38	0.55	14	0.14	3.5
1.5"	3.25	82.5	2.87	73	1.34	34	0.69	17.5	0.96	24.5	3.87	98.4	1.50	38	0.55	14	0.14	3.5
2"	4.00	101.5	3.62	92	1.73	44	0.75	19	1.06	27	4.75	120.6	1.97	50	0.71	18	0.16	4
3"	5.26	133.5	5.00	127	2.76	70	0.94	23.8	1.30	33	6.00	152.4	2.52	64	0.71	18	0.18	4.5
4"	6.75	171.5	6.18	157	3.70	94	0.94	23.8	1.30	33	7.50	190.5	2.52	64	0.71	18	0.18	4.5
6"	8.62	219	8.43	214	5.67	144	1.00	25.4	1.34	34	9.50	241.3	2.99	76	0.87	22	0.18	4.5
8"	10.89	276.5	10.63	270	7.56	192	1.13	28.6	1.46	37	11.75	298.4	2.99	76	0.87	22	0.18	4.5
10"	13.25	336.5	12.76	324	9.57	243	1.19	30.2	1.54	39	14.25	362	4.02	102	0.98	25	0.18	4.5
12"	16.00	406.5	15.00	381	11.54	293	1.25	31.8	1.61	41	17.01	432	4.02	102	0.98	25	0.18	4.5
14"	17.62	447.5	16.26	413	12.68	322	1.37	34.9	1.73	44	18.74	476	4.25	108	1.10	28	0.18	4.5



CONCENTRIC REDUCER



Material Specifications

1. Con.reducer : ASTM A 216 GR. WCB
2. Flange : As per ANSI B 16.5, 150#
3. Lining : PFA conforming ASTM D 3307

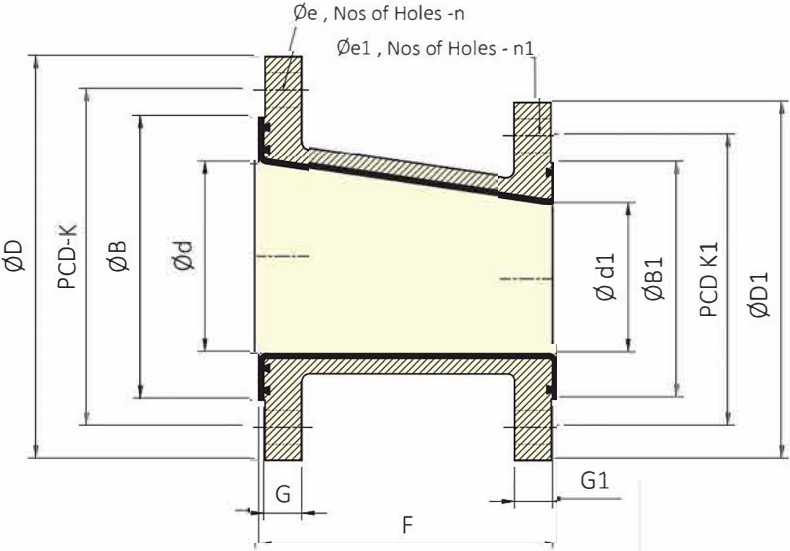
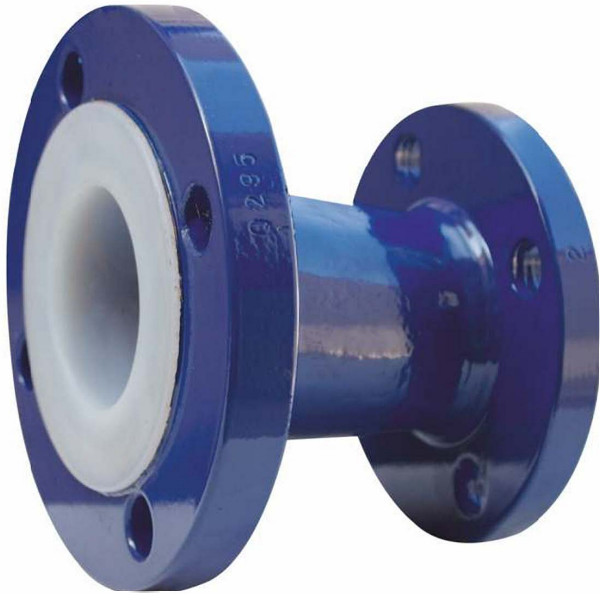
Dimension Specifications

1. All dimensions are in mm.
2. Flange as per ANSI B16.5, 150#
3. Lining and other dimensional tolerances as per ASTM F1545
4. Lining face thickness 80% of min. liner wall Thk.

Testing

1. 100% Visual Check
2. 100% Dimensional Check
3. 100% Spark Test At 15 KVDC.
4. 100% Hydro Test At 29 kg/cm² holding time 3 min., as per ASTM F1545 (after Lining)

ECENTRIC REDUCER



Material Specifications

- 1. Ecc.reducer : ASTM A 216 GR. WCB
- 2. Flange : As per ANSI B 16.5, 150#
- 3. Lining : PFA conforming ASTM D 3307

Dimension Specifications

- 1. All dimensions are in mm.
- 2. Flange as per ANSI B16.5, 150#
- 3. Lining and other dimensional tolerances as per ASTM F1545
- 4. Lining face thickness 80% of min. liner wall Thk.

Testing

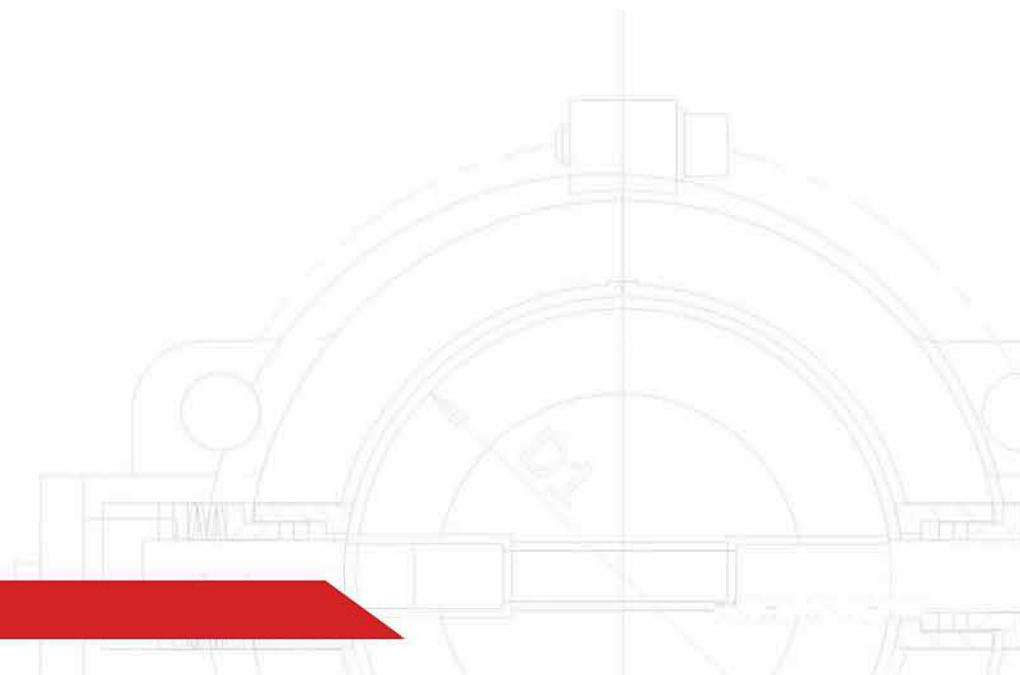
- 1. 100% Visual Check
- 2. 100% Dimensional Check
- 3. 100% Spark Test At 15 KVDC.
- 4. 100% Hydro Test At 29 kg/cm² holding time 3 min., as per ASTM F1545 (after Lining)

DIMENSION TABLE

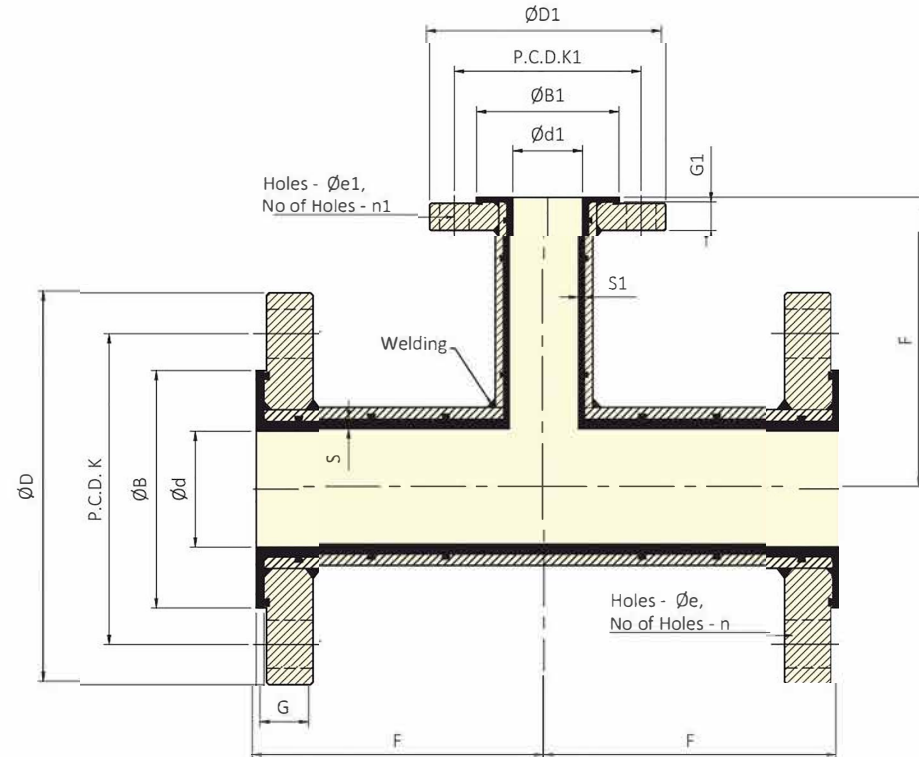
Size	L - ID (∅d)		∅R/F (∅B)		F. OD (∅D)		F. THK (G)		P.C.D. (K)		H - DIA (∅e)		NH (n)	LINING THK (S)		Size	L - ID (∅d1)		∅R/F (∅B1)		F. OD (∅D1)		F. THK (G1)		P.C.D. (K1)		H - DIA (∅e1)		NH (n1)	LINING THK (S1)		F		
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM		INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
	0.079	±2	0.079	±2					0.06	±1.6				0.079	±2		0.079	±2					0.06	±1.6									0.11	±3.0
3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	1/2"	0.39	10	1.37	34.9	3.50	88.9	0.44	11.1	2.37	60.3	0.63	15.9	04	0.126	3.2	4.49	114	
1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	1/2"	0.39	10	1.37	34.9	3.50	88.9	0.44	11.1	2.37	60.3	0.63	15.9	04	0.126	3.2	4.49	114	
1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	4.49	114	
1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	4.49	114	
1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	4.49	114	
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	5.00	127	
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	5.00	127	
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	5.00	127	
3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	5.98	152	
3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	5.98	152	
3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.57	120.6	0.75	19	04	0.157	4	5.98	152	
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	7.01	178	
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	7.01	178	
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	7.01	178	
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	7.01	178	
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	9.02	229	
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	9.02	229	
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	9.02	229	
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	9.02	229	
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	9.02	229	
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	10.98	279	
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	10.98	279	
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	10.98	279	
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	10.98	279	
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	10.98	279	
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	12.01	305	
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	12.01	305	
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	12.01	305	
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	12.01	305	
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	12.01	305	
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	12.01	305	

DIMENSION TABLE

Size	L - ID (∅d)		∅R/F (∅B)		F. OD (∅D)		F. THK (G)		P.C.D. (K)		H - DIA (∅e)		NH (n)	LINING THK (S)		Size	L - ID (∅d1)		∅R/F (∅B1)		F. OD (∅D1)		F. THK (G1)		P.C.D. (K1)		H - DIA (∅e1)		NH (n1)	LINING THK (S1)		F			
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM		INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM	INCH	MM
	0.079	±2	0.079	±2					0.06	±1.6							0.079	±2	0.079	±2							0.06	±1.6							
12"	11.46	291	1500	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	14.02	356		
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	14.02	356		
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	14.02	356		
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	14.02	356		
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	14.02	356		
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	8"	7.54	191.5	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	14.02	356		
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	14.02	356		
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	15.98	406		
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	15.98	406		
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	15.98	406		
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	15.98	406		
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	15.98	406		
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	8"	7.54	191.5	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	15.98	406		
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	15.98	406		
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	15.98	406		



UNEQUAL TEES



Material Specifications

- UN.EQ.TEE : Made From Fabrication Seamless Carbon Steel Pipe:
As per ASTM A 106 GR.B, SCH 40 (upto 6")
As per ASTM A 106 GR.B, SCH 20 (above 6")
- Flange : ASTM A 105 as per ANSI B 16.5, 150#
- Liner : PFA conforming ASTM D 3307

Dimension Specifications

- All dimensions are in mm.
- Pipe as per ANSI B36.10
- Flange as per ANSI B16.5, 150#
- Lining and other dimensional tolerances as per ASTM F1545

Testing

- 100% Visual Check
- 100% Dimensional Check
- 100% Spark Test At 15 KVDC.
- 100% Hydro Test At 29 kg/cm² holding time 3 min.,
as per ASTM F1545
(after Lining)

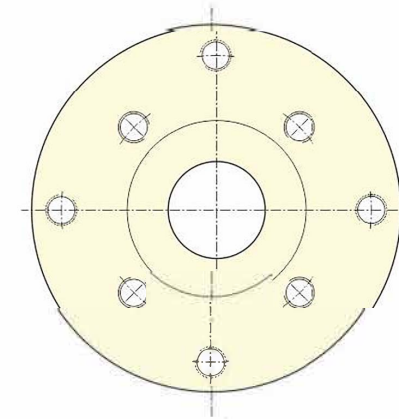
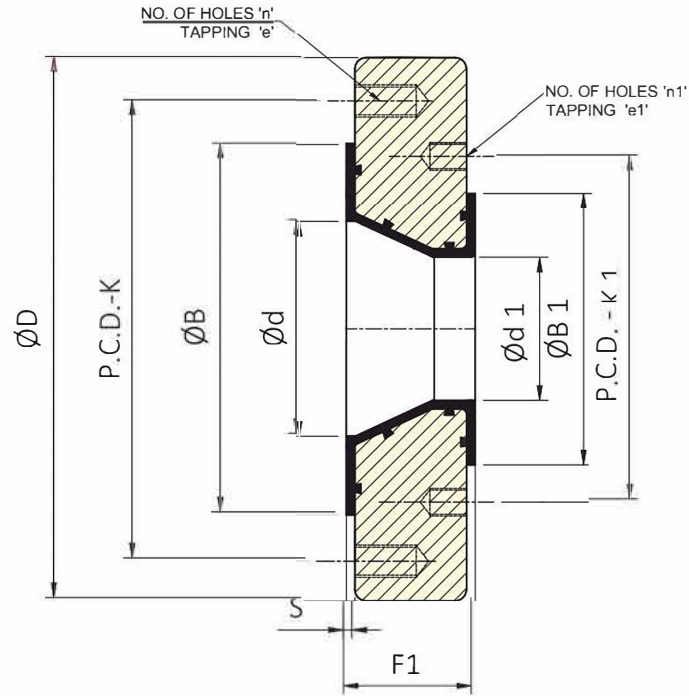
DIMENSION TABLE

Size	L - ID (Ød)		ØR/F (ØB)		F. OD (ØD)		F. THK (G)		P.C.D. (K)		H - DIA (Øe)		NH (n)	LINING THK (S)		Size	L - ID (Ød1)		ØR/F (ØB1)		F. OD (ØD1)		F. THK (G1)		P.C.D. (K1)		H - DIA (Øe1)		NH (n1)	LINING THK (S1)		F		C.S. PIPE (SCH)		
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM		INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM		INCH	MM
	0.079	±2	0.079	±2					0.06	±1.6							0.079	±2	0.079	±2							0.06	±1.6							0.11	±3.0
3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	1/2"	0.39	10	1.37	34.9	3.50	88.9	0.44	11.1	2.37	60.3	0.63	15.9	04	0.126	3.2	2.95	75	40		
1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	1/2"	0.39	10	1.37	34.9	3.50	88.9	0.44	11.1	2.37	60.3	0.63	15.9	04	0.126	3.2	3.50	89	40		
1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	3.50	89	40		
1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	4.02	102	40		
1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	4.02	102	40		
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	3/4"	0.59	15	1.68	42.7	3.87	98.4	0.50	12.7	2.75	69.8	0.63	15.9	04	0.126	3.2	4.49	114	40		
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.57	120.6	0.75	19	04	0.157	4	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	4.49	114	40		
2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.57	120.6	0.75	19	04	0.157	4	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	4.49	114	40		
3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	5.51	140	40		
3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	5.51	140	40		
3"	2.76	70	5.00	127	7.50	190.5	0.94	32.8	6.00	152.4	0.75	19	04	0.177	4.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.57	120.6	0.75	19	04	0.157	4	5.51	140	40		
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	6.50	165	40		
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	6.50	165	40		
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	6.50	165	40		
4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	6.50	165	40		
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	1"	0.79	20	2.01	51	4.25	108	0.56	14.2	3.13	79.4	0.63	15.9	04	0.138	3.5	7.99	203	40		
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	7.99	203	40		
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	7.99	203	40		
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	7.99	203	40		
6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	7.99	203	40		
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	9.02	229	20		
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	9.02	229	20		
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	9.02	229	20		
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	9.02	229	20		
8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	9.02	229	20		
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	10.98	279	20		
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	10.98	279	20		
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	10.98	279	20		
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	10.98	279	20		
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	6"	5.67	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	10.98	279	20		
10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	8"	7.64	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	10.98	279	20		

DIMENSION TABLE

Size	L - ID (Ød)		ØR/F (ØB)		F. OD (ØD)		F. THK (G)		P.C.D. (K)		H - DIA (Øe)		NH (n)	LINING THK (S)		Size	L - ID (Ød1)		ØR/F (ØB1)		F. OD (ØD1)		F. THK (G1)		P.C.D. (K1)		H - DIA (Øe1)		NH (n1)	LINING THK (S1)		F		C.S. PIPE (SCH)
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM		INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM	
	0.079	±2	0.079	±2					0.06	±1.6							0.079	±2	0.079	±2							0.06	±1.6						
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	12.01	305	20
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	12.01	305	20
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	12.01	305	20
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	12.01	305	20
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	6"	5.57	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	12.01	305	20
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	8"	7.54	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	12.01	305	20
12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	12.01	305	20
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	1.5"	1.34	34	2.87	73	5.00	127	0.69	17.5	3.87	98.4	0.63	15.9	04	0.138	3.5	14.02	356	20
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	2"	1.73	44	3.62	92	6.00	152.4	0.75	19	4.75	120.6	0.75	19	04	0.157	4	14.02	356	20
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	3"	2.76	70	5.00	127	7.50	190.5	0.94	23.8	6.00	152.4	0.75	19	04	0.177	4.5	14.02	356	20
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	4"	3.70	94	6.18	157	9.00	228.6	0.94	23.8	7.50	190.5	0.75	19	08	0.177	4.5	14.02	356	20
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	6"	5.57	144	8.50	216	11.00	279.4	1.00	25.4	9.50	241.3	0.87	22.2	08	0.177	4.5	14.02	356	20
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	8"	7.54	194	10.63	270	13.50	342.9	1.13	28.6	11.75	298.4	0.87	22.2	08	0.177	4.5	14.02	356	20
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	10"	9.53	242	12.76	324	16.00	406.4	1.19	30.2	14.25	362	1.00	25.4	12	0.217	5.5	14.02	356	20
14"	12.64	321	16.26	413	21.00	533.4	1.37	34.9	18.75	476.3	1.13	28.6	12	0.256	6.5	12"	11.46	291	15.00	381	19.00	482.6	1.25	31.8	17.00	431.8	1.00	25.4	12	0.217	5.5	14.02	356	20

REDUCING FLANGES



Material Specifications

1. Reducing Flange : IS 2062
2. Flange : As per ANSI B 16.5, 150#
3. Lining : PFA conforming ASTM D 3307

Dimension Specifications

1. All dimensions Are in mm.
3. Flange as per ANSI B16.5, 150#
5. Lining and other dimensional tolerances as per ASTM F1545

Testing

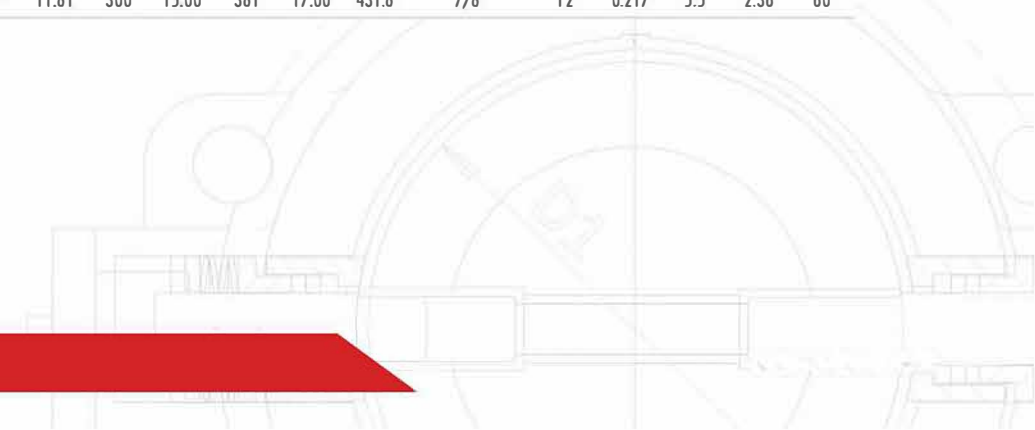
1. 100% Visual Check
2. 100% Dimensional Check
3. 100% Spark Test At 15 KVDC.
(after Lining)

DIMENSION TABLE

Size	L - ID (Ød)		ØR/F (ØB)		F. OD (ØD)		P.C.D. (K)		UNC (Øe)	NH (n)	LINING THK (S)		Size	L - ID (Ød1)		ØR/F (ØB1)		P.C.D. (K1)		UNC (Øe1)	NH (n1)	LINING THK (S)		(F1)	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	TAPPING		INCH	MM		INCH	MM	INCH	MM	TAPPING		INCH	MM	INCH	MM	INCH	MM
	0.079	±2	0.079	±2			0.06	±2						0.079	±2	0.06	±1.6							0.11	±3.0
3/4"	0.79	20	1.68	42.7	3.87	98.4	2.75	69.8	1/2"	04	0.126	3.2	1/2"	0.59	15	1.37	34.9	2.37	60.3	1/2"	04	0.126	3.2	1.38	35
1"	0.98	25	2.01	51	4.25	108	3.13	79.4	1/2"	04	0.126	3.2	1/2"	0.59	15	1.37	34.9	2.37	60.3	1/2"	04	0.126	3.2	1.38	35
1"	0.98	25	2.01	51	4.25	108	3.13	79.4	1/2"	04	0.138	3.5	0.75	0.79	20	1.68	42.7	2.75	69.8	1/2"	04	0.126	3.2	1.38	35
1.5"	1.57	40	2.87	73	5.00	127	3.87	98.4	1/2"	04	0.138	3.5	0.75	0.79	20	1.68	42.7	2.75	69.8	1/2"	04	0.126	3.2	1.38	35
1.5"	1.57	40	2.87	73	5.00	127	3.87	98.4	1/2"	04	0.138	3.5	1"	0.98	25	2.01	51	3.13	79.4	1/2"	04	0.138	3.5	1.38	35
2"	1.97	50	3.62	92	6.00	152.4	4.75	120.6	5/8"	04	0.157	4	0.75	0.79	20	1.68	42.7	2.75	69.8	1/2"	04	0.126	3.2	1.38	35
2"	1.97	50	3.62	92	6.00	152.4	4.75	120.6	5/8"	04	0.157	4	1"	0.98	25	2.01	51	3.13	79.4	1/2"	04	0.138	3.5	1.38	35
2"	1.97	50	3.62	92	6.00	152.4	4.75	120.6	5/8"	04	0.157	4	3/4"	1.57	40	2.87	73	3.87	98.4	1/2"	04	0.138	3.5	1.38	35
3"	3.15	80	5.00	127	7.50	190.5	6.00	152.4	5/8"	04	0.177	4.5	1"	0.98	25	2.01	51	3.13	79.4	1/2"	04	0.138	3.5	1.77	45
3"	3.15	80	5.00	127	7.50	190.5	6.00	152.4	5/8"	04	0.177	4.5	1.5"	1.57	40	2.87	73	3.87	98.4	1/2"	04	0.138	3.5	1.77	45
3"	3.15	80	5.00	127	7.50	190.5	6.00	152.4	5/8"	04	0.177	4.5	2"	1.97	50	3.62	92	4.75	120.6	1/2"	04	0.157	4	1.77	45
4"	3.94	100	6.18	157	9.00	228.6	7.50	190.5	5/8"	08	0.177	4.5	1"	0.98	25	2.01	51	3.13	79.4	1/2"	04	0.138	3.5	1.77	45
4"	3.94	100	6.18	157	9.00	228.6	7.50	190.5	5/8"	08	0.177	4.5	1.5"	1.57	40	2.87	73	3.87	98.4	1/2"	04	0.138	3.5	1.77	45
4"	3.94	100	6.18	157	9.00	228.6	7.50	190.5	5/8"	08	0.177	4.5	2"	1.97	50	3.62	92	4.75	120.6	5/8"	04	0.157	4	1.77	45
4"	3.94	100	6.18	157	9.00	228.6	7.50	190.5	5/8"	08	0.157	4.5	3"	3.15	80	5.00	127	6.00	152.4	5/8"	04	0.177	4.5	1.77	45
6"	5.91	150	8.50	216	11.00	279.4	9.50	241.3	3/4"	08	0.177	4.5	1"	0.98	25	2.01	51	3.13	79.4	1/2"	04	0.138	3.5	2.13	54
6"	5.91	150	8.50	216	11.00	279.4	9.50	241.3	3/4"	08	0.177	4.5	1.5"	1.57	40	2.87	73	3.87	98.4	1/2"	04	0.138	3.5	2.13	54
6"	5.91	150	8.50	216	11.00	279.4	9.50	241.3	3/4"	08	0.177	4.5	2"	1.97	50	3.62	92	4.75	120.6	5/8"	04	0.157	4	2.13	54
6"	5.91	150	8.50	216	11.00	279.4	9.50	241.3	3/4"	08	0.177	4.5	3"	3.15	80	5.00	127	6.00	152.4	5/8"	04	0.177	4.5	2.13	54
6"	5.91	150	8.50	216	11.00	279.4	9.50	241.3	3/4"	08	0.177	4.5	4"	3.94	100	6.18	157	7.50	190.5	5/8"	04	0.177	4.5	2.13	54
8"	7.87	200	10.63	270	13.50	342.9	11.75	298.4	3/4"	08	0.177	4.5	1.5"	1.57	40	2.87	73	3.87	98.4	1/2"	04	0.138	3.5	2.13	54
8"	7.87	200	10.63	270	13.50	342.9	11.75	298.4	3/4"	08	0.177	4.5	2"	1.97	50	3.62	92	4.75	120.6	5/8"	04	0.157	4	2.13	54
8"	7.87	200	10.63	270	13.50	342.9	11.75	298.4	3/4"	08	0.177	4.5	3"	3.15	80	5.00	127	6.00	152.4	5/8"	04	0.177	4.5	2.13	35
8"	7.87	200	10.63	270	13.50	342.9	11.75	298.4	3/4"	08	0.177	4.5	4"	3.94	100	6.18	157	7.50	190.5	5/8"	08	0.177	4.5	2.13	35
8"	7.87	200	10.63	270	13.50	342.9	11.75	298.4	3/4"	08	0.177	4.5	6"	5.91	150	8.50	216	9.50	241.3	3/4"	08	0.177	4.5	2.13	35


DIMENSION TABLE

Size	L-ID (Ød)		ØR/F (ØB)		F. OD (ØD)		P.C.D. (K)		UNC (Øe)	NH (n)	LINING THK (S)		Size	L-ID (Ød1)		ØR/F (ØB1)		P.C.D. (K1)		UNC (Øe1)	NH (n1)	LINING THK (S)		(F1)	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	TAPPING		INCH	MM		INCH	MM	INCH	MM	TAPPING		INCH	MM	INCH	MM	INCH	MM
	0.079	±2	0.079	±2			0.06	±2						0.079	±2	0.06	±1.6							0.11	±3.0
10"	9.84	250	12.76	324	16.00	406.4	14.25	362	7/8"	12	0.217	5.5	1.5"	1.57	40	2.87	73	3.87	98.4	1/2"	04	0.138	3.5	2.13	35
10"	9.84	250	12.76	324	16.00	406.4	14.25	362	7/8"	12	0.217	5.5	2"	1.97	50	3.62	92	4.75	120.6	5/8"	04	0.157	4	2.13	35
10"	9.84	250	12.76	324	16.00	406.4	14.25	362	7/8"	12	0.217	5.5	3"	3.15	80	5.00	127	6.00	152.4	5/8"	04	0.177	4.5	2.13	35
10"	9.84	250	12.76	324	16.00	406.4	14.25	362	7/8"	12	0.217	5.5	4"	3.94	100	6.18	157	7.50	190.5	5/8"	08	0.177	4.5	2.13	35
10"	9.84	250	12.76	324	16.00	406.4	14.25	362	7/8"	12	0.217	5.5	6"	5.91	150	8.50	216	9.50	241.3	3/4"	08	0.177	4.5	2.13	35
10"	9.84	250	12.76	324	16.00	406.4	14.25	362	7/8"	12	0.217	5.5	8"	7.87	200	10.63	270	11.75	298.4	3/4"	08	0.177	4.5	2.13	35
12"	11.81	300	15.00	381	19.00	482.6	17.00	431.8	7/8"	12	0.217	5.5	1.5"	1.57	40	2.87	73	3.87	98.4	1/2"	04	0.138	3.5	2.13	35
12"	11.81	300	15.00	381	19.00	482.6	17.00	431.8	7/8"	12	0.217	5.5	2"	1.97	50	3.62	92	4.75	120.6	5/8"	04	0.157	4	2.13	35
12"	11.81	300	15.00	381	19.00	482.6	17.00	431.8	7/8"	12	0.217	5.5	3"	3.15	80	5.00	127	6.00	152.4	5/8"	04	0.177	4.5	2.13	35
12"	11.81	300	15.00	381	19.00	482.6	17.00	431.8	7/8"	12	0.217	5.5	4"	3.94	100	6.18	157	7.50	190.5	5/8"	08	0.177	4.5	2.13	54
12"	11.81	300	15.00	381	19.00	482.6	17.00	431.8	7/8"	12	0.217	5.5	6"	5.91	150	8.50	216	9.50	241.3	3/4"	08	0.177	4.5	2.13	54
12"	11.81	300	15.00	381	19.00	482.6	17.00	431.8	7/8"	12	0.217	5.5	8"	7.87	200	10.63	270	11.75	298.4	3/4"	08	0.177	4.5	2.13	54
12"	11.81	300	15.00	381	19.00	482.6	17.00	431.8	7/8"	12	0.217	5.5	10"	9.84	250	12.76	324	14.25	362	7/8"	12	0.217	5.5	2.13	54
14"	13.78	350	16.26	413	21.00	533.4	18.75	476.3	1"	12	0.256	5.6	1.5"	1.57	40	2.87	73	3.87	98.4	1/2"	4	0.138	3.5	2.36	60
14"	13.78	350	16.26	413	21.00	533.4	18.75	476.3	1"	12	0.256	5.6	2"	1.97	50	3.62	92	4.75	120.6	5/8"	4	0.157	4	2.36	60
14"	13.78	350	16.26	413	21.00	533.4	18.75	476.3	1"	12	0.256	5.6	3"	3.15	80	5.00	127	6.00	152.4	5/8"	4	0.177	4.5	2.36	60
14"	13.78	350	16.26	413	21.00	533.4	18.75	476.3	1"	12	0.256	5.6	4"	3.94	100	6.18	157	7.50	190.5	5/8"	8	0.177	4.5	2.36	60
14"	13.78	350	16.26	413	21.00	533.4	18.75	476.3	1"	12	0.256	5.6	6"	5.91	150	8.50	216	9.50	241.3	3/4"	8	0.177	4.5	2.36	60
14"	13.78	350	16.26	413	21.00	533.4	18.75	476.3	1"	12	0.256	5.6	8"	7.87	200	10.63	270	11.75	298.4	3/4"	8	0.177	4.5	2.36	60
14"	13.78	350	16.26	413	21.00	533.4	18.75	476.3	1"	12	0.256	5.6	10"	9.84	250	12.76	324	14.25	362	7/8"	12	0.217	5.5	2.36	60
14"	13.78	350	16.26	413	21.00	533.4	18.75	476.3	1"	12	0.256	5.6	12"	11.81	300	15.00	381	17.00	431.8	7/8"	12	0.217	5.5	2.36	60



CERTIFICATION

TRANSPACIFIC CERTIFICATIONS LIMITED



Certificate of Registration
This is to certify that
Quality Management System

ISO 9001:2015



This certificate is valid concerning all activities related to:
Design, Manufacturing and Development Engineering of Plastic and
Urethanes, Ball, Ball Check, Swing Check, Diaphragm, Butterfly,
Plug Valve, Side Split Check, Blending and Strainers for Composite and
Approval Process in Chemical, Petrochemical, Food, Drug,
Process and Pharmaceutical Industries.

ANZSIC Code: 4912

Certificate No: 24173 Aug. 06, 2018 Aug. 05, 2019
Date of this Certificate *Next Audit Due Date

Aug. 06, 2018 Aug. 05, 2021
Date of Initial Registration Certification Expiry Date

Managing Director/Director

TRANSPACIFIC CERTIFICATIONS LIMITED



TECHNICKÁ INŠPEKČIA, z.s.
SLOVENSKÁ REPUBLIKA



ACKNOWLEDGEMENT OF RECEIPT
no. 13487/2018

Technická inšpekcia, z.s.
Třinecká cesta 99, 821 02 Třinec
IČO: 2524

confirms that Technical File Documentation
prepared by

PL01 HDL TO

has been received and stored according to the Article 13 (3) of Directive no. 2014/54/EU on equipment and pressure systems intended for use in potentially explosive atmospheres.

Scope of Exempted
**BALL VALVES, DIAPHRAGM VALVES, BUTTERFLY VALVES,
PLUG VALVES, GLOBE VALVES**
Type: **INDUSTRIAL VALVES**

Marking: 1/2" DN EN 10 131
En 10C 7200°C D0

Technical File Documentation according to the Annex VIII Article 2 of Directive 2014/54/EU

Doc. No.	Issue
UNP0704741	DATE: 23.03.2018
	REV. NO. 02

Technical documentation will be stored for 10 years until May 31, 2028.



Ing. Dušan Ferrel
General Director



EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.

CERTIFICATE OF FULL QUALITY ASSURANCE FOR PRESSURE EQUIPMENT
ACCORDING TO EUROPEAN DIRECTIVE 2014/54/EU (MODULE H)

Certificate No.: PEP1208

CATEGORY OF PRESSURE EQUIPMENT:
H

AGAINST THE PROVISIONS ON
EUROPEAN REGULATION EQUIPMENT DIRECTIVE
2014/54/EU (MODULE H)

THIS CERTIFICATE IS VALID FOR THE FOLLOWING SCOPE:
DESIGN, PRODUCTION, INSPECTION AND TESTING OF PRESSURE EQUIPMENT

CONDITIONS AND LIMITATIONS:
This pressure equipment shall be manufactured and inspected in accordance with the conditions and restrictions of item 11. The manufacturer must also take the relevant duty of care of the relevant conditions of the quality assurance system. The manufacturer must also take the relevant duty of care of the relevant conditions of the safety assurance system.

CE 1124

The EPCRA is valid by 25/08/2018. EPCRA is valid until 2028.

AUDIT REPORT NO.:
PEP1208/06



Ing. Dušan Ferrel
General Director



EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.



EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.

TECHNICAL DESCRIPTION OF PRESSURE EQUIPMENT:
Certificate No.: PEP1208

ID	TYPE	DESCRIPTION	NO. OF VALVES	TEST PRESSURE	TEST PRESSURE
1	WASER	BUTTERFLY VALVES	DN 25 TO DN 150	PN 10	15
2	VALVE	BUTTERFLY VALVES	DN 400	PN 10	15
3	VALVE	BUTTERFLY VALVES	DN 400 TO DN 600	PN 10	15
4	VALVE	CHECK VALVES	DN 25 TO DN 150	PN 10	15
5	VALVE	CHECK VALVES	DN 150 TO DN 200	PN 10	15
6	VALVE	DIAPHRAGM VALVES	DN 80 TO DN 150	PN 10	15
7	VALVE	SAMPLING VALVES	DN 25	PN 04	05
8	VALVE	DIAPHRAGM VALVES	DN 15 TO DN 50	PN 10	15
9	VALVE	DIAPHRAGM VALVES	DN 80 TO DN 200	PN 05	05
10	VALVE	DIAPHRAGM VALVES	DN 15 TO DN 100	PN 10	15
11	VALVE	PLUG VALVES	DN 15 TO DN 200	PN 10	15
12	VALVE	BALL VALVES	DN 250 TO DN 300	PN 16	15
13	VALVE	GLOBE VALVES	DN 15 TO DN 200	PN 10	15
14	VALVE	BALL VALVE	DN 25 TO DN 150	PN 10	15
15	VALVE	BALL VALVE	DN 25 TO DN 150	PN 10	15
16	VALVE	PLUG VALVE	DN 15 TO DN 100	PN 10	15
17	VALVE	PLUG VALVE	DN 150 TO DN 200	PN 10	15



Ing. Dušan Ferrel
General Director



EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.

APPROVED
ISO 15848-1
FUGITIVE EMISSION CERTIFICATION
PFA LINED SIDE SPLIT
FULL PORT BALL VALVES
Size Range : 1/2" to 6"

APPROVED
ISO 15848-1
FUGITIVE EMISSION CERTIFICATION
PFA LINED PLUG VALVES
Size Range : 1/2" to 8"

APPROVED
ISO 15848-1
FUGITIVE EMISSION CERTIFICATION
PFA LINED BUTTERFLY VALVE
Size Range : 2" to 24"

APPROVED
DIN EN 14432:2014
PFA LINED SIDE SPLIT
DESIGN BALL VALVES
Size Range : 1" to 4"

APPROVED
DIN EN 14432:2014
PFA LINED BUTTERFLY VALVES
Size Range : 2" to 8"



Россия

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Казахстан

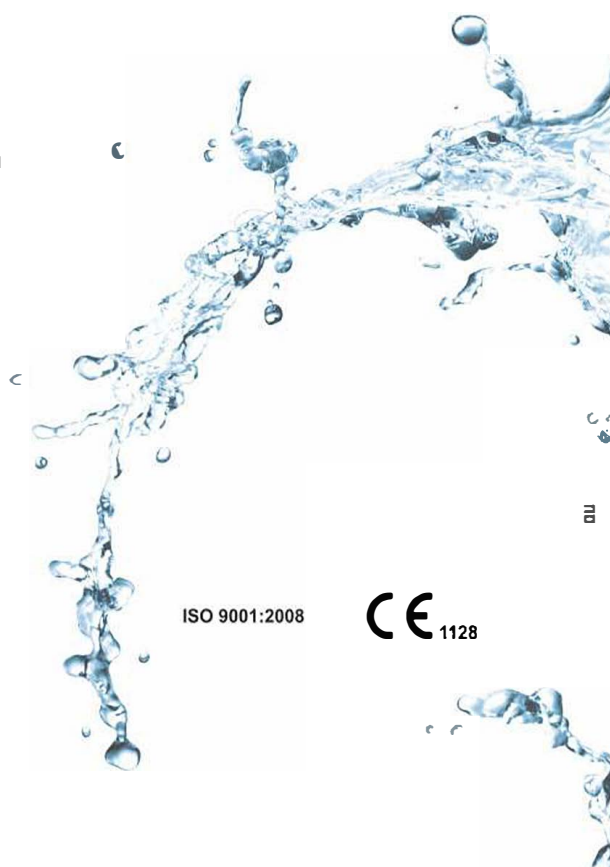

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